

Climate Change as a National Security Challenge: Emerging Threats and Strategic Responses for Pakistan

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Abstract

Climate change has become a multi-faceted national security issue in Pakistan. The country is a small emitter of GHGs, but is highly vulnerable to floods, heatwaves, droughts, glacial hazards, water stress/scarcie supply, sea-level rise, ecosystem degradation, and climate-related livelihood disruption. The impacts of these pressures on the human, economic, food, water, energy, infrastructure and political security of Pakistan are explored in this paper. It underlines the need to consider climate change not as a direct trigger for conflict, but as a threat multiplier that exacerbates existing vulnerabilities due to climate shocks, which are compounded by poverty, weak infrastructure networks, and high rates of urbanization, resource pressures, governance deficits and fiscal constraints. The 2022 floods are a stark example, causing damages and economic losses of more than US\$30 billion, and impacting some 33 million people. The paper uses a qualitative secondary research method, document analysis and a climate-security framework to pinpoint new risks and evaluate strategic responses. It suggests integrating climate risk into national security planning, enhancing water and disaster governance, climate-proofing critical infrastructure, climate early-warning systems, climate smart agriculture, protecting mountain ecosystems, mobilizing climate finance and expanding regional cooperation. The core theme is to shift the country's security policy from military readiness to overall resilience.

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Introduction

The concept of national security today is defined as security of national territory and state institutions, as well as security of social, economic, environmental and human systems that constitute the basis of the stability of the state (Wu, 2025; Ishaque et al., 2022). Climate change is part of this broader notion of security because it can affect production of critical infrastructure, lower agricultural yields, aggravate water scarcity, affect energy systems and cause more displacement due to disasters, and put further strains on already limited public institutions. The problem is exacerbated for Pakistan, due to high population density, water vulnerability to Indus Basin, intensive agriculture, urbanization, low resilience of ecosystems and frequent fiscal constraints (Khan, 2026).

It is also a matter of climate justice that Pakistan is vulnerable. The country is a comparatively small emitter of GHGs, and is highly vulnerable to climate change impacts. The World Bank says Pakistan's GHG emissions are less than one per cent of the world total, but the extent of

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vulnerability was visible during the floods in 2022. UNDP also rates Pakistan as being extremely vulnerable to climate change, and mentions climate-related shocks like frequent disasters, pollution, glacial melt, and changing rainfall rates as threats to lives, livelihoods, and ecosystems. The recent flooding in 2022 is the most recent proof of the national-security aspect of climate risk. More than US\$14.9 billion in physical damages, estimated at least US\$15.2 billion in economic losses, and at least US\$16.3 billion in resilient reconstruction needs were estimated in the post-disaster assessment. Over 33 million people were impacted and over 1,730 people lost their lives. These sectors were the most heavily damaged, including housing, agriculture and livestock, and transport and communications (Saad, 2025).

The effects of climate change can also be a factor in internal migration and displacement. Affected communities can move to other areas and cities temporarily or permanently in the face of the destruction of homes and fields caused by flooding, or the effects of droughts and water scarcity on rural livelihoods (Qasim et al., 2024). While migration itself is not necessarily a threat to security, large numbers and uncoordinated migration can add to housing, employment, water supply, sanitation, education, health care and other public services strains. Urbanization rates can also accelerate the growth of informal settlements and impact them with flooding and heat. Where state institutions are not able to cope, climate-induced displacement can add to social tensions and undermine public trust in state institutions (Ali et al., 2025). The economic impacts of climate change also bolster its connection to national security. Climate disasters can harm infrastructure, cut agricultural production, disrupt trade, harm businesses, create unemployment, and put a significant strain on public finances. Governments must devote a large proportion of their resources to emergency relief and reconstruction, which, in some cases, may help to compete for funds allocated to other long-term objectives, such as education and health care. In turn, repeated climate crises can have a negative impact on economic growth and enhance poverty and fiscal vulnerability. World Bank warned of the potential of such climate risks to seriously impact Pakistan's economic performance by the middle of this century. Resilience to climate change, therefore, needs to be considered as a critical element of economic and national security measures (Aman, 2025).

Research Methodology

This study adopts a qualitative, exploratory research design grounded in the securitization and human-security traditions of security studies. The design is appropriate because the research question is analytical rather than statistical: it seeks to explain how climate change operates as a non-traditional, multidimensional national-security threat in Pakistan rather than to measure a single causal coefficient. A qualitative approach allows the study to trace the causal pathways or "threat-multiplier" chains that connect climate hazards to water, food, economic, health, infrastructural, migratory, and political-governance insecurity.

Research Design

The study follows a single-country, embedded case-study design, with Pakistan as the case and the eight security domains listed above as the embedded units of analysis. The 2022 super-floods serve as an illustrative critical case that demonstrates the cascading, cross-sectoral

character of climate-security risk. The analysis is descriptive-analytical and interpretive, combining thematic content analysis of documentary sources with a structured climate-security framework.

Data Sources and Collection

The research relies exclusively on secondary data drawn from authoritative and peer-reviewed sources. Data were gathered through systematic document analysis of (i) post-disaster assessments and technical reports of multilateral bodies (World Bank, ADB, UN, UNDP, IMF); (ii) national policy instruments (the National Climate Change Policy and Pakistan's Nationally Determined Contributions); (iii) data from national institutions (PCRWR, NDMA, PMD); and (iv) recent peer-reviewed scholarship on the climate-security nexus in Pakistan and South Asia. Sources were selected using the criteria of authority, recency (with priority given to 2022–2026 material), topical relevance, and verifiability, and were cross-checked against one another to reduce single-source bias. Table 1 summarizes the principal data sources and the analytical purpose each served.

Category of source	Representative sources	Analytical purpose
Multilateral / technical assessments	World Bank, ADB, EU & UN Post-Disaster Needs Assessment (2022); World Bank Country Climate and Development Report	Quantifying flood damages, losses, and reconstruction needs; establishing macro-fiscal risk
International agencies	UNDP, IMF, IPCC-aligned reporting	Vulnerability profiling; water-stress and macro-economic context
National policy & institutions	National Climate Change Policy; NDCs; PCRWR; NDMA; PMD	Assessing policy commitments, institutional capacity, and implementation gaps
Peer-reviewed scholarship	Journal literature (2017–2026) on the climate–security nexus	Theoretical framing; corroboration of thematic findings

Table 1. Principal data sources and their analytical purpose.

