CLIMATE CHANGE AND ITS IMPACT ON HUMAN SECURITY IN THE AFRICAN SAHEL

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Abstract: This study aims to investigate the impact of climate change in the African Sahel region on human security levels. By focusing on key concepts related to the subject and addressing the negative implications of this phenomenon on coastal and neighboring countries, the study highlights its effects on human security. The findings suggest that the environmental challenges in the African Sahel pose a significant threat to both local populations and those in nearby countries, primarily due to the environmental pressures exerted by major industrial nations.

Keywords: environmental threats, climate change, human security, African coast region, implications.

LE CHANGEMENT CLIMATIQUE ET SON IMPACT SUR LA SECURITE HUMAINE SUR LA COTE AFRICAINE

Résumé : Cette étude vise à mettre en lumière le changement climatique dans la région de la côte africaine en termes de réalité et de son impact sur les niveaux de sécurité humaine en se concentrant sur les concepts liés à l'étude et en abordant les implications négatives de ce phénomène sur les pays côtiers eux-mêmes, les pays voisins, et en mettant en évidence ses effets sur la sécurité humaine. L'étude conclut que l'environnement sur la côte africaine est devenu une menace pour la vie des individus dans la région et même ceux des pays voisins à cause des pressions exercées sur l'environnement dans la région par les grands pays industriels

Mots-clés : menaces environnementales, changement climatique, sécurité humaine, région de la côte africaine, implications

Introduction

Climate change is a global concern, as its impacts are not limited to a specific region or country. Global awareness of environmental challenges has grown as a result of the reaction that the environment itself has shown due to the damage caused by human activity which has increased the emission of greenhouse gases, especially from the burning of fossil fuels such as coal, oil, and natural gas, as well as the destruction of tropical forests. Former Canadian Minister of Environment, David Anderson, warned that it is unlikely that terrorism will cause a 500 million people to become refugees, but climate change could cause it. The eminent British scientist David King added that climate change poses a much greater threat to global stability than international terrorism. (Abderrahman et al., 2007:123). Africa in general and the African coastal countries are among the most vulnerable developing

countries to the effects of climate change, despite not being responsible for the Earth's rising temperature. Their inability to adapt to the current climate situation has contributed to the deterioration of ecological systems, the shrinkage of vegetation cover due to desertification, the decrease in agricultural productivity, water scarcity, and thus, the impact on all aspects of human security. This has caused the population of the region to flee to safer areas, either within the region or to neighboring countries, to at least save their lives, accompanied by various diseases that will affect the internal and external structure of the region. The excessive exploitation and neglect of environmental resources in order to meet the material needs of industrial communities have resulted in small amounts of money being paid to the African coastal countries, instead of governments being able to provide for their people's sufficiency and prosperity. Through this, the following problem is raised: To what extent does climate change affect human security in the African coastal region? The problem has been broken down into the following questions: What is the reality of climate change in the African coastal region? What are the implications of climate change on human security in the African coastal region? Climate change's potential impact on human security in the African Sahel region may lead to increased security challenges, potentially resulting in forced displacement and migration. The severity of climate change effects appears to correlate with heightened environmental insecurity, encompassing factors such as drought, desertification, and water scarcity. Consequently, this may contribute to an elevated risk of food insecurity.

0.1. Theoretical framework

The subject at hand necessitates the adoption of a human security perspective, focusing on individuals rather than the state in security-building processes. This approach facilitates understanding climate change's impact on human security in the African Sahel. Consequently, a comprehensive security approach encompassing all dimensions of human security has been embraced.

0.2. Methodological framework

The study adopted a case study methodology, focusing on the African Sahel region and its manifestations resulting from the phenomenon of climate change.

