

## THE NEXUS OF CLIMATE CHANGE AND CONFLICT IN THE SAHEL REGION: INSIGHTS FROM RELEVANT STUDIES



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Submission date: 20/02/2022 Acceptance date: 26/05/2022 Publication date: 05/06/2022

**Abstract:** Africa and the Sahel in particular, are often seen as regions of the world where climate change threatens security and provoke violent conflict. This is due to serious conflicts that have destabilized the region, and therefore it is seen as vulnerable to climate change. This article aims to study the validity of this perception by providing a brief overview of the available theoretical literature on the links between climate change and violent conflict, especially in the African Sahel region. The article concludes with the need for regional cooperation, particularly between the Maghreb and the Sahel, to address common challenges.

**key words:** Sahel; Conflict; Violence; Climate Change; Vulnerability to Climate Change.

### ملخص:

غالبًا ما يُنظر إلى إفريقيا ومنطقة الساحل على وجه الخصوص على أنها مناطق من العالم حيث يهدد تغير المناخ الأمن ويثير نزاعات عنيفة. ويرجع ذلك إلى الصراعات الخطيرة التي زعزعت استقرار المنطقة في الماضي، وبالتالي يُنظر إليها على أنها عرضة لتغير المناخ. تهدف هذه المقالة إلى دراسة صحة هذا التصور من خلال تقديم لمحة موجزة عن الأدبيات النظرية المتاحة حول الروابط بين تغير المناخ والصراع العنيف، لا سيما في منطقة الساحل الإفريقي. يخلص المقال إلى ضرورة التعاون الإقليمي، لا سيما بين المنطقتين المغاربية والساحل لمواجهة التحديات المشتركة معًا.

**الكلمات المفتاحية:** الساحل الإفريقي؛ النزاع؛ العنف؛ التغير المناخي؛ قابلية التعرض للتغير المناخي

## Introduction:

Climate change is unarguably one of the most important global challenges of the twenty-first century. As stated in the 1992 Rio Declaration, “Peace, development and environmental protection are interdependent and indivisible.” (Conférence des Nations Unies, 1992) Therefore, according to the UN interpretation reaffirmed at the Rio +20 Summit, climate change represents a threat to the environment, peace and sustainable development. (Conférence des Nations Unies sur le Développement Durable, 2012)

People of the Sahel region are among the world's most vulnerable to crises and disasters, as most of them depend on natural resources for their livelihood, which is based on agriculture and animal husbandry. Today, however, they are witnessing a drastic change in their environment due to the effects of climate change.

Current tensions between pastoral communities and farmers are heightened by climate change as communities compete for access to available scarce lands and unexpected access to water resources for crops and pastures. The pastoral and agro-pastoral areas are exposed to severe shortages and water shortages.

This paper calls into question the issue of Climate change as a source of conflict and violence in the African Sahel region

The purpose of this paper is to review recent research on the likely links between Climate change and conflict mainly in the African Sahel region, and aims also at exploring and identifying mechanisms linking climate change to violent conflict.

Taking a descriptive approach, I have addressed this issue through five elements:

- 1- Climate change: Definition and Aspects
- 2- Climate change and violent conflict: theoretical reviews
- 3- Geographical and climatic characteristics of the African Sahel
- 4- Climate change in the African Sahel
- 5- Violence and violent conflicts in the Sahel
- 6- Possible links between climate change and violent conflict in the Sahel

## 1- Climate change: Definition and Aspects

During recent years, there has been widespread debate about climate change. Different definitions of the term are discussed by academics, policymakers and international organizations.

