



REVIEWING THE LINKS BETWEEN CLIMATE CHANGE AND RESOURCE CONFLICT

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(Received 26 April 2021; Revision Accepted 24 May 2021)

ABSTRACT

Knowledge of the relationship between climate change and resource conflict is paramount in resolving resource conflict between farmers and herdsman in Nigeria. However, there is yet no general agreement on how climate change causes or influences resource conflict. Thus, a review of existing literature that link climate change and resource conflict was conducted for identification of the missing link. These were achieved through the review of literature published in the era of the recent global climate change from late 90s to date. Selections of papers were based on the topic and date of publication. Result showed that there is general agreement that climate change influence resource conflicts. Some of the authors agreed that climate change cannot cause resource conflict in isolation but through influences on other factors that affect resource availability, accessibility and utility. These factors are also influenced by policies and socio-cultural system. Thus, resource conflict may be a secondary or tertiary effect of climate change. Climate change solution is scarce in literature that linked climate change and resource conflict. Thus, future studies should be focused on climate change solution to resource conflict.

KEYWORDS Climate change, Resource conflict, Literature review, Farmers

1. INTRODUCTION

Climate change is one of the most important worldwide issues addressed among scientists and researchers; and one of the consequences of climate change is conflict resulting from alteration of rainfall patterns and increased temperature. A number of studies have demonstrated an empirical relationship between higher ambient temperatures and sub-state violence, which have been extrapolated to make predictions about the security implications of climate change (Hsiang et al., 2013; Alexander and Andrew, 2015).

The Intergovernmental Panel on Climate Change (IPCC, 2007), views climate change as statistically significant variation in either mean state of the climate or in its variability, persisting for an extended period (typically decades or longer). Similarly, the United States Environmental Protection Agency (USEPA, 2020) defined climate change as any long-term significant change in the expected average weather of any place over an appropriate period of time. In other words

climate change depicts abnormal variations in the expected climate of a region. Climate change has become a global issue in recent times manifesting in variations of different climate parameters including cloud cover, precipitation, temperature ranges, sea levels and vapour pressure (Ministry of Environment of the Federal Republic of Nigeria (MoEFRN, 2003).

Haider (2019) affirmed that climate change exists in Nigeria, in his words "Nigeria's climate has been changing, evident in: increases in temperature; variable rainfall; rise in sea level and flooding; drought and desertification; land degradation; more frequent extreme weather events; affected fresh water resources and loss

of biodiversity". Haider (2019) stated that the reports of Elisha et al., (2017), Ebele and Emodi, (2016) and Olaniyi (2013) are proves that Nigeria is currently experiencing climate change. United State Geological Survey (USGS, 2020) noted that climate change is resulted many factors. These factors are both natural and anthropogenic but mainly the later. Studies on

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climate change in Nigeria especially those that emphasize the effects are robust and in agreement that climate change threatens Nigerian's desire of achieving socio-economic development and peace (Nzeadibe et al., 2011; Olaniyi, 2013; Haider, 2019).

Resource conflicts are disagreements and disputes over access to, and control and use of, natural resources (FAO, 2000). These conflicts often emerge because people have different uses for resources such as forests, water, pastures and land, or want to manage them in different ways. Disagreements also arise when these interests and needs are incompatible, or when the priorities of some user groups are not considered in policies, programmes and projects. Such conflicts of interest are an inevitable feature of all societies (Swedish International Development Cooperation Agency SIDA, 2018).

The theory of eco violence developed by Homer-Dixon (1999) is an emerging theoretical construct that seeks to elucidate the relationship between environmental factors and violent conflicts. The theory holds thus: a decrease in the quality and quantity of renewable resources, population growth, and resource access act singly or in various combinations to increase the scarcity, for certain population groups, of cropland, water, forests, and fish. This can reduce economic productivity both for the local groups experiencing the scarcity and for the larger regional and national economies. The affected people may migrate or be expelled to new lands. Migrating groups often trigger ethnic conflicts when they move to new areas, while decreases in wealth can cause deprivation conflicts (Adeoye, 2017). Implicit in the eco-violence theory is the assumption that competition over scarce ecological resources engenders violent conflict. This trend has been aggravated in contemporary times owing to the impacts of climate change, which has exacerbated ecological scarcity across the world (Blench, 2004; Onuoha, 2007).

