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EVOLVING CHALLENGES OF CLIMATE CHANGE: EXPLORING NON-TRADITIONAL SECURITY RISKS IN GILGIT-BALTISTAN

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ABSTRACT

Climate change is an emerging global challenge that has profound implications for human security. In regions like Gilgit-Baltistan, a remote and environmentally fragile area in northern Pakistan, the impacts of climate change extend beyond traditional environmental concerns to encompass non-traditional security risks. This study will explore the multifaceted challenges posed by climate change in Gilgit-Baltistan, focusing on water security, food insecurity, displacement, and socio-economic vulnerabilities. The rapid melting of glaciers, increased frequency of GLOFs, and errant weather patterns are changing the very ecology of the region by raising the risks to livelihoods and infrastructure. It aggravates the socio-political tensions of resource competition and also adds migration pressures that might destabilize the region.

This study, therefore, tries to explore the relationship between environmental degradation and non-traditional security risks in Gilgit-Baltistan through a multidisciplinary approach. This study, therefore, brings into focus the need to address the particular vulnerabilities of Gilgit-Baltistan in order to ensure long-term stability and resilience in the face of changing climate challenges. It does this by looking into local and regional dynamics and giving insights into policy strategies to reduce such risks.

Keywords: *Gilgit-Baltistan, Security, Climate, environmental, Threats, strategies.*

INTRODUCTION

Climate change is a subtle but powerful enemy at work in the Gilgit-Baltistan region, where glaciers wind through valleys and tall peaks reach the sky. Located in Pakistan's northern area, Gilgit-Baltistan is well-known for its breathtaking scenery, rich cultural heritage, and strategic geopolitical significance. But beneath its peaceful exterior is a force that is becoming more and more deadly, threatening not only the environment but also the socioeconomic stability and security of the region. Climate change was often believed to be solely an environmental problem, but it is now understood to be a complicated one with implications for national human security. It is crucial to understand how climate change is impacting vulnerable regions like Gilgit-Baltistan, even though geopolitical conflicts and territorial disputes are typically the primary subjects of discussion when it comes to security threats. This introduction aims to shed light on the intricate connection between

security and climate change in Gilgit-Baltistan by stressing its unusual but important implications. Gilgit-Baltitan's unique geography makes it particularly susceptible to the adverse effects of climate change. This region is particularly susceptible to changes in the surrounding environment because it is situated where three powerful mountains ranges the Hindu Kush, the Himalayas, and the Karakoram meet. Temperature increases have accelerated the melting of glaciers, leading to severe issues like altered precipitation patterns, glacial lake outburst floods (GLOFs), and water shortages. These changes jeopardize the livelihoods of millions of people who rely on glacial melt water for hydropower generation, agriculture, and residential use. They also disturb the fragile ecological balance (Ali, 2011).

Due to the intimate relationship between the socioeconomic structure of Gilgit-Baltitan's and its natural resources, disruptions caused by climate change could be especially detrimental. The region's economy depends on agriculture, but it is increasingly under risk from unpredictable weather patterns, damaged soil, and scarce water supplies. Along with monetary losses, the repercussions include poverty, food insecurity, and heightened social unrest. Declining economic possibilities make security issues worse and make disadvantaged people more susceptible to extremism. The threat of migration brought on by climate change is a major concern in Gilgit-Baltistan, increasing concerns about individual safety and deepening socioeconomic gaps. Many people have been forced to leave their homes due to natural disasters and environmental degradation, further taxing already fragile infrastructure and resources and increasing social unrest and instability (khan 2021).

In the absence of adequate adaptation strategies and plans for sustainable development, the region could become a focal point for intraregional conflicts and transnational security concerns. Therefore, addressing the interconnected issues of climate change and security in Gilgit-Baltistan requires an all-encompassing approach that integrates conflict prevention, socioeconomic development, and environmental sustainability strategies. The detrimental effects of climate change cannot be denied, but by taking proactive measures to lessen dangers, communities that are currently at risk can become more resilient. Upgrading, investing in climate-resilient infrastructure, and boosting renewable energy sources. The ecological integrity, socioeconomic stability, and human security of Gilgit-Baltitan's are all at risk from climate change in a novel but significant way. By comprehending the intricate connection between security dynamics and climate change, policymakers can direct their efforts toward projects that support sustainable development and resilience-building. With coordinated action and international cooperation, Gilgit-Baltistan can successfully navigate the rough seas of climate change and emerge stronger and more resilient than ever before, despite the immense challenges that must be faced (Munir, 2021).

