

FLOOD DISASTERS GOVERNANCE IN PAKISTAN AND THEIR SOCIO-ECONOMIC IMPLICATIONS: EVIDENCE FROM 2022 AND 2025 FLOODS.

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Abstract

This study has examined the socio-economic impacts of Pakistan's 2022 and 2025 floods were the country's destructive climate-induced disasters and has aimed to identify gaps and limitation in policy implementation. The study used the qualitative research approach and case study design to explore the socio-economic, health, and educational impacts of the 2022 and 2025 flood events. It is guided by the Pressure Release Model (PAR) and the Sustainable Livelihoods Framework (SLF). Secondary data collected from various sources such as Government reports, UN agencies, humanitarian assessments, and peer-reviewed studies were analyzed to capture the climate hazards that have led to the intersection of the pre-existing vulnerabilities. The results indicate that the intensified monsoon variability, that accelerated glacial melt, and the environmental degradation were the main causes of the severe flooding. On the other hand, high exposure, weak infrastructure, and unplanned settlements increased the losses. The floods caused a loss of livelihoods on a large scale, agricultural destruction, housing collapse, disease outbreaks, educational disruption, and long-term displacement. The institutional review revealed recurring issues of late early-warnings, uncoordinated activities between NDMA, PDMA and district administrations, and lack of recovery planning, though modest improvements were observed in 2025.

This research demonstrates that the flood disasters in Pakistan are not just due to climate change, but governance problems and socio-economic inequities also contribute to the situation. By improving early warning systems, climate adaptive infrastructure, and local preparedness as well as integrated disaster governance can help to increase the resilience. The research is a worthy contribution to the knowledge based on evidence that can improve disaster risk management and climate adaption in Pakistan.

1. INTRODUCTION

Floods are one of the most common and destructive natural disasters in the world, leading to the

significant loss of lives and infrastructure. Due to the climate change weather patterns are changing

causing heavy rainfalls, and glacial melting that are increasing the risks of floods in most part of the world. In the past year's record flooding has affected various regions in South Asia, Central Europe, and Africa, this unprecedented flooding has affected developing countries the most. Pakistan is a country in South Asia, which is highly vulnerable to natural disasters like floods, because of its heterogenous geography including the high-altitude Himalayan ranges, the Hindu Kush and Karakoram ranges, and the Indus-river plains with fertile soil as well. This geographical and climatic profile makes Pakistan extremely vulnerable to climate-induced disasters; therefore, Pakistan is ranked as the most vulnerable nation to the impacts of climate change. (Ullah 2016)

Over the last ten to fifteen years, Pakistan has witnessed a series of destructive floods that struck the country in 2010, 2020, 2022, and 2025. These tragic events have halted the developmental progress, affected the lives of millions of people, and revealed persistent weaknesses in disaster preparedness and governance. The floods of 2010 affected approximately 18 million people, the death of 1,700 individuals, the destruction of 1.7 million homes, and inundating 2.2 million hectares of crops (OCHA 2010). The disaster led to a significant public health crisis, as the total number of medical consultations for waterborne diseases, and communicable diseases alone exceeded 37 million. (Shabir 2013) Besides this, maternal health services and education were severely impacted.

Another tragic history was written in mid of June-2022, when country was hit by severe deluge once more. These floods have affected approximately entire country, including Punjab, KPK, Sindh, Baluchistan, Azad Kashmir and Gilgit Baltistan. Almost two third of the nation was submerged, these floods have caused severe damages to essential infrastructure, displaced millions of people and inundated vast areas of fertile agricultural land. Over 33 million people were affected by these floods, nearly 10 million people were affected in Baluchistan and around 15 million people in Sindh province. The primary drivers of these floods were heavy downpours that lasted for continuous 15 days, which was fuelled by two air rivers that passed through southern region of Pakistan. (Nanditha et al. 2023).