In effect, ecological scarcity raises the competitive stakes and the premium that the various societal groups may place on available ecological resources. This condition tends to precipitate violent conflicts. Applied to the present review, the theory of eco-violence offers insights into the links between climate change and resource conflict in Nigeria. It suggests that resource conflicts have been driven by the desperation of the affected groups to protect and advance their livelihood interests in the context of an ever shrinking ecological space, characterized by resource-scarcity, a livelihood crisis, population explosion, and resource competition which are propelled by climate change (Okoli and Atelhe, 2014).

Climate change and resource conflict are among the contemporary challenges in Africa particularly Nigeria. There is growing recognition of the possible links between climate change and resource conflicts between farmers and herders in Nigeria (Abubakar, 2012; Abugu and Onuba, 2015; Abugu et al., 2020). However, the links between climate change and resource Nigeria is not clearly articulated due to differing views among researchers. There seems to be a debate on how climate change influences resource conflict between farmers and herders in Nigeria. Thus, this review was conducted to contribute to the debate on the known links

between climate change and resource conflict and identify the missing links for further studies.

2. MATERIALS AND METHODS

Desk study of over two hundred (200) research articles out of six hundred (600) documents related to the topic were sorted for review. Qualification of article for review was based on contextual and temporal scope of the study. On the basis of context, article must be on climate change, resource conflict, climate change and resource conflict, climate parameter and conflict, temperature and conflict/crime. On the other hand, preferences were given to studies in Nigeria and articles published in 2007 and upwards. This is because 2007 was when the fourth IPCC assessment report declared that climate change is an issue to be taken seriously. However, articles must not be published before late 19th century as scientists generally regard the later part of the 19th century as the point at which human activity started influencing the climate (Picock, 2016). The findings from existing literature were summarized and direction for further study was suggested.

3. RESULTS AND DISCUSSION

From a historical point of view, certain scholars refer to the fact that resource conflicts resulting from cattle grazing have existed for as long as the practice of agriculture (Blench 2010; Abbass, 2012). 'However, the dimension and scope of farmers/herdsmen conflict is worrisome (Aliyu, et al., 2018)'. The primary cause of these conflicts in Nigeria has been linked to southward migration of herders which has been largely attributed to climate change and the recent insecurity in the Northeast (International Crisis Group, 2017). Disagreements over the use of essential resources such as farmland, grazing areas and water between herders and local farmers are said to be the major igniting cause of the battles (Adebayo and Olaniyi, 2008; Ofuoku and Isife, 2009; Abubakar, 2012).

Koubi, (2019) described two schools of thought on the link between climate change and resource conflict as follows. Firstly, those who claim that climate affects the likelihood of conflict via direct physiological and/or psychological factors and resource scarcity. The second group postulates that climate indirectly leads to conflict by reducing economic output and agricultural incomes, raising food prices, and increasing migration flows.

On the basis of physiological and/or psychological factors, scholars have argued that, temperature, especially warmer temperatures, elevate levels of discomfort and aggressiveness thereby increase hostility and violence (Anderson and Bushman, 2002). Climate change also affects the likelihood of intragroup violence via the scarcity of renewable resources such as freshwater, arable land, forests, and fisheries (Koubi, 2019).

At the national level, for instance, less rainfall or high temperatures could lead to conflict among consumers of water, for instance farmers and herders, as well as, urban unrest, insurrections, and other forms of civil violence, especially in the developing world. Some scholars suggest that scarcity, especially around shared resources such as transboundary water resources, can also lead to interstate conflict (Salehyan and Gleditsch, 2006).

