Climate Change and its Impact on International Security: The Case of the Sahel Region

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Abstract

Climate change is increasingly recognized as a significant driver of international security challenges, particularly in vulnerable regions like the Sahel. This paper examines the multifaceted impact of climate change on international security, focusing on the Sahel region as a case study. The Sahel, a semi-arid belt spanning across Africa, is one of the most climate-affected regions in the world, experiencing rising temperatures, desertification, and erratic rainfall. These environmental changes exacerbate existing socio-economic vulnerabilities, fueling resource conflicts, forced migration, and the proliferation of extremist activities. The paper explores how these climate-induced challenges transcend national borders, creating ripple effects that impact regional and global security. It evaluates the role of diminishing natural resources in intensifying communal conflicts, the link between climate-induced displacement and transnational security risks, and the ways extremist groups exploit these vulnerabilities. The paper also assesses the effectiveness of current regional and international responses to climate-security challenges in the Sahel, including initiatives led by the United Nations, African Union, and regional bodies like ECOWAS. The paper adopts Environmental Security Theory and Human Security as its framework. Using a qualitative approach, the paper draws on secondary data, including reports, academic articles, and policy documents. It identifies gaps in existing mitigation strategies and offers policy recommendations to strengthen resilience, enhance regional cooperation, and promote sustainable development. The findings highlight the need for a comprehensive, multi-level approach to address the intersection of climate change and international security, not just in the Sahel but globally.

Keywords: Climate Change, Security, International Security, Sahel Region, Africa.

Introduction

The Sahel region, a vast semi-arid zone stretching across Africa from Senegal to Sudan, is of critical strategic importance to both regional and international security. Known as the transition zone between the Sahara Desert to the north and the savannas to the south, the Sahel is home to a diverse population that relies on agriculture, livestock, and subsistence farming for livelihoods. Its geostrategic location places it at the intersection of North Africa and Sub-Saharan Africa, making it a hub for trade, migration, and, increasingly, international security concerns.[49] However, the region faces serious challenges, which include weak governance, economic underdevelopment, and the proliferation of extremist groups such as Boko Haram and Al-Qaeda in the Islamic Maghreb (AQIM).

In recent decades, climate change has exacerbated the Sahel's vulnerabilities, leading to profound ecological and socio-political transformations. Rising temperatures, desertification, and erratic rainfall patterns have disrupted traditional agricultural and pastoral systems, intensifying food and water insecurity.[50] These environmental stressors have also contributed to resource conflicts, forced migration, and the loss of livelihoods, creating a fertile ground for social unrest and extremism. According to Hummel, climate variability in the Sahel has compounded pre-existing tensions between communities, particularly between farmers and pastoralists, over access to shrinking resources.[51] The interplay

[1] P. Collier, (2019). *The Future of Africa: Strategies for Sustainability and Security.* Oxford University Press.

[50] IPCC. (2021). Climate Change 2021: The Physical Science Basis. Intergovernmental Panel on Climate Change.

[51] D. Hummel, (2016). Climate change and security in the Sahel. *Climate Policy*, 16(5), 622–637.

between climate change and security challenges in the Sahel underscores a critical research gap. While the environmental impacts of climate change are well-documented, their direct and indirect implications for international security remain underexplored. Climate-induced conflicts, displacement and weakened state capacity in the Sahel pose danger not only to the region but also to global security, given the potential for spillover effects such as increased migration to Europe and the expansion of transnational terrorism.[52]

Linking Climate Change to Conflict and Migration

There is a growing body of research connecting climate change to increased resource conflicts and forced migration in the Sahel. Hendrix and Salehyan argue that environmental stress, caused by shrinking arable land and water resources, intensifies disputes between pastoralists and farmers, leading to localised violence.[53] Furthermore, Hummel demonstrates that climate-induced migration is not only a response to environmental degradation but also a factor that heightens tensions in receiving communities, both within and outside the Sahel.[54] Migration patterns from the Sahel have also raised concerns in Europe, with increased arrivals of displaced individuals seeking asylum, creating geopolitical tensions and border management challenges.

