

The Impact of Climate-Induced Resource Conflicts on Arms Proliferation

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Abstract

Climate change has emerged as a significant driver of resource-based conflicts in many parts of Africa, particularly in regions characterized by environmental vulnerability and weak governance structures. In Northwestern Nigeria, increasing desertification, erratic rainfall patterns, declining agricultural productivity, and shrinking grazing lands have intensified competition over scarce resources, thereby contributing to rising insecurity and the proliferation of small arms and light weapons (SALWs). This study examined the impact of climate-induced resource conflicts on arms proliferation in Northwestern Nigeria. Guided by Ecological Theory and Conflict Resolution Theory, the study adopted a qualitative research design. Data were generated through in-depth interviews with 25 key informants drawn from security agencies, community leaders, academics, civil society actors, and other relevant stakeholders. The data were analysed using thematic analysis. The findings revealed that climate-induced resource scarcity has intensified conflicts over land and water resources, creating conditions that encourage the acquisition and circulation of SALWs. The study further found that arms proliferation is reinforced by porous borders and cross-border trafficking networks, poverty and unemployment, political violence and elite manipulation, ethnic and religious tensions, self-defence initiatives, and institutional weaknesses within the security architecture. These factors interact to create a cycle in which environmental stress generates conflict, conflict increases demand for weapons, and the widespread availability of weapons further aggravates insecurity. The study concludes that addressing SALW proliferation in Northwestern Nigeria requires an integrated approach that combines strengthened border security, climate-resilient resource management, community-based conflict resolution mechanisms, socioeconomic empowerment programmes, improved governance, and enhanced regional cooperation. Such measures are essential for breaking the cycle of climate-induced violence and promoting sustainable peace and security in the region.

1. Introduction

Climate change has become one of the greatest challenges that humanity is currently facing, especially in the context of environmental sustainability, socio-economic development and human safety. The effects of climate change, such as global warming, alterations to precipitation, desertification, flooding, and biodiversity loss, have been a focus of much research and policy analysis, but to some extent, concerns have turned to how climate change affects security. The current discussions around climate security imply that climate change is not only an environmental but also a vulnerability condensing factor. Environmental stress may increase competition for limited resources and thus create conditions conducive to escalating or starting violent conflicts in areas that heavily depend on natural resources. Climate change and conflict have emerged as a key topic of study. While direct drivers of climate change and violence have yet to be clearly identified, climate change often works as a 'threat multiplier', exacerbating existing tensions linked to poverty, weak governance, inequality, demographic pressures, and resource constraints. (Agaba, 2024)

In Africa, there has grown a significant number of conflicts over resources, which is occurring due to climate change. Resource conflicts are growing more common in Africa as a result of climate change. With high reliance on climate-dependent economic activities, such as agriculture and livestock production, the continent continues to be greatly vulnerable to the impacts of climate change. The stressed environment and scarcity of resources in some African nations have exacerbated communal conflicts, farmer-herder clashes, displacement, and other insecurity issues (Ebaye, 2021). These are issues that have given rise to concerns for policy makers and academics about the wider implications of climate change for peace, security and development. The climate change now being perceived as a security threat has thus led to an increasing interest in the impact of environmental pressures in conjunction with those already existing socio-economic and political factors on patterns of conflict and violence.

Nigeria is one such important case study to explore these dynamics. The country has faced major biodiversity changes over the last few decades and especially in the northern parts of the State. Desertification, frequent droughts, loss of soil fertility, irregular rains and reduction in water bodies have jeopardized the agricultural and pastoral livelihoods. The developments have occurred particularly in Northwestern Nigeria, where the livelihood of farming and livestock farming is important. There has also been a corresponding increase in insecurity in the area, through banditry, communal violence, kidnapping, cattle rustling and violent conflicts over natural resources' access. They have been a factor in the massive displacement, livelihood destruction, food insecurity and deterioration of local governance systems.

One of the critical aspects of insecurity in North West region of Nigeria, is the exposure to rising acquisition, proliferation of SALWs also known as small arms and light weapons. Local disputes have been escalating into long-lasting and more violent conflicts as more and more illegal arms are available. Increasingly, communities and groups of various non-state actors including vigilante groups, bandits, and organized criminal groups obtain weapons previously used largely by those groups. The widespread diffusion of SALWs has improved the ability of rival groups to be involved in violence, leading to greater frequency, intensity, and duration of resource-related conflicts. The supply of illicit weapons has thus become a contributing and an outcome factor to insecurity in the area. Previous studies have researched different aspects of climate change, resource conflict and arms proliferation in Nigeria. Researchers have investigated how climate-induced environmental degradation impacts livelihoods, how conflicts between farmers and herders have developed in this region, how the presence of illicit arms puts security at risk, and how climate change affects security overall.

This background has led to this study on how resource conflicts are influenced by climate change affecting arms proliferation in the Northwestern region of Nigeria. The study aims to join the ever-expanding body of work on climate security, and asks the question of how climate pressures interact with socio-economic, political and institutional processes to influence conflict and arms proliferation. It does so by offering empirical knowledge that could feed into policies seeking to prevent, control, manage, and build sustainable peace in conflict zones.

1.1 Statement of Problem

In Northwestern Nigeria, conflicts over resources are becoming an increasing security threat due to climate change. Increased ecological pressures like desertification, drought, loss of soil fertility and irregular rainfall patterns have made less land suitable for farming, less water available, and less land available for pastoralism, intensifying competition amongst those reliant on those resources. Clashes between farmers, pastoralists, and communities over limited resources are often violent, leading to loss of life, livelihoods and social stability.

One of the most alarming aspects of these wars is the increasing spread of the small arms and light weapons (SALWs). Many resource-related conflicts have become long and violent due to the ready availability of illegal weapons. Armed actors become more likely to obtain weapons to protect themselves, defend their territories, fight back, and make a living, leading to more violence in their hands. Resource-related conflicts and arms proliferation, thus, have become mutually reinforcing issues that threaten the region's peace, development, state authority and the status quo.

