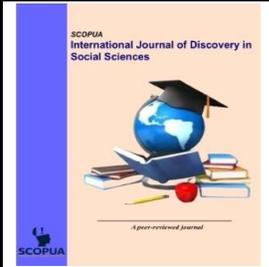




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Climate Change-Induced Displacement and Human Rights: A Case Study of Attabad Lake

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ABSTRACT

The Attabad Lake disaster in northern Pakistan offers a remarkable example of how climate change can drive forced displacement. In 2010, a massive landslide caused by an earthquake created Attabad Lake, displacing over 6,000 people from surrounding villages. This incident underscores the intersection of climate change and human rights violations, highlighting the vulnerability of communities in susceptible areas. The study explores the human rights impacts of this displacement, evaluates Pakistan's inadequate legal response, and proposes strategies for integrating human rights protections into climate policy. The research uses a qualitative case study approach, employing interviews with displaced persons, government officials, and NGOs, alongside a thematic analysis of the data. Key findings show that displaced individuals faced severe human rights violations, including inadequate housing, economic loss, and denial of reparation. The government's slow response and lack of infrastructure planning worsen the crisis. The research also reveals a significant gap in Pakistan's legal framework for addressing climate-induced displacement. The study calls for stronger disaster response mechanisms, better legal protections for climate-displaced persons, and the inclusion of local communities in decision-making processes. This case serves as a crucial lesson in the need for comprehensive policy reforms to mitigate the effects of climate-induced displacement.

Keywords: Climate Displacement; Human Rights; Attabad Lake; Disaster Management; Legal Framework

1. Introduction

Climate change is increasingly recognized as a significant driver of forced displacement, as communities are compelled to leave their homes due to sudden or gradual environmental changes that threaten their safety and livelihoods (Ivanovic, 2024). This phenomenon, commonly described as climate-induced displacement, lies at the intersection of environmental degradation, development policy, and human rights protection (Mamba et al., 2025). In countries like Pakistan, where geographically vulnerable regions are exposed to landslides, floods, and glacial lake outburst events, climate-related hazards do not only destroy physical infrastructure but also expose serious gaps in the protection of displaced populations (Ullah, Shafique, Yu, & Shah, 2024). The case of Attabad Lake in northern Pakistan exemplifies how environmental disasters can trigger complex patterns of internal displacement, raising urgent questions about the legal status, rights, and long-term rehabilitation of affected communities (Pirzada, Khan, & Khokhar, 2025).

The Attabad Lake disaster, which unfolded in 2010 in the Hunza Valley, was triggered by a massive landslide that blocked the Hunza River and created a natural dam, submerging villages, agricultural land, and a vital segment of the Karakoram Highway (Shahid, 2024). Thousands of residents were displaced, many losing not only their homes and livelihoods but also their social networks, cultural ties, and sense of belonging. While the event attracted national and international attention, early responses were largely framed in terms of emergency relief and infrastructure restoration rather than comprehensive,



rights-based rehabilitation. Existing data and researches has tended to focus on the geomorphological, hydrological, and disaster management dimensions of the Attabad incident, with comparatively less emphasis on the human rights implications of the displacement it generated or on the adequacy of Pakistan's legal and policy frameworks in responding to such crises(Rashid et al., 2025).

This article addresses that gap by offering a socio-legal analysis of climate-induced displacement through the lens of the Attabad Lake disaster, foregrounding the human rights experiences of affected communities and the limitations of Pakistan's existing governance structures. It contributes novel insight by explicitly connecting climate displacement, internal migration, and human rights law in the Pakistani context, assessing how far current national frameworks recognize and protect climate-displaced persons, and where critical normative and institutional shortcomings remain. Building on this analysis, the study advances a rights-based framework for disaster governance that integrates human rights principles into climate adaptation, displacement management, and post-disaster recovery. In doing so, it seeks to move debates on Attabad and similar disasters beyond technical risk management towards a more holistic understanding of justice, accountability, and the protection of vulnerable populations in an era of accelerating climate change.

