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Climate Change as a Security Challenge in a Warming World

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ABSTRACT

Climate change has ceased to be an environmental problem and has become a serious security challenge that carries deep consequences not only for national but global peace and security. Rising temperatures, extreme weather events, and ecological decline are aggravating conflicts, relocating populations, and intensifying rivalry over scarce resources. These issues challenge the traditional concept of security, requiring states to reassess their security strategies. The study's objectives are to evaluate climate change as a challenge to international and national security and to address the question how climate change is a threat to global and national security. This research recommends that, to overcome these challenges, states must integrate climate change issues into national security policies and balance environmental sustainability with geopolitical stability, which is essential to stop climate change from further threatening the global order.

Keywords: *Climate Change, Security Challenge, Scarce Resources, Environmental Sustainability, Geopolitical Stability.*

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1. Introduction

The connection of climate science and security studies has arisen as one of the most pressing academic and policy imperatives of the twenty-first century. For decades, climate change was enclosed mainly as an environmental problem — issue of rising sea levels, Ice sheet degradation, and endangered biodiversity (Barnett & Adger, 2007). International relations and strategic studies addressed climate change as a marginal "low politics" issue—an ecological apprehension referred to scientists, ecologists, and specific United Nations agencies. Policymakers, experts, and activists discussed carbon taxes, emissions targets, and Climate-resilient energy systems

within the boundaries of environmental governance and sustainable development. Yet, as the global temperature breaks historical records, this pattern has proven hazardously outdated, a new and stark consensus has taken hold: climate change is not just an ecosystem crisis but a serious danger to human security, local economies, sovereign integrity of state, and the global order.

Climate change pose both direct and indirect threats for state security. Directly, extreme weather conditions damage infrastructure, displace population, and overwhelm agricultural systems that millions of people be contingent for their livings and existence (Busby, 2018). Indirectly, the pressures exerted because of shortage of resources,



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displacement, and economic disturbance (Burke et al., 2015). worsen pre-existing social strains, fuel political or ethnic grievances, and create the situations in which conflict becomes more probable (Gleick, 2014). In unstable states and

regions already have by weak governance, disparity, and historic enmities, climate change performs as a threat multiplier — it does not generate conflict from nothing, but it exaggerates issues that might otherwise have remained minor.

Table 1: *Climate Change -Key Indicators*

Indicators	Rank	Weighting	Rating
GHG Emission	18	40%	High
GHG per capita- Current level (Including LULUCF)	4	10%	Very High
GHG per capita Current trend(excluding LULUCF)	59	10%	Very Low
GHG per capita -- Compared to a well –below- two- degree bench mark	4	10%	Very High
GHG 2030 Target - Compared to a well –below - two- degree bench mark	15	10%	Very High

(Climate Change Performance Index [CCPI], 2024) <https://ccpi.org>

2. Conceptual Framework: From Environmental Issue to Security Threat

2.1 Redefining Security in the Age of Climate Change

The traditional view of security in international relations is entrenched in the realist tradition, which highlights the state as the primary unit of analysis and armed power as the primary tool of security arrangement. According to this approach, security is attained when a state is secured from external armed attacks and when its territorial sovereignty and political freedom are conserved. This model was suitable to explain the Cold War period, in which the main security challenge fronting most countries was the threat of military attack from enemy powers or the diffusion of superpower rivalry in post-cold war era, new crisis like terrorism, ethnic conflict, disease, and

economic uncertainty appeared that military might alone could not overcome (Adger et al., 2014). Though environmental security was known over 30 years ago, it only entered dominant security narrative with the Escalation of climate change in the 21st century.

