Climate Change and Resource War in Africa[1]

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Abstract

Establishing a link between climate change and resource war has been on the front burner in research and global discourse for a while, but the matter is still far from being settled as opinions are yet divided. The current study examines the relationship between climate change and resource war in Africa with a view to establishing the extent to which one influences the other in the respective directions. Data were gathered utilizing library research and hindsight. The findings show convincing evidence of bidirectional influence between the two, though it appears the influence is more from climate change than resource war. The study concludes that a damaged environment just like a disease in the body, can undermine societies and give rise to violent conflicts and failed states if left unchecked; and that is direction where most African countries are heading, consequent upon the effects of climate change and violent conflicts in the continent. It recommends that all stakeholders; researchers, relevant agencies and advocacy groups, policymakers, as well as development planners should do their bits in tackling the menace of the effects of climate change and resource war in Africa with a view to achieving lasting and innovative solutions for societal transformation in the desired direction(s).

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Introduction

Climate change is a global phenomenon. It is indeed one of the defining issues of our time in global discourse; from shifting or extreme weather patterns that disrupt harvest thereby threatening food security, to the rising sea levels that increase the risk of heavy and catastrophic flooding as well as the attendant environmental degradation giving rise to the spread of infectious diseases etc. The impacts of climate change are global in scope and unprecedented in scale. It threatens the lives and livelihood of billions of people in the world.

Despite its low contribution to greenhouse gas emissions, Africa remains the most vulnerable continent to climate change impacts. Put differently, the continent faces exponential collateral damage, posing systemic risks to its economy, infrastructure investments, water and food systems, public health, agriculture, and livelihood, threatening to reverse its modest development gains and forcing on it, greater levels of extreme poverty[3].

As it is, the following factors are seen to contribute to Africa's vulnerability to climate change[4]:

i. Sub-Saharan Africa has 95% of rain-fed agriculture generally;
ii. A large share of agriculture in its GDP and employment adds to the vulnerability;
iii. Other weather-sensitive activities, such as herding and fishing, leading to income losses and increased food insecurity;
iv. Seven (7) of the ten (10) countries that are most vulnerable to climate change are in Africa, and in 2015, four African countries ranked among the ten (10) countries most affected by climate change in the world: Mozambique (1st), 2023 Malawi (3rd), Ghana and Madagascar (joint 8th position).

Nigeria in particular is adjudged to be a country highly vulnerable to climate change and it is classified as one of the ten countries of the world most vulnerable to climate change[5]. It is exposed to more frequent extreme

[3] African Development Bank 2022, https://www.afdb.org/en/cop25/climate-change-africa)
[4] African Development Bank 2022, https://www.afdb.org/en/cop25/climate-change-africa)
[5] Climate Change Vulnerability Index, 2017.

weather events, increases in temperature, variable rainfall, rise in sea level and heavy flooding, drought and desertification, environmental degradation, affected fresh water resources and loss of biodiversity.

Similarly, resource war is also a global phenomenon because no nation or people have become effectively so self-sufficient to the extent that they would look the other way even when their resources (usually scarce) are being tampered with by others in whatever circumstance or disguise, hence, the violent conflicts that are largely driven by competition for control over vital or valuable natural resources. Most often, wars are caused by one nation or a people's wish or desire to take over the control of another's wealth or possession. And whatever the reason for a war may be, there is very often, an economic motive underlying most conflicts, no matter how noble and morally justifiable, the stated aim of the war presented to the public may appear.

As it were, no matter how one may look at climate change and resource war in global discourse or on the African continent in particular, they are perennial and nagging problems that are of great concern to any society and the world at large. Supposedly, they require policy intervention, advocacy, as well as critical research attention for lasting and innovative solutions.

From the critical research angle, one of the pertinent questions to ask and which forms the thrust of the current study is the extent to which one influences the other; between climate change and resource war. Even though climate change is widely recognised as a "threat multiplier" due to its role of intensifying the traditional causes of conflict, the connection between climate change and violent conflict or resource war is not a straightforward one. This is so because the relationship is characterised by a complex nexus of problems that may include marginalisation and exclusion, disintegration and secession, population pressure, exploitation of land and forests, declining agricultural productivity, food insecurity and

diseases. And these may also be attributed to other causative factors, not necessarily as a result of climate change[6].

In the extant literature, there are contradictory statements on the link between climate change and violent conflict/resource war. Among the numerous quantitative empirical studies on large historical periods, geographical regions, forms of violence and causal mechanisms, most studies found significant links, whilst others found only ambivalent or no so strong links. This has led to three interesting general proposals or positions over time namely[7]:

i. the enthusiasts, who assert that the connection is direct and obvious;
ii. the moderates, who argue that the link is weak and shallow;
iii. the skeptics, who maintain that there is hardly any link or it is ambivalent and unclear.

From an objective point of view, it may not be safe to render a definite verdict on the point at issue here because it is contentious and polemic. In other words, the matter is far from being settled as contending camps are yet to reach any form of consensus, in spite of the plethora of evidence amassed in the past decades by the three camps to support their respective positions. And this, it is that makes the matter an interesting one in the current endeavor. It is, as it were, 'work in progress' and so, the investigation continues. Against this background therefore, the present study investigates the extent to which climate change influences resource war in Africa or vice versa, present the available pieces of evidence on the point at issue as they were.

Objectives

The aim of the study is to examine the nexus between climate change and resource war in Africa with a view to establishing the direction(s) of influence.

Therefore, the specific objectives are to:

i. assess the extent to which climate change influences resource war in Africa;

[6] Adams, C., Ide, T., Barnett, J. and Detqes, A. (2018). Sampling Bias in Climate–Conflict Research. *Nature Climate Change*, 8, 3, 200–203.