Climate change in the Sahel has ramifications for international security, particularly in the areas of migration, transnational terrorism, and global

[52] UNEP. (2022). Climate Security in the Sahel: A United Nations Perspective. United Nations Environment Programme.

[53] J. Scheffran, et al, 'Climate change and violent conflict,' *Science,* Vol. 336, No. 6083, 2012, Pp.869–871.

[54] D. Hummel, 'Climate change and security in the Sahel,' *Climate Policy,* Vol.16, No.5, 2016, Pp.622–637.

stability. As climate stress undermines state capacity and governance, extremist groups such as Boko Haram and Al-Qaeda in the Islamic Maghreb (AQIM) exploit these vulnerabilities to expand their influence.[55] According to Scheffran et al., the inability of states to address climate-induced challenges in the Sahel has led to a spillover effect, destabilizing neighbouring countries and impacting international peacekeeping efforts.[56]

Theoretical Framework

Environmental Security Theory

Environmental Security Theory provides a framework for understanding how environmental degradation can threaten national and international security. According to Homer-Dixon, environmental changes such as resource scarcity and habitat loss act as "threat multipliers," exacerbating pre-existing tensions and leading to conflict.[57] This theory is particularly relevant to the Sahel, where dwindling natural resources have intensified competition between communities, contributing to instability. By linking environmental stressors to socio-political outcomes, Environmental Security Theory emphasizes the need for sustainable resource management as a critical component of security strategies.

Human Security Framework

The Human Security Framework shifts the focus from state-centric security to the well-being and dignity of individuals. It addresses non-traditional threats such as climate change, poverty, and displacement,

[5555] UNEP. (2022). Climate Security in the Sahel: A United Nations Perspective. United Nations Environment Programme.

[56] J. Scheffran, et al, 'Climate change and violent conflict,' *Science,* Vol. 336, No. 6083, 2012, Pp.869–871.

[57] T. Homer-Dixon, (1999). *Environment, Scarcity, and Violence.* Princeton University Press.

which disproportionately affect vulnerable populations.[58] In the context of the Sahel, the Human Security Framework underscores the interconnectedness of environmental, economic, and social challenges. By prioritising human development and resilience, this framework provides a holistic approach to addressing the security implications of climate change, advocating for policies that protect livelihoods and reduce vulnerabilities.

Climate Change in the Sahel Region

The Sahel region, spanning from Senegal in the west to Sudan in the east, is experiencing significant environmental transformations driven by climate change. One of the most pronounced changes is the steady rise in temperatures. According to the Intergovernmental Panel on Climate Change (IPCC), the Sahel has warmed at a rate 1.5 times faster than the global average over the past century, with temperatures projected to increase by 3–5°C by 2100 if current trends persist.[59]

Another critical environmental change is desertification, where fertile land is degraded into arid, unproductive terrain. The expansion of the Sahara Desert southwards has encroached on arable and grazing lands, diminishing their productivity. Desertification is compounded by unsustainable land-use practices and deforestation, which exacerbate soil erosion and loss of vegetation.[60]

Droughts have also become more frequent and severe in the Sahel, disrupting water cycles and leading to water scarcity. This is accompanied

[58] UNDP. (1994). *Human Development Report 1994.* Oxford University Press.
[59] IPCC. (2021). Climate Change 2021: The Physical Science Basis. Intergovernmental Panel on Climate Change.
[60] S. E. Nicholson, (2013). *The West African Sahel: A review of recent studies on the rainfall regime and its interannual variability*. ISRN Meteorology. Pp.1–32.

by increasingly erratic rainfall patterns, which cause challenges for agriculture and water resource management. While rainfall variability has always characterised the Sahel, recent studies suggest that climate change has amplified the unpredictability, resulting in prolonged dry spells and intense but short-lived rains that often lead to flooding.[61]