According to the Mekong Rive Comission : “change of climate, which is attributed directly or indirectly to human activity that alters the composition of the global atmosphere and which is in addition to natural climate variability observed over comparable time periods”. ( Mekong Rive Commision, 2013)

Climate change in The Intergovernmental Panel on Climate Change (IPCC) usage refers to a change in the state of the climate that can be identified by changes in the mean and/or the variability of its properties and that persists for an extended period, typically decades or longer. It refers to any change in climate over time, whether due to natural variability or as a result of human activity. (IPCC, 2018)

These conceptions differ from that in the United Nations Framework Convention on Climate Change (UNFCCC), where climate change refers to a change of climate that is attributed directly or indirectly to human activity that alters the composition of the global atmosphere and that is in addition to natural climate variability observed over comparable time periods. (United Nations Framework Convention on Climate Change, 2011)

Despite the disparate definitions of climate change, the phenomenon can be observed through the following aspects:

- Temperatures are rising world-wide due to greenhouse gases trapping more heat in the atmosphere.
- Droughts are becoming longer and more extreme around the world.
- Tropical storms becoming more severe due to Warmer ocean water temperatures.
- As temperatures rise there is less snowpack in mountain ranges and polar areas and the snow melts faster.
- Glaciers are melting at a faster rate.
- Sea ice in the Arctic Ocean around the North Pole is melting faster with the warmer temperatures.
- Permafrost is melting, releasing methane, a powerful greenhouse gas, into the atmosphere.
- Sea levels are rising, threatening coastal communities and estuarine ecosystems.
- The sharp decrease in rainfall, reducing rain-fed crops.
- The phenomena of desertification, erosion and soil impoverishment, reducing the stock of available living resources.

## 2 -Climate change and violent conflict: theoretical reviews

Starting from the beginning of the nineties and following the Rio Conference in 1992, which was known as the Earth Summit, a theoretical dialogue emerged between specialists and diplomats about the environmental dimension of relations between countries and the global challenges imposed by the increasing environmental changes.

This debate quickly moved among specialists in international conflict, especially over observations made about possible links between environmental degradation and conflict. These observations can be found in much of the literature that believes that climate change increases threats and will make existing problems more difficult. However, theoretical debates are growing about the extent of the role climate change plays in fomenting violent conflict.

Research on the links between environmental degradation and conflict explores the changing (sometimes catastrophically reduced) capacity of states and societies to adapt to changing environmental conditions without resorting to violence. These research approaches, especially the contribution of Thomas Homer-Dixon, have identified important, simple, and direct links that lead to environmental degradation to violent conflict. (Homer-Dixon, 1994) This prompted the modification of the previous theoretical proposition to a new view that there are some armed conflicts, such as those in Haiti and the Philippines, whose causes cannot be understood without referring to environmental degradation. This new vision is embodied in the work of (Homer-Dixon, *The Environment, Scarcity, and Violence*, 1999).

This theoretical dialogue has enriched the language of international relations and international conflicts with new terms and concepts such as: environmental conflict, environmental degradation, scarcity, and environmentally induced conflict. However, with the advent of the 2000s, the focus shifted from the concept of environmental degradation to the concept of "vulnerability to climate change".

Among the contributions focused on the new concept, we find the study by Rüttinger et al. (2015) where they compiled the potential links between climate change and violent conflict in a report commissioned by the G7. According to this report, climate change is exacerbating seven "vulnerable groups":

- 1/. competition for local resources,
- 2/. insecurity in livelihoods and migration,
- 3 /. extreme weather events and disasters,
- 4/. fluctuations in food prices and supply,

- 5 /. transboundary water management,
- 6/. sea level rise and coastal degradation, (Rüttinger & al., 2015)

On the other hand, Hsiang and Burke (2014) reviewed 50 quantitative empirical studies and found "strong arguments for a causal link" between climate change and conflict at all levels and in all major regions of the world. (Hsiang & Burke, 2014)