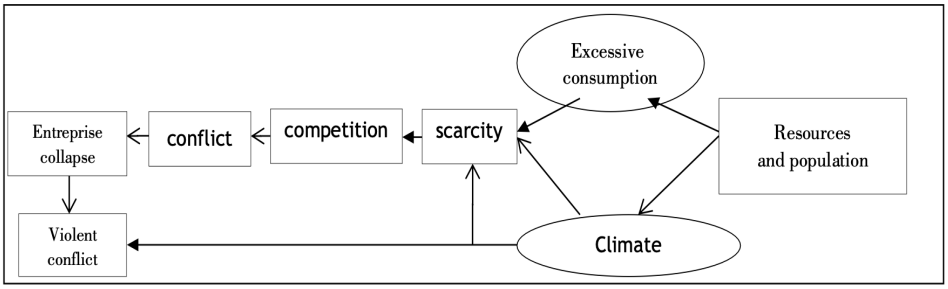
1. Conceptual introduction to the study

1.1Environmental threats

Threat according to **Qamoos** and **Sitar** is an expression or statement of intent to harm, destroy, punish, etc. in revenge and intimidation (Sabrina and Atika, 2020:238) According to the English language, it means "threat," while in French, it refers to the meaning of "danger" (menace), and threat is related to security. The relationship between them is a mutual influence, so when security changes, the source of the threat must be identified. When talking about environmental threats, the definition of Brundtland can be taken, where in 1993, it referred to the threat to security and stated that: "It may result from social disruptions resulting from poverty, inequality, and environmental deterioration through internal conflicts, leading to new waves of refugees." It added that the increasing and rapid pressure of the world's population on the environment will increase these conflicts: climate change, desertification, deforestation, loss of biodiversity, depletion of freshwater, and soil erosion (Sabrina and Atika, 2020:238). The strategic impact of population growth, the spread of diseases and epidemics, deforestation, soil erosion, depletion of water, and air pollution, as well as the rise of sea levels in densely populated areas such as the Nile Delta and

Bangladesh, are developments that will drive mass migrations, which in turn incite conflicts. This will represent the main challenges for foreign policy after the Cold War (Dalby, 2008 : 262-263). The United Nations addressed, for the first time, the concept of environmental degradation as a threat that must be prevented, according to a report by a team under the Secretary-General, published on December 2, 2004, regarding threats, challenges, and changes. (Amina, 2013-2014 : 26) Alexander Knecht uses the term "environmental threat" to refer to the threats posed by environmental change and degradation that directly endanger human life, living conditions, or, in other words, human security. (Amina, 2013-2014 : 32). Moreover, an article by Robert Kaplan on the future of global politics in the Atlantic magazine predicted impending chaos due to conflict resulting from environmental degradation. His article had a significant impact on the US government during the Clinton era, where Kaplan argues that the environment is a national security issue in the 21st century, with the latter emphasizing the possibility of future conflicts that threaten to undermine society due to environmental scarcity, and most of these conflicts will be within the same countries, meaning that it will be difficult for states and local governments to protect their citizens from this violence (Dalby, 1977:16). A diagram illustrating how environmental scarcity leads to these conflicts is shown in

Figure 1: An illustration of how environmental scarcity causes conflict



Source: Gli brown and others, « climate change as the « new » security threat: implications for Africa", International affairs; vol., 83, issue 6, November 2007, p, 1148.

1.2 Climate Change

The global interest in the issue of climate change emerged widely when the attention was first drawn to the "ozone hole" in 1974, and the World Climate Conference was held in 1979 with the participation of the World Meteorological Organization, the United Nations Environment Programme, the World Health Organization, the Food and Agriculture Organization of the United Nations (FAO), and UNESCO, which pointed to an increase in greenhouse gases (Challenges of human security in Arab countries, 2009 : 47). The government responsible for climate change has also indicated that the Earth's temperature has risen by about 0.75 degrees Celsius from what it was before the Industrial Revolution, and by 2050 it will increase by two degrees Celsius compared to what it was at the beginning of the Industrial Revolution. Challenges of human security in Arab countries, 2009 : 47)

> Most of the studies that have addressed the issue of climate change have confused climate with weather. Weather describes the atmospheric conditions in a specific area, such as changes in temperature, humidity, wind speed, rainfall rates, and other meteorological elements. Climate, on the other hand, is the average of these atmospheric conditions in a specific area over a very long period of time, estimated to be at least thirty years as defined by the World Meteorological Organization.
>
> Cherifa, 2018 : p112)