Although the field of climate security and conflict studies has gained traction in recent years, studies so far have focused on the interrelationship between climate change and conflict, resource conflicts and conflict, and climate change and arms proliferation. Consequently, the factors affecting farmer-herder conflicts, environmental degradation and insecurity in Northern Nigeria have been the subject of several studies and/or research but a limited number of studies have identified the acquisition, circulation and utilization of SALWs as a consequence of the effects of climate-induced resource scarcity. This void is limiting the ability to fully understand how environmental pressures give rise to environmental security threats.

The ongoing conflicts over resources and the growing availability of illegal weapons indicate the need for a more in-depth understanding of the connections between environmental stress, conflict processes, and the spread of weapons. This study aims to fill this gap by examining the extent to which resource conflict driven by climate change has a role in arms proliferation in the North West of Nigeria and ultimately suggest empirical evidence that can aid policy interventions, conflict preventive measures and sustainable resource governance programmes in the country.

2. Literature Review

2.1 Understanding Climate Change

Climate change is a change in weather patterns/climatic conditions over a prolonged period of time caused by natural causes as well as a consequence of human activities. Climate variability is a natural phenomenon of the earth, having had a role to play through the ages, however, the current climate change is mostly due to the accumulation of atmospheric Green House Gases (GHGs), including carbon dioxide, methane, nitrous oxide and chlorofluorocarbons (CFCs) produced as a result of man's activity (National Environment Commission, Royal Government of Bhutan, 2011; Obada et al., 2024). These emissions have been a cause of the increased global warming and important environmental alterations in different parts of the earth. The effects of climate change are not just environmental, but socio-economic and security impacts as well.

The Intergovernmental Panel on Climate Change (IPCC, 2023) reported the impact of climate change on terrestrial, freshwater, coastal, and marine ecosystems had negative implications, and some of the impacts were irreversible. Livelihoods, food security and access to water resources have been under continued pressure with recurrent drought, extreme weather events, flooding and desertification, especially in vulnerable areas, due to rising temperatures. Climate change has also exposed between 3.3 and 3.6 billion people to high climate change vulnerability, significantly impacting Africa (IPCC 2023). More frequent and severe climate extremes have led to greater resources struggles for limited resources like land, water and grazing pastures.

The issues of environmental stress have significant impact on resource-based conflict in many developing societies where livelihood is largely dependent on natural resource. These clashes are especially intense in areas where poverty, lack of good governance and inadequate conflict management systems prevail. Climate change has therefore taken on a significant role in the security agendas of the present-day due to its ability to enhance the vulnerabilities and resource conflicts that already exist.

2.2 Small Arms and Light Weapons

Small arms and light weapons (SALWs) are a big security problem in both conflict and post conflict societies. Small arms are weapons that can be easily carried by one person such as pistols, rifles, shotguns, and submachine guns, as well as light weapons, which are usually used by a small crew and include heavy machine guns, mortars (caliber less than 100 millimetres), portable anti-aircraft guns, anti-tank guns, recoilless guns, and missile weapons to be operated by a small crew (United Nations, 2005; ECOWAS, 2006). They are portable and easy to use, durable, and comparatively inexpensive, which makes them very appealing to both state and non-state actors. While SALWs may have legitimate uses as in national defense, law enforcement, hunting, and sport shooting, in many countries they have been an area of insecurity. Pandemic of these weapons makes violent conflicts, organised crime, insurgency, banditry and communal violence easy to conduct.

Accessibility of these make it possible for armed groups, criminal networks, militias, and other non-state actors to continue violent activities and fuel conflicts that further hamper peacebuilding efforts (Brown, 2018; Aisedion, 2022). SALWs are especially alarming in areas where there is a conflict over resources caused by climate change. As community needs for protection, self-governance, and economic survival grow in response to scarce resources like farmland, water, and grazing land so does the demand for weapons for community protection, territorial defense, and economic self-preservation. In these settings, the presence of SALWs may escalate local conflicts into more enduring and escalating conflicts.

This phenomenon has been even more pronounced in some regions of Africa where environmental concerns have combined with pre-existing socio-economic and political issues to contribute to insecurity. World authorities, including regional and international organisations have responded to the dangers posed by the SALWs by implementing a range of control measures, such as the ECOWAS Convention on Small Arms and Light Weapons.

But the success rate of these actions remains limited due to porous borders, weak institutional capacity, lack of enforcement and continued insecurity in fragile states (Sule & Deribe, 2020). In fact, the movement of SALWs is a constant problem in areas plagued by resource limitations, climate change and violent conflict and instability.

3. Methodology

The paper employed the use of qualitative method in conducting this research is because it encourages openness, shunning of preconceived notions, deep fascination of the topic of study, and bringing out the curiosity of people in terms of their unique perspectives. The study thus employed the use of purposive sampling technique recruitment strategy in order to conduct an effective research and rational data collection. The sampling methodology is on par with the argument of Creswell (1998) who asserts a margin of five to twenty-five (5-25) in an extensive data sourcing.

The respondent source to be used in the Key Informant Interviews (KIIs) has been broken down by five states in Northwestern Nigeria. The selected states are Kebbi, Sokoto, Zamfara, Katsina and Jigawa States with one local government area and one village or town sampled in each state. There were 25 key informants interviewed and the 5 respondents were randomly sampled in the given locations. The choice of choosing these five states is influenced by their border dynamics and intensity of conflict.

It also aims purposely to provide balance in terms of representation in the main conflict driven regions in the region. The identified local government where KII would be conducted is that of Dandi, Sabon Birni, Zurmi, Jibya and Maigatari in the choice being located in borderlands or other areas that are usually described as being peripheral and that have porous boundaries and weak states. Such regions have continually shown up on the feet and in academic literature as serious hot spots to the spread of the Small Arms and Light Weapons (SALW) because they have easy access to transnational smuggling networks and ill-capacitated police enforcement.

