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Flood Waters, Forced Migration, and Humanitarian Crisis: A Comparative Study of the 2022 and 2025 Floods in Pakistan

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Abstract

The floods of 2022 and 2025 in Pakistan underscore the state's acute vulnerability to climate-induced disasters, triggering massive displacement and a profound humanitarian crisis. This comparative study examines the impact of these catastrophic events on forced migration, livelihoods, and infrastructure. The 2022 floods submerged one-third of Pakistan's landmass, displacing approximately 33 million people, while the 2025 floods, though less severe, still resulted in significant displacement and loss. Using a qualitative research method approach, this research analyzes the scale and patterns of displacement, infrastructure damage, and humanitarian response mechanisms in both events. Key findings reveal that despite some improvements in disaster response, gaps persist in climate resilience, early warning systems, and support for affected communities. The study recommends the urgent need to integrate climate adaptation strategies, strengthen governance frameworks, and enhance humanitarian coordination to mitigate the impacts of future floods. By comparing these two events, this research provides critical insights into Pakistan's evolving climate risks and offers policy recommendations to enhance resilience and protect vulnerable populations.

Keywords: Rains, floods, displacement, natural disasters, government policies.

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Introduction

Pakistan is among the most vulnerable states to the effects of climate change, especially severe, recurring floods that affect millions of civilians and slow the country's national progress and development. Flooding has been more frequent and intense in recent years, mostly due to rising global temperatures, mismanaged water supplies, and rapid urbanization. One of the worst periods in the history of Pakistan was the devastating floods of 2022; about one-third of the nation was underwater, many families were compelled to leave their homes, and a major humanitarian crisis developed. Following the terrible damage of 2022, Pakistan had comparable floods in 2025 that severely damaged infrastructure and human lives, most importantly. This study examines the causes and socioeconomic impacts of the 2022 and 2025 floods. The research also compares the 2022 and 2025 floods to identify the gaps in Pakistan's disaster management, planning, and response systems. This study suggests that decision-makers must devise better policies and provide stronger support systems to vulnerable communities so they remain safe and more aware and prepared for when such future disasters occur.

Literature Review

Floods are among the most destructive natural disasters worldwide, but their impacts are far harsher in developing countries such as Pakistan. Floods are now occurring with greater intensity due to climate change, poor land use, and weak governance, affecting people's lives and livelihoods and hindering the country's overall progress (IPCC, 2022). This literature review focuses on three areas related to the issue: how climate change is altering flooding patterns, the role of floods in triggering forced displacement, and the resulting humanitarian emergencies in Pakistan.

There is a strong scholarly consensus that climate change has contributed to a significant increase in extreme weather events in South Asia (Hirabayashi et al., 2021). Pakistan's monsoon rains – usually driven by systems from the Arabian Sea and the Bay of Bengal – have become irregular, creating a cycle of droughts followed by sudden, high-volume floods (Rahman et al., 2023). Pakistan remains among the top 10 most climate-vulnerable states globally (Green Watch, 2021). Its geographic dependence on river systems fed by melting glaciers exposes the region to flood risks (Shah & Hussain, 2022). The Indus basin, which supports agriculture and water supplies for more than 20 million residents, now experiences accelerated glacial melt due to rising temperatures, coinciding with peak monsoon rains (Khan et al., 2023). Although the 2025 floods are still being studied, they reflect the same climate-driven patterns and indicate that the country's preparedness has not improved. Researchers caution that without immediate and effective climate adaptation, flood disasters will become even more frequent and destructive (Kakar & Ali, 2024). Thus, climate change remains the primary factor shaping Pakistan's recurring flood crisis.

Local environmental mismanagement also greatly intensifies flood damage. Rapid deforestation in northern areas has increased soil erosion and excessive water (Shahid & Mehmood, 2922). Construction on natural floodplains, often unregulated, blocks water pathways and heightens destruction when rivers overflow (Jamil, 2021). Urban expansion is another key concern: over 37% of the population now lives in cities with many informal settlements built close to waterways and drainage networks (Malik & Waqar, 2023). Weak enforcement of land use regulations allows communities to settle in highly vulnerable areas.

Furthermore, Pakistan's flood control infrastructure, including drainage systems and embankments, has failed to adapt to changing climate patterns. The same structural deficiencies exposed during the 2010 to 2022 floods continue to persist and are to be resolved

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in 2025 (IUCN, 2022). These governance shortcomings, combined with climate pressures, convert what could be manageable disaster events into large-scale humanitarian disasters. Floods frequently lead to mass displacement, often referred to as catastrophe-driven migration, forcing families to abandon their homes, livelihoods, and social networks in search of safety and survival. According to the Internal Displacement Monitoring Centre (2023), floods displace more people worldwide than any other disaster. Displacement disrupts family structures, livelihoods, and community ties (Ferris & Donato, 2022). In Pakistan, agriculture is the major employment sector, with over 42% of the workforce relying on crop production and livestock (GoP, 2022). Floods destroy homes, crops, irrigation systems, and livestock, forcing families to leave their land (Sultana, 2023). Women and children are disproportionately affected due to limited access to resources and support systems (Shaikh, 2022).