2.2 Theoretical Approaches to the Climate-Security Nexus

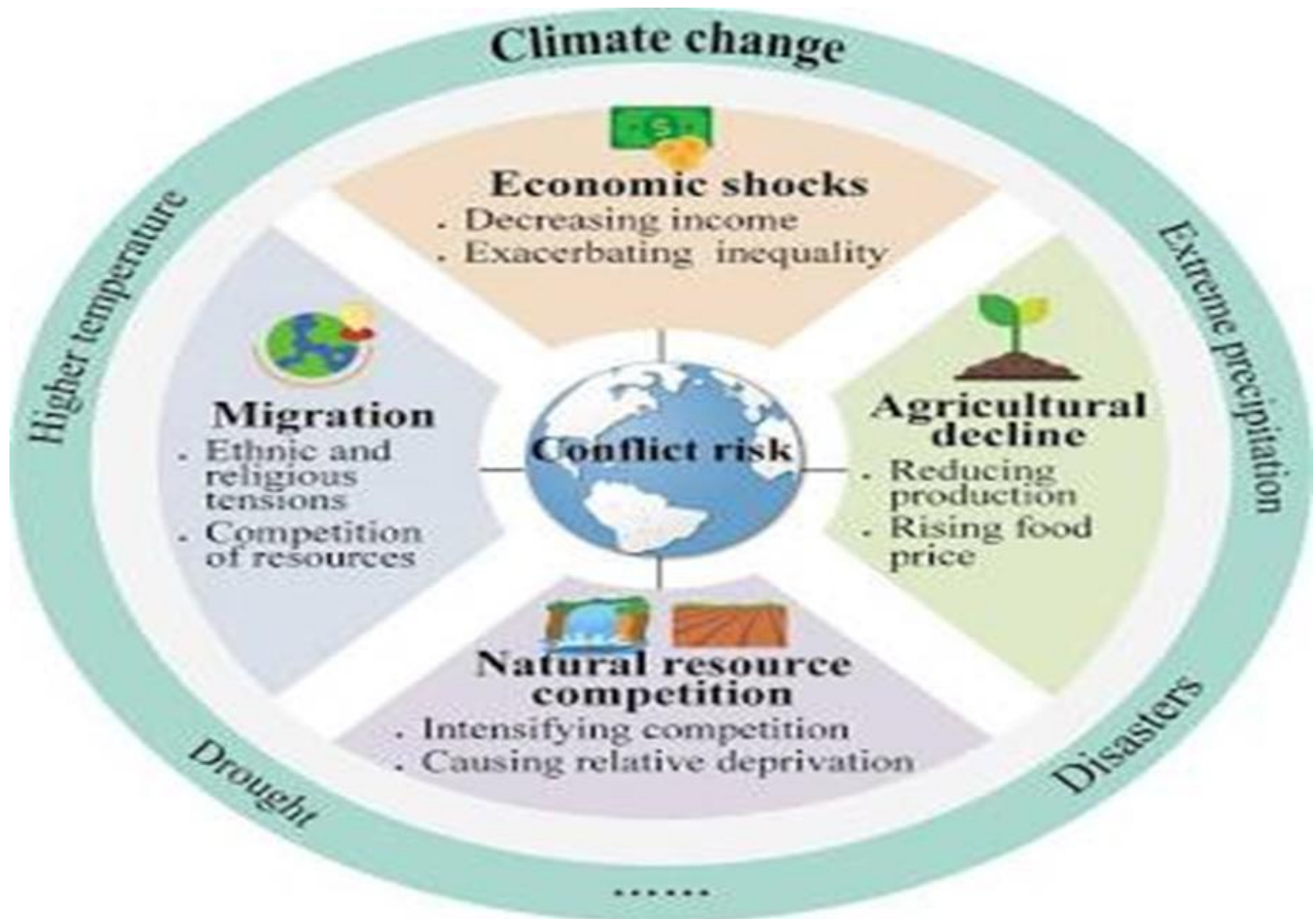
Many distinct theoretical approaches explain the climate-security connection. The first and most significant is the resource conflict approach, established most scientifically by thinkers such as Thomas Homer-Dixon, whose Study in the decade of 90s claimed that environmental scarceness — whether of renewable resources such as Agricultural land, water, and forests, or of energy resources — could cause conflict by growing rivalry among social groups, by instrumental to

economic deterioration and social disturbance, and by failing state capability to resolve these issues.

A second approach emphasizes on climate change as a Risk amplifier. This concept, promoted by the US military's 2014 Quadrennial Defense Review, describes that climate change is not the direct cause of conflict instead aggravates prevailing vulnerabilities and strains, converting conflict more possible in societies that are already

vulnerable or Volatile. According to this notion, climate change connects with other causes of conflict such as poverty, ethnic tension, bad governance, historical grievances to intensify the threat of violence. This approach has been dominant in decision -making circles and has formed the method in which military establishments in the America, Europe, and in another country have started to integrate climate reflections into their strategic planning.