Analytical Framework and Method of Analysis

The collected material was analyzed through a climate-security analytical framework built on two pillars: the human-security approach, which widens the referent object of security from the state to individuals and communities, and the threat-multiplier thesis, which treats climate change as an amplifier of pre-existing vulnerabilities rather than an autonomous cause of conflict.

Theoretical Framework

Human Security Approach

The human security approach extends the concept of security from the state to individual and community level. However, climate change adheres to this approach as it can have a negative impact on food, water, health, livelihoods, shelter and personal safety. When the flooding

destroys homes, it is an environmental disaster and a livelihood crisis, it is a public-health disaster as well, and it is a governance crisis. The concept of Human Security Approach offers an apt theoretical framework to explore climate change as a national security threat in Pakistan. The national security has been studied extensively in traditional terms and the main concern has been towards the safety and security of the nation from attacks, territorial encroachments and political unrests. The notion of human security does, however, extend the definition of security to focus on individuals and communities. The focus is on people, and there is no security simply because the state's territorial frontiers are defended. Food, water, health, livelihood, personal safety, economic welfare, and environmental security are also important aspects of security that need protection. This is a wider knowledge which is especially pertinent to Pakistan, a country that is facing more and more climate-related disasters every day that threaten the security of millions of people (Nawaz, 2025).

Climate–Security Nexus in Pakistan

Climate–security nexus is the relationship between climate change and various aspects of security such as human security, economic security, political security, food security, water security, health security, and national security. Climate change does not inherently drive conflict or instability but exacerbates vulnerabilities and thereby serves as a threat multiplier. Extreme temperature, floods, droughts, changing rainfall pattern, glacier-related hazards and water scarcity can impact lives and livelihoods, and essential services in Pakistan. These environmental pressures can produce larger socioeconomic and political pressures if they are combined with poverty, unemployment, poor infrastructure, high birth rates and governance problems. Climate change thus must be seen as a systemic security issue, and not just an environmental issue (Aslam, 2024).

The climate–security nexus is especially visible in the nexus between water, food security and economic security in Pakistan. The Indus River system is vital to the country for agriculture, drinking water, hydro-power and industry. Rainfall, glacier melt, snow melt and river flows can lead to both drought and flood damage. Water insecurity can impact yield and food prices, and floods can impact agriculture, livestock, homes, roads, and other infrastructure. These effects can result in lower household incomes, higher poverty and displacement rates, and put added strain on government resources. This interdependence was put into effect during the floods of 2022 which impacted around 33 million individuals and resulted in damages and losses of over US\$30 billion. Therefore, the impact of climate hazards is fast becoming a humanitarian, economic and governance issue (Hassan, 2024).

The climate–security nexus is also significant for the long-term national security and strategic stability in Pakistan. Migration in response to climate change, health crises, loss of infrastructure, economic losses and strain on public institutions may erode state capacity to deliver essential services. Glacier-related hazards, GLOFs, landslides and altered water regime are further threats in the mountain areas in GIBB, and can have consequences for water security downstream. It is essential to have a holistic approach to security that extends beyond military readiness to address these issues. This should include measures for Pakistan to take climate risk into national security planning; enhance disaster-management and early-warning systems; improve water governance; encourage climate-smart agriculture; support vulnerable

communities; build climate-resilient infrastructure; and increase regional and international climate cooperation. In this regard, climate resilience must be seen as an integral part of Pakistan's national security approach (Ihsan, 2026).

Climate Change as a Threat Multiplier

The threat-multiplier view does not assert that climate change, by itself, brings about conflict. Instead, climate shocks only exacerbate existing stresses. An increase in food prices during a drought can lead to food insecurity, food insecurity can exacerbate poverty, poverty can lead to out-migration, out-migration can strain urban services, and weak governance can transform these strains into grievances (Qasim et al., 2023). The security result is thus related to institutions, adaptive capacities and policy decisions. The climate securitization can be helpful if it brings climatic risks to the forefront of national planning, it shouldn't militarize climate governance. Civilian institutions, communities and local governments, as well as scientific agencies and the private sector, must be at the heart of things. Security framing should create preparedness, investment and coordination, but never emergency response (Akhtar, 2024).

Climate Change and Pakistan's National Security

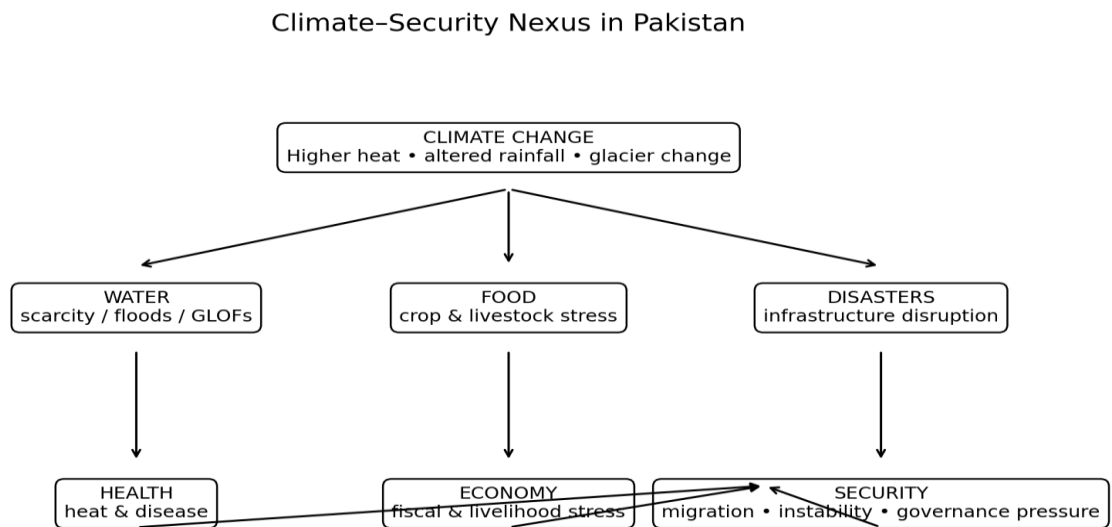


Figure 1. Climate–security nexus in Pakistan. Author’s conceptualization based on the literature and institutional evidence.