Other factors such as poor governance, corruption, institutional instability, religious intolerance, ethnic interest and other location-specific and structural conditions have also been identified as important factors in the relationship between resource scarcity and conflict (Barnett and Adger 2007; Raleigh and Kniveton, 2012). Cederman et al. (2013) were of the opinion that grievances due to climate-induced adverse economic conditions could lead to low-level conflict, such as protests when food prices rise, as well as, to civil conflicts when a certain (ethnic) group is particularly affected by such conditions and is excluded.

Literature recognizes the centrality of resource scarcity and competition between different occupational and ethno-cultural groups. Shettima and Tar (2008) have offered an excellent review of the different theoretical perspectives of conflicts between herders and farmers. The review shows convergence on the centrality of resource scarcity and environmental decline. Similarly, Yunana et al. (2017) pointed specifically that the impact of climate change in the Lake Chad region reflects the general picture, noting that it has taken a heavy toll on the livelihoods of over 8 million pastoralists and fishermen around Lake Chad. Azare et al. (2020) explained that the combined effect of dam development, desert encroachment, and deforestation has caused a series of conflicts and violence, induced by resource scarcity and growing social and economic misery.

Concepts that link climate change and resource conflict are on the increase following speculations and recent researches on the relationship between climate change and migration/conflict. In the words of Maslin (2018), "the media has even started using terms such as "climate refugees" and "environmental migrants" to describe people fleeing their homes from these climate-driven conflicts". However, it not yet clear that climate causes or influence armed conflicts. Literature have linked climate variables like temperature, rainfall, wind, relative humidity with conflict occurrence (Notaras, 2009; Burke, et al., 2009). Burke et al. (2009) found that "there is a relationship between past internal conflict in sub-Saharan Africa and variations in temperature (but not precipitation) and that there are "substantial increases in conflict during warmer years". According to (Notaras, 2009), "a 1% increase in temperature leads to a 4.5% increase in civil war in the same year and a 0.9% increase in the following year".

CLIMATE CHANGE, ALTERED LANDSCAPES AND RESOURCE CONFLICTS

On the basis of possible causes, climate change has been linked to farmers/herdsmen conflicts on the presumption that climate change has slowly changed the landscape of Northern Nigeria leading to increasing drought and desertification which invariably forces herders to migrate southward (Dioha and Emodi, 2018; Elisha et al., 2017). Moreover, studies have also shown that the Southern part of Nigeria is prone to flooding and erosion (Agbonkhese et al., 2014; Enete, 2014; Azubuike and Nnubia 2015; Akukwe et al., 2018; Adeniji, 2018). For instance, Enete (2014) showed that "the durations and intensities of rainfall have increased, producing large runoffs and flooding in Enugu State, Nigeria.

This scenario made the Middle Belt or North Central Nigeria the safest zone for both farmers and herders. This also comes with its own consequence such as resource conflict between the local farmers and herders. The herders are searching for a safe place in the Middle Belt States in Nigeria (Abugu et al., 2020). The farmers around this region who focus on shifting cultivation and rotation of land for fallowing reasons and good output of farm inputs see the invasion of fallowing grounds and other farmlands by the herder's cattle as direct incursion on their livelihood (Abass, 2012; Akevi, 2014; Durojaiye, 2014).

Scholars (Folami 2009; Ofuoku and Isife 2009; Adekunle and Adisa 2010; Blench 2010; Odoh and Chigozie 2012; Solagberu 2012; Audu 2013, 2014; Bello 2013; McGregor 2014; Fabiyi and Otunuga, 2016), had identified climate changes as the root cause of farmers-herdsmen conflicts over resource use in Nigeria.

It was observed by Gefu and Kolawole (nd) that, while some conflicts arise between same resource group such as between one farming community and another, others occur between different user groups such as between herders and farmers or between foresters and farmers. Adisa (2012) has observed that the farmers-herdsmen conflict has remained the most preponderant resource-use conflict in Nigeria.