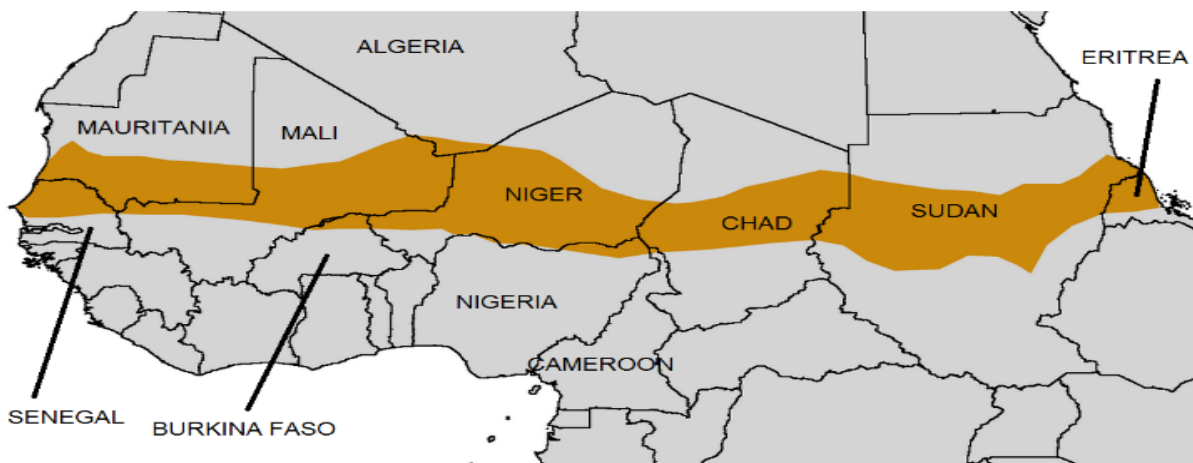
Scheffran et al. (2019) pointed out that climate change, along with other factors, can affect human security and the livelihoods of vulnerable communities in different ways. (Scheffran & al., 2019)

In 2017, Detges reviewed 86 scientific articles found that 48% of them concluded that climate variables influence conflict, while 24% said the opposite and 28% had mixed results. (Detges, 2017)

### 3- Geographical and climatic characteristics of the Sahel of Africa

The Sahel is a transitional space between the Saharan desert in the north and the Sudanese region in the south. It is a strip about 5,500 km long and 400-500 km wide. It includes about ten African countries, from the mouth of the Senegal River to the Sudanese island (Upper Nile), and its area is about 3 million square kilometres. The region covers, in whole or in part, the following countries: Senegal, Mauritania (south), Mali, Burkina Faso (far north), Niger, Nigeria (far north), Chad (centre), Cameroon (far north), Sudan (central including Darfur and Kordofan), and Eritrea.

Figure 01: The Sahel Region



Source: (Doso, 2014)

Due to its location in the warm climatic zone of the Earth's surface, the Sahel has a strongly seasonal climate with a short rainy season and a long severe dry season. Moreover, the Sahel-Sahara region is distinguished by its vast natural resources (uranium, gas, oil, gold, diamonds, copper, silver, cobalt, iron, nickel, zinc, phosphate, bauxite, manganese, chromium).

#### 4- Climate change in the Sahel of Africa

The Sahel is one of the first victims of climate change, with temperatures in the Sahel rising 1.5 times faster than in the rest of the world. The economy of the region depends on rain-fed crops and is particularly affected by the sharp decrease in rainfall, which is expected to worsen in the future, as the number of days of heavy rainfall will increase and droughts will become more frequent and severe. In addition to this are the phenomena of desertification, erosion and soil impoverishment, as well as the population explosion that contributes to reducing the already limited stock of available living resources (land, firewood, water ...). (Conférence des Nations Unies sur le Développement Durable, 2012)

At the same time, climate change is making it more difficult to practice traditional farming and raising livestock. Longer droughts and poor harvests led to frequent food shortages and humanitarian disasters and intensified conflict.