The following visual breaks down how those environmental stressors translate into conflict:



A third view emphasizes on human security, highlighting how increasing temperatures, extreme weather, and sea-level rise threaten the livelihoods, health, and wellbeing of susceptible population. This approach gives less priority to interstate conflict rather focus the methods in which climate change can effects the circumstances required for human prosperity — food security, accessibility of clean water, health, physical security, and the ways of life (Mobjörk et al., 2016). It focusses attention to the unequal distribution of climate effects, which fall most deeply on the world's poorest and most relegated populations, and claims that climate

justice must be essential to any satisfactory action.

3. Climate Change as a Threat to National Security

National security basically be contingent on a state's capacity to sustain internal stability, protection of its territorial integrity, and defend its population from external threat (Busby, 2018).

Climate change directly weakens these main responsibilities across three interwoven trajectories: nationally resource scarcity, forced demographic displacement, and the deprivation of

critical defense infrastructure.

3.1 Resource Scarceness and Internal Conflict

The most direct trail from climate change to internal volatility is through the reduction of main natural resources, mainly agricultural land and fresh water. The quantity and quality of these ecological resources are essentials elements to the security and stability of human society. As climate effects place mounting stress on worldwide biodiversity—intimidating nearly 1 million species with extermination over the approaching decades—struggle over important resources unavoidably rises together with their shortage. Under the right circumstances, this environmental shortfall performance as a catalyst for difference, ferocity, or conflict at the communal level.

This dynamic, often labeled "neo-Malthusian security friction," is highly observable in agrarian economies where livelihoods are intensely knotted to predictable weather cycles (Welzer, 2012). When climate change directly disturbs agroecosystems, the domino effect from the environment to the productive domain, and eventually into acute economic and social upheavals. Safeguarding food and water security in the expression of these structural variations is among the most intimidating challenges fronting humanity. This neo-Malthusian security friction can be fragmented down into three main operative ways:

I. The Failure of Social Agreements and Resource Weaponization

In agricultural countries, the state frequently stems its basic political legitimacy from its capability to guarantee food and resource security. When growing global temperatures, melting glaciers, and long drought situations place new burden on freshwater sources, supply decreases at a moment of growing people demand. These pressures are highly sensed in dry areas with little water quantity and big populations, where water usage is already profoundly planned to stop contest (Kuzma et al., 2023).

When the government be unsuccessful to control this disorder or offer relief, a risky "legitimacy gap" opens. Such agricultural and water stressors harm

crop harvests, damage soil fertility, and reduce water resources for irrigation—mainly in the Global South (Moran et al., 2018). This creates severe household food insecurity, national social volatility, and political strain where baseline growth is small. The connection between resource shortage and violence depends deeply on how governments handled the situation, together with the history of disparity preceding the scarcity. When the state be unsuccessful to arbitrate the crisis justifiably, resource shortage can be produced:

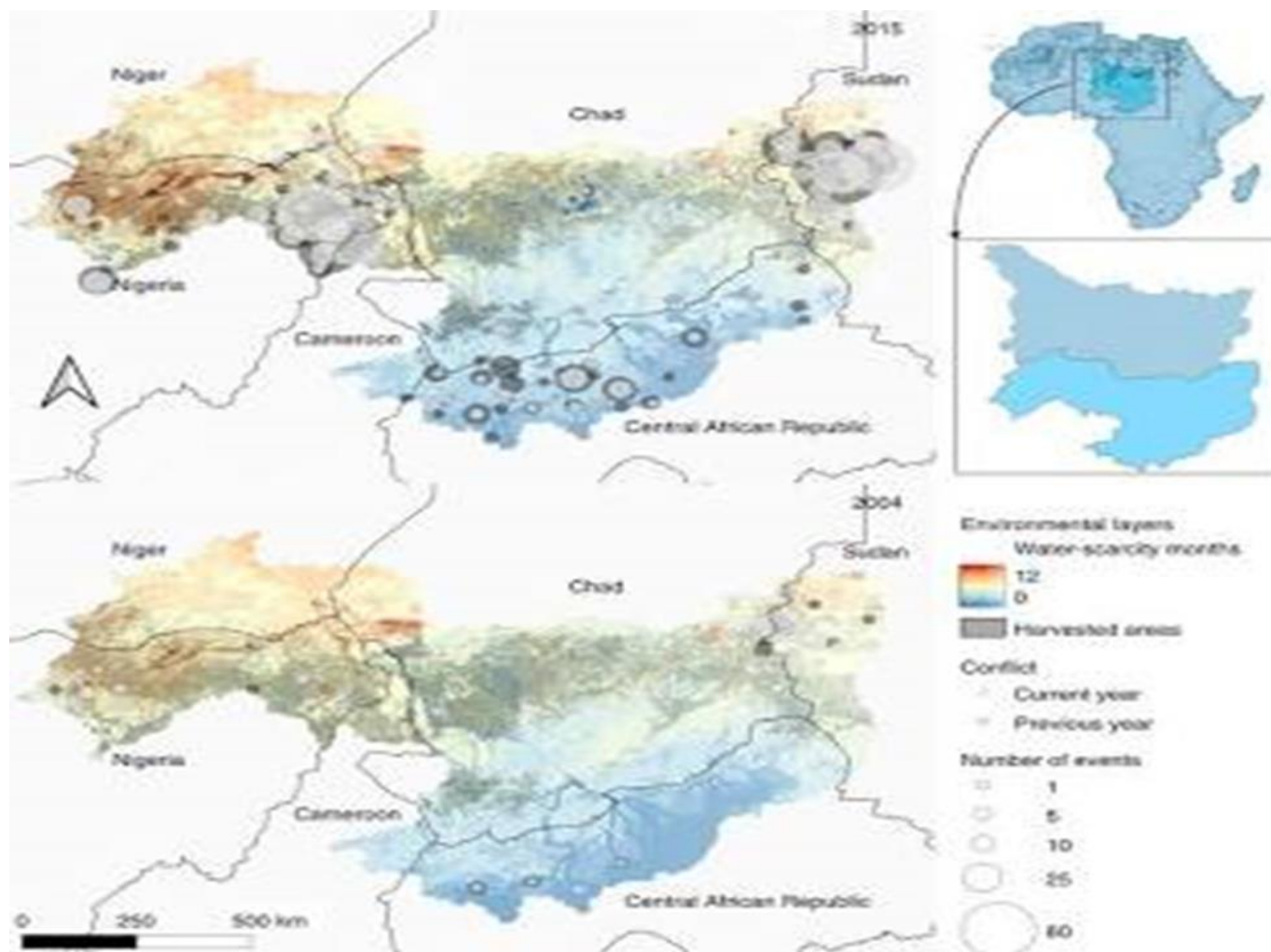
Civil Unrest: Uprisings over food prices and water accessibility intermingle with current political disturbance, intensifying into wider civil conflict and long local insecurity (Werrell & Femia, 2013), as experienced in the Middle East during the Arab Spring protests of 2011.

Militarization by Non-State Actors: As observed by scholars such as King and Burnell, fanatical and confrontational groups usually enter into governance voids. These groups provide defense or important resources to despairing populations in reward for faithfulness, or aggressively weaponize water and food by disrupting crops and cutting off supply systems to populations they consider as opponents ((Von Uexkull et al., 2016; King & Burnell, 2015).

II. The Herder-Farmer Conflict Model and Transboundary Pressure

The decreasing environmental base directly activates local conflicts over physical geography. As agricultural and damages and water sources dry up, Nomadic herders are compelled to change migration ways, moving their livestock into areas conventionally held by established, inactive farmers. Both groups find themselves struggling for survival on the exact same fading plot of land.

The **Lake Chad Basin** provides a case study of this local resistance; as the lake has extremely retreated, exaggerated rivalry for residual water and cropping land has augmented widespread regional volatility and offered suitable recruitment grounds for rebellious groups. (Adelaja et al., 2018).



This clash concurrently elevates to the macro-geopolitical scale. In International river basins, water-sharing contracts happen among national governments, but lessened supply can reduce those sensibly negotiated distributions outdated, generating powerful inducements for unilateral misuse. National governments may provide assurance their own national water access by distracting or blocking a common river system, or safeguarding the basin militarily. This extremely upsurges diplomatic pressures among resource consumers, mainly in regions with current pasts of conflict:

The Nile Basin: Control over and entree to water resources dynamics have augmented

transboundary strains surrounding the Grand Ethiopian Renaissance Dam (GERD) project, where downriver states consider independent water management as an existential risk to their national stability (Link et al., 2016).

Aquaculture Dislocation: Likewise, littoral and island populations reliant on local aquafarming

experience high economic and nutritional stress because of increasing ocean temperatures, migrating fish stocks, and disappearing coral reefs, creating resource rivalry out into disputed naval regions (Cheung et al., 2010).