[7] Scheffran, J. 2021. Environmental Security and Climate Diplomacy in the Mediterranean. Peacebuilding and Climate Change. Report of the Bologna Peacebuilding Forum, 18-19 May 2021 (pp.28-44). Agency for Peacebuilding.

ii. investigate the extent to which resource war influences climate change in Africa;
iii. compare the extent of the influences from both directions with a view to ascertaining which factor influences the other more.

Materials and Methods

Data gathering for the study was done utilizing majorly library research, Focus Group Discussions (FGDs) and hindsight. The information on the influence of climate change on resource war in Ibaji Local Government Area were elicited using the researcher's hindsight and participant observation in addition to the Focus Group Discussions (FGDs) comprising seven members with relevant, adequate and appropriate knowledge of the subject matter of the research, purposively selected to form the group. The remaining data for the study were elicited through library research from the available literature and research on the connection between climate change and resource war or violent conflict in Africa, namely: Reports of USAID[8] sponsored research on 'Climate Change and Conflict' as compiled or prepared by Jeffrey Stark for the Foundation for Environmental Security and Sustainability (FESS) and other general relevant conceptual literature on the subject matter referenced in the appropriate sections and sub-sections of the research report below. The analysis took mainly a descriptive or qualitative approach.

Results

The results are presented in two major sub-sections on climate change driven resource war (4.1.) and resource war driven climate change (4.2.) as contained in the following:

Climate Change Driven Resource Wars/Conflicts in Africa

Similarly, the data presentation and analysis in this section are done in three sub-sections namely; the general relevant conceptual literature on the subject matter (4.1.1), the reports of USAID[9] sponsored research on 'Climate Change and Conflict' (4.1.2), results of the Focus Groups Duscussions (FGDs) and the researcher's hindsight as a participant

[8] USAID '(2014) sponsored research on 'Climate Change and Conflict: Lessons Learned from Five Case Studies in Seven Countries'. Prepared by Jeffrey Stark, Foundation for Environmental Security and Sustainability (FESS), through a subcontract to Tetra Tech ARD.

[9] USAID '(2014) sponsored research on 'Climate Change and Conflict: Lessons Learned from Five Case Studies in Seven Countries'. Prepared by Jeffrey Stark, Foundation for Environmental Security and Sustainability (FESS), through a subcontract to Tetra Tech ARD.

observer relating to his experience and observations of what obtained in his locality (Ibaji Local Government Area of Kogi State) on climate change and violent conflicts or resource wars over the past decades in the area (4.1.3).

General Conceptual Literature on Climate Change and Violent Conflicts

As argued earlier, the connection between climate change and violent conflict or resource war may not be a straightforward one but climate change is widely recognised as a "threat multiplier" due to its role of exacerbating the traditional causes of conflicts. As it is held in certain quarters, climate change can contribute to violent conflicts under some conditions and in certain pathways. There are considerable pieces of evidence, however suggestive, that climate change can lead to violent conflicts in communities, countries or regions which largely depend on agriculture, have ineffective and weak institutions including poor governance, and host politically excluded or undermined groups[10].

There are two different mechanisms by which changes in climate might affect conflict[11]. These they referred to as pathways namely; direct and indirect pathways as enunciated below:

Physiological and/or Psychological Factors and Resource Scarcity: Climate change is said to affect the likelihood of interpersonal violence due to some underlying physiological and/or psychological factors. In other words, warmer or colder temperatures; by elevating levels of discomfort and aggressiveness, increase hostility and violence[12];[13]. Climate change alters competition over increasingly scarce resources and the hostility that comes with increased temperature aggravates the

[10] Koubi, V. 2018. Exploring the Relationship between Climate and Violent Conflict. Chinese Journal of Population Resources and Environment, 16(1):1-6.

[11] Anderson, C. A. & Bushman, B. J. (2002). Human aggression. Annual Review of Psychology, 53, 27–51.

[12] Anderson, C. A. & Bushman, B. J. (2002). Human aggression. Annual Review of Psychology, 53, 27–51.

[13] Burke, Marshall B, Edward Miguel, Shanker Satyanath, John A Dykema, and David B Lobell. 2009. "Warming Increases the Risk of Civil War in Africa." Proceedings of the National Academy of Sciences 106 (49): 20670–74. https://doi. org/10.1073/pnas.0907998106.

effects. Research on the so-called 'heat—aggression relationship' suggests[14]the following:

i. A 10- 20% increase in the risk of armed conflict is associated with each 0.5°C increase in local temperatures;
ii. From 1970 to 2015, local temperature increase in 159 countries also saw an increased number of terrorist attacks and increased death rates;
iii. Hot temperatures increase aggression by directly increasing feelings of hostility and indirectly increasing aggressive thoughts. Results show that global warming trends may well increase violent-crime rates in the coming years.

These result from economic outcomes and migration. The indirect pathways focus on the effect of climate change on conflict through economic impacts and migration. There are several possible causal mechanisms underlying these relationships, which are mainly drawn from the conflict literature.

In the same vein, the diagram below was to illustrate what appears like a pictorially summarized version of the potential pathways of the relationship between climate change and violent conflicts in Africa. And I believe, the picture is self-explanatory[15].

[14] Anderson, C. A. (2001). Heat and violence. Current Directions in Psychological Science, 10, 33–8.

[15] Brzoska, Michael, and Christiane Fröhlich (2016), Climate Change, Migration and Violent Conflict: Vulnerabilities, Pathways and Adaptation Strategies, in: *Migration and Development*, 5, 2, 190–210.