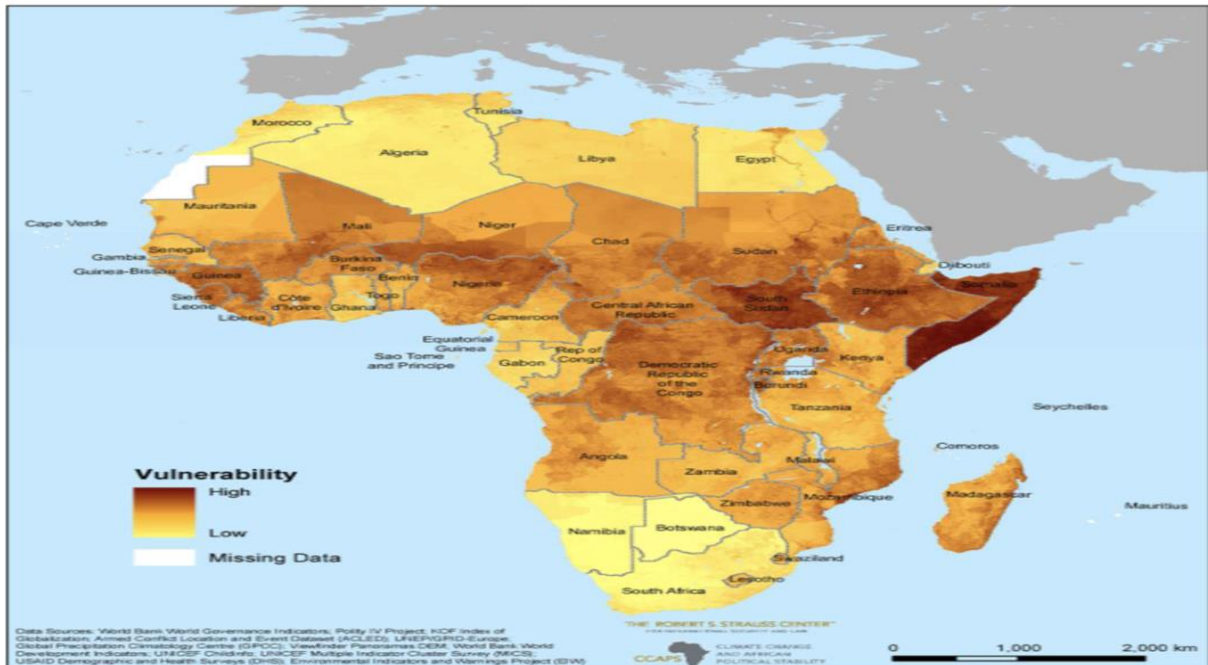
In the Sahel, the conflict-related consequences of climate change seem to reinforce this analysis: a recent UNEP study identified nineteen “climate hotspots” in the region and found, among other things, that “climate change exacerbates problems related to the availability of Natural resources essential to life [...] as well as food insecurity.” (UNEP, 2011) More importantly, the effects of changing climatic conditions on the availability of natural resources, along with factors such as population growth and problems of mismanagement and land tenure, are increasing competition for scarce resources - Especially fertile land and water - and led to tensions and conflicts between communities and between socio-professional groups.” (Environment, Forest and Climate Change Commission, 2019)

According to Isilmo Abdelkader, “The effects of the dynamics caused by climate change are still in their infancy and can reach the extent of destabilizing the human spatial composition of states and questioning the coherence of secular relations between the Sahel communities. This is a formidable challenge that can only be faced by the international community if it does not want to The deterioration of large areas of the coast leads to the drying up of Lake Chad and



the basins of the Senegal and Niger rivers and then triggering a tsunami towards the nearest shores”. (Isselmou, 2017)

Figure 01: Vulnerability to climate change in Africa



Source: (Busby & al., 2014)

## 5- Violence and violent conflicts in the Sahel

According to The Heidelberg Conflict Barometer, all countries in the region, except Eritrea, are currently experiencing a violent crisis of any kind. Five countries (Libya, Egypt, Sudan, Ethiopia and Nigeria) are on the brink of all-out war, and three other countries are on the brink of limited war (South Sudan, Cameroon and Mali). The Organization for Economic Co-operation and Development also classifies every Sahel country, except Senegal, as Fragile or Extremely Fragile, and Libya and Tunisia as Fragile. (OECD, 2018)

Significantly growing insecurity and conflict in the Sahel in recent years are the main drivers of humanitarian needs in the region. Questions of jihadist groups, demands for multifaceted ethnic autonomy, separatism, insecurity, porous borders, and the de facto conversion of a large desert area into non-state land are now endemic dilemmas that threaten the region's fragile stability. As a result, this situation has exacerbated the economic decline and weakened the social, political and cultural organization of the region. These threats have had and will essentially have a serious impact on the challenges to peace, security and stability in the region.

So the main issue is security. Since the collapse of Libya in 2011 and the outbreak of conflict in northern Mali in 2012, the situation in the Sahel region has become increasingly worrying. Poverty, along with organized crime, violent extremism, and weak institutions has created a climate of insecurity, instability, and conflict in the region.