On a final note, the data analysis was done with the use of NVivo 15 software.

3.1 Theoretical Framework

This study is anchored on Ecological Theory and Conflict Resolution Theory. The selection of these theories is informed by their ability to explain how climate-induced environmental pressures contribute to resource conflicts and how such conflicts create conditions that encourage the proliferation of small arms and light weapons (SALWs). Together, the theories provide a useful framework for understanding the relationship between environmental stress, competition over scarce resources, conflict escalation, and the growing demand for weapons in Northwestern Nigeria.

3.2 Ecological Theory

Ecological Theory focuses on the interdependence of human society and the natural environment. The theory suggests that environmental variations can have profound effects on social interaction, resource use and conflict. Environmental challenges like desertification, drought, waning agricultural output and unpredictable rainfall can limit access to vital resources such as water, land, and grazing land. With an increasing scarcity of these resources, competition between individuals and groups increases and this competition can result in conflict (Okoli & Atelhe, 2014). Ecological Theory is relevant to this study because it provides an explanation for the scarcity and insecurity of resources and how climate change plays a role in all of these.

In Northwestern Nigeria environmental degradation has intensified the competition among farmers, pastoralists among other resource users which has culminated into frequent conflicts over access to land and water resources. If state institutions are weak or fail to ensure proper security, communities that have been affected may obtain weapons for their own protection, to defend their territory, or gain control of economic resources. Thus, when there is environmental scarcity, it is more likely to result in conflict and also provides an incentive for the acquisition and circulation of SALWs.

The theory also goes on to describe how the pressure of climatic resources has differential impact on vulnerable groups, especially on the unemployed youth and the marginalized groups. Low livelihood prospects and enduring lack of security can make them more vulnerable to being recruited by armed groups, which can fuel the ongoing growth and use of illegal weapons (International Alert, 2020). Ecological Theory thus offers a way of examining the potential for conflict and arms demand to emerge in response to environmental stress.

3.3 Conflict Resolution Theory

The theory of conflict resolution emphasizes the handling and peaceful resolution of conflict. The theory focuses on dialogue, negotiation, mediation, cooperation and other non-violent methods of handling disagreements and preventing escalation (Ann & Di, 2007). It assumes that conflict is a part of society and is not a cause for concern, but can be managed effectively through the institutions and processes that address the causes of grievances. Conflict Resolution Theory emphasizes the need for effective conflict management mechanisms in preventing

escalation of conflict to violence, when applied to resource conflicts resulting from climate change. Rivalry over limited resources can create conflicts between communities, especially when land and water use is essential to survival. In the absence of strong and effective institutional structures to handle such conflicts, they can intensify and spur the acquisition of SALWs for self-defence, revenge or territorial purposes.

The theory also highlights the need for a participatory peacebuilding process, which includes the incorporation of local communities, traditional leaders, women and young people as actors in conflict management. Dialogue, mediation and alternative dispute resolution can be used to resolve resource-related grievances without escalating them to a violent confrontation. These interventions can also help to decrease the demand for and the spread of SALWs in affected communities by decreasing the likelihood of violence.

3.4 Theoretical Linkage

The combined use of Ecological Theory and Conflict Resolution Theory is able to explain the link between resource conflicts and SALW proliferation comprehensively. The ecological theory is used to understand how climate change plays a role in environmental scarcity, resource competition and conflict escalation. Conflict Resolution Theory also fits into this plan, which views conflict as a means to bring about change, yet this change can occur through peaceful or violent means, depending on whether or not there is an effective way to manage the conflict. The combined theories suggest that climate-induced scarcity of resources establishes conditions for conflict; and weak conflict management institutions make it more likely that affected groups will engage in conflict and obtain weapons. This is why we can view the rise in SALWs as a response to environmental pressures, and as a result of failing in prevention and resolution of conflict. It offers a theoretical framework that facilitates the analysis of the climate induced resource conflicts as drivers of SALWs in Northwestern Nigeria.

4. Data Presentation and Analysis

4.1 Border Insecurity and Arms Trafficking

The results showed that one of the major drivers for the proliferation of small arms and light weapons (SALWs) in Northwestern Nigeria is border insecurity. The idea of porous borders, inadequate border surveillance, corruption in border officials, and the presence of many informal crossing points was repeatedly mentioned as the primary corridors through which illicit weapons enter the region. The need to pay attention to unregulated border crossing points and commercial transactions to ensure that weapons are not transported across borders without the knowledge of the authorities was highlighted. Some of the participants mentioned that an important point to consider is the region's rich international trade networks through which smugglers can hide arms in legal merchandise. When crossing the border, "smugglers put arms into acceptable products" (Inf42), as one informant explained. Likewise, another participant noted that, "There are also individuals who don't pay much attention to the border and venture into Nigeria through the bush, due to the porosity of the border" (Inf31). Responses indicate that there is an opportunity for illegal arms to pass through the border beyond official routes due to weak border security.

The study also shows that the closeness of the Northwestern region to the neighbouring states has made the region more vulnerable and open to arms trafficking. Lack of effective monitoring of the borders, especially the ones bordering Niger and Chad, has made it possible for the activities of arms traffickers, bandits and other criminal networks run rampant, participants said. One informant reported that "the government's failure to secure the Nigerian border especially with Niger and Chad allows arms trafficking to occur (Inf26). Other respondents reported that there is also weak border control which enables "easy ingress of arms from across the borders by criminals" (Inf13). In addition to cross-border trafficking, local arms production was cited by respondents as another cause of the proliferation of SALW.