III. Involuntary Urbanization (The "Youth Bulge" Issue)

When rural area and local agriculture cannot further support a domestic, rural inhabitants are left with no option but to migrate. This generates a secondary wave of friction positioned around fast, unplanned urbanization (Brzoska & Fröhlich, 2016). When the young, working-age rural residents migrates to urban hubs, it clashes with metropolitan infrastructures that are seldom prepared to engage such a speedy incursion of laborers. The effect is a high concentration of jobless, underemployed, and marginalized youth settled in unstable urban centers. In security studies, this demographic convergence—where a speedy environmental ruin accelerates an unabsorbed "youth bulge" into urban areas—is a well-documented indication to high political

turbulence, explosive protests, and anti-government mobilization.

3.2 Food insecurity

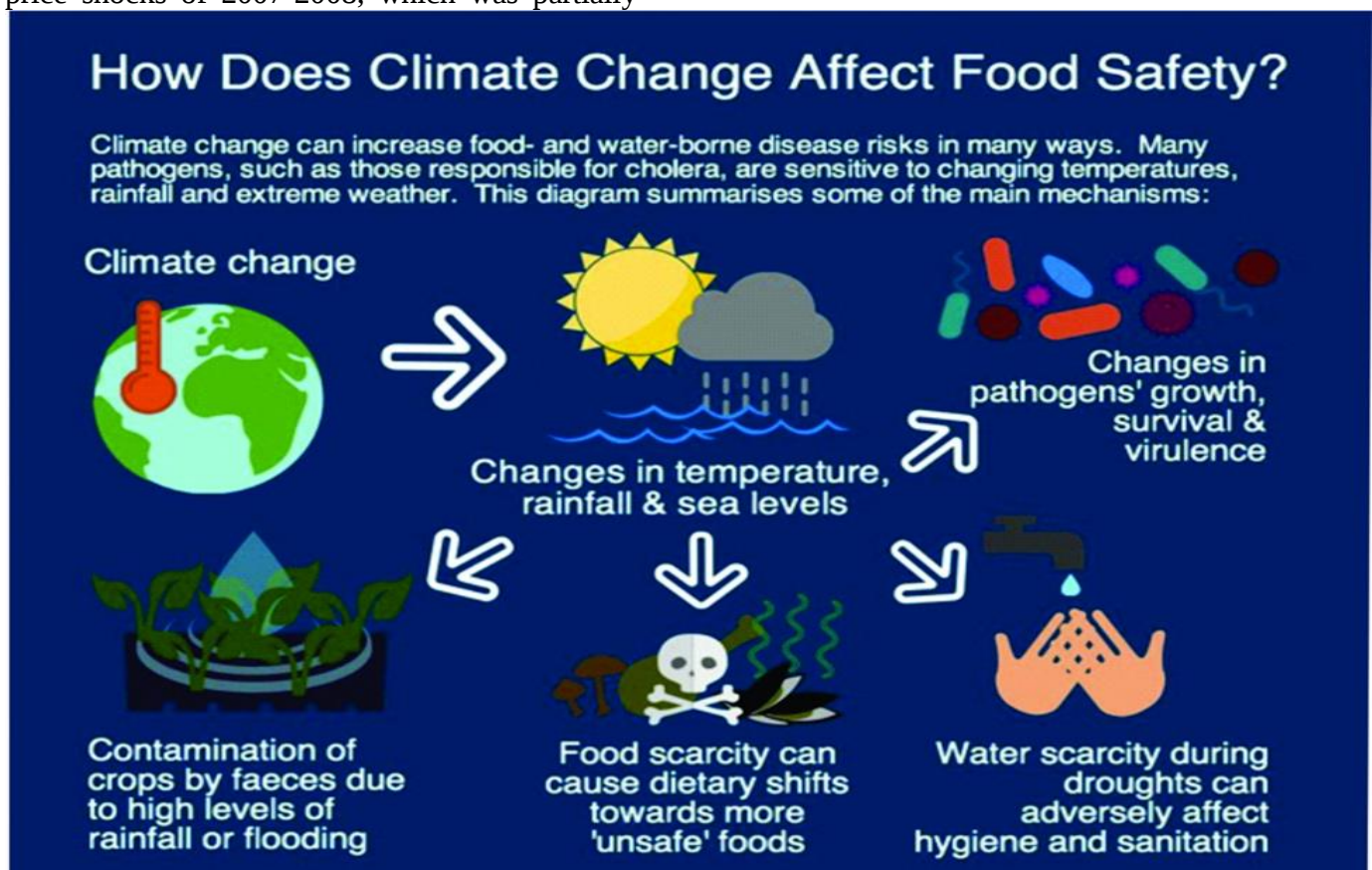
Food insecurity is another critical pathway linking climate change to conflict. Climate change impacts directly agroecosystems, which in turn has a potential impact on agricultural production, which drives economic and social impacts, which impact livelihoods. In other words, impacts translate from climate to the environment, to the productive sphere, to economic and social dimensions. Therefore, ensuring food security in the face of climate change is among the most daunting challenges facing humankind.