Violent movements, terrorist groups, and criminal networks trafficking in people, weapons, and drugs have also gained a foothold in areas where the state is absent or lacks adequate control over its territory. Proceeds from organized crime enable extremist groups to provide services, jobs, and protect vulnerable communities, and people in these areas may view these groups as the best—if not the only—resort for work and a safe environment.

Across the Sahel, fragility and instability are evident in Mali, the surrounding areas, and Libya, as the security situation continues to deteriorate in the region along the three borders of Mali, Burkina Faso, and Niger and violent groups spread across large parts of Mali and expand into neighbouring Burkina Faso and Niger. In Burkina Faso, which has survived conflict until recently, one in three people is now affected by the crisis and an estimated 1.5 million people need assistance. (UNEP , 2011)

In Central Sahel, the number of reported deaths has increased dramatically. In 2019, more than 4,300 civilians were killed, and civilian casualties due to violence are increasing. In the Lake Chad region, violent attacks by non-state armed groups directly targeting civilians, the authorities and humanitarian workers have increased. Where thousands of civilians were killed or kidnapped. (Hsiang & Burke, 2014)

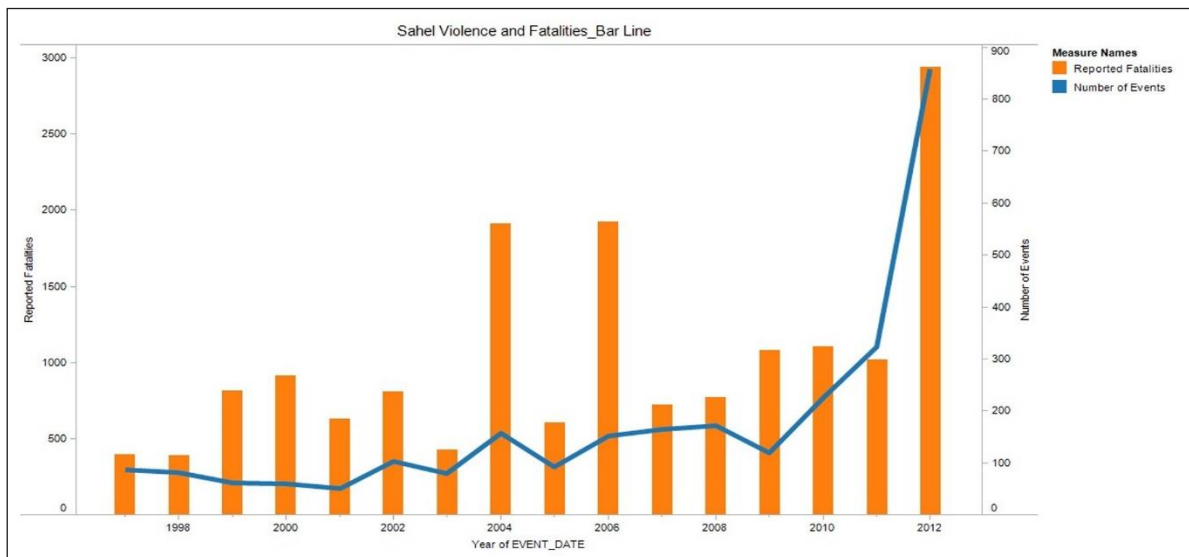
## **6- Possible links between climate change and violent conflict in the Sahel**

The African Climate Change and Political Stability (CCAPS) project has implemented a complex climate security fragility model that combines indicators of physical vulnerability, population density, resilience, governance and levels. Political violence was noted. Although this superposition of indicators cannot further identify causal links, it does suggest that the region most vulnerable to climate conflict extends to the south of the Sahel, with a risk of climate conflict towards southern Africa. (Busby et al., 2014).

According to the project, in the case of North Africa and the Sahel, four links emerge between climate change and the potential for violent conflict:



Figure 01: Conflict and fatalities rate in the Sahel region.