The 2022 floods displaced more than 8 million people, many of whom moved into makeshift shelters or temporary camps (UNHCR, 2022). Migration was not always temporary; many people settled in cities and struggled to integrate into already strained urban environments (Ahmed & Riaz, 2024). Similar trends can be seen in early research on the 2025 floods: more people are being forced to relocate as significant tracts of farmland are irreversibly devastated in some locations (Hussain et al., 2025). Families that relocate from rural to urban areas in search of protection must confront rising socioeconomic disparity, unemployment, and poverty. Communities are vulnerable to floods in many ways, including financial, cultural, emotional, and physical devastation. People experience injuries, fatalities, and severe damage to their roadways, shelters, and other facilities in the immediate aftermath (World Bank, 2023). Communities affected by floods eventually experience food shortages, health issues, and increased poverty, while important sectors such as agriculture, housing, transportation, and education suffer greatly (UNICEF, 2023). Social impacts are also very damaging. They include: emotional and psychological stress faced by the survivors as they try to recover from the trauma of floods, prolonged closure of schools and educational institutions disrupts the system, increased risk of waterborne diseases, dengue fever and malaria, and an increase in child marriage and gender-based violence within temporary shelters (UN Women, 2023).

Moreover, the disaster exposed deep structural inequalities. Low-income households often settle in high-risk areas due to the duty of affordability, facing the greatest scale of suffering and the least access to recovery resources (Urooj & Khan, 2024). These impacts align with theories of human security, with stresses that threats to safety, health, and life would undermine social stability (UNDP, 2022). Therefore, addressing floods requires more than physical restoration; it also involves rebuilding human lives and resilience. Disaster management involves coordination among government agencies, NGO, the military, and community organizations. However, Pakistan struggles with institutional fragmentation and a lack of preparedness (Naseer et al., 2023). Some of the major issues in existing literature include weak early warning systems, lack of effective policies, dependence on international aid and funds, and insufficient and unequal resource distribution (Haider & Aslam, 2022). Although the 2022 flood response comprised extensive global contributions, many affected communities were not reached in time (International Crisis Group, 2023). Similar concerns are visible in the ongoing 2025 response efforts. Researchers argue that humanitarian crises worsen not only because of the disaster itself but also because of political and administrative weaknesses (Suleri, 2022). Better coordination and long-term planning remain urgent needs. While extensive research exists on climate change and the 2022 flights, some areas need more attention, such as a comparative study of the 2022 and 2025 floods, which is limited by recent

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data. By comparing the 2022 and 2025 floods, this study contributes new knowledge to the ongoing discussion about disaster resilience, migration, and humanitarian challenges in Pakistan. It highlights the urgency of introducing stronger policy measures, improving community-level resilience, and investing in climate-resistant infrastructure to reduce the likelihood of recurring disasters.

Research Objectives

- To understand the nature and patterns of the 2022 and 2025 floods in Pakistan
- To analyze the main causes behind both floods
- To propose the precautionary measures for policy makers and administration to minimize the social and economic impacts of floods

Research Questions

- How did the 2022 and 2025 floods differ in their nature and patterns?
- Which environmental and human factors caused both floods?
- What precautionary measures should the government take to minimize the losses of floods, and how did floods affect people and the state of Pakistan?

Significance of the Study

This research is crucial because of recurring and destructive floods in Pakistan that cost people's lives, homes, and the economy. By comparing both floods, we can understand why such floods frequently occur. The study reveals that heavy rainfall is not the sole cause of such catastrophic floods, but weak planning, water mismanagement, and slow government response also add to the already struggling situation. This study also highlights how floods cause displacement at a mass level of poor civilians, which creates socioeconomic issues like unemployment, social inequalities, and health crises. The findings of this study can help the government to improve its management and early warning systems to protect vulnerable communities.

Research Methodology

In this paper, a qualitative research approach is adopted to analyze government documents, assessment reports, and scholarly articles related to the 2022 and 2025 floods. The research is comparative in nature, enabling us to understand Pakistan's heightened vulnerability to climatic hazards and the reasons for their frequent occurrence. Secondary data is gathered from reputable sources such as the United Nations, World Bank, NDMA, and various humanitarian organizations. This study also uses a library review method to guide Pakistan's susceptibility to climate change in order to mitigate climate disasters. The importance of this research in the realm of international relations is evident in its emphasis on how environmental disasters influence human security, development priorities, and global humanitarian collaboration.