According to The World Food Programme evaluations climate change could drive an extra 80 million people into food insecurity by 2050 (WFP, 2020). Food price volatility — often activated by climate-related yield failures — have been connected with social discontent and political uncertainty in many historical incidents. The food price shocks of 2007-2008, which was partially

determined by droughts in main grain-producing areas, given to social discontent in more than 30 states and has been connected to the political uncertainty that led the Arab Spring.

3.3 Struggle for Land

Struggle for land is also a progressively significant factor of climate-concerned conflict, mainly in sub-Saharan Africa. As desertification and land degradation happen — developments enhanced by climate change — agriculturalists and herders are gradually enforced to contest for the same rare land and water resources (Neupane et al., 2022). In Sudan, Nigeria, Mali, and other nations across the Sahel, conflicts between agricultural communities and pastoral herders have deepened meaningfully in current years, motivated in area by the advance of the Sahara Desert and the degradation of old cropping lands (Benjaminsen et al., 2012). These battles have estimated tens of thousands of lives and displaced millions of people, contributing to wider designs of political unpredictability and humanitarian crisis.



4. Climate Change, Displacement, and State Fragility

Climate change is a rising cause of human dislocation — averaging 21.5 million displaced

people per year from 2008–2016 (Internal Displacement Monitoring Centre [IDMC], 2017), with forecasts of up to 216 million internal climate immigrants by 2050 across six main regions

(World Bank, 2021). On big level displacement brings grave costs at every level: people lose livelihoods and security; groups face resource fights; and nations danger political crises and geopolitical strains. Small island countries such as Maldives and Tuvalu experience the highest risk — possible complete inundation — which existing international law has no agenda to address.

Climate relocation is lawfully foggy too. The 1951 Refugee Convention doesn't identify climate change as bases for refugee status, creating it difficult to differentiate climate immigrants from economic or political migrants (McAdam, 2012). Fragile countries are facing more threats, and the connection is a vicious cycle: climate change deteriorates already stressed governments, and frail governments are less capable to adapt to climate change. The Sahel area is a best example — speedy heating and unpredictable rainfall multiple poverty and conflict, as observed in the Lake Chad Basin, where a 90% reduction of the lake has motivated the Boko Haram revolt (Vivekananda et al., 2019).

5. National Security in the Stage of Climate Change

5.1 Climate Change and Armed Strategy

The incorporation of climate change into national security arrangement is no longer a hypothetical practice for key military powers — it has developed into a working imperative. The United States military has been among the most spoken institutional supporters for considering climate change really as a security threat. The Department of Defense has printed manifold valuations documenting the dangers that climate change creates to American armed installations, actions, and strategic interests. The 2021 Climate Risk Analysis recognized climate change as an importance national security matter and instructed all parts of the defense establishment to integrate climate deliberations into their planning, actions, and attainments (U.S. Department of Defense, 2021).

Military installations globally are progressively susceptible to the physical effects of climate change. Seaside bases face the risk of sea-level rise and hurricane flow; bases in dry areas experience water shortage and high heat that confines operative capacity; Arctic installations are confronted by melting of permafrost and altering sea-ice situations. The US Naval Station Norfolk,

the world's largest marine base, experiences grave inundating dangers from sea-level rise; Pacific island bases in Guam and the Marshall Islands experience the view of flood. These physical susceptibilities are not just infrastructure issues but strategic ones, as dented or devastated military installations decrease the capability of the armed forces to show power and retort to crises.