Source: (Raleigh & Dowd, 2013)

## Conflicts between farmers and herders

Traditionally, most of the inhabitants of the Sahel were semi-nomadic pastoralists. Rapid population growth in previous decades has increased the area of agricultural land, and at the same time, climate variability has altered migration routes. In some areas of West Africa's Sahel, severe droughts in the 1970s and 1980s caused semi-nomadic pastoralists to move south in search of pasture during droughts, often leading them to settle in areas where they previously spent only part of the year. In many places, bans on access to pastures and damage to livestock have become the norm. But latent conflicts turn into a direct and violent confrontation when one group feels that the other is being treated disrespectfully or unfairly. (Brottem, 2016)

However, farmers and herders have a history of peaceful cooperation over resources, underpinned by customary rules on access to resources and conflict resolution. (Scheffran & al., 2019) Essentially, the sheer existence of these conflicts between farmers and herders is the result of seasonal mismatch between the two lifestyles, when farmers try to harvest their crops after the rainy season without the damage caused by livestock. (Brottem, 2016)

In the agro-pastoral region of West Africa, this is becoming more difficult, as the period when crops mature in the fields, while livestock are also present, has been prolonged for several months due to changes in environmental conditions

and livelihood strategies. For example, studies in Burkina Faso have shown that climate change and variability is accelerating land degradation negatively and affecting livestock health, while the frequency and intensity of extreme weather events threaten livelihood security. (Abdoulay & al., 2015)

One way to see the problem is that the increase in disputes between farmers and herders is due to the latter's unadapted strategy to deal with the degradation of their environment. (Adamu & Umar, 2017) However, by focusing on temperature and precipitation as a reflection of climate change, researchers risk masking the more complex environmental changes occurring in arid sub-Saharan regions, which are admittedly linked to but not limited to climate change. Such as the increase in herds and agricultural footprint. (Brottem, 2016)

A joint fact sheet produced by the Stockholm International Peace Research Institute (SIPRI) and Norwegian institute of International Affairs (NUPI) confirmed that: “Disasters and climate change erode resilience, increasing the vulnerability of communities to predation by armed groups and manipulation by elites. Some armed groups recruit from communities whose livelihoods are affected by factors including climate change; and local militias can escalate farmer–herder conflicts”. (NUPI, SIPRI, 2021)

### **Tensions related to climate-induced migration.**

The second link is the potential impact of climate change on forced or voluntary migration of people and the potential for violent conflict in places where they seek asylum. There is a history of mass migration caused by climate variability in the Sahel and the Horn of Africa. (Scheffran & al., 2019)

A study based on an analysis of 38 cases since the 1930s in which environmental factors played a role in triggering mass migration concluded that in 19 cases it resulted in some form of conflict. (Reuveny, 2007) Eric Alda agrees that migration is a cause of conflict and that young people are particularly vulnerable to climate change and variability. (Alda, 2014)

The Civil Wars study also revealed that out of 103 ethnic conflicts, 32 were characterized by violence between members of an ethnic minority living in one region and recent immigrants from other regions. Research agrees that environmental factors do not operate in isolation, but rather contribute to pre-existing migratory flows. However, Brzoska notes that the relationships between climate change, migration and conflict are complex and that empirical support for establishing a strong link between migration and conflict is weak. The droughts of the 1970s and 1980s played a role in the Tuareg rebellion in northern Mali, but not through the mechanism of scarcity commonly cited as drought. Rather,

droughts encouraged the emigration of thousands of young people to Algeria and Libya. (Brzoska, 2016)

“Rapid-onset disasters and long-term climate change may force people to temporarily or permanently move, sometimes joining people displaced by armed conflicts. Migration is an important adaptation strategy, but it can lead to conflict between host and migrant communities”. (NUPI, SIPRI, 2021)

**Table No. 01: Internally Displaced Persons (IDP)**

Country	Data date	Rates	Displaced Population
<a href="#">Burkina Faso</a>	31 Dec 2021	60.7%	1,579,976
<a href="#">Chad</a>	31 Jan 2022	15.6%	406,573
<a href="#">Mali</a>	31 Dec 2021	13.5%	350,110
<a href="#">Niger</a>	31 Jan 2022	10.2%	264,257

Source: (UNHCR, 2021)

### The struggle over water distribution

A third type of potential conflict relates to changes in water availability. Water shortage and watershed competition are associated with low-intensity conflict. (Scheffran & al., 2019) In the case of Darfur, there is a strong correlation between the potential and severity of violence and long-term changes in the availability of water and fertile land. Intense discussions aim to determine to what extent reduced water resources can lead to international conflicts), (Petersen - Perlman & al., 2017) although the past shows that the Nile is the cause of strong tensions between Egypt and its upstream neighbours.