As of November 2022, there have been more than 1700 deaths and almost 13,000 flood related injuries in addition to 8 million people being displaced. Like other floods, along with destroying and damaging millions of homes, the floods also had an impact on roads, livestock, agricultural crops and yields, vital infrastructure such as the energy grids and other industries. According to the Post Disaster Need Assessment (PDNA, 2022), that was jointly prepared by the Govt of Pakistan, UN agencies, World bank and Asian Development Bank (ADB), the damage caused by the summer monsoon rains and floods is estimated to have been around 14.9 billion dollars, economic losses of 15.2 billion USD and reconstruction needs of approximately 16.3 billion USD. In response to the flood, Govt of Pakistan launched the Resilient Recovery Rehabilitation, and Reconstruction Framework (4RF), which aims to prioritize Climate- resilient reconstruction, and direct national recovery efforts. Expansion of Banzir Income Support Programme (BISP) was significant Policy Response which has provided monetary Assistance of PKR 25,000 to over 2.7 million flood affected families (Ijaz Nabi, 2023). Despite receiving more than USD 10 billion in foreign pledges and extensive relief programs, the 2022 floods deepened poverty and widened inequality in Pakistan because of structural, governance and climate related factors. According to the World Bank and PDNA (2022) reports that almost a decade of progress in reducing poverty was reversed, with over 9 million people ended up living below the poverty line.

As mentioned earlier, every time Pakistan attempts to recover from the previous flood disasters, new floods recur, halting economic growth and wreaking widespread damage across various sectors. A severe deluge struck Pakistan once more in 2025. Heavy pre-monsoon rainfall in June-2025, set-off a series of catastrophic floods, that lasted until September-2025. The deluge primarily affected Khaybar Pakhtunkhwa, Azad Kashmir, Punjab, Sindh and Baluchistan. Since June,26,2025 to mid -September 2025, the National Disaster Management Authority (NDMA) reports that the monsoon rains and floods triggered by them have caused extensive damage to 8,481 homes, destroyed or damaged 239 bridges, and damaged 674.58 Kilometers of highways, resulting in about 972 casualties and 1062 injuries. Pakistan is

facing worst environmental- catastrophes in its recent history, as one deluge after another continues to strike the country. Multiple regions are experiencing a serious humanitarian crisis as a result of massive floodings that has cut off communities, demolished homes, and submerged vast areas of cultivable lands. During the recent floods, among the four provinces and additional administrative regions, Punjab has emerged as the most severely affected area. In addition, Sindh had flash floods and heavy rainfall, which resulted in urban flooding in major cities and displacing people in rural areas. Constant rains in Baluchistan triggered flash floods and landsliding isolating various districts and destroying roads networks. Communities in low-lying parts of Khaybar Pakhtunkhwa, were affected by hill torrents and river overflowing. Simultaneously in Azad Jammu & Kashmir and Gilgit Baltistan, excessive precipitation led to localized landslides and disruption in transportation and communication routes. In response to 2025 floods, with the help of National Disaster Management Authority (NDMA), and provincial governments and organizations (PDMA's), the Govt of Pakistan initiated massive relief and rescue operations. In order to provide aid to flood affected areas NDMA partnered with Rescue 112, the Pakistan army and international organizations. The Federal govt under prime Minister Shehbaz Sharif, established a Flood Emergency Cell to coordinate in real time, giving provincial authorities instructions to guarantee prompt evacuation and distribution. (NDMA 2025b)

Although existing studies, document the immediate impacts of the 2022 and 2025 floods in Pakistan, most focus on short-term humanitarian losses and physical damage, with limited analysis of broader socio-economic consequences. There is still a significant gap of comprehensive studies examining long-term impacts on health, education, livelihoods, and economic stability, particularly in the context of recurrent disasters such as the 2022 and 2025 floods. Addressing this gap, the present research work, analyses socio-economic impacts and assess the effectiveness of the policy response in a climate vulnerable low emission country Pakistan; the results can be used to improve disaster preparedness,

institutional coordination, and climate resilience planning.