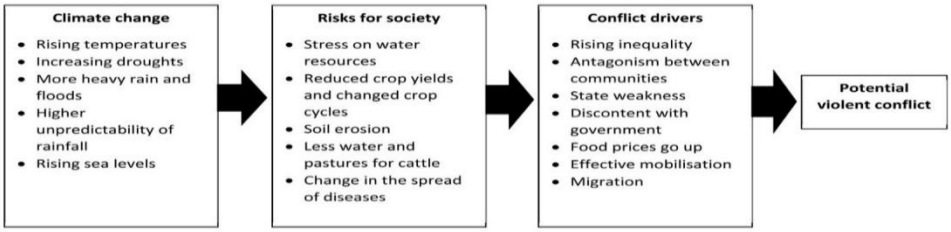

Fig 1: Potential Pathways from climate to Violent conflicts in Africa[16]

Climatic conditions, it is observed, breed conflict in fertile grounds especially in regions dependent on agriculture and in combination and/or interactions with other socio-economic and political factors such as low level of economic development, poverty, poor governance, inequality and political marginalization which characterize most countries in Africa.

At this point and for evidently clear arguments on the point at issue, it may be pertinent to mention however briefly, the flashpoints for climate change driven resource wars or violent conflicts in Africa as documented in the extent literature. These are the Sahel, the Lake Chad Basin and the Horn of Africa[17].

The Sahel: Across the Sahel, stretching from Senegal in the West to Sudan in the East, prolonged periods of drought, intense desertification and soil erosion persist, resulting in depleted productivity of land, changes of grazing patterns, had led to civil war lasting from the 1980s. Desperation triggered mass ecological migration, mainly towards Southern Darfur, for more fertile lands inhabited by settled farmers disrupting harmony between inhabitants namely; the pastoralists, the Arab nomads, and so

[16] Brzoska, Michael, and Christiane Fröhlich (2016), Climate Change, Migration and Violent Conflict: Vulnerabilities, Pathways and Adaptation Strategies, in: *Migration and Development*, 5, 2, 190–210.

[17] Burke, Marshall B, Edward Miguel, Shanker Satyanath, John A Dykema, and David B Lobell. 2009. "Warming Increases the Risk of Civil War in Africa." Proceedings of the National Academy of Sciences 106 (49): 20670–74. https://doi. org/10.1073/pnas.0907998106.

on. Thus, the conflict, largely driven by resource scarcity, became enmeshed in ethnic polarisation.

The Lake Chad Basin: About 30 million people in Nigeria, Chad, Niger and Cameroon compete over the dramatically shrinking water source, which from 1960, has lost 90% of its surface water. Displacement, hunger and malnutrition are rife. This has contributed to increasing abductions, killings and human right violations and the growth of terrorist organisations. In North East Nigeria, where more than 50% of the population make their living from farming, fishing and livestock production, increased aridity has reduced their sources of good living, making them vulnerable to recruitment by Boko Haram[18]. Since its formation in 2009, Boko Haram alone has recorded 40,000 casualties and has contributed to the displacement of 2.4 million people around the Lake Chad Basin[19].

The Horn of Africa: The Horn of Africa encompasses Eritrea, Ethiopia, Somalia and Kenya and the region is also affected by climate driven conflicts. Drought impacts over 13 million people, encouraging induced migration and ultimately ethnic tensions and terrorism. With war beginning in November 2020 in Tigray, a region already hosting 100,000 Eritrean refugees and suffering from drought, the position of its communities has become extremely poor and volatile. The violence from the conflict has transnational effects on Eritrea, Sudan and Somalia[20].

Lastly, as reported[21];[22], the United Nations (UN) and the Intergovernmental Panel on Climate Change (IPCC) have raised the concern on the possibility of climate change induced food and resource

[18] Boko Haram is a terrorist organization based in northeastern Nigeria, which is also active in Chad, Niger and northern Cameroon.

[19] Burke, Marshall B, Edward Miguel, Shanker Satyanath, John A Dykema, and David B Lobell. 2009. "Warming Increases the Risk of Civil War in Africa." Proceedings of the National Academy of Sciences 106 (49): 20670–74. https://doi. org/10.1073/pnas.0907998106.

[20] Gleditsch, N. P., and P. F. Diehl, (eds). *Environmental Conflict.* Boulder: Westview, 2001.

[21] Ibid.

[22] Schneider, G., K. Barbieri, and N. P. Gleditsch, (eds). *Globalization and Armed Conflict.* New York: Rowman and Littlefield, 2003.

scarcity sparking regional conflicts. According to them, in the Middle East alone, disputes over water access already posed a significant impediment to lasting peace settlements between some nations in the region. To them, the armed conflict in the Sudan in the 1980s was a practical example of conflict initiated by food insecurity and famine. Similarly, as the sources[23], [24] argued further, in East Africa, deforestation, soil erosion and rising populations leading to uncontrolled urban migration combined to diminish food self-sufficiency and heightened the danger of civil conflicts in the region.

Evidence from Empirical Literature: Recent Quantitative Studies and USAID's[25] Sponsored Research on 'Climate Change and Violent Conflict'

Recent Quantitative Studies

The recent studies receiving the greatest media attention have been a new wave of quantitative studies that have sought to answer basic questions about causality on the relationship between climate change and resource war or violent conflict in Africa.

First, a team of academic researchers analyzed historical linkages between civil war and temperatures in sub-Saharan Africa from 1981–2002. Combining the findings with climate model projections for the future, it was found that the data suggest "a roughly 54% increase in armed conflict incidence by 2030" owing to climate change[26]. However, Buhaug[27] contested those findings on technical methodological grounds and claimed that "political exclusion, poor economic performance, and changes in the international system" rather than climate change can better help to explain

[23] Ibid

[24] Ibid

[25] USAID '(2014) sponsored research on 'Climate Change and Conflict: Lessons Learned from Five Case Studies in Seven Countries'. Prepared by Jeffrey Stark, Foundation for Environmental Security and Sustainability (FESS), through a subcontract to Tetra Tech ARD.