Non-traditional security

The Non-traditional security refers to a broad category of security concerns that extend beyond the typical military threats that are frequently addressed by state defense policies. Among the various issues that fall under the umbrella of non-traditional security concerns include terrorism, pandemics, environmental degradation, food and water crises, cyber threats, and multinational organized crime. Threats to non-traditional security pose significant challenges to the stability, development, and well-being of a region known for its delicate ecological balance and crucial geopolitical importance. With its wide-ranging impacts on water security, natural disasters, and socioeconomic vulnerabilities, climate change discussed earlier stands out as one of the most pressing non-traditional security issues. Climate change and non-traditional security concerns are contributing factors to the region's problems. Pollution, deforestation, and unsustainable land use practices cause environmental degradation that weakens the region's ecological resilience and increases its vulnerability to natural disasters. Food security, poverty, and social unrest are all threatened by ecosystem

damage in a region where agriculture and natural resources are the main sources of income (Srikanth, 2014).

The cross-border security concerns are brought about by transnational organized crime, which includes illicit wildlife trafficking, drug smuggling, and people trafficking. Gilgit-Baltitan's porous borders and isolated, inhospitable landscape leave it vulnerable to criminal networks' manipulation, further weakening societal stability, rule of law, and governance. With increased reliance on information and communication technologies (ICTs) and expansion of digital connection, cyber-attacks also become an increasing issue. Attacks on vital infrastructure, financial systems, and governmental organizations can cause major disruptions to vital services, erode public confidence in institutions, and present serious security and governance issues (Azam, 2023).

The susceptibility of the area to pandemics, as the current COVID-19 outbreak, emphasizes the connection between socioeconomic stability and health security. Pandemics worsen socioeconomic inequality and put further strain on already vulnerable populations when they are caused by weak health systems, poor access to healthcare, and inadequate infrastructure. A comprehensive and multifaceted strategy that incorporates social resilience, environmental sustainability, and efficient governance is needed to address these non-traditional security concerns. Essential elements of such an approach include investing in sustainable development, building community resilience, bolstering institutions, and fostering cooperation among regions. Gilgit-Baltistan can create a more safe, resilient, and prosperous future for its people and support regional peace and cooperation by identifying and mitigating the wide range of non-traditional security risks (Alam, 2022).

Research Methodology:

The dissertation investigates qualitative research methods as well as analytical and explanatory research. A qualitative research method has been used to make the study. A secondary data collection method has been used to accumulate data for the study. Most of the data has been collected via secondary data collection methods such as diplomatic papers, official releases, research papers, journals, books, as well as official archives.

Theoretically Framework

Copenhagen school of security theory

Barry Buzan, an international relations scholar, is credited with establishing the Copenhagen School of Security Studies, an academic movement, with his 1983 book People, States, and Fear: The National Security Problem in International Relations. Departing from conventional security studies, the Copenhagen School emphasizes the non-military dimensions of security in detail. Jaap de Wilde, Buzan, and Ole Waever are among the school's affiliated theorists). The institute got its name since many of its members were employed by the Copenhagen Peace Research Institute. Students studying security studies are taught a critical approach by the esteemed Copenhagen School of Security Studies. This relates to international relations (IR), a subject of study that became well-known after the Cold War ended due to the post-pastoralism movement. In international relations, the issue of national security emerged as the pillar of the academic philosophy of the school. Two eminent scholars have ties to the school. The Copenhagen School of International Studies employs constructivist ontology. A tendency to view international threats or worries about national security as socially manufactured issues. Professor Bill McSweeeny, a peace studies expert from the University of Dublin and one of the movement's main opponents, coined the term "Copenhagen School" in the beginning (Emmers, 2017). The process by which common domestic political issues are brought to the national political arena and exert influence over governments is known as securitization, and it is a fundamental element of the Copenhagen School.

Climatic efftes

Key points and impacts of climate change include:

- **Rising temperatures**: Global average temperatures have been increasing, leading to heat waves, melting ice caps and glaciers, and rising sea levels.

- **Extreme weather events:** Climate change is associated with more frequent and intense weather events such as hurricanes, droughts, floods, and wildfires.
- **Changes in precipitation patterns**: Some regions may experience increased rainfall, while others may face more prolonged droughts, leading to shifts in ecosystems and water availability.
- **Ocean acidification**: The absorption of excess CO2 by the oceans leads to acidification, which harms marine life, particularly organisms with calcium carbonate shells like corals and shellfish.
- **Loss of biodiversity:** Climate change threatens numerous species with habitat loss, changes in migration patterns, and increased extinction risk.
- **Impacts on agriculture:** Changes in temperature and precipitation patterns affect crop yields, livestock health, and food security, leading to potential disruptions in global food systems.
- **Health impacts:** Climate change exacerbates health risks through heat-related illnesses, the spread of vector-borne diseases, and air pollution (Kreutzmann,2013).