Socio-economic Impacts

Effects on Agriculture and Food Security

Agriculture, the primary source of livelihood for the majority of Sahelian populations is highly vulnerable to climate change. With 80% of the region's population dependent on rain-fed agriculture, irregular rainfall and rising temperatures have drastically reduced crop yields. Staple crops such as millet and sorghum have seen declining productivity, threatening food security and increasing reliance on food aid.[62]

Water Availability: The Sahel's water resources have been significantly impacted by climate change. Rivers and lakes, such as Lake Chad, have seen dramatic reductions in size due to prolonged droughts and unsustainable water extraction. The shrinkage of Lake Chad, which has lost over 90% of its surface area since the 1960s, has adversely affected fishing, farming, and access to potable water, escalating tensions among communities competing for dwindling resources.[63]

[61] UNEP. (2022). Climate Security in the Sahel: A United Nations Perspective. United Nations Environment Programme.

[62] D. Hummel, 'Climate change and security in the Sahel,' *Climate Policy,* Vol.16, No.5, 2016, Pp.622–637.

[63] C. Hendrix, & I. Salehyan, 'Climate change, rainfall, and social conflict in Africa,' *Journal of Peace Research,* Vol. 49, No. 1, 2012, Pp.35–50.

Livelihoods: The combination of environmental stressors has undermined traditional livelihoods in the Sahel. Pastoralists, who depend on grazing lands for livestock, face increasing challenges as desertification and drought shrink pastures. This has led to heightened competition between herders and farmers over land and water, often resulting in violent conflicts. Furthermore, the decline in agricultural and pastoral productivity has forced many individuals to migrate in search of better opportunities, creating socio-economic pressures in both rural and urban areas.[64]

The socioeconomic impacts of these environmental changes highlight the interconnectedness of climate change, resource scarcity, and human vulnerability in the Sahel. Addressing these challenges requires integrated strategies that combine environmental restoration, sustainable resource management, and social resilience.

Security Implications of Climate Change in the Sahel

Conflict over Resources: Climate change has intensified competition for dwindling resources such as water and arable land in the Sahel, fueling conflicts that pose significant security threats. As desertification and prolonged droughts reduce the availability of fertile land and water sources, disputes between farmers and pastoralists have escalated. These conflicts often arise during the seasonal migration of pastoralists seeking grazing land, leading to violent clashes with settled agricultural communities.[65] For instance, disputes over access to the Niger River and Lake Chad have resulted in numerous fatalities, displacement, and

[64] J. Scheffran, et al, 'Climate change and violent conflict,' *Science,* Vol. 336, No. 6083, 2012, Pp.869–871.

[65] C. Hendrix, & I. Salehyan, 'Climate change, rainfall, and social conflict in Africa,' *Journal of Peace Research,* Vol. 49, No. 1, 2012, Pp.35–50.

destruction of property. The inability to manage these conflicts effectively exacerbates insecurity, with spillover effects into neighbouring regions.

Migration and Displacement: Climate-induced migration is another significant consequence of environmental changes in the Sahel. Rising temperatures, crop failures, and resource scarcity have forced millions to leave their homes in search of better living conditions. According to the International Organization for Migration (IOM), over 2.5 million people were displaced in the Sahel by 2023 due to climate-related pressures and conflicts. These migrations strain already fragile urban centres and neighbouring countries, increasing the risk of social tensions and instability.[66] Additionally, international migration from the Sahel to Europe has heightened geopolitical tensions, as European nations grapple with an influx of asylum seekers. These dynamics underscore the transnational security implications of climate-induced displacement.