[26] Burke, Marshall B, Edward Miguel, Shanker Satyanath, John A Dykema, and David B Lobell. 2009. "Warming Increases the Risk of Civil War in Africa." Proceedings of the National Academy of Sciences 106 (49): 20670–74. https://doi. org/10.1073/pnas.0907998106.

[27] Buhaug, Halvard (2010), Climate Not to Blame for African Civil Wars. *Proceedings of the National Academy of Sciences*, 107, 38, 16477–16482.

civil conflicts in Africa. Burke and his colleagues refused to concede on the technical issues on their original conclusions, but when they extended their analysis to include the years from 2003 to 2008, they found that the climate-conflict relationship was notably weaker, perhaps due to improved economic growth and democratization[28].

In an attempt to quantify the influence of climate on violent conflict, scholars[29] assembled 60 previous quantitative studies of various times and claimed to find 'strong causal evidence linking climatic events to human conflict across a range of spatial and temporal scales and across all major regions of the world.' The methods of the study and the far-reaching assertion, however, elicited considerable criticism from other scholars[30]. First, as it was argued, the concept of 'human conflict' used in the paper was so broad as to include events as diverse as domestic violence and the collapse of ancient civilizations. Secondly, scholars[31] maintained that the study offered no analysis of what climate-related causal mechanisms could be at play in producing such extremely divergent conflict outcomes. Therefore it may be possible to assert that causal mechanisms such as difficult economic conditions, weak and poor government institutions, migration and urbanization, and 'grievances' might have played greater roles than climate change in the circumstances cited in the study.

Other quantitative studies have produced mixed results. For example, while Hendrix and Salehyan[32] found that extreme deviations in rainfall were positively associated with all types of political conflicts,' Slettebak's[33] data analysis concluded that 'countries that are affected by climate-related disasters face a lower risk of civil war'.

[28] Burke M, Dykema J, Lobell DB, Miguel E, Satyanath S. 2010. Climate and civil war: Is the relationship robust? NBER Work. Pap. 16440.

[29] Hsiang, S., Burke, M. & Miguel, E. Quantifying the influence of climate on human conflict. *Science* 341, 1–14 (2013).

[30] Busby, Joshua W., Todd G. Smith, and Nisha Krishnan. 2014. "Climate Security Vulnerability in Africa Mapping 3.0." Political Geography, Special Issue: Climate Change and Conflict, 43 (November): 51–67. https://doi.org/10.1016/j, polgeo.2014.10.005.

[31] Busby, Joshua W., Todd G. Smith, Kaiba White, and Shawn M. Strange. 2013. "Climate Change and Insecurity: Mapping Vulnerability in Africa." International Security 37 (4): 132–72.

[32] Hendrix, C. and Salehyan, I. 2012. Climate change, rainfall, and social conflict in Africa. *Journal of Peace Research*, 2012, vol. 49, issue 1, 35-50.

[33] Slettebak, Rune T (2012) Don't blame the weather! Climate-related natural disasters and civil conflict. Journal of Peace Research 49(1): 163–176.

USAID's (2014) Sponsored Research on 'Climate Change and Violent Conflict'

The empirical evidence in this sub-section covers the study's reports on five (5) African countries from two regions or flashpoints for climate change and violent conflicts in Africa namely; the Greater Horn of Africa (Uganda and Ethiopia), and the Sahel (Niger and Burkina Faso), and then a West African city, precisely, Lagos in Nigeria as reported below:

Pastoralism in The Greater Horn of Africa: Uganda and Ethiopia

As reported, pastoralism in Uganda is a livelihood and set of cultural practices based on cattle herding that uses mobility to make maximum use of scarce natural resources in arid or semi-arid environments with limited and erratic rainfall[34]. The study indicated that climate change contributed to the stiff competition over scarce pasture and water scattered over a patchwork of locations and this, in turn, led to low livestock and crop productivity. For most farmers interviewed in Nakasongola, conflicts with cattle keepers are generally low-level affairs and cattle encroach on crops and disputes occur at water sources, but these are often settled through negotiations and/or payments for compensation. However, pastoralists in northern Nakasongola, as reported, experience more serious conflicts when numerous pastoralists bring their cow herds to the valley dams at the same time[35]. As reported further, climate variability especially erratic and unpredictable rains at times interacted with other factors in a number of ways that multiply the number of conflicts. It was however argued that the pastoralists are among the poorest in Uganda and are therefore often held in poor regard. Consequently, the weak capacity of the pastoralists in the cattle corridor to organize and mobilize for conflict probably might have reduced the scale of violence in the area. However, at the local level, sporadic episodes of deadly violent conflicts were eminent, the report concluded; adding that the situation in Karamoja part of Uganda was far more challenging in terms of culture, livelihoods, security, national policy, climate change, and conflict. This is so because in addition to the erosion of traditional social roles such as the exercise of authority by elders, the severe consequences of increasingly frequent droughts had rendered it extremely difficult, the efforts at reducing violent conflicts in that part of Uganda.

[34] USAID '(2014) sponsored research on 'Climate Change and Conflict: Lessons Learned from Five Case Studies in Seven Countries'. Prepared by Jeffrey Stark, Foundation for Environmental Security and Sustainability (FESS), through a subcontract to Tetra Tech ARD.