Causes of the 2022 and 2025 Floods

Climate Change and Global Warming

The most important and immediate cause behind floods in Pakistan includes climate change and global warming. They have altered the weather patterns around the world, causing unpredictable and intense rainfall, especially in Pakistan. Pakistan is a country that is highly affected by these two factors because of its location and dependence on seasonal rains (IPCC, 2021). The major impact of global warming is the rise in the average global temperature of the Earth. When the air becomes warmer, it retains more moisture, leading to heavy rainfall (WMO, 3023). In the year 2022, Pakistan experienced unusual and record-breaking monsoon rains, almost three times higher than the 30-year average in some areas. It occurred due to the warming of the Indian Ocean and Arabian Sea, allowing more water vapor to increase and

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form monsoon rain clouds (Pakistan Meteorological Department, 2022). The same scenario happened in 2025, when the rare heat before the monsoon season caused heavy rainfall, hitting the northern and southern parts of the country. It raised concerns about how climate change is affecting Pakistan's weather every year (Asian Development Bank, 2025).

Another cause of global warming is the melting of glaciers in the northern areas of Pakistan. Due to the extreme rise of Earth's temperature, glaciers are melting faster than before, creating huge glacial lakes. When these lakes burst, they cause heavy floods, called Glacial Lakes Outburst Floods (ICIMOD, 2021). During 2022 and 2025, such lakes broke in the provinces of Gilgit-Baltistan and Khyber-Pakhtunkhwa, releasing a large amount of water that drifted downstream and gave rise to the worst floods in the plains (NDMA, 2024). This became an alarming threat to the northern areas and low-lying communities associated with the Indus River System.

Climate Change has also disrupted the monsoon patterns of Pakistan. Normally, monsoon rains begin in July, but in recent years, their timing is unpredictable (IPCC, 2021). In the year 2022, Northern areas have experienced landslides and overflowing rivers, while on the other hand, Provinces like Sindh and Baluchistan have faced limited rains (Pakistan Meteorological Department, 2022). Another impact of global warming is that, before the monsoon rains, it gives rise to heatwaves. The soil becomes hard and dry due to extremely high temperatures, so when the rain falls, the ground cannot absorb water rapidly. This allows the water on the surface to flow quickly and cause flash floods (WMO, 2023). This similar phenomenon was seen in the 2022 and2025 floods of Pakistan. These kinds of weather patterns have become more common due to the continuous heating of the Earth (IPCC, 2023).

Environmental Mismanagement and Urban Planning

Another major root cause of the devastating 2022 and 2025 floods of Pakistan is the environmental mismanagement that has intensified the country's resilience to extreme weather (UNEP, 2022). Pakistan is continuously facing natural disasters, and it has been heightened due to poor management of the environment and natural resources. Throughout the years, due to unregulated construction, the drainage systems have been blocked, wetlands have been destroyed, and the forests have been cut down (Asian Development Bank, 2024). Deforestation in the northern parts of Pakistan has reduced the ground's capacity to absorb rainfall. Trees are important for absorbing a huge quantity of water and holding soil together, but increased logging for agriculture, fuel, and timber has destroyed this natural protection (ICIMOD, 2021). As a result of it, heavy rains take place, and water flows quickly into the river and coastal areas, leading to wide-reaching destruction and flash floods (NDMA, 2023).

Another feature of environmental mismanagement is the encroachment on natural waterways and floodplains. Gradually, people began to set up heavy industries, markets, and housing societies beside riverbanks and drainage channels (World Bank, 2022). This unplanned infrastructure diverts the natural flow of rainwater and river channels. The 2022 flood in Sindh and Baluchistan was caused by the blockage of natural drainage systems and the poor design of roads (Pakistan Flood Report, 2022). Likewise, in 2025, urban flooding in areas such as Karachi was caused by blocked stormwater drains and the dumping of solid waste in drainage channels (NDMA, 2025). Urbanization has made cities overcrowded with insufficient infrastructure. In big cities like Karachi, Lahore, and Islamabad, where natural streams were built to carry away rainwater and avoid floods are now transformed into housing societies and construction sites (UN-Habitat, 2023). Lack of a proper rainwater system leads to flooding and waterlogging. Moreover, environmental mismanagement and urban planning are linked to political and social issues. Weak governance, corruption, and political interventions

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allow illegal construction of housing schemes that remain unchecked (Transparency International Pakistan, 2023). Many projects related to flood control are incomplete due to a lack of or poor management of funds (Planning Commission of Pakistan, 2024). Due to inappropriate planning and the absence of environmental regulations, Pakistan is still vulnerable to face more floods in the future.