There is no better climate-security linkage in Pakistan than water. The Indus Basin is essential for the agricultural economy of the country and for the large-scale urban and industrial systems. Changes in snow and glacier melt, rainfall variability and extreme precipitation can all affect the timing and quantity of river flow and result in changes in climate. Meanwhile, drought and water depletion in the ground can make it harder to find water. Rising temperatures, saltwater intrusion, glacial lake outburst floods and a changing climate are threatening Pakistan's already stressed water resources, UNDP warns. The lack of water

security is having national security implications as water is linked to agriculture, energy, food price and public health and inter-provincial relations. The physical scarcity can be converted to distributional conflict by poor water governance. Hence, there is a need for a paradigm change from crisis management to basin-wide planning, demand management, groundwater management, efficient irrigation, watershed rehabilitation and sharing of data in Pakistan (Ahmad, 2026).

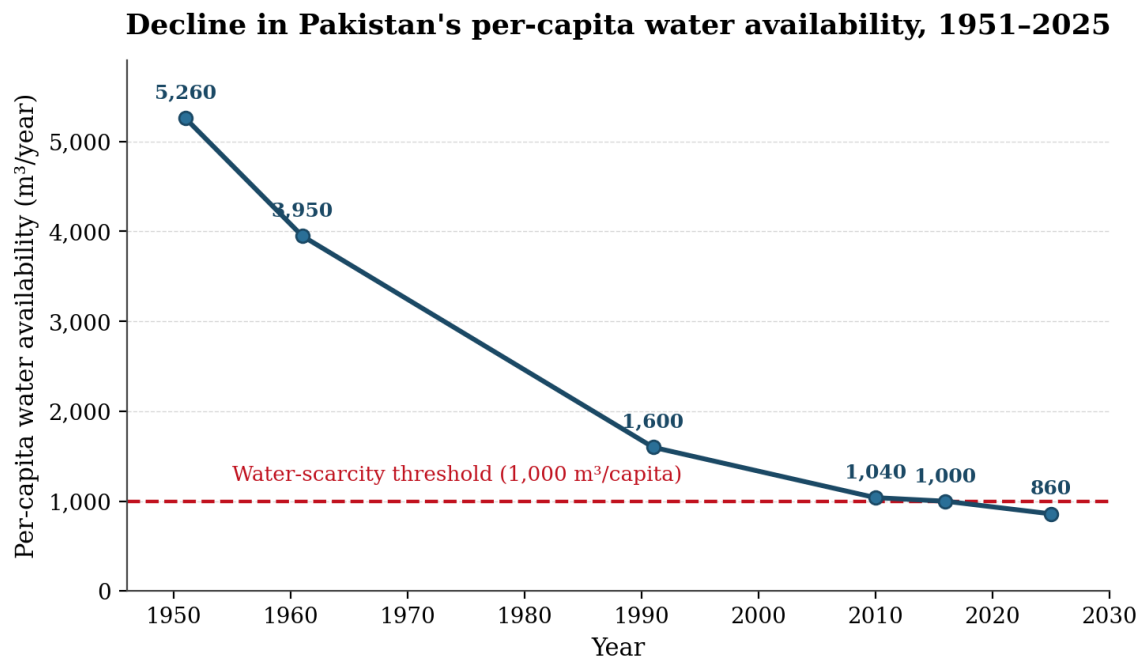


Figure 2. Decline in Pakistan's per-capita water availability, 1951–2025. The dashed line marks the 1,000 m³ water-scarcity threshold. Sources: National Water Policy (2018); PCRWR; IMF.

Food Security and Agriculture

Livelihoods and food availability are still heavily dependent on agriculture. Crop and livestock productivity can be decreased due to heat stress, flooding, droughts, or shifts in rainfall patterns and water shortages. In 2022, floods ravaged agriculture and livestock operations on a scale never seen before and the World Bank warns that in the future agricultural productivity will be increasingly at risk due to climate stress. When there is food insecurity, inflation, rural unemployment and migration may result, and household indebtedness may be created. Climate-smart agriculture, drought- and heat-tolerant crops, and better extension services, efficient irrigation, crop insurance, livestock protection, improved storage and diversified rural incomes and enhanced agricultural research are some of the strategic responses (Ali, 2017)