Interestingly, periodic droughts in the Sahel have had cascading repercussions on the broader hydrology of the region. For example, the 'Great Drought' between 1968 and 1993 reduced average rainfall by 35-30%, but major watersheds experienced twice the flow reduction - a 55% reduction in the flow of the Senegal River Basin and 60% for that. Niger - with a 90% reduction in the volume of Lake Chad (Descroix & Lambert, 2018). This means that even a moderate decrease in precipitation caused by climate change in the future could have severe consequences for transboundary water volumes and potentially severe consequences for its management and allocation.

The NUPI and SIPRI joint fact sheet mentioned that: “changing rainfall and seasonal patterns can sometimes fuel and compound violent conflict over limited or unevenly distributed resources. Women and girls are especially vulnerable. Across the Sahel, climate change may increase the risk of clashes between herders and farmers over access water and pastures”. (NUPI, SIPRI, 2021)

## Implications for state capacity and the evolution of armed opposition groups

The frequently cited fourth report relates to the cascading effects of scarcity associated with climate change and natural disasters on the capacity and legitimacy of states. Added to this risk is the insecurity of livelihood and high unemployment rates among youth due to climate change, which may lead to an intensification of the recruitment of young people seeking wages, food and education in rural areas. Armed opposition groups such as Boko Haram. (Scheffran & al., 2019)

Others believe that drought does not explain jihadist movements, because the most serious drought (1968-1993) ended long before jihad began in the Lake Chad Basin. On the contrary, Descroix and Lambert claim that the implications of climate change have been oversimplified and exaggerated because, on the contrary, they make it possible to conceal the guilt of governments in the multiple crises affecting the region. (Descroix & Lambert, 2018) But these links are not inevitable. Conflict can turn into violence through a specific process consisting of various factors: in particular the general level of conflict, the history of conflicts in a particular society, the ability of institutions to manage or resolve conflicts and to regulate violence (Brzoska, 2016).

On the other hand, the report of the Ethiopian Environment, Forestry and Climate Change Authority (2019) considered that the continuation of environmental degradation and climate change has a direct impact on the intensification of tribal conflicts internally and across borders between livestock herders in East Africa. (Environment, Forest and Climate Change Commission, 2019)

Finally, in this context, it can be noted that the majority of scholars of international conflicts almost agree to describe the conflict in Darfur as the first example of environmental conflicts in modern history, and it is a conflict located in the African Sahel region.

### Conclusion:

This paper has given an account of:

- The importance of the climate change issue and the widespread use of it among academics, policymakers and international agencies.
- The theoretical debate on possible links between climate change and conflict.
- Possible links between climate change and conflict are investigated through the concept of "vulnerability to climate change".
- Climate change, with other factors, can affect human security and the livelihoods of vulnerable communities in different ways.

- The Sahel region is one of the first victims of climate change in the world.
- Most of the countries of the region are currently experiencing violent Conflicts.
- Some studies suggest that the region is highly vulnerable to climate conflict.

- Four links emerge between climate change and the potential for violent conflict in the Sahel region: Conflicts between farmers and herders, tensions related to climate-induced migration, the struggle over water distribution and the implications for state capacity and the evolution of armed opposition groups.

Finally, an implication of this paper is that the economic, political, social, environmental and health insecurity of the population of the Sahel highlights the need for regional cooperation, particularly between the two regions the Maghreb and the Sahel to face common challenges together. The Maghreb region is considered one of the most affected regions by conditions in the Sahel, as the latter is a natural extension of the desert borders of the Maghreb, especially Algeria, which shares a very long border with two countries in the Sahel, namely Mali (1300 km) and Niger (1200 km).

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