Terrorism and Insurgency: Extremist groups such as Boko Haram, the Islamic State in the Greater Sahara (ISGS), and Al-Qaeda in the Islamic Maghreb (AQIM) have exploited the vulnerabilities created by climate change in the Sahel. These groups capitalize on weak state control and community grievances over resource scarcity to recruit members and expand their influence.[67] For instance, Boko Haram has utilized the shrinking of Lake Chad as an opportunity to target displaced populations and establish control over strategic water and land resources. Terrorists also take advantage of local governments' limited capacity to manage

[66] D. Hummel, (2016). 'Climate change and security in the Sahel,' *Climate Policy*, Vol.16, No.5, Pp.622–637.

[67] UNEP. (2022). Climate Security in the Sahel: A United Nations Perspective. United Nations Environment Programme.

climate-induced challenges, creating safe havens in under-governed areas and contributing to broader regional instability.[68]

Weak Governance and Fragility: Governance challenges compound the security implications of climate change in the Sahel. Many governments in the region lack the capacity to effectively address climate-security risks, including mitigating conflicts over resources, managing displacement, and countering extremist threats. Poor infrastructure, limited financial resources, and corruption further weaken these states' ability to respond to environmental and social challenges. Weak governance creates a feedback loop, where unaddressed climate-induced pressures undermine state legitimacy, foster social unrest, and increase vulnerability to external threats.[69]

International organizations and regional bodies, such as the African Union and the G5 Sahel, have initiated efforts to address the climate-security nexus. However, coordination challenges and funding gaps hinder the implementation of sustainable solutions. Strengthening governance capacity and fostering international cooperation are critical to mitigating the security threats posed by climate change in the Sahel.

International Implications of Sahel's Climate Challenges

Regional Instability

The Sahel's climate challenges, marked by desertification, erratic rainfall, and resource scarcity, have destabilized not only the region itself but also

[68] L. Rüttinger, et al, (2015). *A New Climate for Peace: Taking Action on Climate and Fragility Risks.* Adelphi, International Alert, Woodrow Wilson Center, and EUISS

[69] J. Scheffran, et al, (2012). 'Climate change and violent conflict,' *Science*, Vol. 336, No. 6083, Pp.869–871.

its neighbours in West Africa and beyond. As conflicts over land and water escalate, they often spill over into bordering countries, exacerbating tensions across national boundaries. For instance, the trans-boundary Lake Chad Basin is a hotspot where resource disputes have intensified, affecting Cameroon, Chad Republic, and Niger alongside Nigeria.[70] Such instability undermines regional cohesion, strains diplomatic relations, and creates a breeding ground for extremist groups that operate across porous borders.

Moreover, regional trade routes have been disrupted by violence and displacement, further weakening economic ties between Sahelian countries and their neighbours. This loss of economic integration hampers development and fosters cycles of poverty and insecurity, reinforcing the destabilizing effects of climate change.[71]

The Sahel region, an arid expanse stretching from Senegal in the west to Sudan in the east, has historically depended on trans-Saharan trade routes that facilitated economic, cultural, and social exchanges. These routes are vital for connecting sub-Saharan Africa to North Africa and beyond, have been severely disrupted by climate change-induced environmental stress, violence, and displacement. This disruption has undermined economic activities, exacerbated insecurity, and strained regional stability.[72] He mentioned key Trans-Saharan Trade Routes in the Sahel to include;

[70] D. Hummel, (2016). 'Climate change and security in the Sahel,' *Climate Policy*, Vol.16, No.5, Pp.622–637.

[71] J. Scheffran, et al, (2012). 'Climate change and violent conflict,' *Science*, Vol. 336, No. 6083, Pp.869–871.