The 21st century the Global collaboration and action are needed to combat climate change in order to cut greenhouse gas emissions, switch to renewable energy sources, increase resistance to its effects, and promote sustainable practices in a variety of industries and sectors, including transportation, energy, agriculture, and industry.

Climate change: Risks for Gilgit-Baltistan

Gilgit-Baltistan faces a range of threats that impact its environment, society, economy, and security. These threats stem from various factors, including geopolitical tensions, environmental degradation, socio-economic disparities, and governance challenges. Here are some of the key threats facing Gilgit-Baltistan.

Scarcity of Water with Glacial Retreat:

The region's rivers, lakes, and aquifers depend heavily on the world's largest glaciers outside of the Polar Regions, which are found in Gilgit-Baltistan. But these glaciers are receding at a startling rate due to climate change, which means that there will be less water available during the dry season. This puts livelihoods at risk and exacerbates problems with water scarcity. It also presents serious challenges for agriculture, hydropower production, and the supply of potable water.

Increased Frequency and Intensity of Extreme Weather Events:

In Gilgit-Baltistan, climate change is causing weather patterns to change, which is increasing the frequency and intensity of extreme weather events such floods, avalanches, landslides, and droughts. These incidents cause death and property damage in addition to upsetting vital services, livelihoods, and infrastructure, which increases vulnerabilities and threatens socioeconomic stability.

Impact on Agriculture and Food Security:

The climate changes Impact on Agriculture and Food Security, Weather-related variations in Gilgit-Baltistan have an impact on crop yields and agricultural productivity, endangering livelihoods and food security. An increase in dependency on foreign food aid and a decrease in agricultural productivity result from variable weather patterns that disturb crop cycles and conventional farming methods, such as unseasonal frost, droughts, and unpredictable rainfall (Hussain. 2016).

Natural Resource Degradation and Biodiversity Loss

The Biodiversity Loss and Natural Resource Degradation Underlying fragile ecosystems and rare species of Gilgit-Baltistan, climate warming promotes environmental deterioration and biodiversity loss. There are cascade impacts on ecosystem services like pollination, soil fertility, and carbon sequestration when temperature and precipitation regime changes cause habitats to change, ecosystems to be disrupted, and species to migrate and become extinct.

Glacial Lake Outburst Floods (GLOFs)

The GLOFs, or glacial lake outburst floods, Glacial Lake Outburst Floods (GLOFs), in

which the abrupt release of water from glacial lakes can cause catastrophic floods downstream, are becoming more likely as a result of Gilgit-Baltitan's retreating glaciers. Particularly in vulnerable communities situated in the floodplains of glacial lakes, these occurrences represent a serious threat to life, property, and means of subsistence.

Health Risks and Disease Outbreaks: In Gilgit-Baltistan, climate change intensifies health risks and disease outbreaks, impacting vulnerable communities with restricted access to sanitary facilities and medical care. The spread of aquatic illnesses like cholera and typhoid fever, as well as vector-borne illnesses like malaria and dengue fever, is facilitated by shifting patterns of precipitation and temperature.