[35] USAID '(2014) sponsored research on 'Climate Change and Conflict: Lessons Learned from Five Case Studies in Seven Countries'. Prepared by Jeffrey Stark, Foundation for Environmental Security and Sustainability (FESS), through a subcontract to Tetra Tech ARD.

In Ethiopia, the study reported that drought and famine have been the powerful factors shaping governance in Ethiopia over the past forty (40) years. There have been shrinking grazing areas in Ethiopia due to the effects of climate change and just like in Uganda, mobility became fundamental to pastoralists' strategies for coping with unpredictable rainfall, livestock diseases, and the sustainable use of scarce natural resources in the area. As the report asserted, 'Ethiopia is among the countries most vulnerable to climate risks in Africa because of its extremely heavy reliance on rain-fed, subsistence agriculture'[36]. In Southern Ethiopia, precisely in Yabelo, recurrent drought, as the report indicated, has made the search for water and pasture more difficult, and moving into new areas in search of these resources had often provoked pockets of violent conflicts in the area.

The Sahel: Niger and Burkina Faso

In Niger, the report averred that the great drought was transformative; drying up water bodies and drastically reducing vegetative cover over vast areas, and pastoralists in the north were the hard hit. Consequently, erratic rainfall and rising temperatures interacted with non-climate factors to increase livelihood vulnerability in especially Northern Niger. The report enumerated those factors such as increasing climate variability and intensity, rapid demographic change, continual extension of agriculture to new lands, environmental degradation, and new forms of commercial activities combined to engender stiff competition over resources that in turn increases the potential for violent conflicts[37].

In Burkina Faso, the report argued that the country's recent political instability was 'unfolding in the context of serious climate challenges that appear likely to worsen over time'[38]. The challenges occasioned by land degradation and climate variability, as the report indicated, have brought about internal migration to areas where irrigated agriculture and commercial investments are increasingly found, and as well as where land is relatively more abundant. In these instances, increasing population has

[36] Ibid.
[37] Ibid.
[38] Ibid.

contributed to conflicts over land. Similarly, in the south, for instance, intra-family disputes over the sale of land to 'outsiders' from elsewhere in the country was an indication of such conflict, while in the east, there were disagreements among the different ethnic groups over the duration and validity of the tacit agreements allowing newcomers to cultivate unused plots of land. Even at the national level, the Ministry of Animal Resources estimated that approximately 4,000 farmer-herder conflicts took place between 2005 and 2011 owing to the restriction of pastoral spaces, and access to pastoral resources conditioned by the effects of climate change in the country[39].

West Africa: Lagos, Nigeria

In Nigeria, there is no denying the fact that Northern and northeastern Nigeria have experienced the most dramatic effects of climate change as indicated by the steady encroachment of desertification, the loss of farmland and pasture, and increasingly difficult access to water sources and firewood. Together with population growth and poor farming practices, the effects of these factors have severely disrupted the livelihoods of farmers, herdsmen, and fishermen in northern Nigeria[40]. Even at that, Lagos stands as one of the coastal cities in Nigeria that prominently suffers the effects of climate change and environmental conditions driven by migration and over population. The report indicated that 'as Lagos struggles with migration, poverty, and the provision of adequate public services, it is also highly vulnerable to the effects of severe weather and climate change'[41]. This is evident in the city's low-lying coastal location, with an average elevation of less than 1.5 meters, increasing temperatures, intensified rainstorms, rises in sea level, and so on. Besides, Lagos is grossly overpopulated with almost 70% of the residents living in poor, often illegal, settlements (e.g. Makoko), and this too, has its adverse environmental effects. The study concludes thus:

Current climate projections for Lagos have uncertainty with respect to annual precipitation, but the broader scenario they imply in combination

[39] Ibid.
[40] Ibid.
[41] Ibid.

with other factors is fairly dire: a continuing stream of migrants from northern Nigeria; more frequent and intense rainfall; sea-level rise and stronger sea surges; more cases of waterborne diseases; and the potential for increasing deaths, displacement, and damage in heavily populated, poor settlements in high-risk zones at the water's edge. Under such circumstances, and perhaps even in the case of serial flood events in the near to medium term, it is not difficult to envision crises that could overwhelm the government's capacity to respond, leading to social unrest and violence[42].

Hindsight as a Participant Observer: Experience(s) from Ibaji Local Government Area of Kogi State, Nigeria

Ìbàjì is one of the Local Government Areas created in Kogi State, North Central Nigeria in 1996 with its Headquarters at Ọ̀nyẹ̀dẹ́gà. It was formerly in Idah Local Government Area. The LGA shares boundaries with Enugu, Anambra and Delta States to the south, and is separated from Edo State to the west by the River Niger. It is made up of several towns and villages such as Ọ̀nyẹ̀dẹ́gà, Òděke, Ẹ́chéñọ̀, Ìyáñó, Ùnálè, Ẹ̀nwẹ̀lì to mention just a few. Ibaji is predominantly a rural setting whose inhabitants depend on rain-fed agricultural practices, majorly farming and fishing for livelihood.

Comparing my experience as a child growing up in Ibaji LGA the past five decades with the present, a lot has changed in terms of the climate and climate related activities in the area as well as the multiplier effects of the changes over time and at present. A few practical examples or illustrations from my experience as a participant observer may suffice here to drive the point home. Just like other parts of Africa and Nigeria, Ibaji LGA has witnessed certain evidence and effects of climate change in the past decades, namely; frequency and severe changes in extreme weather such as heatwaves, droughts, floods and precipitation; change in vegetation cover and distribution of rainfall, drying-up of rivers, and the receding of water bodies in several parts of Ibaji.

[42] Ibid.