The elements of the atmosphere, hydrosphere, cryosphere, lithosphere (soil and sediments), and biosphere (living organisms) all make up the climate. This means that climate is not weather, but rather an average of the changes in this weather over a long period of time ranging from decades to centuries, which is the period of climate change measurement. Climate change is a significant and large-scale change in the statistical properties and distributions of weather patterns around their mean states over the measurement period. Thus, changes that occur over periods of less than several decades do not represent climate in the scientific sense but rather climate variability, as opposed to climate change, which occurs in response to driving factors of change. This response may be rapid, such as a sudden cold snap due to the spread of volcanic ash in the air, reflecting sunlight and reducing the amount of incoming energy, or it may be slow, as in the case of the gradual spread of desertification or sea level rise. (Cherifa, 2018). From a scientific point of view, the occurrence of climate change is mainly due to the increase in the accumulation of carbon dioxide and some other environmental gases. Accumulation cases in the world increase dramatically every year. Figures indicate that the amount of carbon dioxide emissions ranges between 6 to 7 billion tons of carbon equivalent annually (Omar, 2020-2021 : 137). Global warming has also increased, especially since the 1950's; hence the increase in the temperature of the gaseous envelope, the oceans, as well as sea level, and the decrease in covered snow area, so that the intergovernmental panel warns in its report on climate change that the change in temperature may range from 1.5 to 4.8 degrees Celsius until the year 2100 (Salem, 2017 : 170).

Table 1: Climate change causes can be divided into two types

Natural causes	Human causes
These are caused by changes in solar output or changes in the energy reflected from the Earth to space due to volcanic ash or gases.	These are caused by human economic activities that release greenhouse gases which increase their concentration in the atmosphere, causing the Earth's temperature to rise. These gases allow sunlight to pass through to the Earth, but hinder the reverse direction of some radiation, especially low-frequency infrared radiation, which the Earth usually reflects back to space. This process results in a disturbance of the balance between the amounts of energy coming from the sun to the Earth and those reflected from the Earth, which enhances global warming

Source: Designed by the Researcher.

It can be concluded that climate change is characterized by the property of continuity, and even though its causes may be immediate, the negative effects will continue for generations to come. All opinions agree clearly that climate change is real and most of the observed climate changes over the past years are caused by intense human activities.

1.3 Human Security

The concept of human security emerged as a result of the shift in the nature of threats that affect all levels of security from individual security, state security, and even global security, as well as the transition of threats from the state borders to inside the state itself. Former United Nations Secretary-General Kofi Annan provided a comprehensive definition of the concept of human security during the presentation of the Millennium Project as follows: "Human security means a comprehensive concept that goes beyond the absence of armed violence, as it includes human rights, good governance, access to education and health care, and ensuring that each individual has the opportunity and ability to meet their specific needs. Every step in this direction is a step towards reducing poverty, achieving economic growth, and preventing conflicts, achieving freedom from want and fear, and the freedom of future generations to inherit a natural and healthy environment. These are the interconnected pillars of achieving human security, and from there, achieving national security (Raouf, 2016 : 39) The 1994 Human Development Report issued by the United Nations Development Programme identified seven variables of human security: economic, political, military, environmental, health, social, and personal security. The report also identified the basic characteristics of human security, which revolve around the global dimension, the focus on the human being, interdependence, and early prevention. The report also recognized the necessity of the interdependence between the individual's physical security and their protection (1994 : 26) The threats that affect each dimension of human security are illustrated in the following table:

Table 2: The dimensions of human security and the main threats affecting each of them

Security Type	Examples of Main Threats
Economic Security	Persistent poverty, unemployment
Food Security	Hunger, famine
Health Security	Infectious diseases, contaminated food, malnutrition, lack of basic healthcare access
Environmental Security	Environmental degradation, resource depletion, natural disasters, pollution
Personal Security	Physical violence, crime, terrorism, domestic violence, child labor
Community Security	Identity-based tensions, ethnic conflicts
Political Security	Political oppression, human rights violations