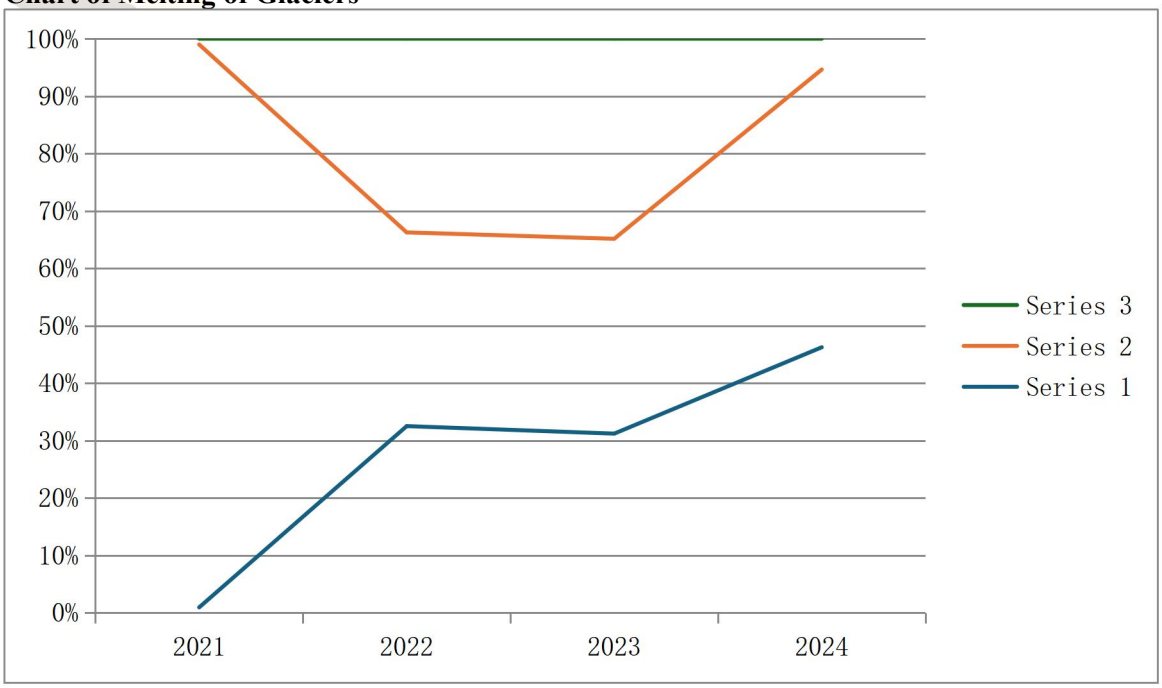
Displacement and Migration: Communities may be forced to migrate in pursuit of alternate livelihoods and resources as a result of climate-induced environmental changes, such as water scarcity, crop failures, and natural catastrophes. Urban centers and host communities are further burdened by this internal movement and displacement, which can spark conflict and social tensions as well as competition for limited resources (Iqbal, Q. 2022).

Threats from climate change necessitate quick and coordinated response on a local, national, and worldwide scale. In order to reduce vulnerabilities and build climate resilience, Gilgit-Baltistan needs to implement adaptation measures like bettering water management practices, strengthening early warning systems, boosting agricultural resilience, and supporting ecosystem-based approaches to disaster risk reduction. Furthermore, in order to stop the effects of climate change in the region from getting worse, mitigation measures to cut greenhouse gas emissions and stop global warming are essential.

Melting of Glaciers

Glaciers melting in the Gilgit-Baltistan region of Pakistan, which forms part of the extensive Himalayan and Karakoram ranges, have become an issue of great environmental concern. In this area, glacial melt is mainly caused by climate change through increasing temperatures that speed up their melting.

Chart of Melting of Glaciers



Note: Global climate change is having an impact on Gilgit_baltistan as well. The graph illustrates the annual increase in glacier melt, which is particularly severe for the area.

Suggestions for future

A thorough and diversified strategy that incorporates adaptation, mitigation, and sustainable development techniques is needed to address the challenges that climate change poses in Gilgit-Baltistan. To lessen the effects of climate change and increase the region's resilience, consider the following ideas:

- **Promote Sustainable Water Management:**

Encourage sustainable water management by putting into practice water-saving techniques like drip irrigation, rainwater collection, and economical water usage to lessen the effects of water shortages and provide fair access to water resources. Storage.

Strengthen Agricultural Resilience: Provide farmers with climate-smart agricultural methods to help them adapt to changing weather patterns and increase productivity, such as crop diversification, agroforestry, and soil conservation measures. In order to strengthen farmers' ability to adapt, make climate-resilient crop varieties, weather data, and agricultural extension services accessible.

- **Boost Emergency Preparedness Initiatives:** To lessen the effects of severe weather conditions and natural catastrophes, develop and put into practice comprehensive disaster risk reduction plans that include early warning systems, evacuation schedules, and resilient infrastructure. To determine high-risk regions and allocate resources for disaster preparedness and response, conduct risk assessments and vulnerability maps. In order to improve biodiversity, control water flow, and lessen the effects of climate change, it is important to conserve and restore important ecosystems like wetlands, watersheds, and forests. Employing natural approaches to mitigate erosion, increase ecosystem resilience, and sequester carbon includes afforestation, reforestation, and habitat restoration initiatives.

- **Encourage Community Empowerment and Participation**: Include marginalized groups, indigenous peoples, and local communities in the planning, execution, and decision-making processes of climate adaptation and resilience-building projects. Encourage indigenous customs, traditional knowledge, and community-based strategies to strengthen the adaptability and resilience of the area.