2. Methodology

This study employs a conceptual and case study-based qualitative design to examine the nexus between climate-induced displacement and human rights in the context of the Attabad Lake disaster. The analysis is grounded in an extensive desk-based review of academic literature, policy instruments, and empirical reports produced between 2010 and 2025. The corpus of sources includes peer-reviewed journal articles, governmental publications, NGO assessments, and international policy frameworks that address climate displacement, disaster risk governance, and human rights protection. Relevant materials were identified and collected primarily through established academic databases and publishers, alongside institutional repositories such as those of UNHCR, UNDP, and Pakistan's National Disaster Management Authority (NDMA). Both theoretical contributions and empirical case studies were systematically reviewed to capture the socio-legal, environmental, and humanitarian dimensions of the problem. The methodological approach goes beyond descriptive synthesis of existing work. It involves critical document analysis coupled with thematic synthesis to interrogate the extent to which human rights norms and protections are incorporated into Pakistan's legal, institutional, and policy responses to climate-related displacement. Particular attention is paid to identifying gaps in normative frameworks, shortcomings in implementation, and they lived experiences and vulnerabilities of affected communities. The Attabad Lake disaster is treated as an illustrative case through which systemic weaknesses are examined and a rights-based framework for future disaster governance is developed.

3. Comparative Regional Context

Climate change-induced displacement is a widely studied trend, with large-scale research stressing its multi-dimensional impacts(Mustak, 2022). The literature generally focuses on three key themes: environmental causes, socio-economic consequences, and legal and policy responses. Environmental studies put emphasis on that climate change has escalated risks such as floods, droughts, and landslides(Peduzzi, 2019). In mountainous regions like northern Pakistan, glacier recession and unpredictable rainfall patterns increases the frequency of landslides and natural dam formation(Hewitt, 1998). The Attabad Lake incident exemplifies how fragile ecological systems are becoming more and more disturbed due to warming temperatures(Van Assche & Hornidge, 2023).

Socio-economic studies discuss that climate change induced displacement not only results in the physical and material loss of homes and livelihoods but also undermines and compromise community unity, cohesion and cultural identity. Displaced populations often face poverty, social segregation, and psychological trauma(McAdam, 2010). In South Asian countries like Bangladesh and Nepal are affected of the same intensity where vulnerable groups stand disproportionate burdens of climate risks(Dewan, 2015). If we look into the legal and policies framework nationally and internationally, a large gap can be seen in it. If we talk about the Paris agreement, the loss and damage is recognized in that but they do not obligatory talk about and protect the climate displaced people. This gap in the national and international framework leaves millions of people without legal recognition or rights-based remedies(Calliari, 2018).

The current literature confirms the need of incorporating human rights principles into climate governance(Duyck, Jodoin, & Johl, 2018). However, very few studies distinctively analyze Pakistan's legal framework or its treatment of internal



displacement through a climate change lens. This study explores that gap by connecting human rights, displacement, and environmental governance in the perspective of the Attabad Lake disaster (Peel & Osofsky, 2018).

Displacement due to climate is not limited only to Pakistan, but also Countries like Bangladesh, Nepal, and Pacific Island states experience similar Problems. In Bangladesh, frequent floods and river erosion have displaced millions of people, while in Nepal, melting glaciers and glacial lake eruption floods continue to wipe out settlements. The Pacific Islands is facing a continuous threat from rising sea levels, such as nations like Kiribati is already purchasing lands in foreign for potential of its people (Islam & Khan, 2020). These examples demonstrate that this climate displacement is not only environmental issue but also a human rights and development crisis. Bangladesh has already begun incorporating climate adaptation into relocation and resettlement planning (Kisinger & Matsui, 2021), but Pakistan's policies are still reactive, fragmented, and poorly rights-focused.