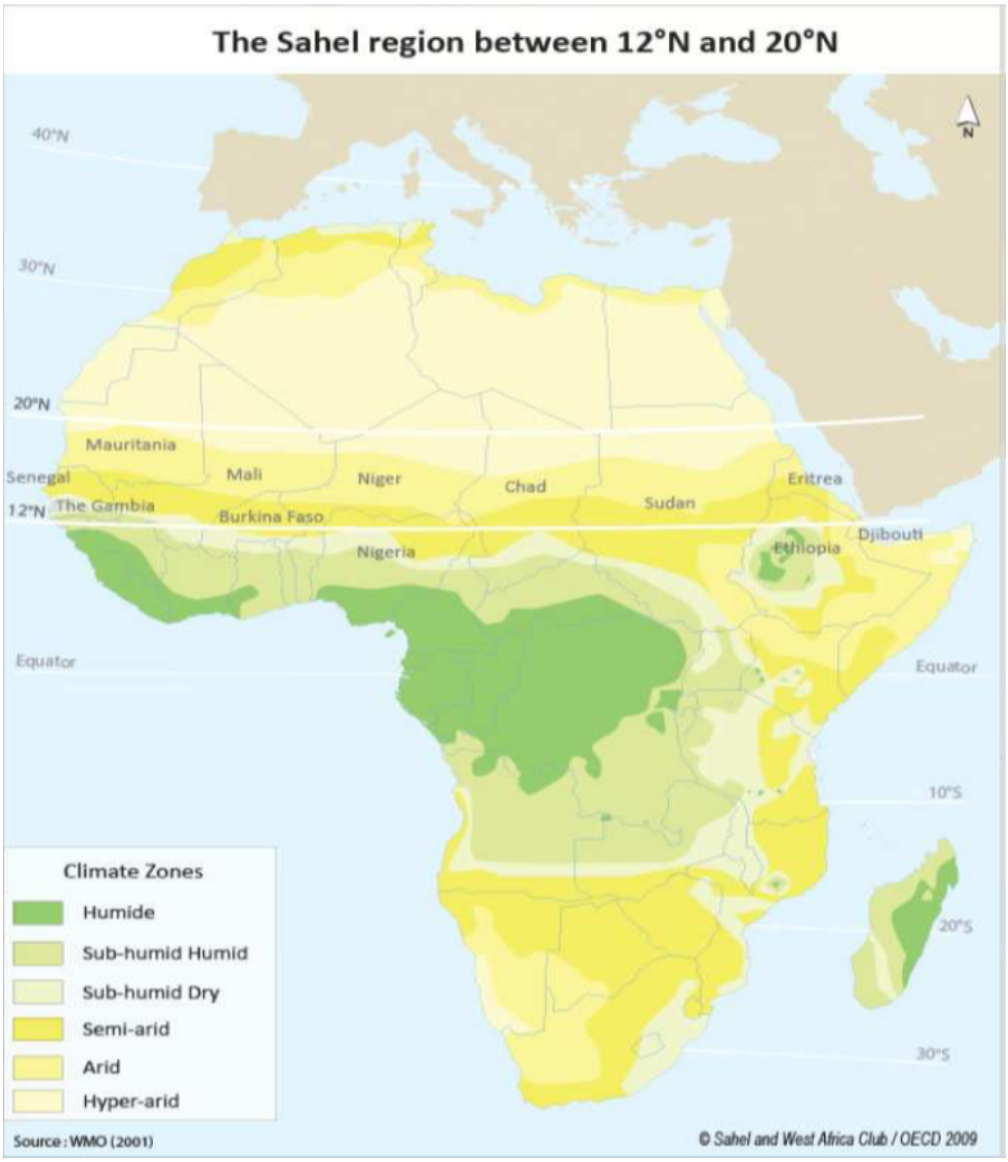
Source: Designed by the researcher

Therefore, providing a comprehensive and unified definition of human security is difficult given the multiple and complex sources of threats.

1.4 The African Coast

"The African coast is a geographical term referring to the southern coast and edge of the Sahara" (Taje, 2006 : 06) It stretches from the Red Sea in the east to the Atlantic Ocean in the west and includes several African countries such as Sudan, Chad, Niger, Mali, Mauritania, and Senegal. The region has been expanded to include Burkina Faso, Nigeria, and Cape Verde on a strip estimated to be 5500 km long with a width ranging from 400 km to 500 km, covering an area of approximately 3053200 km. (Atika, 2020 :232). Some geographic studies and research define the coast and West Africa region surrounding the Economic Community of West African States (ECOWAS), such as "Philip Heinrig's" study on the security implications of climate change in the Sahel, which includes the region between the 12th and 22nd parallels of latitude (Heinring, 2023). According to this study, the African coast includes parts of twelve countries: southern Mauritania, central Mauritania, northern Senegal, Gambia, southern Mali, Niger, Chad, northern Burkina Faso, Nigeria, central Sudan, southern Sudan, Eritrea, northern Ethiopia, and Djibouti. Some studies also include countries like Algeria and regions like northern Mali and Niger in this concept (Heinring, 2023). Therefore, the coast is the strip that has been defined based on geographical and climatic research by the Sahel and Sahara Observatory (Karim, 2014 : 10).