Flood Disaster Governance and issues;

Floods are part of natural Earth's water cycle when water flows out of its normal place onto the land that is usually dry, they happen as a consequence of heavy rains, rivers bursting its banks, rapid melting of snow or storm surges (WMO 2021) . Floods are the most common and powerful natural calamities, floods lead to extensive damages to physical structures, ecosystem and human settlements. According to the Intergovernmental Pannel on Climate Change, climate change has made floods more frequent and severe all over the world, due to shifting precipitation patterns, rising sea levels, and an increase in extreme weather events (IPCC et al. 2023) . Floods have become recurring phenomenon in Pakistan due to irregular monsoon patterns, poor urban planning, and the lack of efficient drainage system. (NDMA, 2025) The socioeconomic impacts of flood encompass loss of livelihoods, the forced displacement of people, damage to the infrastructure, and rise in poverty, while health and educational impacts refer to the occurrence of diseases, disruption of medical services and closure of schools. Extensive research on the 2022 floods, revealed that Pakistan faced serious governance challenges, including coordination failures, and the delayed reactions of authorities to policies that exacerbated damages worth over USD 30 billion (UNDP 2022) . In comparison, the initial studies on the monsoon floods in 2025 revealed both progress and persistent gaps in the area of disaster preparedness and institutional capacity. Together these studies uncover how recurring floods disasters in Pakistan are a reflection of the government's weak response to climate change and inadequate planning for adaption in the long run (OCHA 2025b) . Few studies have compared the 2022 and 2025 floods in Pakistan, which has resulted in lack a of understanding of how the previous experiences influenced the later policies and recovery. This study fills that gap by looking at the government responses, health, education, and the socio-economic recovery to strengthen future climate resilience. Flooding has been a major cause of change in Pakistan's environmental and socio-political landscape for

decades. Large basin floods and repeated monsoon inundations raised acute humanitarian tragedies and long-term development crisis. Historical analysis depicts the morphological changes of the Indus Basin coupled with population growth in the low-lying areas of plain and poor floodplain management have increased the impacts of floods several times (Tariq and van de Giesen 2012a) . Seasonal monsoon variability along with early-warning data for extreme weather events are well recorded by the National Meteorological and hydrological monitoring leading by the Pakistan Meteorological Department (PMD) and river gauge networks. However, the on-the ground operations in term of forecasting translation and local dissemination of this information have been lagging, thus, the means to give protection through early-warning are at minimum (PMD 2024) . Empirical studies and post disaster assessment following major events (notably 2010 flooding episodes, 2019 localized events and 2022 disastrous floods) document severe socio-economic effects, displacement on large scale, crop losses, and damage to both basic and non-basic infrastructure and increase in poverty over a long period of time, underscoring recurring nature of risks in Pakistan (Manzoor et al. 2022) . Non-governmental Organizations and UN datasets (OCHA, Relief Web, IFRC) provide a timely and detailed account of the situation on the ground that complements government records. These datasets not only complement government records but also bring in detailed community-level mapping of the impacts, which reveals the effects that are spatially heterogenous, and shows those secondary impacts that have been under-reported, like the prolonged closure of schools and the outbreak of diseases (IFRC, 2022, OCHA, 2025) . Thus, the past record based on the sources from academic, governmental and humanitarian sources, points out that the mounting issue of floods in Pakistan is a complex one, being hydrological, institutional and socio-economic, problems happening at the same time: thus, the effective mitigation of the situation calls for enhance forecasting and infrastructure, through upgrading local warning dissemination and integrating social protection to help decrease the vulnerability of the most disadvantaged communities. (Tariq & van de Giesen, 2012) .