It was found that regionally, there is a need for guns and that local blacksmiths and informal workshops produce these. One participant said "There are local blacksmiths who produce small arms locally and transact them both locally and internationally, the light weapons are also produced locally" (Inf32). Another respondent commented about the ease of production as it meets local demands ("To meet up with local demands, local smiths make production easy" Inf14 & Inf49). In addition, participants noted that locally produced weapons are also quite cheap and readily available, which facilitates their increased proliferation among criminals and within local communities. The results indicate that overall, the spread of SALWs in Northwest Nigeria is driven by loose border crossings, cross-border smuggling of arms and ammunition, corrupt officials, inadequate capacity of border control bodies and domestic production of SALWs. All these have contributed to an environment that facilitates access to, movement and flow of weapons in the region.

4.2 Socioeconomic Deprivation and Arms Proliferation

The findings showed that socioeconomic deprivation is a major element in the increase in the presence of small arms and light weapons (SALWs) in the north western Nigeria. Participants had a consistent association of poverty, unemployment, social exclusion and increased participation in arms trading, banditry, kidnapping and other crime regimes. The respondents highlighted that economic hardship and the lack of livelihoods options leaves people, especially youth, at risk of being recruited by armed groups or involved in some form of arms-related activity. Some participants pointed to poverty as an important factor in arms proliferation in the region. Many people are involved in arms trading, banditry and other related crimes as a means of survival in the aftermath of the harsh economic conditions, the respondents said. As one of the participants said, "Poverty drives people to become involved in arms dealing for survival, vulnerable people are easy to recruit in to become armed bandits" (Inf50, Inf47 & Inf14). Likewise, another respondent remarked that "Desperate people who are in search of how ends will meet eventually engage in arms deal" (Inf27).

These reactions indicate an escalation of demand and supply of illegal firearms in the affected communities due to chronic poverty. The results also show that the lack of employment is a major factor in criminal recruitment and armed violence as a risk for young people. Unemployed youths are also seen to be an easy pick for bandits, insurgent groups and criminal networks because they have fewer economic opportunities, participants repeatedly pointed out. One of the respondents noted that "Jobless people are easily convinced to join armed bandits" (Inf43), while another reported that "Idle youths are being recruited to the bandit groups" (Inf39 & Inf40). The participants also noted that the smuggling of arms and other illegal activities are being seen as alternate livelihoods among the region's young people who are out of work.

They further noted that social and political marginalisation is a factor that drives insecurity and arms purchase. They reported that a sense of exclusion, intimidation, economic domination and/or lack of opportunity frequently produce grievances which lead to violent reactions. One respondent noted that "the fear of domination and intimidation and political marginalization" (Inf28) is also a driver of the spread of weapons, and another mentioned that "economic domination and marginalisation" (Inf17) is also a factor contributing to insecurity. The results indicate that the sense of exclusion and inequality can drive people and groups to protect themselves, seek influence or recognition through having arms. The findings overall indicate that poverty, unemployment and marginalization are inter-locked conditions that provide conducive circumstances to the growth of SALWs in Northwestern Nigeria.

4.3 Political Drivers of Arms Proliferation

The results showed that politics and political thuggery are important factors that promote the proliferation of small arms and light weapons (SALWs) in Northwestern Nigeria. The issue of the circulation of illegal arms was always associated with the role of politicians in recruitment, sponsorship and arming thugs to serve their agendas, especially during the electoral season. Those who answered reported seeing weapons being given out for elections, which are then left to circulate in the area after election day, and which can foster criminal activities and insecurity. A few participants mentioned that politicians give weapons to political thugs for the purposes of intimidation, coercion, and protection of political interests. "Reward for loyal thugs can sometimes be arms" (Inf44) and "Politicians usually arm the thugs in order to use them for their rough jobs" (Inf21) were the comments of one respondent each.

The results also indicate that political thuggery is one of the factors that fosters the rise of organized armed groups. Participants said that numerous political thugs keep weapons after the elections and then go on to commit crimes like banditry, kidnapping, armed robbery and communal violence. As one of the respondents mentioned: "Thugs later become armed groups" (Inf50), another said: "Political thugs later become armed bandits after elections" (Inf19). The responses suggest that the temporary arming of political actors could have a broader impact on security than electoral politics. The participants also emphasized the significant role that political interests play in the proliferation of arms. One of the respondents observed that: "Politicians engage in unhealthy competition, which results in proliferation of arms and ammunition" (Inf39); and another noted that: "Politicians who seek to take over the power resort to the procurement of smuggled small arms and light weapons for thugs to support electoral malpractices" (Inf24).

Respondents also noted political interference, patronage networks, and the use of influential people to safeguard armed groups as factors that continue to fuel the distribution of illegal weapons in the region. Overall, the results showed that the political dimension of SALW proliferation in Northwestern Nigeria is significant; political thuggery, electoral violence, as well as political actors' involvement in arming non-state groups are also significant factors. The use of weapons for political ends has not only led to better availability of arms but also helped in maintaining their role in criminal and violent activities outside an electoral period.

4.4 Identity-Based Conflicts, Self-Defense, and Arms Acquisition

It showed that the issue of identity-based conflict and the desire for self-defence are important drivers of small arms and light weapons (SALWs) in Northwestern Nigeria. There was a consistent association between the acquisition of weapons by the individuals and communities and ethnic tensions, religious differences, farmer-herder clashes, communal violence and insecurity. Participants highlighted that communities have been urged to arm themselves to protect themselves and survive due to the continued violence and perceived lack of security from the security agencies.

Ethnic and communal conflicts were cited as among the factors that led to arms acquisition by several of the participants. Lack of land, water and other resources, along with retaliatory attacks of competing groups, have exacerbated the need for weapons, according to respondents, and so have longstanding grievances. One of the participants noted that "Competition for land and water resources has resulted in violent conflicts between pastoralist and farming communities" (Inf29). Likewise, another respondent noted: "There are a lot of societies who always have unsettled scores within themselves" (Inf30), and another pointed out that: "Ethnic and religious tensions have intensified as rival groups arm themselves, turning local disputes into large-scale violence" (Inf27). The answers indicated that un-resolved community conflicts remain a factor in propagating and using SALWs in the region.

