Climate Change, Resource Scarcity and the Transformation of Global Security in the Twenty-First Century

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Abstract

Climate change is rapidly redefining global security dynamics. Having been primarily understood as an environmental or economic challenge, climate change has come to represent a major driver of instability and conflict that has characterised geopolitical debates of the 21st century (Goldstein, 2016; Dalby, 2021). Climbing temperatures, extreme weather events and environmental degradation are intensifying competition over essential resources such as fresh water, fertile land and food (Koubi, 2019). Research warns that the world has entered an "era of global water bankruptcy," as water reserves reach their breaking point and many sources move beyond recovery (United Nations University Institute for Water, Environment and Health, 2026). Simultaneously, fertile soil depletion, biodiversity collapse and irresponsible resource extraction threaten the stability of international cooperation (UNEP, 2019).

This article argues that climate change functions as a "threat multiplier," exacerbating existing political and economic tensions lead to volatile competition and conflict (Goldstein, 2016). Expanding upon existing literature, the article seeks to draw a conclusive link between the rise in environmental stress and the influx of global security through real world examples of Syria, the Darfur region and the Lake Chad Basin. The paper concludes by offering policy recommendations stressing the importance of climate adaptation and sustainable resource governance to encourage international cooperation and address environmental insecurity.

Introduction

Climate change has come to dominate conversations concerned with the developing nature of global security and has become a defining feature of contemporary (Buzan, 1991; Dalby, 2021). Traditionally, security studies centred around military threats, political rivalries and competition over strategic and fiscally lucrative commodities such as oil. However, the accelerating impact of climate change is transforming the very nature of global diplomacy and international relations (O'Brien & Barnett, 2013). Environmental pressures now exacerbate established economic and political vulnerabilities generating unprecedented forms of conflict and hostility amongst international actors (Koubi, 2019).

Goldstein emphasises that climate change operates as a "threat multiplier," heightening existing tensions rather than acting as an isolated catalyst towards war (Goldstein, 2016). Environmental degradation undermines livelihoods, intensifies resource shortages and perpetuates inequality, as a result creating conditions where political grievances and social unrest are more likely to unravel into violence (Ahmed, 2011). Tackling this devolution into conflict reaffirms the importance of proactive governance intervention as recommended later in this article. A critical example of climate change creating a catastrophic scarcity in the resources is the rapidly depleting global supply of water. Over the past twenty years, terrestrial water storage has declined at a rate of approximately one centimetre annually (United Nations University Institute for Water, Environment and Health, 2026). As a result, United Nations scientists have declared that the world has entered an "era of global water bankruptcy," a post-crisis reality where many river basins and alternative water sources have suffered irreversible ecological damage (United Nations University Institute for Water, Environment and Health, 2026).

Water scarcity is a singular ramification of the far-reaching environmental crisis. As it stands, projections predict that 95% of Earth's soil could become depleted of key minerals and rendered infertile by 2050, ultimately dismantling global food production and trade (Save Soil, 2024). This existential crisis urgently demands the implementation of sustainable land management policies explored in the recommendations section of this article. Alongside this crisis, unsustainable methods of resource extraction continue to intensify environmental pressures. The extraction and processing of materials such as fuel and food products accounts for half of global greenhouse gas emissions and more than 90% of biodiversity loss and water stress (UNEP, 2019). Since 1970, resource extraction has more than tripled, including a fivefold increase in the use of non-metallic minerals and a 45% increase in fossil fuel consumption (UNEP, 2019). These trends of overconsumption and overproduction illustrate the increasingly undeniable relationship intersection between environmental security and global stability and signal the necessity of transitioning to more sustainable economic models. As resource pressures intensify, conflicts over control for water, land and food are likely to become significant drivers of geopolitical instability (Enemchukwu, 2019).