Figure 02: A geographical map representing the countries of the African coast should be included here.



Source: Khaled Bashket, The Role of the Humanitarian Security Approach in Achieving Security in the African Coast, unpublished master's thesis (University of Algeria 3, Faculty of Political Science and International Relations, Department of Political Science and International Relations, 2011), d.

1.5 Climate Change in the African Sahel

David King has confirmed that climate change poses a much greater threat to world stability than international terrorism, as explained in the 2007 report by the government body concerned with climate change. Africa is the continent most vulnerable to climate change and its effects, exacerbated by the interaction of multiple stressors occurring at different levels with decreasing capacity to adapt (Abdelkarim, 2011: 244). Canadian Environment Minister David Anderson also warned in February 2004 that terrorism is unlikely to cause 500 million people to become refugees, but climate change could (Mohamed & Thana, 2007 : 123). The African coastal region is characterized by strong climate changes and weather fluctuations, with a hot and dry climate considered the highest in the world (Samir,

2020 :337) The region has also experienced contrasting heavy rainfall from south to north, with the "Palmer Drought Severity Index" indicating that the coast is still suffering from drought. The region is known for four characteristics: desertification, drought, famine, and high temperatures. Climate change has had a significant statistical impact on sea surface temperature changes affecting rainfall variability in a large part of the coast, with the Atlantic Ocean warming leading to a noticeable impact on rainfall distribution on the coast, resulting in a rainfall deficit of up to 200 mm (Hulme, 2001: 145-146) This is evident in the drying up of many rivers, such as the Chad River, which has shrunk by 90% from 23,500 km2 between 1900 and 1700 km2 currently, as well as a decline of 40-60% of the total available water in the largest basins ever, such as Lake Senegal and Niger. Climate data also affects population density, with the population density of the African coastal countries being low and unstable compared to their land area, with a population of about 50 million people, where the population density is often higher than in semi-humid and humid climate areas, and the northern areas tend towards pastoralism, while the south tends towards agriculture. The sea has a significant impact on the variability of rainfall on much of the coast. The rise in temperature of the Atlantic Ocean has had a noticeable effect on the distribution of rainfall on the coast, with precipitation deficits reaching up to 200 mm. Evidence of this is the dryness of many rivers, such as the Chad River, whose area has shrunk from 23,500 km2 between 1900 and 1700 km2 currently, a reduction of 90%. In addition, there has been a decrease of between 40% and 60% in the proportion of available water in the largest basins, such as Lake Senegal and Niger (Abdelkarim, 2011, 245). Climate data also affects population density, so the population density of African coastal countries is characterized by a weak and unstable population density compared to their vast area. The population is about 3.1%, with a fast urbanization rate of 7%, and the population is about 50 million people. Population density is often higher than in semi-humid and humid climate zones, and northern areas tend towards pastoralism while southern areas rely on agriculture for livelihoods, with the area dedicated to agriculture comprising 8% of the total area of the coast. Water scarcity and rising temperatures are considered the most restrictive factors for agricultural production (Sabrina & Atika, 2020 : 241). Global warming, which causes an increase in the earth's temperature, threatens biodiversity loss, as well as a decrease in soil fertility, and accelerates the melting of polar ice, leading to an increase in the level of rivers and oceans. The West African coastal area is considered the weakest region exposed to rising sea levels, despite its high population density, except for the Mauritanian coasts, where an increase in sea level will inevitably lead to an increase in salinity of coastal rivers and groundwater. The African coastal area is also known to have a weak biodiversity due to climate change, with 50% of medicinal plants facing the risk of extinction due to their use in 80% of cases, as well as unregulated trade in rare animal meats, which are also at risk of extinction (Amina, 2013-2014 : 62- 64) Climate change is caused by an increase in greenhouse gas emissions, which results in the Earth's temperature increase. This increase is primarily caused by the emissions of gases in the world, and the major industrialized countries are responsible for this. The United States alone is responsible for 33% of these emissions, followed by China with a percentage of these toxic emissions. In contrast, Africa's carbon dioxide emissions account for only 3.8% of the total global emissions. These climate changes have played a role in changing the way of life for the inhabitants of the African coast, turning it into an unstable area and increasing health risks, loss of livelihoods, and migration to avoid scarce resources and the risks of natural disasters that lead to the destruction of vital infrastructure (Trémoliére, 2010 : 11-12).