Water Security

7.3 Disaster and Infrastructure Security

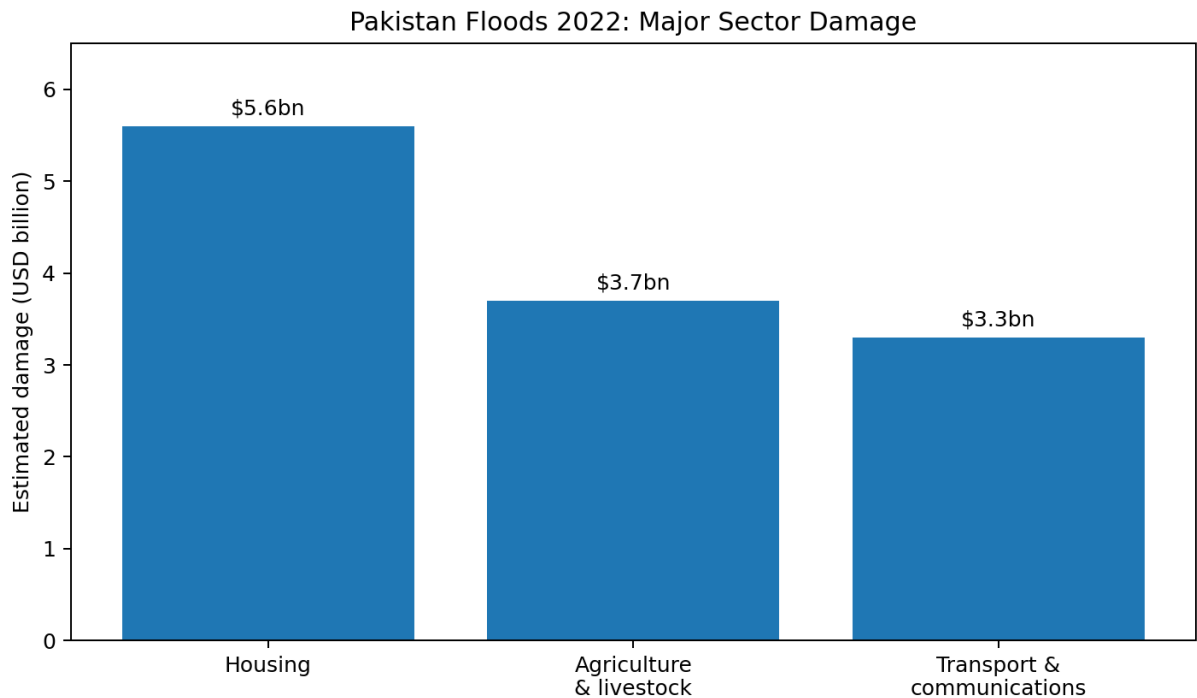


Figure 3. Major sector damages from the 2022 floods. Source: World Bank/PDNA.

The security of roads, bridges, telecommunications, power systems, schools, hospitals and housing is increasingly inseparable from climate resilience. The 2022 floods caused particularly severe damage to housing, agriculture and transport and communications. Infrastructure failure can interrupt military mobility and logistics, humanitarian relief, trade, education, health care and energy supply. Climate-proofing critical infrastructure should therefore become a component of national resilience planning.

7.4 Economic and Fiscal Security

Climate disasters present a fiscal problem – governments have to invest large amounts of money in relief and reconstruction at a time when revenues can be declining. The flooding in 2022 caused over US\$30 billion in damages and economic losses and left at least US\$16.3 billion in resiliency reconstruction needs. The World Bank has also cautioned that climate change events may negatively impact poverty reduction and macroeconomic stability. Shocks can lead to higher public borrowing, reduction in development spending, reduce export capacity, and exacerbate household poverty. Climate resilience is thus a type of fiscal risk management (Cheeseman, 2024).

Health Security

Public-health systems may come under strain due to heatwaves, contaminated water, vector-borne diseases, poor air quality and displacement. The 2022 floods resulted in favorable conditions for water and vector-borne diseases and a significant humanitarian need. Heat

action plans, resilient health facilities, disease surveillance, safe water, sanitation, and emergency medical logistics and public awareness are needed for health security (Aziz, 2025)

Social stability and climate migration.

Households without homes, farm land, livestock or services may become a security concern because of climate related displacement. While migration is not a security risk per se, uncontrolled migration can add pressure on housing, employment, water, sanitation and education and health services in the receiving region. Hence, there is a need to incorporate aspects of displacement preparedness, social protection, and urban planning and livelihood restoration in Pakistan's climate policy (Hassan, Climate change: non-traditional security threats for Pakistan., 2024).

Energy Security

Energy security may be impacted by climate change because of electricity demand due to heat, hydrological variability, and damage to electricity transmission infrastructure, and disruption of fuel supply chains. Pakistan needs to diversify its energy mix, enhance grid resilience, build up renewable energy, and also incorporate climate risk assessments in energy infrastructure planning. (Rehman, 2024)

Political and Governance Security

The climate disasters can highlight institutional gaps and create political friction when it comes to relief distribution, reconstruction priorities and resources allocation. In contexts where public institutions are not trusted or perceived as ineffective, climate shocks can further erode trust in government. Well-coordinated federal, provincial and local emergency management, clear disaster funding, and publicly accessible disaster risk data, are therefore, important factors of national security (Abbas, 2022).

Evidence from the 2022 Floods

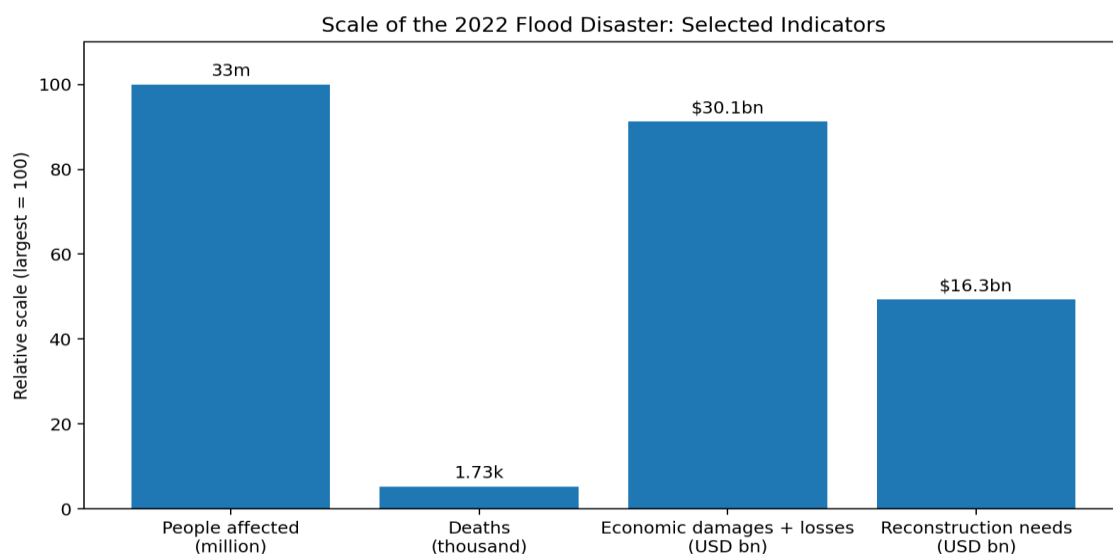


Figure 4. Selected indicators showing the scale of the 2022 flood disaster. Values are displayed in their original units; bars are normalized for visual comparison.