Governmental Preparedness Failures and Policy Gaps

The disastrous floods of 2022 and 2025 have revealed the weakness of the government's policy framework, disaster management, and poor governance. The scale of destruction was largely expanded by Human and Weak Institutions, though glacial melts and heavy rainfall play a key role in it. The failure of governmental preparedness, poor collaboration among state departments, lack of early warning systems, and poor execution of urban and environmental policies made these floods more destructive. Issues of underfunding, bureaucratic delays, and poor inter-agency collaboration are the main hurdles faced by National disaster management authorities and Provincial disaster management authorities (Planning Commission of Pakistan, 2024). Early warning systems are just written in theory, but in practice, they failed to execute. They have left the communities unprepared for the magnitude of devastating floods. The role of implementing evacuation plans and emergency conditions is played by local governments, but they lack the financial resources and technical capacity to act effectively. The absence of an updated national flood management policy is also a cause of floods in Pakistan. Dams, drainage systems, flood control measures, and embankments are old-fashioned and poorly maintained. Flood-plain zoning and land use management are either fully ignored or weakly enforced (UNEP, 2022).

Policy fragmentation has also worsened the nature of floods. Environmental, agricultural, and urban planning policies of Pakistan work separately from each other (ADB, 2024). For instance, urban planners approved housing schemes and industrial zones in flood-identified regions, expressing the disconnection between risk management and planning. The government failed in the relief and rehabilitation operations of the 2022 floods. These operations manifested corruption and mismanagement, showing that aid distribution was inefficient and politicized (Amnesty International, 2023). A similar situation happened in the flood of 2025, showing that no lesson was learnt from the previous flood. In both floods, Pakistan has lacked a proper framework for accountability in disaster spending, further strengthening public resentment (World Bank, 2024). Natural disasters are unavoidable, but their impact can be minimized through proper disaster planning and a strong policy framework. The 2022 and 2025 floods show that Pakistan's vulnerability is institutional rather than environmental (UNEP, 2023).

Flood 2022: Nature and Impacts

Geographic Spread and Intensity

The flood had a great impact on people and the country. They covered nearly one-third of the country, influencing urban and rural areas. The flood moves throughout the city, destroying homes, buildings, shops, roads, and crops. It turns large regions into lakes. As a result, it becomes difficult for the government and NGOs to provide aid to the affected people, leading to a large-scale humanitarian crisis (WFP, 2022). In the province of Sindh, most districts were underwater for days. Entire villages were under floodwater, and in some safe places, camps were built to provide shelter to the people. The floodwater expanded across cities and farmlands, leaving behind piles of debris and mud. The homes made of just mud and bricks were washed away, and the rest were too destroyed to mend (UNICEF, 2022). People faced

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long-term displacement from their homes, and the suffering of those who lost their houses and belongings (UNHCR, 2022).

In Baluchistan, a flash flood swept away roads and bridges. Transport routes were destroyed, and many villages and small towns were cut off for weeks (ADB, 2023). It became very difficult to deliver relief goods and rescue people. The daily life of people was stopped, and they were left stranded without clean drinking water, food, and medicine (WHO, 2022). Punjab, Pakistan's agricultural heartland, has suffered massive loss. The floodwater has damaged millions of acres of farmland (FAO, 2022). The standing crops, such as rice, cotton, and sugarcane, were destroyed. Farmers were severely affected because they lost their entire year's income within days. The national economy of the country was also heavily impacted because Punjab supplies much of Pakistan's cash crop and food (Government of Pakistan Economic Survey, 2023). The destruction of water channels, canals, and irrigation systems challenged farmers in replanting their fields (FAO, 2022). In Khyber-Pakhtunkhwa, homes built near the rivers were swept away, and huge landslides blocked the roads and cut the communication lines. Many villages were cut off from the rest of the province. The tourism industry was greatly affected by floodwater, and many people have lost their income due to widespread damage to the infrastructure (UNDP, 2023). Quetta experienced heavy waterlogging. Floodwater destroyed schools, houses, and health centers. Transport, electricity, and clean water supply were disrupted (UN-Habitat 2023). Pakistan's railways and roads were damaged. Highways connecting provinces were flooded, delaying trade and the supply of goods (World Bank, 2023).

Social Impacts and Forced Migration

The flood led to the loss of life of many people, and a significant number of individuals were separated from their families. In accordance with the reports by the officials, over 8 million people were coerced to leave their homes due to heavy flooding (NDMA, 2022). Whole families were given temporary shelter in camps built alongside roads, schools, or government buildings. Their lives were shifted from normal to a survival struggle. These people were known as "climate refugees" (UNEP, 2023). The flood has greatly affected the social fabric of communities, people who depend on collective farming and close family ties, and the flood broke their traditional system of cooperation (FAO, 2022). Women faced excessive social burden because they had to oversee their children, collect water and food, and secure their families from harsh conditions. Many women in flood relief camps experienced insecurity and harassment due to a lack of adequate privacy measures and appropriate facilities by the concerned authorities. (Human Rights Watch, 2023).