2. The implications of climate change on human security in the African coastal region and the surrounding geopolitical circles.

2.1. The impacts of climate change on human security in the African Sahel region

The African Sahel region is facing severe human challenges due to climate change, such as the impact on food security. Approximately 4.11 million people in the African Sahel region still suffer from food insecurity, and in 2019, around 10.8 million people were reported to be experiencing food insecurity in the region as a whole. It is expected to reach 15.5 million people in 2020 due to the recurring droughts in the area (FAO, 2019 : 12) According to the 2020 statistics from the Global Nutrition Report:

- It is likely that 1.1 million people in Mali will suffer from severe food insecurity.
- Nigeria will experience 3.6 million people with severe levels of food insecurity and malnutrition.
- Burkina Faso: 262,900 children suffer from severe malnutrition.
- Niger: It is expected that the number of people suffering from severe food insecurity will reach 1.9 million.
- UN official, Elizabeth Byrs, has warned that 4.8 million people in the African Sahel region will suffer from hunger due to the approaching dry season, an increase of 2.4 million people compared to 2019, while more than 700,000 children under the age of five suffer from severe malnutrition according to the assessment of UNICEF (Sabrina & Atika, 2020 : 242).

The countries most affected in the Sahel region are Mali, Burkina Faso, and Niger. Mali and Niger have reached a "critical threshold" in malnutrition rates, with the United States Agency for International Development providing $227 million in support in just six months in 2020. In September of last year, aid was provided to 900,000 people, which has now increased to 1.4 million people (ibid: 243). The food crisis prevention network affiliated with the Organization for Economic Cooperation and Development in Paris estimated that the number of people in need of food assistance increased to about 9.4 million people by late 2019 in 16 countries, mostly in West and East Africa. The most affected countries include:

- Nigeria: with 4 million people
- Niger: with 1.5 million people
- Burkina Faso: with 1.2 million people (UNDP, 2016 : 220).

Table 3: below represents poverty rates in the African Sahel countries from 2005 to 2015, except for Cape Verde

Countries/ survey year 2005-2015	People living in extreme poverty	Population vulnerable to multidimensional poverty	People living in extreme poverty	Dimensions of deprivation from general poverty			Population below the poverty line 2009-2015	
				Education	Health	Living standard	1.90 $ per day	Poverty line
Burkina Faso 2010	82.8	7.6	63.8	39	22.5	38.5	43.7	40.1
Chad 2010	86.9	8.8	67.6	32.3	22.5	45.2	38.4	46.7
Senegal 2014	51.9	18.1	30.8	43.6	23.1	33.4	38	46.7
Gambia 2013	57.2	21.3	31.7	32.9	30.9	36.2	-	48.4
Guinea Bissau 2006	80.4	10.5	58.4	30.5	27.9	41.6	67.1	69.3
Mali 2012-2013	78.4	10.8	55.9	37.9	22.4	39.7	49.3	43.6
Mauritania 2011	55.6	16.8	29.9	34.5	20.3	45.3	5.9	42
Niger 2012	89.8	5.9	73.5	35.9	24	40	45.7	48.9