Flooding in Pakistan has imposed huge cost on people, ecosystem, and economy, with the recent events providing data that are unprecedented in terms of their scale and impact. The total number of people affected during the floods in 2022 were more than 33 million, which was a figure that represented most of the country, and the damages went beyond a value of USD 33 billion, which was a value approximately equal to 10% of country's GDP (Wang et al., 2024). Pakistan is an agricultural country. During the floods, agricultural losses also hit the country very hard; for example, in Sindh Province the most important Kharif Crops (also known as monsoon or autumn crops), rice, cotton, and sugarcane, had production losses of roughly 60%, 80% and 88% respectively. The value of the damaged crops was estimated at USD 1.30 billion (Qamer et al. 2022) . Newly satellite-based studies reveal even more detailed information about the extent of cropland that have been submerged in two districts of Punjab and KPK. in addition, 2.67 million acres and 287,000 hectares of cropland have been flooded in these two regions of the country, correspondingly (Khan et al. 2025) . The livestock sector lost tens of thousands of animals (e.g. more than 42 thousand in one province), and the value of livestock that was lost in one district alone was around USD 13 Million (Jamil et al. 2022) . The damage to Transport Infrastructure was equally severe; more than 13,000 km of roads and 439 bridges were either destroyed or damaged. During these floods (2022) houses were also damaged or destroyed. Almost 900,000 homes were destroyed, and more than 1.39 million were damaged. The socio-economic ripple effects that followed represent series of unfortunate events that would be hard to detect even by the most powerful magnifying glass, among these are interrupted schooling, health services and increased risks of waterborne diseases and malnutrition. School have also suffered; more than 22,000 educational institutions across various provinces have been either destroyed or damaged. The health-economic study unveils a scenario in which the terrible floods have become the main reason of the acute outbreaks of diseases such as diarrhea, respiratory infections, and vector-borne diseases such as cholera, malaria and dengue, have gone up significantly in provinces and districts,

thereby healthcare systems getting overburdened which were already under stress. A clinical review pointed out that the environment after floods in South Asia was a major factor in a sharp rise of enteric infections, respiratory illness and skin diseases and Pakistan was one of the most affected countries (Ali et al., 2024). Likewise, research finds that level of acute malnutrition has gone up among displaced women and children and the shortage of medical supplies is aggravating the situation. (Iqbal 2022)

One of the most important and comprehensive bodies of literary work analyzing 2025 flood crisis in Pakistan includes the emerging scientific, governance and applied disaster management literature. The combination of rapid urbanization, unregulated land conversion, and climate-change induced extreme rainfall led to an increase in flood exposure in the major districts of Khyber Pakhtunkhwa and Northern Punjab regions in particular (Ali et al. 2025), their simulation reveals that the increase of impervious surfaces has led to a large volume of runoff which has drenched the already installed drainage system. In Pakistan, the monsoon season has been marked by exceptionally heavy rainfall, triggering widespread flooding, landslides and loss of lives and property across multiple provinces. According to the NDMA, the Pakistan Meteorological Department (PMD) reported a 73% increase in rainfall compared to the seasonal average, compounding vulnerabilities brought on by climate change, inadequate infrastructure and poor urban planning (NDMA 2025a). The increase in cloud burst events between 2020 and 2025 is indicative of perilous climate shift associated with a warming atmosphere over the Hindu-Kush Himalayan region (Kanwal 2025). Cloud burst and heavy rainfall caused major floods in KPK, AJ&K, GB, some regions in Punjab and other provinces as well, resulting in deaths, severe damages to infrastructure, crops and livestock (IFRC GO 2025). The casualties rate was high, as of August 17, there had been 650 fatalities and 918 injuries nationwide due to flooding since June 26, with KPK having the highest number of casualties. Nationwide infrastructure damages include nearly 2000 homes and 640 lost livestock (NDMA 2025a). The transport facilities in the countryside, in particular,

the small bridges and culverts, were damaged structurally due to extremely high discharge of the load, thus the entire communities were cutoff (Kashif et al. 2025). Numerous bridges in Northwest Pakistan are structurally vulnerable to peak flows according to this study, which used a Hydrologic-Hydraulic modelling framework to evaluate flood impacts on rural bridges and infrastructure. The study calls for retrofitting and resilience-focused engineering in flood-prone rural regions (Kashif et al. 2025).

The NDMA and local authorities have mobilized emergency responses, giving impacted population access to clean water, medical care, and relief supplies. The Governance oriented research further underscores the institutional strain imposed by the 2025 floods. Pakistan emergency response was mostly reactive, as it had evacuation order issued with a delay and a coordination was fragmented among NDMA, PDMA, Irrigation Departments and district administrations (Dr. Arfan Mahmood, Maryam Arshad Tarar, and Muhammad Tahir 2025). This argument is in agreement with the (Engr. Muhammad Arshad et al. 2025), in their research they found that poorly coordinated inter-agency collaboration and slow budget releases were the main hindrances to the early relief delivery, which in turn caused economic bottlenecks to provincial governments.