Health problems erupted. Lack of proper medical facilities, contaminated water, and poor sanitation led to the spread of harmful diseases, including dengue, malaria, cholera, and skin infections. Pregnant women and newborn babies were at an alarming risk of diseases due to insufficient healthcare. People who suffered from mental stress and depression, who lost their families and homes (UNHCR, 2023). Urbanization has increased as people from affected regions moved to cities like Karachi, Lahore, and Rawalpindi in search of jobs and shelter. They were discriminated against and were treated as outsiders by the residents. The overcrowding of cities made it difficult for the government to provide resources to the population, which created social tensions (World Bank, 2023). Education was also affected. Many schools were destroyed or turned into shelters. It affected the emotional well-being of the children. They faced trauma, stress, and uncertainty. Cultural traditions, community life was disrupted. Festivities, weddings, and religious gatherings no longer take place (UNICEF, 2022).

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Economic Losses and Infrastructure Damage

The economic impact of the 2022 flood was severe. The total damages and losses exceeded 30 billion US Dollars as estimated by the World Bank and the government reports of Pakistan (World Bank & GoP, 2022). Agriculture, the backbone of Pakistan's economy, which employs a large part of the population, suffered heavily. Millions of acres of crops, such as cotton, wheat, sugarcane, and rice, were entirely damaged. This had insufficiently affected farmers and national exports of the country (UNDP, 2023). Thousands of peasants were left with no income and no seeds to replant. They were forced into debt and poverty. The other Pakistan's largest export sector is the textile industry, which was badly affected as cotton was damaged (ADB, 2023). In the livestock sector, many animals were drowned, or died from the diseases caused by the floods. This not only caused the shortage of milk and meat but also raised food prices across the country. It became difficult for the ordinary citizens to afford essential goods due to increased Inflation. Infrastructure damage has added more suffering and economic stress. Roads, railways, highways, and bridges were damaged. Entire road networks were cut off. The National Highway Authority (2022) has reported major loss as major highways that connect provinces were submerged. The disruption of the transport affected trade, shipments, and raised the prices of moving goods (Ministry of Planning, 2022).

Electricity and energy infrastructure were heavily damaged. Power stations, poles, and transmission lines were damaged, causing long power outages (WAPDA, 2022). There was no electricity in many areas of Sindh and Balochistan for weeks. The damage to energy infrastructure slowed industrial activities (NEPRA, 2022). Housing infrastructure was also damaged. Houses were damaged or destroyed, leaving people homeless. In many rural areas, houses were made of mud and bricks that could not withstand heavy winds and rain. Schools, hospitals, and government agencies were severely affected as they were turned into emergency shelters (UNICEF, 2022). Education was disrupted. Industries faced indirect losses. Many factories were temporarily closed, which prevented exports and slowed the national economy (UNDP, 2022). Workers became stressed because of unemployment. Governments faced challenging tasks during this period. They had to redirect funds from development projects to emergency relief camps (Government of Pakistan Economic Survey, 2022). Inflation, reduced exports, and damaged infrastructure all slowed the national economy. The cost of rebuilding infrastructure added to the country's debt (IMF, 2022). The government also had the difficult task of restoring health and education facilities (WHO, 2022).

Flood 2025: Nature and Impact

Severity, Frequency, and Affected Regions

The devastating flood of 2025 came only a few years after the 2022 flood. It had proved more severe in intensity and scale (UN OCHA, 2025). Heavy rainfall continued for weeks. Areas were recently recovered from the previous flood, yet they were again submerged under deep water. This flood covered both the northern and southern areas of Pakistan. The melting down of glaciers in the Gilgit-Baltistan and Khyber-Pakhtunkhwa caused landslides and huge destruction in the mountainous villages (ICIMOD, 2025). In Punjab, overflowing of the Ravi, Jhelum, and Chenab rivers spread across the cities and farmland, destroying houses, livestock, and crops (Punjab Disaster Management Authority, 2025). Urban cities were also not left behind. Lahore, Karachi, Islamabad, and Sialkot faced flooding due to poor drainage systems and unplanned construction. Streets were filled with heavy water, electricity was cut off, and clean water was not available for drinking (WAPDA, 2025). In rural areas, villages were washed away, and people were moved to temporary shelters. The 2025 flood hit mainly the agriculture

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sector, destroying rice, cotton, and sugarcane, which were near the harvesting phase. Roads, schools, and hospitals were damaged, leaving people isolated from basic services (WHO 2025).

Displacement Trends and Humanitarian Crisis

They were similar to the 2022 flood. People were forced to leave their houses and temporarily take refuge in the relief camps. Cities become overcrowded because people move there in search of food and shelter. Urban authorities struggled to accommodate flood victims, leading to water shortage, food, and medical care. The 2025 floods affected a wide area, causing severe displacement. Many families in rural areas were pushed to leave their homes, belongings, livestock, and crops due to destructive floods. Temporary shelters were established alongside roads, in schools, and other public spaces to accommodate the people affected by the flood. But soon they become overcrowded, leading to an eruption of health hazards and hygiene issues. Many people moved to big cities like Hyderabad, Multan, and Sukkur, disrupting the already weak infrastructure. Municipal facilities faced hurdles in providing food, clean water, and medical aid to the people, leading to long lines of people getting necessities. (Government of Pakistan, 2025).