The results also show that religious tensions and extremist activity have a positive effect on arms proliferation. Participants linked the religious crises, insurgency and violent extremism to the acquisition of weapons by armed actors and affected communities. "Religious crisis and the quest for self-defence is also a reason why there is the proliferation of small arms and light weapons in the north-western region" (Inf27), said one respondent. The activities of extremist groups have sparked civilians and local militias to buy weapons for self-defence against threats (Inf5). The results indicate the link between religiously driven violence and local security responses.

Self-defence was also a consistent participant factor for obtaining weapons. The results indicate that there has been a decline in public trust of the formal security institutions since the bandits, kidnappers, cattle thieves, and armed attackers have become common occurrences resulting communities to look for other methods of securing themselves. One respondent said, "Communities get armed against outsiders' attacks" (Inf47), and another said, "People learn how to get guns to defend their selves against the attacks of bandits" (Inf42). The participants also noted that local vigilante groups, militias and community-based security mechanisms emerged to protect lives, property and livelihoods from attacks by criminals.

The results also indicate that conflicts relating to resources, especially farmer-herders conflicts, have also contributed to the increased demand for arms in affected communities. Participants noted that there often is a struggle for access to farmland and grazing lands and water, which can lead to violent confrontations and the acquisition of arms by both sides to protect themselves from and retaliate against the other. "Farmers-Herder's clash is one of the dominant clashes that plays an important role in the proliferation of SALW in the North-western" (Inf23) noted one participant.

In general, the results indicate that ethnic conflicts, religious wars, conflicts over resources, and the increased dependence on self-defence mechanisms have played major roles in the spread of SALWs in Northwestern Nigeria. The ongoing insecurity and intercommunal violence have fostered the perception among individuals and groups that purchasing weapons is necessary to protect them and has thus perpetuated the trend of arms proliferation in the region.

4.5 Institutional Weaknesses and Security Failures

The results indicated that there are various weaknesses and deficiencies in the security architecture that significantly play a role in the proliferation of small arms and light weapons (SALWs) in Northwestern Nigeria. Low levels of coordination between security agencies, lack of technological capacity, weak enforcement mechanisms, lack of funding and lack of state presence in vulnerable communities were repeatedly mentioned by the participants as factors that affect the control of the spread of illicit weapons. Participants highlighted the need for these weaknesses to be addressed to enable the operations of arms traffickers, criminal networks and armed groups with little resistance.

One of the key issues that emerged from the discussions was the lack of synergy between security agencies. Lack of coordination between the military, police, intelligence agencies and the other law enforcement bodies is a recurring issue that leads to communication, operational inefficiencies and lack of enforcement of arms control measures, respondents said. One participant said, "If security forces are not operating effectively, coordinated and integrated, gaps in law enforcement and security open up for arms to spread out without control" (Inf5). Likewise, another respondent commented, "The absence of this synergism brings about failures in the security system" (Inf26). It was also reported that there was a lack of effective responses to arms trafficking and intelligence sharing delays with other agencies, due to competition among agencies.

The results also indicate that there is a lack of technological capacity to help with the monitoring and interception of illegal arms. One of the challenges identified by the participants was the underutilisation of modern surveillance technologies, intelligence gathering systems and weapon tracking systems by the security agencies. Some respondents indicated that authorities' capacity to detect arms movements and track criminal activities in remote and border areas is hampered by the lack of use of advanced technological tools (Inf44 & Inf46). These gaps were seen as facilitating the continued flow of illegal guns in the area.

The participants also highlighted weak defence and law enforcement as a driver of the proliferation of SALW. They pointed out that security agencies are poorly equipped, underfunded and understaffed to effectively deal with the fast-emerging security challenges that are faced in the region. Another reported that "Security personnels are more reactive than proactive" (Inf46) and another noted that "The government under funds security agents and poor morale of law enforcement agencies" (Inf9). These restrictions were perceived as limiting the efficiency of security services and providing opportunities for criminals to gain access to and distribute weapons. Additionally, respondents noted that security officers were not well represented in remote and ungoverned areas.

These zones are therefore often used as sanctuaries for gangs and criminal networks that are operating outside of the reach of government. The overall results suggest that the proliferation of SALWs in Northwestern Nigeria has been hindered by institutional weaknesses such as low level of inter-agency coordination, limited technological capacity, low level of enforcement capability and low state presence. These challenges persist and contribute to the region's security gaps, enabling the spread, transfer, and availability of illegal firearms.

5. Discussion of Findings

This part explores the complicated nature of small arms and light weapons (SALWs) proliferation in Northwestern Nigeria, and particularly the factor of climate-based conflicting resources. The results indicate the role of environmental stressors including desertification, frequent rainstorms and deteriorating agricultural viability in enhancing the number of competing players over such valuable resources as land and water which have contributed to rising violence and insecurity. What is more, these resource wars, which are exacerbated by poverty, exclusion, and political instability, have contributed to the proliferation of SALWs especially among the vulnerable communities. Through its examination of the complex intersections of border security, economic inequality, and local arms production, the results also support the idea that climate change is not only an issue that can be analyzed without considering socio-political factors but that it will interact with socio-political factors to fuel growth in arms because of the already existing conflict in the region. Findings of the several aspects influencing proliferation of small arms are also briefly discussed, with the discussion being executed in the critical manner that highlights how there is an urgent need to create comprehensive plans in order to counter both environmental and socio-economic causes of violence and instability.