[72] Interview with J. T. Brig. Gen. Dr. Aun, Fellow, Nigerian Army Resource Centre, and Deputy Vice Chancellor (DVC), Nigerian Army University, Biu, Borno State, on 27th December, 2024 at Officers' Quarters, Ribadu Cantonment, NDA, Kaduna, Kaduna State.

i. The Central Sahel Route: Timbuktu-Gao-Agadez-Ghat: This route historically linked Timbuktu and Gao in Mali to Agadez in present day Niger and Ghat in Libya. It further extended to North African ports on the Mediterranean. It served as a major artery for the trade of salt, gold, and other commodities, connecting resource-abundant West Africa to North Africa. Increasing desertification, conflict involving armed groups, and banditry have made this route perilous, forcing traders to abandon it or resort to alternative pathways.

ii. The Western Sahel Route: Senegal-Mauritania-Morocco: Stretching from Senegal through Mauritania to Morocco, this route facilitated commerce between the Sahel and Maghreb regions. Historically, it was pivotal for the exchange of fish, livestock, and grains. Rising sea levels, climate-induced migration, and insurgent activities, particularly in Mauritania and Mali, have severely disrupted trade flows along this route.

iii. The Eastern Sahel Route: Lake Chad-Kano-Tripoli: Starting near Lake Chad, this route extended northward through Kano in Nigeria to Tripoli in Libya. It was integral to the trade of agricultural products, textiles, and livestock, benefiting pastoralist communities in the region. The Boko Haram insurgency, compounded by the ecological crisis in the Lake Chad Basin, has rendered this route unsafe, drastically reducing its use.

iv. The Eastern Trade Corridor: Sudan-Chad-North Africa: This route connected Darfur in Sudan and Chad to North African markets in Egypt and Libya. It was a key channel for trading livestock, gum Arabic, and artisanal goods. Conflict in Darfur, coupled with

prolonged droughts and violent clashes, has destabilized this route, reducing economic exchanges.[73]

The disruption of trade routes in the Sahel exemplifies the interplay between climate change, conflict, and international security. Addressing these challenges requires a coordinated approach that incorporates environmental adaptation, economic revitalization, and conflict resolution to restore the stability of this vital region.[74]

Global Security Threats

Climate-induced migration from the Sahel has become a pressing issue for Europe. As agricultural yields decline and livelihoods collapse, many Sahelian residents embark on perilous journeys to European shores in search of better opportunities. According to TS Joseph, Chief Scientific Officer, National Space Research and Development Agency (NASRDA), Abuja, in an interview on the 30th December, 2024, opined that migrants from Sahel region predominantly come from countries such as;

i. Mali: the nation faces severe desertification and erratic rainfall, which have drastically reduced agricultural yields. Over 70% of Malians depend on agriculture for their livelihoods, making them highly vulnerable to climate shocks.
ii. Niger: Niger is one of the world's poorest countries, with over 80% of its population engaged in subsistence farming and herding. Recurrent droughts and soil degradation have rendered large

[73] Interview with J. T. Brig. Gen. Dr. Aun, Fellow, Nigerian Army Resource Centre, and Deputy Vice Chancellor (DVC), Nigerian Army University, Biu, Borno State, interviewed on the 27th December, 2024 at Officers' Quarters, Ribadu Cantonment, NDA, Kaduna, Kaduna State.
[74] Ibid

portions of the country uninhabitable, leading people to hardship and subsequent migration. Niger serves as both a source and a transit hub for migrants traveling through Agadez, a key smuggling route to Libya.

iii. Chad: This country suffers from water scarcity due to the shrinking Lake Chad, which has lost over 90% of its surface area since the 1960s. The collapse of fishing and farming industries has forced many residents to migrate.

iv. Burkina Faso: The increasing temperatures and irregular rainfall have led to the failure of staple crops like millet and sorghum. Additionally, armed conflicts between herders and farmers over dwindling resources have displaced thousands of citizens.

v. Sudan: Sudan also faces recurring droughts, desertification, and conflicts over land and water, particularly in Darfur. These issues have driven mass displacement within the country and across borders.[75]

Climate-induced migration from the Sahel represents a multifaceted challenge tied to environmental, economic, and political instability, which fuelled migration.[76] This migration wave has led to significant political and social challenges in Europe, where governments face rising anti-immigration sentiments and strained resources to manage asylum seekers. According to the International Organization for Migration (IOM), irregular migration from the Sahel to Europe has surged by over 30% in the last