Beyond the defense of military resources, armed forces are gradually called upon to reply to the humanitarian costs of climate-related tragedies. Military possessions — logistics capability, engineering ability, medical resources — are frequently the most operative instruments accessible for large-scale tragedy reply, and call for armed humanitarian support is rising as climate change upsurges the occurrence and harshness of extreme weather incidents. The US military steered hundreds of humanitarian aid and disaster relief actions per year in the second decade of the twenty-first century, and this operative speed is expected to rise. Handling the stiffness between the humanitarian support mission and the conventional warfighting mission is a gradually significant problem for military designers.

5.2 Climate Policy as National Security Strategy

Recognizing climate change as a national security issue has significant implications for how countries should think about climate strategy. If climate change creates risks as compare to those created by antagonistic armed powers or terrorist organizations, then the asset need to address it should be adequate to the perceived risk. This reason has been appealed by leaders ranging from Barack Obama, who named climate change 'an immediate danger to our national security,' to armed officials who have claimed that the resources allocated to climate adjustment and mitigation are reserves in national security.

The national security enclosing of climate policy also has consequences for the types of policy tools that are brought to tolerate on the problem. Traditional climate strategy has functioned mainly through international discussions, national controlling bases, and market mechanisms for example carbon pricing. These tools remain vital, but the nationwide security inclosing proposes that extra tools — consisting strategic investments in climate-resilient structure, advancing arrangement for climate migration, and the use of advance

support to shape adaptive capability in vulnerable regions — should also be part of the policy framework. It also proposes that climate deliberations should be combined with the complete scope of foreign policy and security decision-making, not tackled as an isolated domain (Hallegatte et al., 2016).

The problem of uniting climate into national security policy is turned complex by the long time horizons included, the unpredictability of climate forecasts at regional and local levels, and the political problems of ordering long-term dangers over short-term necessities. Security institutions are particularly planned to respond to instant, solid threats — an aggressive military, a terrorist attack, a local crisis — instead of to manage slow-moving, diffuse developments such as climate change (Werrell & Femia, 2017). Creating the institutional capability, the investigative tools, and the political will to integrate climate into strategic arrangement is a noteworthy governance challenge that has only started to be discussed.

6. International Dimensions: Climate Change and Geopolitics

6.1 Climate Change and Great Power Competition

The geopolitical consequences of climate change are progressively redesigning the dynamics of great power race. The Arctic, long a tactical backwater, has developed a central point of geopolitical competition as melting sea ice unlocks new shipping ways and makes formerly unreachable natural resources utilizable (Huebert et al., 2012). United States, Russia, Norway, Canada, and Denmark are all progressing contending territorial rights in the region, and the pace of Arctic growth is speeding up as climate change developments. The opening of the Northern Sea Way — potentially reducing transit routes from Europe to Asia by 40 percent as compared to the Suez Canal route — has deep consequences for international trade and marine policy, and is motivating substantial military investment by Russia and, progressively, the United States (Climate Central, 2020).

Concurrently, climate change is changing the comparative strategic situation of different powers and regions. States in the tropics and subtropics — consisting large parts of South and Southeast Asia, Central America, sub-Saharan Africa — experience

excessively severe climate effects, comprising extreme heat, altered rainfall patterns, and sea-level rise, that will affect their economic progress and rise their susceptibility to volatility (Maplecroft, 2023). States in higher latitudes, counting Canada and Russia, may receive some economic advantages from climate change in the shape of amplified agricultural production and entree to Arctic resources, whereas fronting their own important challenges consisting permafrost melting and severe weather incidents. These asymmetric influences are probable to change the circulation of economic and political power, with possibly noteworthy significances for the global order.

The energy transition determined by climate change is also redesigning geopolitics. The global shift from fossil fuels to renewable energy impend the economic and political power of main hydrocarbon exporters, consisting Saudi Arabia, and Gulf states and Russia. States that have constructed their economies and their foreign policy effect on oil and gas incomes confront an essential strategic problem as the world decarbonizes, and their responses — from divergence plans to struggle to slow the energy conversion — have noteworthy consequences for global stability (O'Sullivan, 2017). At the same time, the competition to grow and install clean energy technologies is creating new forms of technological rivalry, mainly between the United States and China, with far-reaching effects for the future balance of power (Goldthau et al., 2020).