4. Human Rights and Legal Frameworks

It is pivotal to understand the relationship between human rights and climate displacement to understanding the Attabad lake case (Butz & Cook, 2016). Climate change is a threat to basic human rights such as the right to life, housing, food, water, and health (Lewis, Lewis, & Jones, 2018). And still, displaced individuals due to climate change in Pakistan are not recognized under any specific legal category. The current frameworks which is the National Disaster Management Act and National Climate Change Policy; lack provisions for climate-induced displacement. Though, they provide emergency relief but ignore long-term rehabilitation and rights protection. The lack of legal identification for climate-displaced persons leaves affected populations exposed to negligence and segregation from state support mechanisms (Wazir et al., 2024).

At the global level, frameworks such as the UN Guiding Principles on Internal Displacement and the Paris Agreement give soft-law assistance but have no enforceability (Brus, 2018). It is admirable that these principles persuade states to protect internally displaced persons but they do not impose necessary obligations. Resultantly, a global legal vacuum creation takes place, where displaced communities fall between charitable aid and human rights protection. Addressing this requires embedding human rights safeguards openly into national climate and disaster laws and ensuring that the displaced population is treated as rights-holders and not just victims of environmental change.

5. The Attabad Lake Disaster: A Case Study

In January 2010, a massive landslide struck the Hunza Valley due to a high magnitude earthquake, blocking the Hunza River and creating a natural dam that formed Attabad Lake (Schneider, Gruber, & Mergili, 2013). The disaster submerged 22 KMs of the main road and sunken several villages, destroyed farmland, and cut off a key section of the Karakoram Highway (Figure 1 & 2). Over 6,000 residents were displaced, losing homes, land, and livelihoods (Pirzada et al., 2025). The urgent humanitarian response was slow and poorly coordinated, leaving communities trapped and stranded without food, shelter, or medical care for weeks. Temporary camps lacked hygiene, sanitation and heating, exposing the affected families to harsh winter conditions (Cook & Butz, 2015).



Figure 1: Pre Land Slide Satellite Image of Attabad Current Lake (Google Maps)





Figure 2: Post Land slide Satellite Image of Attabad Lake (Google Maps)

Beyond material deficiency, displaced individuals faced deep psychological, emotional, and cultural losses. Communities were uprooted and displaced from ancestral lands, severing ties to heritage sites, inheritance, and social networks. Women and marginalized groups were affected the most and bore the heaviest burdens, as their livelihoods and care giving roles were disrupted (Sökefeld, 2012). The government's compensation mechanisms were ceremonial, bureaucratic and uneven, with many eligible families excluded from compensation's payment. The delayed reconstruction of the Karakoram Highway further isolated the region, causing long-term economic crash and stagnation (Li et al., 2024).

The Attabad case reveals and exposes systemic flaws in Pakistan's disaster management, weak institutional coordination, lack of community input and participation, and nonexistence of rights-based rehabilitation (Rahman, Rahman, Rahman, & Shaw, 2025). The government's focus on short-term relief failed to address the structural causes of vulnerability. A human rights-based approach would require participatory planning, fair and reasonable compensation, and legal identification of displaced persons to make sure accountability and dignity in recovery (Sökefeld, 2022).

6. Findings and Discussion

The finding shows that the Attabad Lake tragedy resulted in severe violations of fundamental human rights. Displaced families suffered the loss of sufficient housing, livelihoods, and right to use education and healthcare. The lack of effective rehabilitation policies and legal protections worsen these challenges. The state's disaster response mechanisms prioritized infrastructure and road repair over human recovery, neglecting the social and psychological effects of displacement.

Institutional disintegration was a persistent barrier. The National Disaster Management Authority and provincial agencies had no coordination within them and operated without any proper plan of rescue, leading to delays in compensation and reconstruction. The lack of gender-sensitive and inclusive approaches left women, children, and persons with disabilities disproportionately affected. Moreover, the nonexistence of a monitoring system prohibited displaced persons from seeking redress for unfulfilled promises.

The research stresses on that climate-induced displacement must be seen as a human rights issue, not simply a logistical or environmental issue. Incorporating human rights into disaster management ensures that affected individuals have access to justice, involvement in decision-making and equitable and fair access to recovery resources.