Economic Disruptions and Recovery Challenges

The flood brought serious economic problems with it. Crops, cotton, wheat, and rice were damaged. Livestock, seeds, and tools of the farmers were destroyed. Food shortages and inflation increased. Canals and irrigation systems reduced production of the next season's crops (NDMA, 2025). Commercial and industrial sectors faced heavy losses. Factories were closed due to floods, power outages, and blocked roads. Small businesses and markets were shut down due to the loss of products. Foreign investors became cautious about their investment due to the uncertain economic environment in Pakistan (IMF, 2025).

The recovery of 2025 flood is a big challenge both for people and the government. The biggest is the rebuilding of Infrastructure. Roads, railways, bridges, and schools need immediate repair, but the government has limited funds and resources. Restoring agriculture is a difficult task. Farmers are in need of seeds, fertilizers, and finances, but the support of the government is not enough to meet their demands. Lack of coordination between government institutions and bureaucratic delays is slowing down the recovery process. Weak monitoring mechanisms and corruption are leading to the misuse of aid. Families are complaining about not receiving the compensation. All these challenges require cooperation between NGOs, governments, and local communities. Moreover, strong political will and transparent governance are also a need of the hour (World Bank, 2025).

COMPARATIVE ANALYSIS 2022 VS 2025

Shifts in Flood Magnitude (2022 VS 2025)

The 2022 floods were the most devastating floods in decades, marked by heavy monsoon rains, melting glaciers, and widespread soil saturation (Ahmad and Hussain 2023). In comparison, the 2025 floods were a combination of harsh cloudbursts, overflowing of rivers, and extended wet spells, hitting the areas already weakened by previous floods. In 2022, the heavy monsoon brought nearly three times more rainfall in many areas of Sindh and Baluchistan (World Bank & Government of Pakistan 2023). This abnormal rainfall submerged drainage systems, swamped entire villages, and turned the areas into large lakes. The water expanded slowly but covered the whole area, creating long-term stagnation. In comparison, the 2025 floods were characterized by sudden and quickly heavy concentrated bursts of rain. This sudden cloudburst caused flash floods in the Northern areas.

In 2022, the glacial contributed to the rise of river volume. Warm temperatures accelerated the melting process, adding immeasurable pressure to the Indus River System. This created a

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steadily unstoppable surge downstream. On the other hand, the 2025 floods were slightly affected by glacial melt and more by localized extreme rainfall events. Rivers did inflate in 2025, but the predominant cause was the massive inflow from short high-intensity storms. This shift displayed how climate-produced variability is changing the traditional patterns of flooding in Pakistan. The other factors that played a major role in shaping the magnitude of the 2022 and 2025 floods were Soil and Land conditions. In 2022, though the level of the rain was unusually high, the land had not experienced much shock. But during 2025, many flood-vulnerable regions are still recovering from substantial soil erosion, damaged embankments, and weakened agricultural fields left behind by the 2022 crisis (ADB 2023).

Variation in Social and Economic Outcomes

The social impacts of the 2022 floods were extensive due to the huge scale of flooding, affecting 33 million people in Pakistan (World Bank and Government of Pakistan 2023). Entire regions of Sindh and Baluchistan were flooded for weeks, destroying homes and forcing people to flee from their houses and get temporary shelters in safe areas. communities faced extended displacement, loss of social networks, and disturbance in education and healthcare. Schools in many districts were closed due to massive flooding, and many families struggled to get to medical facilities due to damaged roads and stagnant water (UN-OCHA, 2025). Flood also caused severe Economic outcomes. Huge agricultural losses occur because the water stays behind on agricultural lands for a long period, leading to the destruction of crops, seeds, and fertile topsoil. Livestock losses were considerable, affecting rural income sources and long-term productivity. Farmers needed help to rehabilitate fields, rebuild irrigation channels, and replace damaged equipment (UNDP Pakistan, 2024).

The 2025 floods created more localized but extreme disruptions. The sudden cloudburst caused great displacement. But families were able to return sooner because the water retreated more quickly. The psychological impacts were intense as people had less time to prepare and evacuate, causing huge trauma, stress, and fear among people (PMD 2025). Communities in northern regions and Punjab reported emotional stress in people associated with floods and property loss. It raised huge economic challenges, because the rain was severe for a short period. The flood heavily damaged crops. Infrastructure such as small bridges, local markets, and transportation routes was damaged, disrupting the movement of goods and services among regions. Many industries were shut down temporarily, highly affecting the workforce. Social recovery patterns were varied. The 2022 flood weakened community bonds and raised health crisis due to crowded shelters and poor sanitation (Ahmad & Hussain, 2023). In the 2025 floods, shelter stays were shorter, but families and especially women felt fear due to living with strangers. People who have experienced both the 2022 and 2025 floods have developed a huge fear of future climate disasters.