CLIMATE CHANGE AND HUMAN ARMED CONFLICT

The link between climate change and conflict is well documented in the literature but there is no general agreement among these reports (Burke et al., 2009; Sutton et al., 2010; Gleditsch, 2012). Burke et al. (2009) stated that "hotter annual temperatures have led to increased civil war incidence in sub-Saharan African states". The sub-Saharan African area has been the primary geographic focus, given policy concerns over the region's vulnerability due to populations and "heavy dependence on rainfed agriculture" (Gleditsch, 2012). The assumption by Burke et al., (2010) that increased temperature can lead to increase violence has been challenged by critique (Sutton et al., 2010).

In response to criticisms, Burke et al. (2009) revised their model and generated additional results confirming that variation in the incidence of large wars in sub-Saharan Africa in the 1980s and 1990s is in part explained by temperature change (Burke et al., 2010). The updated finding does not hold for the 2003 to 2008 period, which the authors argued may be the result of economic development, improvements in domestic governance, or international peacekeeping efforts.

Sutton et al. (2010) suggested that such relationship should be subjected to measurement, dataset selection, and statistical analysis strategies (Buhaug, 2010). From this theoretical perspective, subsequent studies have sought to predict the consequences of climate change on violence levels by extrapolating from historical temperature and rainfall trends (Gleditsch, 2012; Hendrix and Salehyan, 2012; Theisen, 2012). According to Hsiang et al. (2011) temperature-induced variation in agricultural yield can alter migration patterns, with potential effects on substate violence. Research has shown "significant effect of climate-driven changes in crop yields on the rate of migration from Mexico to the United States" (Feng et al., 2013). Excessive heat can reduce the supply of crops, which in most circumstances

raises the price of food. In turn, higher food prices have been shown to lead to social instability, including incidents of group violence (Bellemare, 2012). Much of the doubt about the relationship between climate change and conflict results from the inherent complexities of war and peace (Maslin, 2018). With so many political, social, economic and environmental factors playing a role in either preventing or stimulating conflict, applying quantitative analysis and then trying to predict the chance of future conflict is problematic. There is no doubt that impoverishment and human insecurity may arise as a result of climate change, if preventive measures are not undertaken. However, there is missing evidence that global warming directly increases conflict (Notaras 2009).

CHANGING TEMPERATURES AND CONFLICTS

A good number of empirical studies have also demonstrated the relationship between higher ambient temperatures and conflicts (Theisen, 2012; Hendrix and Salehyan, 2012; Hsiang et al., 2013; Bollfrass and Shaver, 2015). However, most of the literature rest on the untested assumption that the mechanism behind the temperature-conflict link is that disruption of agricultural production provokes local violence. Using a subnational-level dataset, Bollfrass and Shaver (2015) demonstrated that: the relationship: (1) obtains globally, (2) exists at the sub-state level provinces that experience positive temperature deviations witness increased conflict; and (3) occurs even in regions without significant agricultural production.

It has been stated that diminished local farm output resulting from elevated temperatures is unlikely to account for the entire increase in substate violence (Burke et al., 2010). The empirical relationship between higher temperatures and increased substate violence has been demonstrated in many settings. A recent meta-analysis of 60 prior studies finds substantial effects of temperature increases on the likelihood of interpersonal and intergroup conflict (Alexander and Andrew, 2015). Similar associations with changes in precipitation patterns have also been identified. The most thorough scholarly exchange to date has centered on the report of Burke et al. (2009) "that hotter annual temperatures have led to increased civil war incidence in sub-Saharan African states".

CLIMATE CHANGE AND ECONOMIC CONDITIONS

Most previous studies have theorized that the effect of climate on conflict operates through local economic conditions (Anderson and Anderson, 2014). The first step in this chain of causation is that higher temperatures depress agricultural output. Within Africa, this effect is well established: temperature can affect agricultural yields through increases in crop evapotranspiration and through accelerated crop development. These in turn can reduce African staple crop yields by 10%–30% per degree centigrade of warming (Burke et al., 2010).