A map showing the countries in the African Sahel region facing food insecurity issues has been provided. Regarding economic and social security: Climate change causes economic and social losses that affect the Sahel region, especially when compared to the situation of these countries. Four countries are among the list of the poorest 15 countries in the world: Niger, Chad, Mali, and Mauritania. Niger is the poorest country in the world, where three-quarters of the population in the Sahel region are classified as poor, and the percentage of people living below the poverty line ranges from 43% to 54% (UNDP, 2016 : 245). In 2019 and 2020, the infrastructure was destroyed in Mali, Niger, and Burkina Faso, and agricultural production decreased by 20% to 75% for the 2019-2020 season compared to 2018 and 2019. This decline affects the increase in prices. Mauritania and Senegal are considered the weakest in the fishing sector, as the sector is of great importance to the local population. The reason for this is attributed, according to a comparative analysis of fishing in 132 countries, to climate fluctuations and their impact on fish production (Julaiblocher, 2014 : 8-11). Due to the recession and economic crises, displacement and intense conflicts occur, where these crises have, for example, led the children of the region's inhabitants to join the active armed groups in Mali, which recruit children across the borders of Burkina Faso and Niger. (Security Council, 2013 : 05). Tensions between pastoral and agricultural communities have also intensified due to the shrinking of exploitable agricultural land and the unsustainability of water resources, leading to delayed development, increased poverty rates, and the spread of criminal activity and violence. According to United Nations estimates, approximately 80% of the land in the region, which is primarily dependent on livestock farming for their livelihoods, has deteriorated (The National Red Crescent Committee, 2023). These economic and social conditions, as well as the state of violence, have driven people in the region to flee poverty and famine. The total number of internally

displaced persons in the African Sahel region is estimated to be around one million people (Sabrina & Atika, 2020 : 247). According to the United Nations agency in 2020, the region is experiencing the worst humanitarian crisis yet due to ongoing displacement, in the face of increasing food insecurity. Mali, Niger, and Burkina Faso represent the centre of forced displacement, with over 1.5 million internally displaced persons and 365,000 refugees. (United Nations News)

Regarding health security, climate change has affected it by spreading animal and plant diseases that are transmitted by vectors such as the Rift Valley fever, malaria, blue tongue virus, or the Zika virus. Changes in land use and its diversity also affect the appearance of diseases in humans. Around 70% of emerging diseases are of animal origin, especially wild animals, such as the Ebola outbreak in West Africa. New transboundary plant diseases, such as the fall armyworm, have also spread throughout the African continent, according to the FAO report of 2018. Infectious diseases such as meningitis, polio, cholera, and malaria are spreading in the African Sahel region, and it is expected that their prevalence will increase. This poses significant challenges to the weak healthcare systems in the region (United Nations News). These dire humanitarian conditions, exacerbated by climate change, have forced the people of the African coast to flee to neighbouring countries as a safe haven for stability or a gateway to Europe, leading to forced displacement.

2.2. Impacts of Climate Change on the Security of neighbouring Countries in the African Sahel

Environmental migrants are individuals, groups, or communities who choose or are forced to migrate due to harmful environmental and climate factors. This broad group includes people who have been forced to flee from environmental disasters in search of alternative livelihoods (Amina, 2013-2014 : 83-84). Other terms that do not have a legal definition include "environmental refugee" and "climate refugee". For the countries of the African coast, the number of internally displaced persons in the region is estimated to be around one million people, with more than 800,000 refugees outside the region in neighboring countries" (FAO, 2019) In most cases, population movements are associated with both forced and voluntary displacement. When discussing disasters as a sudden phenomenon, the term "displacement" is used instead of migration because it involves a type of slow planning and movement.The return of 29,954 Nigerian refugees with mixed asylum status has put pressure on the limited resources of Niger, and in 2018, half a million people were forced to leave their homes in Burkina Faso, with an estimated 792,613 internally displaced persons in 2020. Additionally, the number of Malian refugees outside the country is estimated at 138,900 people in neighbouring countries (Sabrina & Atika, 2020 : 246). Niger is also considered the main crossing point, specifically the city of Agadez, branching out to other routes (Sabrina & Atika, 2020 : 247):

The first route through Libyan territories, this route costs from 150 to 200 dollars and Libya is the main point of transit to Italy and Malta. Currently, there are about 2 million migrants from the African coast in Libya, despite it being an unsafe route where these migrants are exposed to all kinds of violations, but it is a desirable route for them.

The second route through the far west of Morocco and it is 14 km away from the southern coast of Spain. The migrants head to Algeria to work and secure their expenses while moving, and then they move to the far west of Morocco and from there to Spain. The cities of Melilla and Ceuta are considered the main crossing points to Spain, while the cities of Tangier and Nador are the most hospitable to migrants, especially Malians and Senegalese.