The cascading effect of climate-security risk is shown in the 2022 floods. The disaster damaged or destroyed more than 1,730 people, and inflicted damages and economic losses of over US\$30 billion on some 33 million people. In addition to the human toll of the disaster, the assessment estimated at least US\$16.3 billion in reconstruction and rehabilitation needs, which has long-term repercussions on national security, such as loss of assets and damaged infrastructure, disruption of agriculture, risk of disease, displacement, and poverty and fiscal pressure.

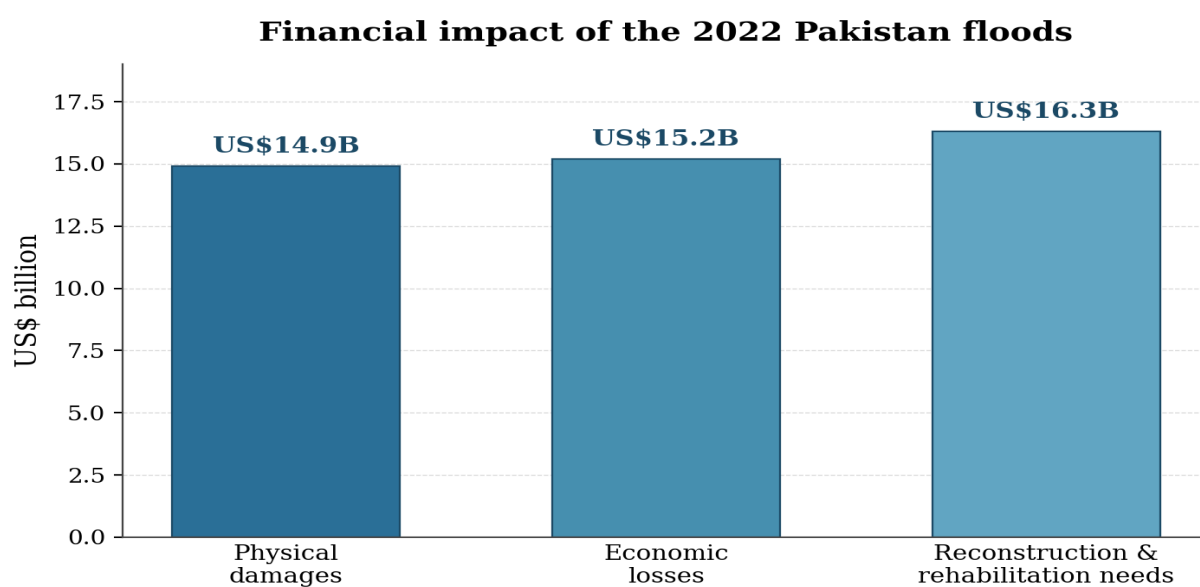


Figure 5: Financial impact of the 2022 floods: physical damages, economic losses, and resilient reconstruction and rehabilitation needs (US\$ billion). Source: World Bank/PDNA.

Table 2. Financial and human impact of the 2022 floods.

Impact dimension	Estimate
Total damages	> US\$14.9 billion
Total economic losses	~ US\$15.2 billion
Damages and losses combined	> US\$30 billion
Resilient reconstruction & rehabilitation needs	≥ US\$16.3 billion
People affected	~33 million
Lives lost	> 1,730
Projected GDP loss (FY22)	~2.2%
People pushed below the poverty line	8.4–9.1 million
Worst-affected province	Sindh (~70% of damages & losses)
Most-damaged sectors	Housing; agriculture & livestock; transport

Source: Pakistan Floods 2022 Post-Disaster Needs Assessment (World Bank, ADB, EU, UN; 2022).

Pakistan's Policy and Institutional Response

Pakistan has worked out policies and international commitments such as the National Climate Change Policy framework and its revised National Determined Contribution. Due to the country's vulnerability to climate change, adaptation is a key focus of Pakistan's climate policy, highlighted by UNDP. But the progress of a policy does not always lead to implementation capability. Some of the main challenges are poor institutional coordination, lack of capacity of local governments, low enforcement, lack of local scale climate information, lack of maintenance of infrastructure, lack of funds and competing fiscal demands. Implementation is the policy challenge, though, converting climate plans into funded programmes, measurable targets and accountable institutions (Aman A. H., 2025).

Climate Migration and Social Stability in Pakistan.

Climate migration has become a significant impact of climate changes and a threat to social stability in Pakistan. Some of the flood, drought, extreme heat, water scarcity, land degradation and glacier related hazards can destroy household properties, farms, livestock and other livelihoods leading to temporary or permanent displacement of individuals and households. The catastrophic floods in 2022 are testament to the impact of this vulnerability, with millions of people impacted and significant numbers displaced from their homes and localities. Environmental migration is thus not just an environmental concern, but also one with major economic, social and governance implications for Pakistan. In the wake of climate-induced hazards, migration can be a way of life for those who lose their means of making a living (Kanwal, 2025).

The issue of climate migrants and social stability becomes more important when populations are migrating towards already crowded urban centers. The speed of population movement may put pressure on housing, employment, transport, water, sanitation, health services, education, and other services. A lack of resources in receiving communities can result in heightened social tensions in the receiving community, as they vie for jobs and public services. Displaced families can also face poverty, unemployment, discrimination, and challenges with accessing essential services. But climate migration does not necessarily lead to conflict. It depends on the ability of government institutions, resources, social networks and migration and urban management policies. Pakistan thus needs a comprehensive climate-migration policy within the country's larger national security and human-security policy. The government needs to identify districts that are exposed to climate disasters, create early-warning and evacuation plans, enhance social protection, offer livelihoods support to affected communities, and increase the capacity of cities with displaced people. Projections of relocation should involve affected communities, safeguard property rights, cultural identity, employment opportunities and access to basic services. Enabling communities to adapt locally to weather and climate change by strengthening climate-resilient agriculture and rural infrastructure can also minimize the need for unnecessary displacement. In conclusion, a well-managed approach to climate migration can help to mitigate social unrest and enhance the country's ability to

address future climate-related challenges in a peaceful and sustainable manner (Rizwan, 2026).

Strategic Responses for Pakistan

Mainstream Climate Risk into National Security Planning

National security planning, development planning and infrastructure planning should incorporate climate risk assessments as a standard practice. Periodic briefings and scenario assessments in NS Committee and related civilian institutions should be given. The existing mechanism for coordination among climate, water, agriculture, interior, disaster management, energy, health, finance and planning and foreign-policy institutions should be made permanent. Its job should be to coordinate and manage risk, and not to militarize environmental policy (Khan M. A., 2025).