7. Recommendations and Policy Reform

To address the persistent failures in managing climate-induced displacement revealed by the Attabad Lake case, Pakistan must move beyond ad hoc, project-based responses toward a coherent, rights-based governance framework. The existing disaster management system remains largely reactive, fragmented, and infrastructure-centered, offering only temporary relief rather than long-term, dignified solutions for displaced communities. A reorientation is therefore required that treats climate-induced displacement as a structural human rights issue rather than a one-off emergency.

The federal government should develop a National Framework on Climate-Induced Displacement that formally recognizes climate-displaced persons and clarifies their entitlements to protection, assistance, and durable solutions. This framework



should set out minimum standards for evacuation, relocation, compensation, livelihood restoration, and access to essential services, while ensuring that affected communities are treated as rights-holders rather than passive beneficiaries of aid. The National Disaster Management Act and related provincial instruments should be amended to explicitly integrate human rights standards into disaster risk management. This includes embedding principles of non-discrimination, transparency, and free, prior, and informed participation into all stages of planning, relocation, and rehabilitation. Legal provisions should also require prior social and human rights impact assessments in high-risk areas such as mountain valleys and river basins. Institutional coordination must be significantly strengthened. Clear mandates, communication channels, and accountability mechanisms are needed between the National Disaster Management Authority (NDMA), Provincial Disaster Management Authorities (PDMAs), district administrations, and local government bodies. Integrated data systems, joint monitoring, and accessible grievance redress mechanisms would help reduce bureaucratic delays, overlapping responsibilities, and arbitrary decision-making in future crises.

All disaster and climate policies should mainstream gender and vulnerability perspectives. This entails systematically identifying and addressing the specific needs of women, children, older persons, persons with disabilities, and landless labourers in evacuation, shelter allocation, compensation schemes, and livelihood programmes. Targeted measures—such as dedicated livelihood support for women, accessible facilities for persons with disabilities, and protection from gender-based violence, should form part of every displacement response plan.

Altogether Pakistan should deepen partnerships with international organisations, research institutions, and civil society to align its practices with global best standards on climate mobility and human rights. International technical and financial support can be channeled towards context-appropriate early warning systems, climate-resilient infrastructure, and the development of legal and policy tools tailored to mountainous and glacial-lake regions like Attabad. Local civil society and community-based organisations, in turn, can play a key role in ensuring community participation, monitoring rights compliance, and sustaining long-term recovery.

8. Conclusion

The Attabad Lake disaster stands as a powerful example of how climate change, weak governance, and inadequate legal frameworks combine to produce long-term human suffering. The displacement it caused was not merely an environmental disaster but a profound human rights crisis. The analysis in this study shows that affected communities experienced violations of core rights, including the rights to housing, livelihood, health, education, and participation in decisions that directly shaped their future. These harms were not accidental side effects of a “natural” catastrophe, but the result of structural vulnerabilities, policy gaps, and the absence of a clear legal status for climate-displaced persons in Pakistan’s existing framework.

The case study further demonstrates that climate-induced displacement cannot be effectively addressed through short-term humanitarian relief alone. Pakistan’s institutional response to Attabad remained largely reactive, fragmented, and infrastructure-centered, prioritizing the restoration of roads and basic services over comprehensive, rights-based rehabilitation. The failure to ensure fair and transparent compensation, to provide gender-sensitive support, and to create inclusive mechanisms for community participation reflects broader weaknesses in national disaster management and climate governance. At the international level, the reliance on soft-law instruments and non-binding guidance has left a protection gap, where communities like those of Attabad fall between disaster relief and enforceable human rights guarantees.

In light of these findings, this study argues that Pakistan must move toward an integrated, proactive, and rights-based framework for climate-induced displacement. This includes legal recognition of climate-displaced persons, explicit incorporation of human rights standards into disaster and climate laws, stronger coordination among federal, provincial, and local institutions, and systematic inclusion of vulnerable groups—especially women, children, and persons with disabilities—in planning and implementation. Partnerships with international organizations, research institutions, and local civil society can support the development of climate-resilient infrastructure and context-specific legal reforms.

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