[75] Interview with T. S. Joseph, Chief Scientific Officer, National Space Research and Development Agency (NASRDA), Abuja, on the 30th December, 2024, through phone call.
[76] Ibid

decade, reflecting the direct link between environmental degradation and transcontinental migration.[77]

Disruptions to International Trade Routes

The Sahel's strategic location as a link between North and Sub-Saharan Africa means, that instability in the region affects global trade. Key transit routes for goods and energy resources, such as the Trans-Saharan gas pipeline corridor, are increasingly vulnerable to attacks by insurgent groups exploiting weak governance. Disruptions in these routes not only affect African economies but also impact global markets' reliance on secure energy and trade flows.[78]

Role of International Organizations

The United Nations (UN)

The UN has played a critical role in addressing the intersection of climate change and security in the Sahel. Initiatives like the United Nations Integrated Strategy for the Sahel (UNISS) and the deployment of peacekeeping missions under MINUSMA (United Nations Multidimensional Integrated Stabilization Mission in Mali) aim to enhance resilience and address root causes of insecurity. However, limited funding and coordination challenges have constrained these efforts.[79]

African Union (AU)

[77] International Organization for Migration, (2023). 'Climate Change and Migration in the Sahel,' *IOM Publications*,

[78] C. Hendrix, & I. Salehyan, (2012). 'Climate change, rainfall, and social conflict in Africa,' *Journal of Peace Research,* Vol. 49, No. 1, Pp.35–50.

[79] UNEP. (2022). Climate Security in the Sahel: A United Nations Perspective. United Nations Environment Programme.

The AU, through its Climate Change and Resilience Agenda, emphasises the need for sustainable solutions to climate-related security risks. Its partnership with the G5 Sahel (Burkina Faso, Chad, Mali, Niger, and Mauritania), a regional security coalition, aims to bolster local governments' capacity to address climate-induced challenges. Nonetheless, progress has been slow due to resource constraints and the complex nature of the climate-security nexus.

Economic Community of West African States (ECOWAS)

ECOWAS has focused on regional coordination, particularly in managing cross-border conflicts and migration flows. The ECOWAS Early Warning and Response Network (ECOWARN) is a key tool for identifying climate-related risks and pre-empting crises. Despite its proactive stance, ECOWAS faces difficulties in implementing large-scale climate adaptation programs, given the financial and political barriers faced by its member states.[80]

In sum, while international organizations recognize the urgency of addressing the Sahel's climate challenges, coordinated global and regional actions are essential to mitigating the long-term security implications. Strengthening local resilience while addressing global drivers of climate change will be crucial in stabilizing the Sahel and preventing broader international repercussions.

Mitigation and Adaptation Strategies

[80] L. Rüttinger, et al, (2015). *A New Climate for Peace: Taking Action on Climate and Fragility Risks.* Adelphi, International Alert, Woodrow Wilson Center, and EUISS

One of the most ambitious regional initiatives in addressing climate change in the Sahel is the Great Green Wall (GGW) project. Launched by the African Union in 2007, the GGW aims to combat desertification and land degradation by creating a belt of vegetation stretching across 11 Sahelian countries. This initiative seeks to restore 100 million hectares of degraded land by 2030, sequester 250 million tons of carbon, and improve the livelihoods of millions of people dependent on agriculture and pastoralism.[81]

While the GGW has faced challenges such as funding gaps and slow implementation, it remains a vital strategy for mitigating climate impacts. Countries like Senegal and Burkina Faso have reported progress, with thousands of hectares of land restored and local communities actively engaged in tree planting and sustainable farming. By addressing the root causes of resource scarcity, the GGW contributes to reducing conflicts and enhancing ecological resilience in the Sahel.[82]

International Interventions: Contributions from Developed Nations and Global Organizations

Developed nations and international organizations play a crucial role in supporting climate adaptation in the Sahel. The United Nations Framework Convention on Climate Change (UNFCCC) has facilitated funding mechanisms like the Green Climate Fund (GCF), which allocates resources to Sahelian countries for climate resilience projects. For example, the GCF

[81] FAO, Great Green Wall: Advancing Africa's Sustainability Goals. *Food and Agriculture Organization*, 2022.