Moreover, empirical psychological research has established the tendency of individuals to behave more violently at higher temperatures, leaving "little doubt or controversy about the existence of a heat-violence relation in real-world data" (Alexander and Andrew, 2015). Relying on the records collected by law

enforcement agencies, several robust analyses have found that much variation in violent offenses can be explained by temperature change (Dodge and Lentzner, 1980). In post-conflict environments where peace is tenuous, temperature induced aggression may be sufficient to trigger escalatory violence, leading to renewed fighting. The argument that climate change contributes to the problems of insecurity and banditry in Nigeria is on the increase.

SIDA (2018) emphasized that climate change increases the risk of conflicts through increase in poverty, hunger and forced migration. Other factors include rapid population growth, weak economy, violation of human rights, and failure of political systems or extreme political instability. In line with the report of SIDA (2018), Notaras (2009) has cautioned that "climate change is likely to impact freshwater availability adversely even if annual global precipitation remains the same, because of changes in precipitation pattern causing drought and flood. Flood and drought both will cause freshwater stress that would adversely affect health, sanitation, agriculture, industry and commerce, making livelihoods unsustainable. This would lead to water-induced migration in some parts of the world. Large scale migration on a sustained basis would put pressure on other resources of host regions. Scarcity of resources would normally lead to conflict and this would be further aggravated if migrants and people of host regions get polarized on ethnic, linguistic, religious or some other identities in their fight for resources.

Abugu and Onuba (2015) carried out a study titled, 'climate change and pastoral conflicts in the Middle Belt and South-East Nigeria: implications on human resources of the regions'. The study examined the relationship between climate change and pastoral conflicts as well as their effects on human resources of both the Middle Belt and South Eastern Nigeria. Deprivation, Frustration and Aggression theory was employed to anchor the study. At the end, the study revealed that pastoralists migrate due largely to extreme and unfavorable weather conditions occasioned by climate change. In similar point, Ofuoku and Isife (2009) noted that the advancement of farming through irrigation and the increased decimation of pasture across the savannah also extended the scope of conflicts, through transhumance, to the coastal zones, which were more ecologically viable. A study by International Organization for Migration (IOM) and United Nations University and Institute for Environment and Human Security (UNU-EHS) in 2009 broadly classified the causes of land resource conflicts under six headings: disagreements over historical claims, changes in climatic conditions, consequences of changes in the nature of power balance; elite manipulation, youth reactions to vulnerability and exclusion and alterations in boundary structures.

The Intergovernmental Panel on Climate Change (IPCC, 2007) stated that "warming of the climate system is unequivocal" and that climate change could become a major contributing factor to conflicts by exacerbating the scarcity of important natural resources, such as freshwater, and by triggering mass population dislocations (migration) due to extreme weather events, such as droughts and desertification, as well as rising sea levels (Koubi, 2019). Similarly, a US governmental

report elevated environmental issues to the forefront of the security agenda by identifying climate change as “potentially the greatest challenge to global stability and security, and therefore to national security” (CNA Corp. 2007).

According to International Organization for Migration (IOM) and United Nations University Institute for Environment and Human Security (UNU-EHS) report in 2009, changes in climatic conditions have become a factor in conflict considerations when unanticipated environmental changes emerge to alter existing land tenure arrangements between local communities. According to Ide et al. (2018) drought and conflict coexist mostly in countries or regions with the following features: already suffer from adverse climatic changes, highly dependent on agriculture for income and food generation, have few capabilities to cope with climatic changes, and have preexisting tensions and conflict.

CLIMATE CHANGE AND CONFLICTS OVER LAND USE

Despite this notable link between climate change and conflict, few studies have statistically linked climate change with conflict (Burke, et al., 2009; Gleditsch, 2012; Hendrix and Salehyan, 2012; Theisen, 2012; Alexander and Andrew, 2015; Anderson, 2017; Abugu et al, 2020). These literature rest on the untested assumption that the mechanism behind the temperature-conflict link is that disruption of agricultural production provokes local violence.