Ibaji, as mentioned earlier, is predominantly an agrarian community which depends on rainfall for its agricultural activities, especially farming and fishing. As we speak, rainfall has become increasingly unpredictable in the area in terms of the time, the volume and effects on agricultural activities in the area. So, also are the seasons of the year. Ibaji people hardly experience harmattan any longer. If it comes at all, the period is extremely shorter than it used to be.

Secondly, Ibaji is an area highly susceptible to annual flooding. That too is no longer predicable nowadays. In the past decades; about forty, thirty years ago, one could predict when the flood would come and prepare for it ahead of time but these days, it has become increasingly unpredictable in terms of the time, volume and effects also.

Thirdly, environmental degradation is currently evident in the area with loss of vegetation, drying up of water bodies especially fishing ponds and drinking water sources, loss of arable land, endangerment and loss of plants, crops, animal and fish species. With the shrinking natural resources due to the effects of climate change and global warming, and the increasing competitive pressure on the scarce resources as a result of the geometrically ever-increasing population in the area, the ripple effects have become obvious and inevitable in the area. For instance, the development has led to both internal and external migration, disputes and violent conflicts between and among land owners and users, disputes over fish ponds, rivers and other natural resources including farmers and herdsmen conflicts in the area. Practical examples of the violent conflicts include but not limited to the Òdẽke/Ẹ́chẹ́ñọ̀ vs. Àgùlérì conflict on Oil-Well, fish ponds and farm lands at certain locations at the boundaries between Kogi, Enugu and Anambra states in recent years. Within Ibaji itself and even in some villages and communities in Ibaji, several violent conflicts and/or resource wars had erupted that could be traceable to the depleting effects of some natural resources, especially land and water consequent upon the multiplier effects of climate change and global warming. The list of some of the verifiable fairly recent cases of such climate change driven violent conflicts in Ibaji LGA are as follows:

1. Òděke/Ẹ́chẹ́ñọ̀ vs. Àgùlérì conflict on Oil-Well, fish ponds and farm lands;
2. Òděke vs Àgwọ́hì conflict over land and fishing ponds (Dec.,1996);
3. Ìká vs. Írẹ̌gu conflict over land for farming and settlement;
4. Ọ́mábó and Úchùchú conflict over land and fishing ponds (1991);
5. Ìyáñó (Áluaja vs. Írù vs Ìtàlè) conflict over fishing ponds, land and chieftaincy matters (2013-2015);
6. Àyéké vs. Ẹ̀nwẹ̀lì conflict over land and fishing ponds;
7. Widespread Farmers vs. Fulani Herdsmen conflicts across villages in Ibaji;
8. Effects of extreme waves and storm surges on Òdòchàlà, Àdágwọ̀, Ọ́kpú and Ójíala and many more along the riverine leading to relocation: Climate change which affects the strength and frequency of floods leading to extreme waves and storm surges that cause the sea level to rise by several metres has washed away the foundation of some of these villages along the River Niger in Ibaji, hence the necessity for the unplanned relocation.

Before now, most Ibaji people at home concentrated on their farming and fishing, and had no cause to bother about what happened beyond their areas of concentration but the shrinking natural resources; limited arable lands for farming and water bodies for fishing against the ever-increasing population that brought much pressure and stiff competition on the available limited resources, caused things to change dramatically. Even family members (regarded as land owners) are now at disputes over land and fishing ponds, talk less of non-land owners who depend on the goodwill and dictates of the land owners. Take the case of Òděke/Ẹ́chẹ́ñọ̀ vs. Àgùlérì conflict, for instance, even though it was claimed that the locations in the dispute were originally owned by Òděke and Ẹ́chẹ́ñọ̀ villages in parts and severally, they neglected or abandoned those places and concentrated on their farming and fishing in the other close-by locations in their heyday until the scarcity set in as a result of the effects of climate change that altered a lot in the environment. In keeping with the adage, nature abhors vacuum; by the time they realized following the necessity to expand and/or seek alternatives, the locations had already been occupied by their neighbours from the other states who needed the

places. The end result was the conflict. One may argue that the immediate causes of the violent conflicts in the area may not be as result of the effects of climate change, what about the remote causes?

Resource Wars/Conflicts Driven Climate Change in Africa

A brief discussion on this is herewith given. It is indeed to generate further research interest on the other side of the coin, which is a discourse on violent conflicts or war driven climate change in Africa. Recall that in the preceding section, the discussion was centered on establishing a positive link between climate change and resource war or violent conflicts in Africa in the forms of climate change driven violent conflicts. It is to be noted that the relationship between the two variables, climate change and violent conflict in terms of the direction of influence may not be only mono-directional as discussed in the preceding section. It could be bidirectional in the sense that whereas climate change influences violent conflict, violent conflict in turn can bring about certain forms of climate change. Given this background, the current section is intended to discuss, however briefly, the other side of the coin; the influence or effects of violent conflict or resource war on climate change. In other words, to what extent does war or violent conflict contribute to climate change? This forms the concern of the succeeding discussions.

In its intents and purposes, war and/or violent conflicts are by nature destructive, not only to people and infrastructure but to the natural environment as well, which in turn, contributes to global warming or climate change, leading to environmental degradation. Generally, military activities can have significant impacts on the environment. For instance, apart from the destructive effects on the socio-environment, military activities can produce extensive amounts of greenhouse gases (that can contribute to anthropogenic climate change), pollution, and cause resource depletion, among other environmental impacts[43]. Besides, very sensitive unexploded weapons such as cluster bombs and landmines, both of which may be difficult to detect or uncover may remain deadly for decades thereby constituting environmental hazards.

[43] Conflict Environment Observatory (CEOBS), April 2022.