Evaluation of Government and Humanitarian Responses

In 2022, the Government of Pakistan launched a joint Floods Response Plan with the UN on 30th August, mobilizing military, provincial authorities, and a cash-assistance program. Despite these efforts, the catastrophe overwhelmed national capacity; some 33 million people were affected, and millions needed lifesaving aid, which enforced extensive reliance on international partners. The government's leadership helped channel resources but could not replace capacity shortfalls at provincial and district levels. For rescue, logistics, and distribution in 2022 and 2025, Pakistan mostly depended on its military and national disaster agencies (NDMA/PDMA), an efficient short-term surge mechanism that rushed supplies into difficult-to-reach areas and saved lives. However, the pace of relief was inconsistent; in 2022, many rural areas had to wait days for steady assistance, and assessments later suggested better

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transportation planning and quicker stock prepositioning. In many regions (such as KP), early 2025 responses showed escalating deployment. Unpredicted cloudbursts and local complaints about delayed warnings illustrate that quick response is still irregular.

The Flood Response Plan and the Post-Disaster Needs Assessment (PDNA) on the significant appeal of United Nations-administered funding designation and priorities after 2022. NGOs and other organizations, such as Red Crescent branches, increased their operations, and humanitarian groups, such as shelter, health, food security, and WASH, became involved. In the 2025 floods, humanitarian groups and governments both express greater importance on resilience-building measures, including temporary housing with better living standards, assistance for displaced populations, and disease prevention policies. Despite improvements, poverty, weak infrastructure, and climate-related risks continued to limit the efficiency of responses, pointing out the need for climate-adaptive disaster governance and sustained institutional reform. An important difference between the 2022 and 2025 floods is the more recurring disaster risk reduction (DRR) conversation between contributors and provinces. Additionally, a small rise in the planning papers and preparedness (including revisions in NDMA planning by 2025)

Floods As a Paradigm of Climate Consequences in Pakistan

One of the most destructive and catastrophic disasters in recent years in Pakistan includes the floods of 2022 and 2025. Both floods showed how vulnerable Pakistan is to severe and extreme weather and how intense rainfalls, glacial melting, and heatwaves are caused by climate change. Massive damage occurred, affecting millions of people and causing heavy economic strain across Sindh, Baluchistan, Punjab, and Khyber-Pakhtunkhwa during the 2022 floods. Already struggling, people further went into unending poverty as many families lost their lives, crops, homes, livestock, and sources of income. Three years later, in the 2022 floods, new floods in 2025 struck the country with great intensity. It affected both northern and southern regions of Pakistan. The already recovering areas from 2022 again got hit, leading to damage to all rebuilding efforts carried out. Rapid glacier melting triggered deadly landslides in the mountains, while swollen rivers and weak drainage systems caused severe flooding in towns and farmland. Major urban cities like Karachi, Islamabad, Lahore, and Sialkot witnessed severe waterlogging due to unplanned construction and fragile infrastructure. At the same time, rural areas were affected badly as entire villages were washed away, irrigation systems were destroyed, and massive agricultural losses occurred. These damages led to a rise in prices of crops in local markets and increased the financial burden on people. Both floods revealed deep institutional loopholes in the country's environmental management, governance, disaster preparedness, and urban planning. Slow relief operations, ineffective early warning systems, and weak coordination among government institutions were seen very evidently. All these disasters proved that Pakistan doesn't only have environmental challenges but also institutional challenges. In short, the floods of 2022 and 2025 showed the urgent need for better planning, improved infrastructure, strong and stable policies, and climate adaptation strategies to protect civilians and reduce future risks from occurring.

Key Findings

The findings of both floods are about the causes, impacts, and weaknesses of Pakistan's disaster management system. Firstly, one of the biggest and most concerning reasons behind intense flooding is climate change. The intensity of both the 2022 and 2025 floods was heightened by unpredictable monsoon patterns, heavy rainfall, rising temperatures, and rapid glacial melting. In Gilgit-Baltistan and Khyber-Pakhtunkhwa, the creation and bursting of glacial lakes worsened the floods to some extent.

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Secondly, the environmental mismanagement made the situation more adverse. The speed and intensity of floods were increased due to deforestation, encroachment on waterways, unplanned urbanization, and blocked drainage systems. Poor drainage systems and illegal construction in flood-prone zones led to the suffering of many urban cities like Karachi, Lahore, and Islamabad.

Thirdly, the weaknesses in governance and disaster preparedness were very evident in both floods. Infrastructure related to flood protection was outdated and poorly maintained. Coordination and collaboration between federal and provincial authorities were weak and questionable. Early warning systems failed to reach communities in need on time. Relief and rehabilitation programs also faced delays, a lack of transparency, and mismanagement.

Lastly, the large-scale socioeconomic impact created by both the 2022 and 2025 floods was insane, and the nation still hasn't recovered from them. Millions of civilians were displaced and compelled to leave their homes and livelihoods. Poor water, sanitation, and water contamination led to many health issues. The already struggling national economic progress was again slowed down due to losses in major industries like agriculture, livestock, and transportation.