In Nigeria, the growth of agro-pastoralism, the expansion of farming on pastures, the invasion of farmlands by cattle, assault on non-Fulani women by herders, blockage of stock routes and water points, freshwater scarcity, burning of range lands, cattle theft, inadequate animal health care and disease control, overgrazing on fallow lands, defecation on streams and roads by cattle, ethnic stereotyping, and the breakdown of conflict intervention mechanisms, these are usually identified by scholars as the root causes of farmers/herders conflicts (Folami, 2009; Ofuoku and Isife 2009; Adekunle and Adisa 2010; Blench 2010; Odohand Chigozie 2012; Solagberu 2012; Audu 2013, 2014; Bello 2013; McGregor 2014). In line with this, Abass (2012) contends that the major source of tensions between pastoralists and farmers is basically economic, with land related issues accounting for the majority of the conflicts.

Okoli and Atelhe (2014) conducted a study on political ecology study of herder/farmer conflicts in Nasarawa State, Nigeria. They posited that the phenomenon of herder/farmer conflict in Nasarawa State typifies what is known as resource conflict in contemporary development literature. Eje et al. (2017) argued that farmers-herder's conflicts in Riyom local government area of Plateau State Nigeria are caused by a combination of factors such as crop damage by cattle, land encroachment, encroachment on grazing reserves, lack of access to water point and pollution of water points, killing of stray cattle, cattle rustling, indiscriminate bush burning and disregard to rules and regulations.

Campion and Acheampong (2014) assessed the causes and arbitrators of the conflicts in the Jatropha area of Ghana by adopting a descriptive survey design. They revealed that issues concerning unclear land boundaries

and illegal sale/lease of land were drivers of conflict within the area. As Greiner (2013) has shown with respect to Kenya, that resource conflict has become part and parcel of politicized claims over administrative boundaries, struggles for exclusive access to land, and attempts to safeguard ethnically homogeneous electoral bases. Similarly in the Nigerian context, the issues are not unrelated to divisive state and local government policies that discriminate on ethnic and religious grounds (Human Rights Watch, 2013). It is in this context that Shetima and Tar (2008) suggested that political powerlessness has been a recurring issue 'where rules governing the trespass of animals are made and enforced by farmers with an inherent bias against pastoralists and animal keepers'.

Earlier studies also noted that peaceful co-existence was conditioned by sufficiency of land for farmers and herdsman and the subsistence nature of farming, limited numbers of cattle managed by the herdsman prevented fierce competition over scarce resources (Goke, 2018; Aliyu, et al., 2018; Saliu, 2019).

CLIMATE CHANGE RESOURCE CONFLICTS AND SOCIAL CONSEQUENCES

The effects of resource conflict between farmers and herdsman is well studied and include loss of lives, displacement of indigenous settlers, food insecurity, hardships and disruption of properties /livelihood sources, famine/mass starvation, reductions in farmland, loss of herds and so on. So many aspects of farmers/herdsman conflicts such as the nature, causes, frequencies, effects and resolution mechanism have been well elaborated (Agbegbedia, 2013).

Musa et al. (2014) evaluated resource use conflict between herdsman and farmers in Benue state of Nigeria by adopting a descriptive survey design. Result revealed that the conflicting parties always end up losing their lives and properties, experience a decrease in productivity and get displaced.

International Crises Group (2017) found that tens of thousands of Nigerians also have been displaced. Women and girls were particularly affected: they experienced poverty and lack of access to resources, and their husbands were killed in the violence in the Fulani-farmer conflict. _Gürsoy (2020) stated that violent conflicts between herdsman and farmers in Nigeria have escalated in recent years, which threaten people's lives and the country's stability. The conflicts between herdsman and farmers have resulted in a humanitarian crisis (Ningxin, 2018).