Strengthen Water Security

The priorities should be the integrated river basin management, regulation of groundwater, water accounting, modern irrigation, reduction of leakage, restoration of watersheds, rainwater harvesting and drought preparedness.

Build Climate-Resilient Infrastructure

Climate risk screening should be conducted on all major roads, bridges, dams, hospitals, schools, power facilities and telecommunications projects. Disaster recovery/rehabilitation shall be designed to be resilient, not recreate vulnerabilities.

Improve the Early-Warning and Early-Action systems.

Satellite, meteorological, hydrological and community-based information should be assimilated into the local early-warning systems in Pakistan. Warnings should be linked to pre-determined evacuation and cash-transfer and relief arrangements (Hussain, 2022)

Promote Climate-Smart Agriculture

Resilient seeds, efficient irrigation systems, crop diversification, livestock shelters, extension services, insurance and climate information services should be promoted through agricultural policy.

Conserve Mountain and Coastal Ecosystems

Glacier monitoring, GLOF preparedness, watershed conservation, forest restoration, mangrove protection and coastal zoning can be considered as investments in national resilience.

Create a Climate Migration Framework

Government needs to identify high-risk districts, plan for displacement and boost services in receiving cities. Relocation policy should prioritize social protection and livelihood restoration.

Mobilize Climate Finance

Pakistan needs to enhance access to adaptation and loss-and-damage financing through the identification of bankable projects, transparent monitoring mechanisms, sound fiduciary principles, and credible tracking of climate expenditure (Muzammil, 2024)

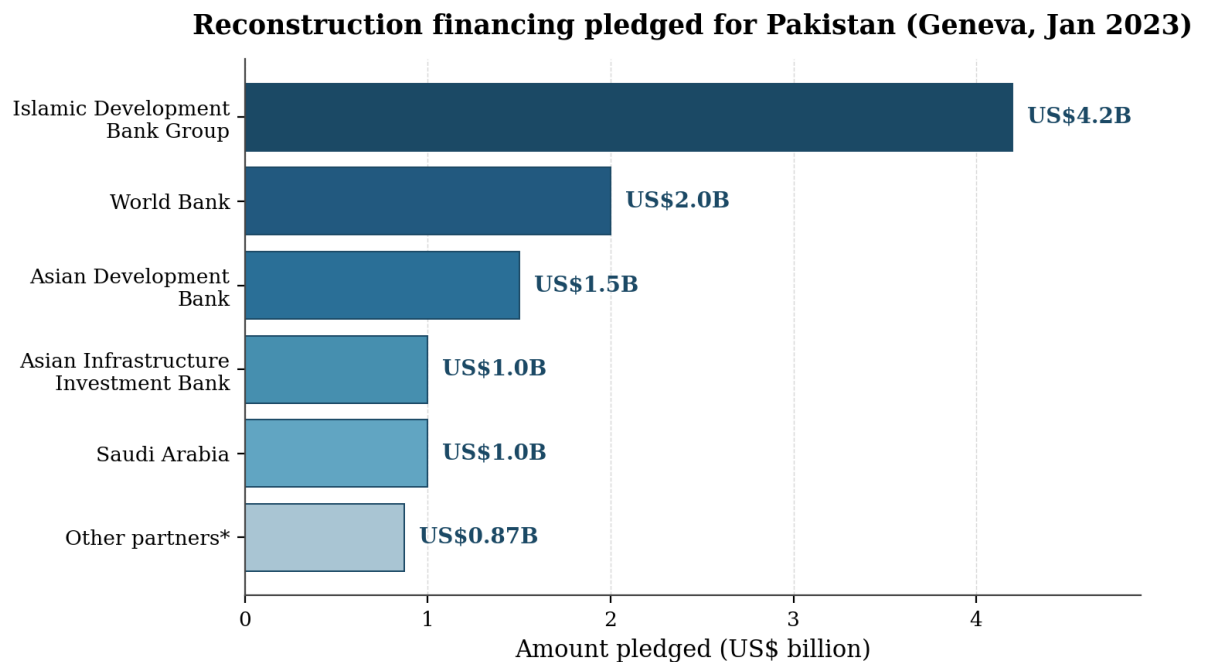


Figure 6: Reconstruction financing pledged for Pakistan at the International Conference on a Climate Resilient Pakistan (Geneva, January 2023); total pledges $\approx$ US\$10.6 billion. *Other partners include France, China, the United States and others. Source: Government of Pakistan; Brookings (2023).

Enhance the capacity of Regional Climate Diplomacy.

Pakistan should deepen the cooperation and sharing of hydro meteorological data, disaster early warning and mountain research and water management with India, China, Afghanistan and other regional countries in the interests of Pakistan and in accordance with the existing legal and diplomatic frameworks.

Formulate a research and data hub on Climate-Security.

Institute and government collaborations should create a climate-risk data set, scenario models, vulnerability maps and policy evaluation tools at the district level (Yasin, 2023).

Discussion

The evidence points to the need to think of climate change as a system-wide national-security threat. It doesn't usually work in isolation. Rather, it plays into existing weaknesses and has

ripple effects on industries. A flood can simultaneously become an infrastructure crisis, a food crisis, a public-health crisis, a migration crisis and a fiscal crisis. This is because the traditional security actors are not equipped to deal with climate security. The biggest strategic change is from responding to resilient. There is still need for disaster relief but regular use of emergency spending is not an alternative to risk reduction. Losses may be lowered in the future through investments in resilient infrastructure, water efficiency, early warnings, ecosystem restoration, and local governance and social protection. The World Bank's estimation of the size of the economic blow to Pakistan's economy if climate risk is not mitigated by early action is only further justification (Deeba, 2024).

There is also a need for a justice component of climate security. Vulnerable communities may be less equipped to defend themselves against flood, heat and drought and livelihood loss. Good national security is therefore to safeguard the most vulnerable people and places. This can add to state legitimacy by making investments for resilience equitable, transparent and locally responsive.