- **Encourage the Green Economy and Renewable Energy**: In order to lower greenhouse gas emissions and improve energy security, communities should be encouraged to switch to renewable energy sources including solar, wind, and hydropower. To stimulate economic growth, provide employment, and lessen carbon footprint, invest in green technologies, energy-efficient projects, and sustainable development initiatives.

Enhance Governance and Institutional Capability: Boost the ability of local government agencies, civil society groups, and government institutions to efficiently organize, carry out, and oversee climate change adaptation and resilience programs. To integrate climate resilience into policies, programs, and projects, strengthen stakeholder coordination, collaboration, and knowledge sharing.

The implementing these recommendations in a coordinated and comprehensive way, Gilgit-Baltistan may grow more resilient to climate change, lessens its vulnerabilities, and creates a sustainable future for its people. Addressing the complex difficulties posed by climate change in the region requires long-term planning, innovation, and collaboration among stakeholders.

Conclusion

A complex interaction of natural, social, and political elements contributes to the vulnerability of Gilgit-Baltistan, as the region's non-traditional security challenges are explored. The area's livelihoods, food security, and water supplies are all impacted by climate change, making it an important challenge. The increasing frequency of natural disasters, unpredictable weather patterns, and melting glaciers highlight the pressing need for

adaptation and mitigation measures. The relationship between food insecurity, population displacement, and resource rivalry and the effects of climate change on security is one of the study's main conclusions. If these overlapping concerns are not adequately addressed, they may worsen pre-existing vulnerabilities and even spark conflicts. To improve the region's potential for adaptation, a comprehensive strategy that unifies climate resilience with more general development objectives is necessary. When it comes to tackling climate-related issues, the importance of local communities and indigenous knowledge systems cannot be emphasized. Insights and solutions for strengthening resilience against environmental hazards can be gained from their traditional practices and sustainable resource management strategies. In any plan for adapting to climate change in Gilgit-Baltistan, empowering local stakeholders and supporting community-based initiatives should be given top priority.

The transboundary problems with water management, energy security, and environmental preservation, regional collaboration and diplomatic initiatives are also essential. Every stakeholder in the region may become more resilient through collaborative frameworks that facilitate technology transfer, information sharing, and coordinated adaptation measures. A multifaceted strategy that takes into account political, social, economic and environmental aspects is needed to address non-traditional security risks in Gilgit-Baltistan. It is possible to lessen the negative effects of climate change and create a more secure and prosperous future for the people of Gilgit-Baltistan and the larger Himalayan area by making investments in sustainable development, enhancing community resilience, and promoting regional collaboration.

Findings of study:

The study emphasizes how vital it is to comprehend how climate change poses a non-traditional security danger to Gilgit-Baltistan. The results underscore the pressing requirement for concerted efforts at the municipal, national, and regional levels to effectively tackle the diverse issues brought about by climate change.

- Firstly, the research emphasizes the vulnerability of Gilgit-Baltistan to climate change impacts, particularly in terms of water scarcity, agricultural disruptions, and increased risk of natural disasters. These challenges not only threaten the livelihoods of local communities but also contribute to broader socio-economic instability in the region.
- Secondly, the interconnected nature of climate change with other security concerns, such as food insecurity, migration pressures, and resource competition, underscores the complexity of the issue. Addressing climate-related risks requires holistic strategies that consider these interlink ages and prioritize resilience-building measures.
- Thirdly, the research highlights the role of governance structures, policy frameworks, and institutional capacities in shaping adaptive responses to climate change. Effective governance mechanisms that promote inclusive decision-making, resource allocation, and risk management are essential for enhancing the region's resilience.

The study emphasizes how crucial it is to use traditional methods, indigenous knowledge systems, and community-based strategies in attempts to adapt to climate change. Local communities have important knowledge and coping mechanisms that can guide the direction of sustainable development and increase resistance to environmental stressors. The study highlights the necessity of increased regional cooperation, communication, and teamwork to handle transboundary issues pertaining to energy security, water resources, and environmental preservation. Gilgit-Baltistan may greatly benefit from regional initiatives that support communication of information, cooperative planning, and shared accountability in constructing a more secure and sustainable future. A comprehensive and integrated strategy combining scientific knowledge, local expertise, policy innovation, and regional cooperation is needed to confront climate change as a non-traditional security challenge in Gilgit-Baltistan. It is feasible to lessen the negative effects of climate

change and advance regional peace, stability, and prosperity by giving adaptation, resilience-building and sustainable development top priority

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