[82] UNCCD, The Great Green Wall Initiative. *United Nations Convention to Combat Desertification*, 2023.

has supported water management and renewable energy initiatives in Niger and Chad, addressing critical vulnerabilities.[83]

Furthermore, developed nations such as France and Germany have contributed to the Sahel Alliance, a coalition focused on addressing the region's security and development challenges, including climate adaptation. However, critics argue that international interventions often lack coordination, and funding commitments are insufficient to meet the scale of the crisis.[84]

Building Resilience: Strategies for Improving Governance and Community Adaptation

Strengthening governance is essential for building resilience to climate challenges in the Sahel. Effective governance can help manage resource disputes, improve infrastructure, and create policies that prioritize sustainable development. Governments in the region must enhance transparency, reduce corruption, and invest in capacity building to address the climate-security nexus comprehensively.

At the community level, empowering local populations with sustainable agricultural techniques, such as agroforestry and water conservation, is vital. For instance, farmer-managed natural regeneration (FMNR) practices in Niger have restored degraded lands and increased agricultural

[83] UNFCCC, Green Climate Fund in the Sahel: Addressing Climate Vulnerabilities. *United Nations Framework Convention on Climate Change*, 2022.

[84] D. Hummel, (2016). 'Climate change and security in the Sahel,' *Climate Policy,* Vol.16, No.5, Pp.622–637.

productivity, directly benefiting rural livelihoods and reducing migration pressures.[85]

Educational programs and public awareness campaigns are also crucial in fostering a culture of climate adaptation. By involving women and youth, groups often disproportionately affected by climate impacts, governments and organizations can ensure more inclusive and effective responses.

Additionally, leveraging technology, such as satellite monitoring and early warning systems, can improve disaster preparedness and resource management in the Sahel. Collaborative efforts between local governments, international organizations, and private sectors are essential to scaling up these strategies.

Conclusion

This paper has explored how climate change in the Sahel is reshaping both the ecological and socio-political landscape, influencing conflict dynamics, migration patterns, and governance structures. The security implications are profound, with climate-induced resource scarcity driving inter-communal tensions and empowering extremist groups to exploit the resulting instability. Furthermore, the migration of displaced populations due to climate pressures places additional strain on neighbouring regions and Europe, intensifying global security threats.

The Sahel region is at the crossroads of multiple, interwoven crises, where climate change exacerbates existing vulnerabilities, creating a complex

[85] C. Reij, *et al*, (2009). Agro-environmental Transformation in the Sahel: Another kind of Green Revolution. *IFPRI, Discussion Paper*

security challenge that transcends national borders. As rising temperatures, erratic rainfall, and desertification continue to impact agricultural productivity, food security, and water availability, they contribute to heightened competition for resources, increased migration, and the proliferation of violent extremism. These challenges not only affect the immediate stability of the Sahel but also have far-reaching implications for regional and global security.

However, the Sahel is not without hope. The Great Green Wall initiative, along with international funding mechanisms and regional cooperation, offers significant potential for mitigating the impacts of climate change. Strengthening governance, improving resilience, and fostering community-based adaptation strategies are essential in addressing the root causes of vulnerability in the region. It is imperative that the international community continues to support these efforts, providing the necessary financial, technical, and political backing to address the multifaceted challenges posed by climate change. Finally, tackling the security risks induced by climate change in the Sahel requires a comprehensive and coordinated approach, one that integrates climate adaptation with national and regional security strategies. By prioritizing resilience-building, sustainable development, and cross-border cooperation, the Sahel can mitigate the adverse impacts of climate change and move toward a more secure and stable future.