Climate Change as a Threat Multiplier

Climate change alone rarely leads to conflict, in reality it widens pre-existing vulnerabilities in society and cleavages underlying international cooperation (Koubi, 2019). By undermining economic progress and weakening governance structures, climate change contributes to heightened risks of unrest and violence (O'Brien & Barnett, 2013), emphasising the importance of integrating climate risks into national security strategies as outlined further on in this piece. One of the most glaring challenges tying climate change and security is resource scarcity. Changes in precipitation patterns and rising temperatures destabilise agricultural practices and limit access to

freshwater (Dalby, 2021). These disruptions lead to crop failures, food price increases and economic shocks, expecially in regions which carry the double burden of relying heavily on agriculture (Werz & Hoffman, 2016). This raises the interconnected nature of the global agricultural and economic networks, reinforcing the need for sustainable agricultural and economic policies discussed in the recommendations section. Meanwhile, the global population ballons and the demand for water and food increases, this generates unprecedented challenges for governments and communities to tackle (Gleick, 2014). As water becomes scarce, competition between agricultural industrial and domestic actors intensifies. In regions where water crosses national boundaries, disputes between states may also emerge (Gleick, 2014), emphasising the importance of international cooperation mechanisms to address the commodification of and battle for water and food on the international stage.

Soil degradation represents an additional imminent risk. Fertile land is essential for food production, yet unsustainable pastoral practices, deforestation and desertification are rapidly degrading soils worldwide (Save Soil, 2024). If trends continue at their current rate, it is predicted that 95% of global soils will become degraded and unusable for food production by 2050. Agricultural productivity will spiral beyond repair; exacerbating food insecurity and increasing the likelihood of political instability (Save Soil, 2024). Another likely ramification of climate change on communities and the global political order is population displacement. Environmental disasters such as floods and droughts are creating mass migration movements whereby communities are forced to uproot themselves to ensure survival (Werz & Hoffman, 2016). Climate-related migration can place additional pressure on urban infrastructure, job scarcity and the availability of social services, placing increased tensions on relationships between host and displaced communities (Werz & Hoffman, 2016). These dynamics highlight the complex ways in which

environmental change intersects with political and economic systems. Rather than acting in isolation, climate pressures interact with governance failures, poverty, and inequality to produce instability (Ahmed, 2011).

Unsustainable Resource Extraction

Apart from water scarcity and land degradation, unsustainable methods of resource extraction contribute to environmental insecurity. Contemporary economic systems depend largely on the extraction of natural resources, important this includes rapidly depleting critical rare earth minerals and fossil fuels (The Guardian, 2025). According to global environmental assessments, the extraction and processing of industrial materials accounts for half of global greenhouse gas emissions and over 90 per cent of biodiversity loss and water stress (UNEP, 2019). These processes place enormous pressure on ecosystems and accelerate climate change. If current trends continue as predicted, global material use could reach 190 billion tonnes by 2060. This untenable expansion would likely lead to a 43 per cent increase in greenhouse gas emissions, further intensifying climate change and environmental degradation (UNEP, 2019). These trends alert us to the undeniably unsustainable nature of current economic systems and underscore the need for fundamental changes in global resource management, such as a transition to a circular economy model.

Case Study 1: Syria

The Syrian civil war is frequently cited as an example of how environmental pressures contribute to political instability (Gleick, 2014; Selby, 2019), emphasising the importance of early intervention and climate risk assessment policies. Between 2006 and 2010, Syria experienced one of the most severe droughts in its recorded history (Gleick, 2014). Agricultural production

collapsed in several regions and rural communities experienced significant economic loss. The drought was attributed to changing climate patterns that increased the likelihood of prolonged dry conditions (Selby, 2019). Crop failures and livestock losses forced many rural families to abandon their farms and migrate to urban centres for alternative employment (Gleick, 2014). This large-scale internal migration exacerbated tension in cities already challenged by high unemployment and economic inequality (Selby, 2019).

Syria also illustrates the importance of political factors in understanding climate related conflict. Government mismanagement of water resources and state sponsored political repression contributed significantly to the country's vulnerability (Selby, 2019) Environmental stressors interacted with these structural and political vulnerabilities to create conditions conducive to large scale social unrest. Thus, while climate change did not directly cause the Syrian conflict, it amplified economic hardship and social grievances that contributed to instability (Gleick, 2014).

Case Study 2: The Darfur Region

Conflict in the Darfur region of Sudan exemplifies alternative ways in which environmental degradation contributes to political instability and threatens peace (Koubi, 2019), reinforcing the role of resource governance in safeguarding stability as discussed later. Declining rainfall and advancing desertification has been observed over several decades and have significantly contributed to the reduced in availability of water and grazing land in the region (Ahmed, 2011). Historically, pastoralist and farming communities in Darfur relied on traditional systems of seasonal migration and negotiated access to land and water with other communities. However, population growth and environmental degradation disrupted these systems, increasing competition over resources (Ahmed, 2011).