Conclusion

Climate change is one of the most critical non-traditional national security threats facing Pakistan. It has impacts that extend beyond environmental degradation and are now beginning to impact economic stability, human security, public health, food production, water availability, infrastructure, livelihoods, migration, and state capacity. Interconnected risks, which may be caused by flooding, droughts, heatwaves, glacier-related hazards, sea-level rise and changing rainfall patterns, can only be managed through the combined efforts of traditional security institutions. Climate change should therefore be seen as a multidimensional security threat that needs a collective response from the nation and internationally. The analysis shows that the impact of climate change is not an autonomous threat in Pakistan but rather a threat multiplier. The impact of climate-related hazards is linked to other vulnerabilities, including poverty, population growth, inadequate infrastructure, urbanization, water scarcity, unemployment, and institutional weaknesses. The climate shock can thus exacerbate existing social issues. A drought may lead to lower food yields, higher food prices, less farmer capacity to sustain their livelihoods, more rural-urban migration, and more stress on urban areas, for instance. This can slowly escalate into broader socio-economic and security issues.

The water security is one of the major aspects of Pakistan's climate-security issue. Precipitation, glacier melt, snowmelt, river flows, and changes in groundwater supplies are especially important in the Nation because of the critical role played by the Indus River system. At the most extreme, Pakistan has to deal with excess water during floods, and on the other extreme, inadequate water during droughts and extended periods of dryness. These pressures are likely to continue, and be exacerbated by poor water governance and rising demand. Therefore, to raise national security, it is necessary to implement sustainable water management, efficient irrigation, regulation of groundwater, watershed conservation and coordination of relevant institutions is needed.

Climate change is also affecting food security as Agriculture is highly water dependent and climate sensitive in Pakistan. Agricultural production and livestock can be adversely affected by extreme heat, flooding, drought, alteration of rainfall and water scarcity, soil degradation. This loss of rural incomes can drive up poverty and unemployment rates, food shortages can lead to rising food prices and food insecurity, and the loss of jobs and incomes can create a vicious cycle of poverty and deprivation. Loss of rural incomes can lead to higher poverty and unemployment rates, food shortages can drive up food prices and food insecurity, and the loss of jobs and income can create a vicious cycle of poverty and deprivation. All in all, Pakistan needs to enhance the capacities of climate-smart agriculture, make resilient crop varieties, optimize irrigation, increase agricultural insurance, and ensure provision of timely CLTS information and modern technologies to the farmers.

The floods in 2022 are a stark reminder of 'Climate Change and National Security' in Pakistan. It impacted about 33 million people, leaving over 1,700 fatalities and damages and losses of over US\$30 billion. The housing, agriculture, livestock, transport, communications, health facilities, and other vital infrastructure were seriously impacted. The disaster drew attention to how quickly climate-driven crises can escalate into humanitarian, economic, health and governance crises. It also uncovered the vast cost of reconstruction, and the need to invest in prevention and resilience in the event of disaster.

The effects of climate change are also a big threat to the mountain regions of Pakistan especially to the area of Gilgit-Baltistan as glaciers, river systems, ecosystems and mountain communities are very sensitive to climatic changes. Habitations, roads and bridges, agriculture, tourism and other economic activities are all threatened by glacier-related hazards, glacial lake outburst floods, landslides, flash floods, and changing precipitation patterns. Climate vulnerability in GB has implications that go beyond its borders due to the close linkages of the mountain ecosystem with downstream water resources. Thus, conservation of mountain ecosystems, enhancing glacier monitoring, early-warning systems, and community preparedness should be a key part of Pakistan's national climate-security strategy.

The study also finds that climate change has the potential to have major consequences for people's security and social stability. A climate-related disaster may have the potential to uproot communities, ruin livelihoods, pose health risks and exacerbate socioeconomic inequalities. The poorest households are at greater risk from climate change than vulnerable communities, who generally lack the capacity to rebound from climate shocks. Unmanaged displacement can also put pressure on receiving areas in terms of housing, employment, health, education, water and sanitation. Social protection, livelihood recovery, planned urban development and climate-resilient public services must thus be part of climate policy.

Another significant threat to national security is economic impacts of climate change. Frequent disaster occurrences can result in infrastructure damage, loss of agricultural production, disruption to trade, rise in public spending, and diversion of government funds away from development. Fiscal pressures can build up and development programmes may be delayed if the governments have to constantly pay for emergency relief and reconstruction. Climate resilience must thus be seen not as an environmental cost, but as an investment in

economic stability. Future losses can be minimized by incorporating climate-risk assessments into infrastructure investments, budgeting, and development planning and economic policy.

Pakistan's GHG emissions are relatively small when compared to other major industrialized countries, but that does not mean that the need for climate action within Pakistan is being lessened. Instead, it reinforces the nation's call for climate justice, international cooperation, adaptation financing, technology transfer, and loss and damage assistance. Pakistan needs to leverage its international climate diplomacy to get financial and technical support, alongside building capacities and accountability mechanisms at the national level. But domestic responsibility is not supplanted by international assistance. The key ingredients of successful climate policy implementation are good institutions, good data, transparent financing, and intergovernmental coordination.

Finally, the resilience-based approach to climate security will rely on Pakistan's capacity to move from a reactive disaster-management approach to a proactive approach. Climate change needs to be considered in national security planning, economic policy, water governance, agricultural development, public-health planning, infrastructure investment, urban development, and foreign policy. National resilience should feature early-warning systems, resilient infrastructure, climate-smart agriculture, ecosystem protection, social protection, scientific research, and community participation. More collaboration is also required between Pakistan and its neighbor's in the field of water, glaciers, disaster management and climate research. The main finding of this study is that climate security goes hand in hand with human security, economic security, and sustainable development. To build a climate-resilient Pakistan, a sense of political will, functioning institutions, science-informed decision making, sufficient financial resources, regional cooperation, and community engagement will be needed. Climate change should now not be considered as a peripheral environmental problem but seen as a key national security issue and a long-term strategic problem for the state and society of Pakistan.