Even before African specific examples, historical pieces of evidence on the environmental costs of war and violent conflicts abound (from the Roman sacking of Carthage to the US led invasion of Iraq, and even to the most recent of such wars and/or violent conflicts). Examples of such are given below:

I. World War II: During the war precisely in August 1945, the United States used atomic bombs against the Japanese cities of Hiroshima and Nagasaki. The blasts as reported[44] caused air pollution from dust particles and radioactive debris, and the accompanying fire lasted for six weeks, destroying plants and wildlife. As a result, the region's water bodies were polluted by radioactive particles. The contamination by radioactive precipitation on humans and agriculture went far beyond the blast zone causing birth defects, and incidence of cancer significantly increased over the following decades[45].

II. Gulf War (1990–1991): During the Gulf War between United States-led coalition and Iraq, the retreating Iraqi army destroyed the Kuwaiti oil field hitherto seized by them. A total of 736 oil wells as given in Schneider, Barbieri, and Gleditsch[46] were set ablaze, consuming 6 million barrels of oil daily and dousing significant parts of the Persian Gulf in impenetrable black clouds.

The fires, it was reported, lasted till November 1991, eight months after the ceasefire. The report indicated further that the sulfur released in the process caused or contributed to acid rain and the local air quality got significantly diminished. The non-ignited oil formed vast lakes on the Arabian Desert, contaminating huge amounts of soil and freshwater[47].

[44] Gleditsch, N. P., and P. F. Diehl, (eds). *Environmental Conflict.* Boulder: Westview, 2001.
[45] Ibid.
[46] Schneider, G., K. Barbieri, and N. P. Gleditsch, (eds). *Globalization and Armed Conflict.* New York: Rowman and Littlefield, 2003.
[47] Ibid.

III. Eritrea vs. Ethiopia War (1961–1991): Schneider, Barbieri, and Gleditsch[48] reported that during the war, 'the country's forest cover was reduced from nearly one third of its overall landmass to less than 1%, resulting in high rates of soil erosion, reduced wildlife populations, sedimentation of rivers and reservoirs, and crop failures[49].

In the same vein, the Conflict Environment Observatory (CEOBS)[50] in April 2022, observed that since November 2020, Ethiopia has been at a devastating civil war with Tigray, one of its northern states, and that until the war in Ethiopia ends, environmental degradation linked to the conflict will continue. As the report indicated, the environmental consequences of the war were already evident in Tigray, where the war first started; loss of woody vegetation, and 'likely further environmental impacts on key infrastructure, agricultural productivity, livestock, wildlife, and the loss of local knowledge of landscape management'[51].

Results & Discussion

The results of the current study when compared with the extant literature, especially as it relates to contradictory positions of the enthusiasts, who assert that the connection is direct and obvious; the moderates, who argue that the link is weak and shallow; and the skeptics, who maintain that there is hardly any link, one is left with the impression that each of the camps has a case to argue for, depending on experience, research and from where one is arguing on the subject matter. But from an objective point of view and based on the findings of the current study, it may be safe to stand between the enthusiasts and the moderates because there is evidence of

[48] Ibid.

[49] Schneider, G., K. Barbieri, and N. P. Gleditsch, (eds). *Globalization and Armed Conflict.* New York: Rowman and Littlefield, 2003.

[50] CEOBS was launched in 2018 with the primary goal of increasing awareness and understanding of the environmental and derived humanitarian consequences of conflicts and military activities to challenge the notion of the environment as a 'silent victim of armed conflict'. It monitors and publicises data on the environmental dimensions of armed conflicts;

[51] Ibid.

bidirectional influence between climate change and resource war. The case of Ibaji Local Government Area which, for instance, is purely empirical, corroborates earlier reports from both USAID[52] (§4.1.2) as well as the general relevant conceptual literature on the subject matter (§4.1.1). And that informs the conclusion drawn and the recommendations proffered as contained in (§6.) below.

Conclusion and Recommendations

Consequent upon the findings, it is safe to conclude that there are some levels of bidirectional influences from both factors on each other, and that justifies the arguments that follow, leading to the recommendations proffered to ameliorate the situation. As it is said; a damaged environment just like a disease in the body, when combined with other stress factors such as poverty, poor governance, inequality, and mass migration, can drastically undermine societies and give rise to violent conflicts and failed states[53]. It is obvious, this is where most African countries are heading, consequent upon the effects of climate change and violent conflicts in the continent. Climate change and resource war represent major threats to Africa's efforts at achieving continuing progress and development including the Sustainable Development Goals, and these, portend grave consequences for Africa's overall development at present and in the years ahead. Whether the link between the two; climate change and resource war is clear or not, they are both 'partners in crime' against the soul of Africa, and they must be so recognized and treated as such with all the remedial and proactive measures required to reduce the negative effects.

As the adage says; the jaw cannot go to rest when there are still palm kernels uneaten and if what is after a man does not stop pursuing him, it will be foolishness on the part of the man to stop running for his dear life. For Africa, the matters of climate and resource wars have become as

[52] USAID '(2014) sponsored research on 'Climate Change and Conflict: Lessons Learned from Five Case Studies in Seven Countries'. Prepared by Jeffrey Stark, Foundation for Environmental Security and Sustainability (FESS), through a subcontract to Tetra Tech ARD.

[53] Mansfield, W 2009. Ecology, Security, and Armed Conflicts in Africa. ASPJ Africa & \Francophonie- 2nd Quarter 2010.

serious as that. No matter how we may look at climate change and resource war in Africa, they are perennial and nagging problems that are of great concern to any African society. And as it was observed earlier at the beginning of the paper, they require policy intervention, advocacy as well as critical research attention for lasting and innovative solutions for societal transformation in the desired direction(s).