As grazing areas shrank and water sources became scarce, conflicts between pastoralists and farmers intensified. These local disputes eventually escalated into wider political violence when armed groups and government forces became involved (Koubi, 2019). When resource scarcity undermines traditional systems of cooperation, competition between communities can escalate into violent conflict (Enemchukwu, 2019), reinforcing the need for preventative policy measures outlined later.

Case Study 3: The Lake Chad Basin

The Lake Chad Basin in West Africa represents one of the most apparent examples of how environmental change interacts with security challenges (United Nations, 2024). Recently the largest source of water in the region, Lake Chad, has shrunk dramatically due to a combination of climate variability, irrigation demands and population growth. Millions of people depend on the lake for fishing and livestock grazing. As water levels declined, these livelihoods became impossible to sustain (United Nations, 2024). This has led to economic hardship and unemployment increasing across the region, particularly amongst vulnerable groups such as young people.

Armed groups, such as Boko Haram and the Islamic State West Africa Province have exploited these conditions and the supply of exploitable demographics desperate for employment. Extremist organisations recruit individuals who have lost their livelihoods due to environmental change, demonstrating how climate-induced economic instability can indirectly contribute to security threats and can supply terrorist organisations with manpower (United Nations, 2024). The Lake Chad case exemplifies how environmental degradation can weaken economic resilience and create opportunities for armed groups to exploit local grievances, further emphasising the need for integrated policy solutions.

Policy Recommendations

Addressing the security implications of climate change requires comprehensive and forward-looking policy responses (Parsons, 2011). Governments and international institutions must integrate environmental risks into security planning while promoting sustainable resource governance.

1. Incorporating Climate Risk into National Security Priorities

Governments should formally incorporate climate change into national security strategies (Dalby, 2021). This includes conducting climate risk assessments, identifying vulnerable regions, and preparing for climate-related humanitarian crises.

2. Reinforcing Water Security Systems

Water scarcity can be mitigated through technological innovation and governance reform (Gleick, 2014). Singapore's "NEWater" initiative demonstrates how investment in water recycling and desalination can enhance resilience to water shortages.

3. Encouraging Sustainable Land Management

Preventing widespread soil degradation is essential for maintaining global food security (Save Soil, 2024). Governments should promote sustainable agricultural practices, including crop rotation, agroforestry, and reduced chemical inputs.

4. Promoting a Circular Economy

Reducing resource extraction is essential for addressing both environmental degradation and climate change (UNEP, 2019). The European Union's Circular Economy Action Plan illustrates how policy can promote resource efficiency and reduce environmental pressures.

5. Emphasising International Cooperation

Climate change is a global challenge that requires coordinated international action (O'Brien & Barnett, 2013). Multilateral institutions should strengthen cooperation on climate adaptation, disaster response, and conflict prevention. Regional water management agreements, climate financing mechanisms, and international early-warning systems can help reduce the risk of climate-related instability (Werz & Hoffman, 2016).

Conclusion

Climate change is fundamentally altering the landscape of global security in an unprecedented manner for the global community (Dalby, 2021). Environmental degradation and resource scarcity are increasingly generating and directing patterns of conflict emergence and global instability. (Koubi, 2019). This will only continue to decline as we enter into an era of unprecedented environmental decline leading to existential challenges. With only 0.5% of terrestrial water being accessible and appropriate for consumption coupled with mass soil degradation and industrial resource extraction, seriou srisks are being levelled against international stability (United Nations University Institute for Water, Environment and Health, 2026).

These pressures do not inevitably lead to conflict; however, they significantly increase the risks of instability, particularly in regions already burdened by economic hardship and weak governance (O'Brien & Barnett, 2013). Addressing climate change as a security issue requires proactive policy responses that integrate environmental sustainability with geopolitical strategy (Parsons, 2011). By investing in developing sustainable agriculture practices and circular economic systems, governments can safeguard international cooperation against climate change and mitigate the likelihood that environmental pressures will transition into conflict. Ultimately, the treat of

climate-related disputes speaks to a far larger truth, that environmental sustainability and global stability are inseparable. Ensuring intergenerational climate security requires states and international institutions to regard climate change not solely as an environmental crisis but equally as central to global security policy.

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