6.2 Global Cooperation and Its Restrictions

The climate challenge is eventually a collective action issue of the highest order — one that can only be sufficiently tackled through constant global collaboration. Climate change is produced by the increasing emissions of all states, its effects are felt internationally, and no single nation — though powerful — can solve it individually (Nordhaus, 2015). This makes strong motivations for free-riding and makes the dialogues and implementation of active global treaties extremely tough. The history of global climate talks, from the Rio Earth Summit in 1992 through the Kyoto Protocol, the Copenhagen Accord, and the Paris Agreement, is a record of incomplete development recurrently dwindling short of the determination vital to prevent unsafe levels of warming.

The Paris Agreement of 2015, which dedicated parties to holding global warming to well below 2 degrees Celsius above pre-industrial levels and to following struggle to limit warming to 1.5 degrees, denoted an important diplomatic success. Its bottom-up architecture, founded on generally determined contributions instead of globally instructed goals, was planned to attain worldwide contribution while obliging the contradictory capabilities and conditions of different states (Climate Action Tracker, 2025). Yet the initiatives made under Paris, even if completely applied, were inadequate to attain the temperature goals, and the concrete application record has dropped more short of even those inadequate initiatives.

The task of international climate collaboration turned complex by the contact between climate and other aspects of geopolitics. US-China rivalry, which has deepened across economic, technological, and military spheres, has made continued climate collaboration between the world's two main emitters more problematic, even as both states have identified the imperative of speaking climate change. The war in Ukraine and its outcomes for European energy security have both augmented and complex the energy conversion in Europe, representing the methods in which climate strategy and geopolitical security cooperate in complex and occasionally opposing ways. Construction and supporting global climate collaboration in the background of escalating great power rivalry is one of the important governance challenges of the twenty-first century.

Equity deliberations are also vital to the politics of global climate collaboration. The states most susceptible to climate change — small island developing countries, least developed states, and nations across the Global South — have contributed minimum to the issue in terms of increasing greenhouse gas emissions. The request for climate impartiality — that rich, historically high-emitting states should tolerate the maximum load of climate action and should offer economic and technical support to susceptible developing states — is both ethically convincing and politically indispensable for safeguarding broad-based global collaboration. The loss and impairment mechanism recognized at the COP27 climate conference in Sharm el-Sheikh in 2022 represented an important, if still insufficient, acceptance of the responsibility of rich states to

compensate exposed states for climate effects they cannot adjust to.

Conclusion

Climate change signifies one of the most significant security challenges of the twenty-first century. As this study has recognized, the physical effects of a warming planet — increasing temperatures, severe weather incidents, sea-level rise, altering rainfall patterns, and environmental deprivation — are already creating security costs across manifold dimensions: augmenting resource struggles, forcing population displacement, weakening fragile countries, redesigning the strategic scene, and confounding the dynamics of great power rivalry. These outcomes will deepen in the approaching decades as warming endures, and they will intermingle with other causes of conflict and unpredictability in ways that are problematic to forecast but possibly disastrous.

Addressing this challenge needs a basic reconfiguration of how countries and the globally people think about security. The narrow emphasis on armed threats to territorial sovereignty must provide way to a wider conception of security that includes the full variety of risks to human wellbeing and social solidity — consisting environmental pressures of the kind that climate change created. This theoretic modification is previously happening, as showed by the rising combination of climate into national security strategies, the growing acknowledgement of climate as a security threat in multifaceted forums, and the propagation of research and policy analysis discovering the climate-security nexus.

But theoretical acknowledgement is not adequate. What is essential is action — determined, constant, and globally synchronized action to decrease greenhouse gas emissions to levels consistent with preventive warming to the goals set by the Paris Agreement; to shape the adaptive capability of susceptible communities and countries; to advance active global governance agendas for handling climate-related dislocation, resource battles, and humanitarian crises; and to guarantee that the conversion to a clean energy economy is achieved in ways that are reasonable, that do not produce new sources of conflict and volatility, and that reinforce instead of weaken worldwide cooperation.

The risks could not be higher. Climate change, left

unaddressed, risks to weaken the bases of the global order — the stability of countries, the security of people, the capacity for transnational collaboration — that have reinforced relative peace and prosperity for much of the post-World War II period. Recognizing it, by contrast, provides the

Recommendations

- States must implant climate into national security strategies and foreign policy goals.

opportunity not only of evading catastrophic warming but of creating a safer, more just, and more sustainable world. The option, as always, is ours to make — and the time for creating it is quickly diminishing

- Developed countries must finance in building climate resilience in developing countries
- Global climate governance institutions require noteworthy strengthening.

Conflict of Interest

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