Saliu (2019) cautioned that in environments that are already unstable, protracted farmer/herder violence has the potential to aggravate preexisting tensions. Similarly, Bagu and Smith (2017) warned that if the violence is not properly dealt with, farmer/herder conflicts have the potential to undermine community relationships, destabilizing the country and the state. Additionally, Shehu (2018) opined that farmers-herdsman conflict often leads to mistrust among people who live together for so many years because some northern Christian minorities and southern politicians have labeled the conflict as a deliberate attempt by the Northern Muslim leaders to impose Islamic shariah or as a jihad movement to the mostly Christian dominated states of north central and southern states.

Ajuwon (2004) reported farmer – herdsmen conflict in Imo State, Southeast Nigeria. The author noted that between 1996 and 2003, nineteen (19) people died and forty-two (42) injured in the rising incident of farmers–herders conflict and the violence that often accompany such conflicts should be regarded as being of national concern. According to Aluko (2017), the conflict between herders and farmers in the north central of Nigeria has displaced more than 100,000 people in Benue and Nasarawa states. It has left them without any other feasible option than squatting with relatives or relocating to temporary displaced persons' camps.

Studies (Human rights watch, 2010; Agbegbedia, 2013) have shown that resolving resource conflicts requires a wide range of skills. These include an understanding of precedent, local history and the political economy, including the contested role of the state, and the ability to build trust, be creative and manage complex processes. Knowledge of natural resources and resource governance is also essential. However, International Crisis Group (2017) opined that farmers and herders' conflict have not received adequate attention by both State and Federal Governments. Consequently, violent conflicts escalated in recent years and are spreading southward, threatening the Nigeria's security and stability.

Salihu (2019) assessed the effectiveness of government strategies in resolving farmers-herdsmen conflict in Adamawa State. Results indicated that the government is up and doing with effort to tackle the problem of farmers-herdsmen conflict in Adamawa State by introducing such measures as security and legal actions, creation of grazing reserves, development programmes, cattle colonies, national livestock transformation plan, organized dialogue and negotiations, and comprehensive livestock development plan. However, the author concluded that these measures did not yield the desired outcome. Chikaire et al., (2018) recommended involvement of traditional rulers, town unions, herder unions, farmers associations, religious organizations and law enforcement agents in reconciliatory roles to ensure peaceful co-existence between farmers and herdsmen.

4. CONCLUSION

There is general agreement that climate change influences resource conflicts. However, there is disagreement on the nature of the influence and majority see resource conflict as a secondary effect of climate change. To psychologists, frustration/aggression theory best describe the link between climate change and resource conflict. Psychologists claim that rise in temperature upset people and provoke conflict. Sociologists point at societal structure and deprivation and uses deprivation/ structural conflict theory in the explanation of climate change and resource conflict link. Geographers consider the interconnection between the environment and man in discussing climate change and resource conflict. Thus, eco-violence theory is usually applied in their holistic approach to link climate change and resource conflict.

Though, climate change is a well accepted factor of resource conflict between farmers and herdsmen; the decision in the present study is that climate change has a relationship with resource conflict through influence on

other factors that affect resource availability, accessibility and utility. These include land use, population distribution and economy. These factors are also influenced by policies and socio-cultural system. Thus, resource conflict may be a secondary or tertiary effect of climate change.

Climate change solution is the focus of recent literature that links climate change and resource conflict (Buhau, 2015; Schleussner, 2016; Dapilah et al., 2019; Koubi, 2019; Schilling, 2020; Mach and Kraan, 2021). However, such studies are relatively inadequate. This suggests that future studies should be focused on climate change solution as a response to resource conflict. Since climate change relate to resource conflict through influence on other factors that affect resource, addressing climate change involves restructuring land use, adopting environmental friendly economy and so on. Therefore, good policies on land use, population distribution and economy will abate the effects of climate change on societal cohesion and minimize resource conflict between farmers and herdsmen.

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