Policy Recommendations

- Ensure that the cost and impact of climate risks are assessed for key public infrastructure and development initiatives.
- Incorporate climate scenarios into national security, fiscal and development planning.
- Permanently upgrade the institutional capabilities of NDMA, PDMA's, local authorities and technical agencies, clearly defining roles.
- Create district-level climate-security vulnerabilities and a public-facing district-level risk map.
- Enhance investment in water efficiency, groundwater monitoring and integrated basin management.
- Increase implementation of climate-smart agriculture, agricultural insurance and diversifying livelihoods for the rural population.
- Improve flood, heatwave, drought and GLOF early-warning systems and connect to early action.

- Establish specific standards for roads, bridges, schools, hospitals, power systems and telecommunications.
- Improve climate finance institutions, transparency over climate-budget tracking.
- Broaden climate cooperation and science dialogue in the Indus Basin and beyond.
- Targeted social protection in times of climate shocks for women, children, older persons and economically vulnerable households.
- Facilitate universities and research centers to generate climate-security data, models and policy assessments.

References

- Abbas, S. G. (2022). Impacts of climate change on agricultural labour force and food security in Pakistan: the importance of climate-smart agriculture. In Food Security and Climate-Smart Food Systems: *Building Resilience for the Global South*, 5(1), 87.
- Ahmad, M. &. (2026). Pakistan under Climate Change Patterns: Challenges for Security and Survival. *Journal of Climate and Community Development*, 5(1), 10-4. <https://www.joccd.com/index.php/joccd/article/view/110>
- Akhtar, M. (2024). Revisiting Climate Change as a Non-Traditional Security Threat to Pakistan: A Comparative Analysis (Master's thesis. *National University of Sciences and Technology*)., 34(11), 45.
- Ali, N., Nihei, T., & Ahmed, Z. (2025). Reshaping of Pakistan's demographic landscape by the China-Pakistan Economic Corridor: A comprehensive review of migration, labor and settlement shifts. *Journal of Development and Social Sciences*
- Ali, S. L. (2017). Climate change and its impact on the yield of major food crops: Evidence from Pakistan. *journal of Foods and security*, 6(6), 90.
- Aman, A. H. (2025). Strategic securitization: Climate change in the national security narratives of Pakistan. *Annals of Human and Social Sciences*,, 6(3), 89.
- Aman, A. H. (2025). Strategic securitization: Climate change in the national security narratives of Pakistan. *Annals of Human and Social Sciences*,, 4(2), 2-7.
- Aslam, M. H.-u.-D. (2024). Climate change: A threat to national security of Pakistan. International. *Journal of Contemporary Issues in Social Sciences*,, 3(3), 79.
- Aziz, A. (2025). Climate change: A growing challenge for food security in Pakistan. *Social Science Review Archives*,, 3(1), 34.
- Cheeseman, J. (2024). Food security in the face of salinity, drought, climate change, and population growth. In Halophytes for food security in dry lands. *Academic Press*, 4(2), 76.
- Deeba, F. &. (2024). Confronting climate chaos: Socio-economic strategies for climate resilience in Pakistan. *Pakistan Journal of Society, Education and Language*, 45(11), 45.

- Hassan, T. U. (2024). Climate change: non-traditional security threats for Pakistan. *International Journal of Learner Diversity and Identities*, 31(2), 112-4.
- Hassan, T. U. (2024). Climate change: non-traditional security threats for Pakistan. *International Journal of Learner Diversity and Identities*, 6(3), 98.
- Hussain, Z. M. (2022). Climate change in Pakistan: Impacts, strategies, and the way forward. *Pakistan Languages and Humanities Review*, 3(1), 23.
- Ihsan, E. S. (2026). Climate Change as Security Threat in Pakistan: The Rise of Eco-Geopolitics. *Annals of Human and Social Sciences*, 7(1), 56.
- Ishaque, W., Tanvir, R., & Mukhtar, M. (2022). Climate change and water crises in Pakistan: Implications on water quality and health risks. *Journal of Environmental and Public Health*. <https://doi.org/10.1155/2022/5489358>
- Kanwal, N. J. (2025). Mainstreaming climate change into development planning in Pakistan: key barriers and way forward. *Qlantic journal of social sciences*, 6(1), 5.
- Khan, M. A. (2025). The challenge of climate change and policy response in Pakistan. *Environmental Earth Sciences*, 75(6), 67.
- Khan, M. A. (2026). The challenge of climate change and policy response in Pakistan. *Environmental Earth Sciences*, 75(4), 123-6.
- Muzammil, M. Z. (2024). Climate change adaptation strategies for sustainable water management in the Indus basin of Pakistan. *Science of The Total Environment*, , 2.
- Nawaz, N. A. (2025). Impact of climate change on the SAARC region: National security implications for Pakistan. *Journal of Climate and Community Development*, 4(1), 67-9.
- Qasim, M., Ali, N., & Aqeel, M. (2023). Trends and patterns of temporal urban population growth in Pakistan. *Pakistan Social Sciences Review*.
- Qasim, M., Ali, N., Haider, S. S., & Ali, M. (2024). Socio-ecological dynamics in Gilgit Baltistan: Insights of human geographic perspectives. *Journal of Education and Social Studie*
- Rehman, A. B. (2024). Climate change and food security in South Asia: the importance of renewable energy and agricultural credit. *Humanities and Social Sciences Communications*, 8(3), 98.
- Rizwan, A. &. (2026). Stakeholders Role to Combat Climate Change: Initiatives Adopted and Resource Integration in Response to Sustainable Development Goal 13 in Pakistan. In Disasters, Climate Change and Sustainability in South Asia:. *Challenges and the Way Forward*, 12(4), 76.

- Saad, S. M. (2025). Climate change impacts: exploring the rising climate-security nexus in Pakistan. *Liberal Arts and Social Sciences International Journal (LASSIJ)*, 8(1), 56-9.
- Yasin, H. Q. (2023). Climate-water governance: a systematic analysis of the water sector resilience and adaptation to combat climate change in Pakistan. *Water Policy*, 5(1), 17.
- Wu, C. (2025). Redefining concepts of nation and national security and establishing their models for the new era. *Journal of Safety and Sustainability*, 2(1), 45–58.