5.1 Border Insecurity and Arms Trafficking

The findings indicated that one of the key factors contributing to small arms and light weapons (SALWs) proliferation in Northwestern Nigeria is border insecurity. The concept of porous borders, poor monitoring and control measures, corruption among border officials and the presence of unofficial crossing points were consistently noted as facilitators for illicit arms trafficking. The results corroborate the views of Ebaye and Okon (2021), who assert that porous borders are a serious threat to national security as they create vulnerabilities in the state, thereby allowing transborder trafficking of illegal goods and weapons. In a like manner, Salihu and Ozden (2020) state that some areas of Nigeria have been turned into routes for smuggling of weapons. The results also show that trade routes and informal migration routes have facilitated the availability of weapons in conflict-prone communities. This observation corroborates the position of Odey et al (2022), who state that the large land borders of Nigeria make smuggling of SALWs possible, particularly packaged up in a legitimate business. The flow of weapons has played a role in the rising militarisation of local conflicts, especially in regions of resources scarcity and environmental stress. According to the Ecological Theory, environmental deterioration due to climate change has increased the competition over limited resources like grazing lands, water and land. Border insecurity thereby not only enables arms trafficking, but also reinforces the relationship between resource competition and violent conflict due to climate change. It was also found that local arms production plays an important role in the circulation of arms in the region. Gun makers and local manufacturing networks have boosted local access to relatively inexpensive guns in rural and conflict-prone areas. This discovery corroborates Roosevelt (2021) who reported that indigenous arms production is an important factor that has been responsible for the continued proliferation of arms in Nigeria. Availability of locally produced weapons provides support to cross-border trafficking networks, providing multiple pathways for the entry of SALWs into local communities. The results of these findings have implications for conflict management and security governance. Conflict Resolution Theory focuses on the conditions of the structure that perpetuates violence. In this respect, enhancing border management, strengthening surveillance mechanisms, combating corruption among border officials and regulating local arms production are key steps to increase the difficulty of having weapons available and to help

prevent the escalation of climate induced resource conflicts. Solutions to the security challenges facing Northwestern Nigeria without tackling these structural weaknesses will only have limited impacts.

5.2 Socioeconomic Deprivation and Arms Proliferation

The results found that poverty, unemployment, marginalization, etc. are significant factors contributing to the spread of Small Arms and Light Weapons (SALWs) in Northwestern Nigeria. Economic hardship was seen as a driver of arms trafficking, banditry, kidnapping and other criminal activity by respondents regularly. The results indicate that those in extreme economic need are more vulnerable to armed groups' recruitment, and are more likely to see involvement in illegality as a way to make a living. These results confirm the opinion of Yusuf (2021) who suggests that Northwestern Nigeria is one of the most economically backward areas in Nigeria with poverty, inadequate social services, and few livelihood opportunities. The results also show that the environmental pressures and shocks associated with climate change have increased poverty. With the growing challenge to farming and pastoral activities, many households have a reduced income and increased vulnerability.

This is consistent with the premises of the Ecological Theory which focuses on the connection between changes in the environment and the resulting social disintegration. According to the theory, the degradation of the environment can lead to the breakdown of existing livelihoods, competition for limited resources, and the creation of conditions for violence and insecurity. Climate impacts on livelihoods seem to have helped increase the attractiveness of armed groups and illegality in trade in Northwestern Nigeria. In Northwestern Nigeria perspective, climate-induced livelihood pressures may have been a factor in the rise in the appeal of armed groups and illegality in trade. Unemployment became another key factor contributing to SALW proliferation. The study found a high number of employed youths are regularly recruited by criminal networks, bandits and arms dealers looking for recruits. This discovery aligns with the arguments of Aliyu (2020) that unemployment contributes to the extent which youth engage in illegal activities such as arms trafficking and organized violence. Many young people lack economic avenues and are susceptible to economic incentives from armed groups.

As such, weapons are no longer just weapons of violence, but also means of economic survival in fragile and conflicted communities. The results also pointed toward the security and arms acquisition factor of marginalisation in social and political life. Perceived exclusion from political processes, inequity in access to resources and social injustice were seen as playing a part in generating resentment and conflict between affected groups. Nwadior (2023) also notes that marginalised communities may feel more insecure and engage in self-help actions when they see a lack of responsiveness by state institutions to their grievance. In the context of the Conflict Resolution Theory, the continuing issue of poverty, unemployment and marginalisation is a result of structural factors which perpetuate conflict. The theory focuses on the need to confront the causes of violence as well as build security.

The theory highlights the importance of tackling the underlying causes of violence alongside security measures to build durable peace. Based on the findings, it is recommended that migration of SALW cannot be stopped with arms control measures alone but poverty alleviation, job creation programmes, social inclusion policies, and equitable resource distribution should be equally considered. Strategies to overcome these structural drivers would lower the number of incentives for involvement in armed violence and diminish socioeconomic conditions that drive the need for such weapons. The overall findings indicate that there is a reinforcement process between socioeconomic deprivation and environmental stress resulting in conditions conducive to SALW proliferation. The vulnerability to recruitment by armed groups is a consequence of poverty, unemployment and marginalization, which exacerbates resource-based tensions in climate-affected communities. Therefore, the demand for sustainable solutions to the problem of arms proliferation in Northwestern Nigeria calls for integrated solutions to environmental issues, economic inequalities and social exclusion.

5.3 Political Drivers of Arms Proliferation

The results showed that small arms and light weapons (SALWs) proliferation is influenced by political factors in Northwestern Nigeria. Political thuggery, electoral violence, political patronage and arming of non-state actors by political elites were constantly pointed to as important mechanisms for weapons to enter and stay in communities. The research indicates that political actors often help to ensure greater access to weapons for electoral and strategic purposes, which facilitates the continuation of armed violence and insecurity beyond election periods. The findings corroborate the position taken by Emmanuel & Daisy Onyige (2019) who argued that electoral violence continues to be one of the key factors in the proliferation of small arms in Nigeria. Political figures often hire and are known to arm thugs to intimidate constituents, sway the election results, and safeguard political interest. These arms are initially given out for political reasons but they are also kept by recipients after the elections and in some instances become used for criminal activities including banditry, kidnapping, armed robbery and communal violence.