In conclusion, all these findings highlight that Pakistan's sensitivity and vulnerability are caused by the combination of both climatic and institutional factors, which makes it important for Pakistan to adopt stronger, stable, and long-term policies to cope with climate change and flood management.

Conclusion

The floods of 2022 and 2025 visibly showed that Pakistan is entering serious worsening climate conditions that keep increasing and intensifying each year. These disasters were not sudden or isolated; instead, they were outcomes of long-term climate changes, unplanned urbanization, and ineffective disaster management. Although natural causes like heavy rainfalls and rapid glacial melting were heavy triggers, massive damage was also caused by human activities such as deforestation, unregulated construction, outdated flood protection structures, and clogged drainage systems.

Both floods also showed that Pakistan suffers from a weak institutional infrastructure in times of crisis. Early warning systems failed, government departments also failed to coordinate effectively, and all the relief programs were also delayed due to mismanagement, corruption, and limited capacity. As a result, millions of people lost their lives, homes, and livelihoods, many people were displaced, many lost their jobs, faced serious health problems, and experienced long-term social and economic hardships. The repeated damage also placed immense pressure on Pakistan's already fragile economy, especially the agricultural and infrastructure sectors. These disasters were clearly proof that Pakistan's vulnerability is not only due to environmental and climatic factors but is also deeply rooted in structural and administrative weaknesses. Without any proper planning, responsible environmental policies, and transparency in governance, the country will remain highly vulnerable to such catastrophic floods. The flood disasters of 2022 and 2025 serve as a strong warning that immediate, stable, long-term policies are urgently required. Upgrading infrastructure, strengthening institutions, and preparing communities for extreme weather conditions are essential steps to protect lives, reduce future losses, and build a safe and resilient Pakistan.

Recommendations

After analyzing the results of the floods of 2022 and 2025, Pakistan needs strong, stable, and dynamic initiatives to lessen future risks and safeguard vulnerable communities.

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1. **Improve Early Warning and Communication Systems**

- Early warning systems must be designed with the latest technologies to alert people promptly.
- Install automated river water-level sensors in areas like Sukkur and Charsadda that are vulnerable to flooding.
- When there is a risk of a glacial lake outburst or excessive rains, send emergency SMS alerts via PTA to every cell user.
- Teach community volunteers to use loudspeakers to issue warnings, particularly in places with spotty cell service.

2. **Strength Environmental Management**

- Effective Environmental Management: Controlling environmental deterioration is necessary to lower the risk of flooding.
- To stop landslides, implement extensive tree planning in Swat, Dir, and Gilgit-Baltistan.
- To stop landslides, remove any unlawful construction along the floodplain of the Ravi River.

3. **Upgrade Urban Drainage and City Planning**

- Cities need proper water drainage and regulated construction.
- Clean stormwater drains in Karachi before the monsoon season instead of during emergencies.
- Construct on natural nullahs such as Nullah Lai in Rawalpindi.
- Build rainwater harvesting pits in Lahore's nature intersections to reduce waterlogging.

4. **Rebuild And Modernize Flood Infrastructure**

- Pakistan must repair and improve its flood protection structures.
- Strengthen embankments along the Indus River in Dadu, Rajanpur, and Muzaffargarh.
- Repair damaged bridges in Baluchistan to keep transport routes open during disasters.
- Build small check-dams in Northern areas to slow glacier meltwater before it reaches villages.

5. **Support Farmers and Rural Communities**

- Farmers need help to recover from crop and livestock losses.
- Provide free wheat and cotton seeds to farmers whose fields were destroyed.
- Offer interest-free loans through Zarai Taraqiati Bank Limited (ZTBL) to help farmers restart planting.
- Set up mobile veterinary camps in Sindh and Punjab to treat surviving livestock after floods.

6. **Strengthen Coordination Between Institutions**

- Collaboration and coordination between Government departments is also necessary for efficiency.
- Combine NDMA, PDMA, and Rescue 1122 and create a single disaster command center.
- Monthly meetings must be held between federal and provincial disaster authorities.
- The shared digitalized database of flood-affected communities must be kept to avoid delays.

7. **Ensure Transparency and Fair Distribution of Aid**

- Aid must get to the suffering communities without any corruption.
- Utilize NADRA digital verification for financial assistance to ensure that only real and deserving victims receive support.
- Release district-by-district reports detailing the amount and recipients of help.
- Permit NGOs and independent auditors to keep an eye on aid camps.

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8. Promote Community Awareness and Preparedness

- The community should receive emergency response training.
- Every year, conduct evacuation treks in communities that are at risk, such as those in Swat and Kohistan.
- Teach school-age children the fundamentals of first aid and water filtration safety.
- Provide first aid kits, ropes, and torches in community emergency storage boxes.

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