Therefore, it has become not only a necessity but imperative for all stakeholders; researchers, relevant agencies and advocacy groups, policymakers and development planners to do their bits in tackling the menace of the effects of climate change and resource war in Africa. The researchers, for instance, should engage themselves in the-state-of-the-art and result oriented research on climate change and resource war in all its ramifications for proactive measures. And for policymakers and development planners, the specific mechanisms by which climate change affects conflict potential and vice versa as discovered through research should be of interest to them. This is because, understanding such nexus serves as the prerequisite for the creation of improved policies, programmes, and projects aimed at conflict prevention and mitigation, as well as the formulation and implementation of better, realistic, workable and home-grown climate change policies in Africa. Following this, the agencies and advocacy groups can, therefore, stand on the solid foundation laid by research and policy interventions to advance the cause of the society in the right direction to tackle the negative effects of climate change and resource war in the affected communities or societies in Africa.

Bibliography

Adams, C., Ide, T., Barnett, J. and Detqes, A. (2018). Sampling bias in climate–conflict research. *Nature climate change*, 8, 3, 200–203.

Adekunle, A. A., Simeon, O. A. & Bolatito, I. (2011). Impact of climate change in Nigeria; *Iranian journal of energy & environment* 2(22),145-152.

Anderson, C. A. (2001). Heat and violence. *Current directions in psychological science*, 10, 33–8.

Anderson, C. A. & Bushman, B. J. (2002). Human aggression. *Annual review of psychology*, 53, 27–51.

Barnes, J. 2013. Contribution of anthropology to the study of climate change. *Nature*, 3(6):541-544. DOI:10.1038/nclimate1775

Brzoska, Michael, and Christiane Fröhlich (2016). Climate change, migration and violent conflict: Vulnerabilities, pathways and adaptation strategies. *Migration and development*, 5, 2, 190–210.

Buhaug, Halvard (2010), Climate not to blame for African civil wars. *Proceedings of the national academy of sciences*, 107, 38, 16477–16482.

Burke, Marshall B, Edward Miguel, Shanker Satyanath, John A Dykema, and David B Lobell. 2009. Warming increases the risk of civil war in Africa. *Proceedings of the national academy of sciences* 106 (49): 20670–74. https://doi. org/10.1073/pnas.0907998106.

Burke M, Dykema J, Lobell DB, Miguel E, Satyanath S. 2010. Climate and civil war: Is the relationship robust? *NBER work. Pap*. 16440.

Busby, Joshua W., Todd G. Smith, Kaiba White, and Shawn M. Strange. 2013. Climate change and insecurity: Mapping vulnerability in Africa. *International security* 37 (4): 132–72.

Busby, Joshua W., Todd G. Smith, and Nisha Krishnan. 2014. Climate security vulnerability in Africa mapping 3.0. *Political geography, special issue: Climate change and conflict*, 43 (November): 51–67. https://doi.org/10.1016/j, polgeo.2014.10.005.

Climate change vulnerability index, 2017.

Conflict environment observatory (CEOBS), April 2022.

Earth science communication Team, NASA's Jet Propulsion Lab, California Institute of Technology, 23-02-2022

Gleditsch, N. P., and P. F. Diehl, (eds). *Environmental conflict.* Boulder: Westview, 2001.

Hendrix, C. and Salehyan, I. 2012. Climate change, rainfall, and social conflict in Africa.
Journal of peace research, 2012, vol. 49, issue 1, 35-50.

Hsiang, S., Burke, M. & Miguel, E. 2013. Quantifying the influence of climate on human conflict. *Science* 341, 1–14.

Klare, M.T. & Levy, B.S. & Sidel, V.W., 2011. The public health implications of resource wars. *American journal of public health*, *American public health association*, vol. 101(9), pages 1615-1619.

Koubi, V. 2018. Exploring the relationship between climate and violent conflict. *Chinese journal of population resources and environment*, 16(1):1-6.

Mansfield, W 2009. Ecology, security, and armed conflicts in Africa. *ASPJ Africa & Francophonie - 2nd Quarter* 2010.

Nnaemeka, V. E. & Nebedum, E. 2016. Impact of climate change in Nigerian economy. *Journal of scientific research and reports* 10(6),1-13.

Schneider, G., K. Barbieri, and N. P. Gleditsch, (eds). *Globalization and armed conflict.* New York: Rowman and Littlefield, 2003.

Scheffran, J. 2021. Environmental security and climate diplomacy in the Mediterranean. *Peacebuilding and climate change. report of the Bologna peacebuilding forum*, 18-19 May 2021 (pp.28-44).

Slettebak, Rune T. 2012. Don't blame the weather! Climate-related natural disasters and civil conflict. *Journal of peace research* 49(1): 163–176.

UN Framework Convention on Climate Change (UNFCCC) 2020.

U.S. Global Change Research Program, Fourth National Climate Assessment 2017.

USAID 2014 sponsored research on 'Climate Change and Conflict: Lessons Learned from Five Case Studies in Seven Countries'. Prepared by Jeffrey Stark, Foundation for Environmental Security and Sustainability (FESS), through a subcontract to Tetra Tech ARD.

Welzer, H. 2012. **Climate wars: What people will be killed for in the 21st century. *Polity press*. March 2012.**

Web Sources

African Development Bank 2022, https://www.afdb.org/en/cop25/climate-change-africa)

https://africacenter.org/spotlight/selected-effects-climate-change-africa

IPCC 2007. IPCC Fourth Assessment Report. Climate Change 2007. *Geneva: Intergovernmental panel on climate change* (www.ipcc.ch/publications_and_data/ar4/wg1/en/annexessglossary-a-d.html).