This has helped keep SALWs moving throughout conflict-prone regions in NW Nigeria. The results also suggest that insecurities have been heightened within climate-affected communities due to political competition

and poor governance. This is also supported by the argument advanced by Awotayo et al (2022) that the rise of SALWs is closely associated with political violence and the ineffective regulatory measures by the state institutions. Political actors have a tendency to play on existing grievances for political or electoral benefit in areas where environmental pressures have made competition over scarce resources more intense. Climate-related threats to land and water, coupled with armed threats that flow from political networks, have heightened local conflicts, and made violent confrontations more likely. As a consequence, political manipulation is a trigger that converts pre-existing socioeconomic and environmental discontent into organized violence.

The results further support the tenets of Conflict Resolution Theory, which highlights the value of inclusive governance, the political accountability of leaders, and peaceful conflict management mechanisms. Armed groups used for political ends continue to affect institutional legitimacy and reduce the capacity and possibilities for peaceful conflict management. Political actors may be responsible for exacerbating disputes by allowing weapons to be acquired and for pitching in to the competition in a violent way. Political actors can be responsible for making it easy to obtain weapons, and for getting involved in violent competition, instead of resolving disputes through dialogue and democratic processes. Additionally, the results indicate the long-term consequences of political use of armed actors on security and stability. Electoral weapons often survive the electoral events that led to their purchase, leaving behind disenfranchised armed people who can help fuel organized crime and communal violence.

Political weapons handed out at elections can outlast the election they were used for, leaving behind armed disenfranchised individuals who may become involved in organized crime and/or communal violence. This reinforces the acceptance of violence as a tool to achieve political and economic goals and adds to the problem of curbing the spread of SALW in the region. The overall results indicate that political thuggery, electoral violence and political manipulation of armed groups have greatly aided the rise of SALWs in the Northwest region of Nigeria.

5.4 Identity-Based Conflicts, Self-Defense, and Arms Acquisition

The results showed that identity-induced conflicts and the need to defend themselves are important catalysts for small arms and light weapons (SALWs) proliferation in the Northwest region of Nigeria. The increase in the demand for weapons by individuals and communities was consistently linked with ethnic tension, religious differences, farmer-herder tension, communal violence and insecurity. The results indicate that violent conflicts have escalated and that affected groups have been motivated to obtain arms for use in self-defense and for territorial control, which has helped to sustain the regional flow of SALWs. The results are consistent with those of Jibrin and Yandaki (2021) who believe that the general access to small arms has made ethnic conflicts more violent and allowed competing groups to act on their own interests in a violent manner. Ethnic tensions in Northwestern Nigeria have long existed and have been exacerbated by conflicts over land and water over the years, leading to the potential for violent clashes.

These tensions are made more complex by the impacts of climate change on the environment, which have led to less productive land for farming and grazing. This has led to greater militarization of competition between farming and pastoral communities, as SALWs are used for protection and aggression. Religious tensions also arose as a key determinant in the arms acquisition in the region. The results suggest that religious divisions are often interconnected with political, economic and resource-related grievances, and can thus enhance the risk of violent conflict. This is in line with Otite (2020) who asserts that religious identities are often put to use during social and political meltdowns resulting in enhanced insecurity and violence. In places where resources are scarce due to climate change, religion or ethnicity may serve as causes or rallying points that allow communities to organize support and legitimize defensive and/or retaliatory measures. In such contexts, the availability of SALWs leads to higher intensity and longer conflicts. The findings also showed that local communities have a major reason for arms acquisition for self-defence. Regular incidents of banditry, kidnapping, cattle stealing and communal attacks have also ensured public distrust of state security institutions, leading people and communities to find other ways of protecting themselves.

This observation is consistent with Ebaye and Bassey (2021) who state that communities will adapt to the need for self-help security strategies when formal security institutions are not able to provide the security and safety they require. Local vigilant groups, militias, and community defense groups, therefore, have proliferated in various conflict-affected regions, many of which are depending on SALWs to protect lives, property and livelihoods. In the wider context of the Ecological Theory, they are symptoms of a larger impact of environmental stress on social relations and social stability. The impacts of climate change have also brought more competition for land, water and feeder resources and created more scarcity of resources, thereby disrupting traditional livelihood systems. These pressures can foster heightened ethnic, religious, and communal identities which can lead to conflict. Acquisition of weapons by affected groups may thus be seen as a reaction to environmental insecurity and to potential threats from other communities. The findings also align well with the theory of Conflict Resolution, which highlights the need for dialogue, negotiation and for inclusion to manage conflicts and prevent

a spiral towards violence. The continuation of identity related conflicts indicates that effective conflict management structures are either lacking or insufficient to help resolve conflicts and quell grievances concerning resource access, community relations and social exclusion.

Communities that are unable to solve their conflicts peacefully are more likely to use weapons to protect themselves and to use weapons to bargain. This is another dimension that continues to perpetuate cycles of violence and insecurity. Overall, the results show that ethnic tensions, religious wars, communal violence, and self-defence considerations have all significantly played an important role in the proliferation of SALW in the Northwest of Nigeria. Competition for limited resources has grown as a result of climate change, adding to social divisions, while insecurity has led to the acquisition of arms for self defence and in response. These conditions have been made more conducive to the persistence of armed violence and ongoing demand for SALWs in the region due to the interplay between environmental pressures, identity-based grievances, and poor conflict management systems.

5.5 Institutional Weaknesses and Security Failures

The study revealed that weak institutions and inadequate security measures have played a significant role in the proliferation of small arms and light weapons (SALWs) in Northwestern Nigeria. Poor coordination between security agencies, lack of technological capability, weak border surveillance, lack of funding, and limited operational effectiveness were recognized as significant challenges affecting security agencies' ability to control the movement and circulation of the illicit weapons. The results indicated the lack of ability of the relevant institutions to prevent arms trafficking and their failure to deal with the new security threats has caused an environment conducive to the proliferation of SALWs in the region. Poor cooperation between the various security and intelligence services, and between military and police was a recurring problem identified by the respondents. The results have shown that poor coordination frequently leads to delays in the sharing of information, duplication of effort, operational competitive dynamics and enforcement gaps. The institutional gaps provide opportunities for arms traffickers and criminal networks to take advantage of the vulnerabilities in the security system.