According to statistics in 2017, Morocco received 6,066 Senegalese migrants, 1,560 Mauritanians, and 1,139 Malians, despite the fact that they are unemployed by 24.6% compared to foreigners, whose percentage is estimated at 13.4% (Nadjia, 2021-2022 : 310).

The third route through Algerian territory: Tamanrasset is considered the main gateway for migrants, especially from Mali and Niger, although the cost of crossing into Algeria is estimated at 2 million Algerian dinars. Other statistics estimate that 50,000 to 150,000 migrants have settled in Tamanrasset and other oases in Algeria (ibid. :310). 48 nationalities are present in the Tamanrasset province. As a result, climate change in the African Sahel region has forced people to flee and escape to neighboring countries. About 2,000 migrants have arrived in Tunisia, seeking job opportunities. However, the receiving countries have been affected by the presence of these migrants, with increased begging, homelessness, and unemployment rates. In Algeria, the unemployment rate is 28% among active populations, while in Tunisia and Morocco, it ranges from 15% to 18%. Additionally, these countries bear the responsibility of expensive healthcare for carrying infectious diseases by these migrants. The spread of prostitution, which carries the AIDS virus, has also become a significant issue. Rabat and Tangier in Morocco are centers for these cells, while Tamanrasset in Algeria has seen the highest incidence of HIV, with reports indicating that one-fifth of the population is carriers of the virus. Over a million Africans are at risk of death, with more than 9,000 migrants and 30,000 refugees carrying 10 dangerous diseases such as malaria, AIDS, and viral hepatitis. Mali and Niger are the sources of epidemic cases in Algeria (Sabrina & Atika, 2020 : 249).

Conclusion

Embedded within a realist theoretical framework and underpinned by the human security paradigm, this study culminates in a comprehensive perspective. Its discerning conclusion unveils the profound reverberations of climate change throughout the African Sahel region, intricately intertwining with diverse dimensions of human security. The impact is evident, either at the immediate individual level or resonating globally, thereby influencing the broader tapestry of humanity. Ascertaining the intricacies of personal security unearths a poignant narrative: individuals grappling with the harrowing specter of lost homes, ravaged agricultural lands, perished livestock, and decimated crops. This backdrop casts a prevailing shadow of pessimism over their envisioned future. Concurrently, the contours of community security undergo a transformative shift, unveiling the emergence of hitherto foreign social dynamics – poverty, homelessness, population displacement due to migration, cultural erosion, and the dissolution of ethnic demarcations – collectively eroding the cohesive social fabric. Economic security experiences a nuanced challenge – escalating poverty stemming from the annihilation of vital infrastructures propelled by climate-induced tremors. These perturbations, in turn, precipitate economic stagnation and, in stark desperation, might drive certain individuals to gravitate towards extremist groups as an avenue of last resort. Simultaneously, the landscape of political security is riddled with intermittent tremors as the region grapples with recurring shocks to authority, compounded by an egregious dearth in equitable wealth distribution. The ripple effect extends to food security, as the devastation of arable lands, coupled with water scarcity and contamination, underpins a narrative of mounting famine and food insecurity, rendering the aspiration for self-sufficiency an increasingly elusive mirage. Environmental security, the cornerstone of ecological equilibrium, bears the brunt of climate-induced perturbations, as diverse ecosystems waver on the precipice of endangerment. These multifaceted dimensions of human security find

interdependence in their intricate tapestry. An alteration in one dimension cascades into the others, magnifying the interconnectedness that underscores their collective plight. As a collective, the humanitarian security landscape within the region bears an indelible imprint of climate change's inexorable march. Addressing this complex confluence mandates a concerted and coordinated effort at both national and international echelons. An imperative shared responsibility is incumbent on major industrial nations, who stand as primary contributors to the prevailing quandary. Compensation for redevelopment and rehabilitation is a requisite step towards safeguarding lives, ensuring not only health, sustenance, and employment but also the fundamental right to existence. Amidst this reality, North African countries form a natural extension of the coastal nations. However, this coexistence should not come at the expense of their intrinsic security. In this light, proactive and anticipatory strategies, fortified by legal and legislative frameworks, emerge as pivotal countermeasures to navigate abrupt future upheavals.

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