This finding agrees with Agaba (2024) who further claims that lack of effective inter-agency cooperation is one of the major challenges faced by arms control and security management in Nigeria. When agencies do not work together to ensure the effective monitoring of illegal arms transfers and trafficking networks, it is less effective. The report also revealed that security agencies' technological capabilities have been hampered in their ability to detect and intercept illegal weapons. The lack of a modern surveillance system, advanced tracking systems, and intelligence-gathering tools necessary for border management and arms control were noted by respondents. This is in line with Dahiru (2020) who argues that the modern challenges in security cannot be addressed with traditional security technologies, but with using newer technologies like drones, electronic surveillance systems, Geographic information systems, and modern intelligence platforms. Due to the limited use of these technologies, the capacity of security institutions has been reduced in hard-to-reach and remote areas where arms trafficking activities are often carried out. Another profound issue that arose from the results is the fragility of the overall defense and security system. A lack of funds, logistics, manpower and operational resources were cited by the respondents as limitations to the security response to arms trafficking and organized violence. The present discovery corroborates Mashi and Mohammed (2021), who state that many security institutions in Nigeria are not resourceful enough in pursuing security threats. In some conflict prone zones, especially in remote rural and border areas, the presence of state security forces has been minimal, giving criminal groups and arms traders a relatively free rein. According to the Ecological Theory, the weakness of the institutions starts to cause serious issues in a context of climate-related stresses. Environmental degradation, reduced agricultural productivity and growing competition for limited resources create conditions that create insecurity and social tensions. The results also align with the theory of conflict resolution, which also underscores the role of robust institutions in averting conflict and ensuring social order. Capable security institutions that are able to enforce laws, protect communities, and facilitate peaceful conflict management processes are essential for effective conflict management.

In the absence of strong, well-coordinated, and well-equipped institutions, however, prospects for peaceful conflict management become limited. In such cases, people and communities might be forced to increasingly use self-help solutions such as obtaining SALWs to defend their rights and security. In addition, the results indicate that institutional dysfunctions have indirect effects on many of the other factors identified in this study that contribute to arms proliferation. Poor border management allows for the illicit trafficking of weapons across the borders, weak law enforcement enables illegal markets to flourish and weak security coverage gives communities the space to form their own security arrangements. Institutional weaknesses therefore do not occur in isolation, but in tandem with other factors that contribute to the wider ecosystem of SALW proliferation, including socioeconomic deprivation, political violence and identity-based conflicts. However, the overall results indicate that the institutional capacities, coordination between agencies, technological preparedness and security

infrastructure in Northwestern Nigeria have had a serious impact on the efforts to control SALW proliferation. These vulnerabilities have made it easier to export and import illegal arms, and less effective is the state's response to new security challenges. Comprehensive institutional reform is therefore needed to improve the manner in which security is coordinated at the institutional level, as well as to upgrade security technologies, to facilitate border management and enhance the capacity of security agencies in responding effectively to the multifaceted security concerns of resource conflicts related to climate change.

6. Conclusion and Policy Implications

This study investigated the link between resource conflicts and the spread of small arms and light weapons (SALWs) in north-western Nigeria in the context of climate change. The results show that climate change is a threat multiplier that aggravates environmental stressors like droughts, variability of precipitation, loss of pasture, and lower productivity of agricultural crops. These environmental stressors lead to rivalry for limited resources, land and water in particular, and to conditions that escalate into violent conflict between farmers, pastoralists and other groups dependent on such resources. They also found that the increased presence of SALWs is not only driven by environmental pressures, but by porous borders, socioeconomic deprivation, political manipulation, identity-based conflicts, and institutional weaknesses. These factors have resulted in a vicious cycle of scarcity, conflict, escalating demands for arms and the ready availability of arms which in turn has further contributed to the existing insecurity and undermined governance in the area.

The results of this study support the Ecological Theory as well as the Conflict Resolution Theory, which suggest that environmental degradation, social vulnerabilities and weak conflict management structures are all linked to the high level of insecurity in the region and arm proliferation in the region. This challenge needs to be addressed through a comprehensive and integrated policy approach, which addresses both the immediate security threats and the structural drivers of violence. First, Nigerian government must increase the security at Nigerian borders by using up-to-date technology including electronic monitoring systems, deployment of drones, increase in military presence and coordination of military, police, customs and immigration agencies to halt arms trafficking. Second, investments in sustainable agriculture, water resource development, environmental restoration, and climate adaptation programmes that will help to mitigate resource-based conflicts between competing groups should be encouraged through implementing climate-resilient resource management strategies. Thirdly, community-based conflict resolution mechanisms should be reinforced by a measure of empowerment of the traditional institutions, community leaders and local stakeholders to promote dialogue and peaceful management of conflicts regarding land and water resources before they may turn to violence. Fourth, poverty, unemployment and social exclusion, including of young people, should be tackled with targeted interventions through mechanisms that strengthen their capacities to resist being recruited into armed groups and criminal networks, including the provision of education and vocational training.

Lastly, better governance, political accountability, and regional collaboration would be key in tackling underlying conditions that fuel the proliferation of SALW. This involves implementation of the arms control measures, stopping the use of politics to sponsor violence, taking measures to ensure inclusive resource governance, and improving partnerships with neighbouring countries and international actors in combating cross-border arms trafficking. These together provide a more sustainable way to lower the incidence of armed violence, improve the security situation and build climate-driven conflict resilience in Northwestern Nigeria.

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Conflict of Interest

Authors declare that there is no conflict of interest regarding the publication of the manuscript.

Author Contribution

The authors confirm shared responsibility for the following: Manuscript structure, data collection, presentation and interpretation of results, and manuscript preparation in general.

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