According to the UNICEF 2025 humanitarian briefings further stated that thousands of children were deprived of access to clean water, health services and temporary learning centers, which is indicative of the communities' vulnerabilities that have been left unaddressed in the emergency social protection system (UNICEF 2025). The 2025 flood disaster in Pakistan continue to dismantle the public-health infrastructures of country: leading health-care facilities have been shut down due to the floods, disease the surveillance system is exhausted, and water borne infections are spreading rapidly in flood-affected populations. The six weeks after the floods have seen the increase of diarrheal diseases, skin and respiratory infections, and vector-borne diseases to a level that is several times higher than the seasonal norms. However, the provision of emergency health funds and the global support are still very much

behind the line of the enormous needs (Fahim, Qureshi, and Sethi 2025) .

Building on the historical and regional patterns of disaster management that were discussed earlier, the 2022 floods in Pakistan revealed not only the gaps in the country's disaster governance framework but also the government's failure to address these gaps over years. Pakistan has been recognizing flooding as its most recurrent hazard for years. Still, when the 2022 crisis unfolded, the institutional mechanisms such as the National Disaster Management ACT (2010) and National Flood Protection Plan IV-(2015-2030) were only partially functional. The Government of Pakistan, with assistance from the World Bank, EU, ADB, and UNDP, has prepared the Post- Disaster Need Assessment (PDNA) recording the damages exceeding US\$30 billion. The report also talked about the lack of preparedness, early warning, and coordination (UNDP 2022) . Moreover, the academic research compliments the picture: Tariq and Van de Giesen (Tariq & van de Giesen, 2012) argue that Pakistan's flood governance is generally reactive and lacks sufficient funding. Their hydrological study also shows that encroachments along the Indus floodplain as well as the incorrect operations of the reservoirs greatly contributes to the intensification of floods, thus increasing the downstream inundation. Furthermore, the authors note that the Pakistan lacks the integrated system for real-time flood prediction among provinces which is the reason behind late warnings and inefficient evacuation especially in remote areas. Whereas, (Qaisrani et al. 2018) their study demonstrates that families in areas frequently affected by floods suffer gradual loss of their livelihoods caused mostly by the loss of crops, livestock mortality and lack of access to insurance. According to their research, social safety nets are poorly targeted, which results in that the most impoverished households become the one which are most heavily affected by the lack of protection in the time of disaster. Moreover, the research signifies the existence of gender-related vulnerabilities which magnify the increase of difficulties during the post-flood period as women have limited freedom of movement and less access to relief distribution.

Despite several measures researchers consistently identify deep structural-flaws and operational delays

that weakened the effectiveness of Pakistan's flood response. (Mian 2014) in this study the author is stating that, the flood governance in Pakistan is so riddled with problems that it lacks the ability to learn from past experiences. Pakistan's flood governance is characterized by the perpetual defects in adaptive learning, for instance after major disasters, the lessons learned are seldom institutionalized in long-term planning or regulatory reforms. For example, river encroachment, deforestation, and settlements in floodplains have been recognized for a long term as risk multipliers, but these areas are basically unregulated because of political pressures, and the mismanagement of land-use. (Wang et al. 2024b) , Authors take this viewpoint further with their detailed flood mapping. Their multi-source satellite survey of the 2022 mega-flood has shown that the significantly affected districts were in fact the areas that were previously considered as high risk, thus pointing to the state's failure to implement hazard zoning, embankment maintenance, and drainage restoration. Similarly, the Authors (Arifeen and Eriksen 2020) claim that disaster governance in Baltistan Pakistan, is not only dependent on the technical capacity but also the political and social inequalities that influence which losses get recognized and who gets the assistance first. Their research demonstrates that communities frequently refuse to recognize the formal authorities and instead depend on the informal local networks, because of the distrust towards state institutions.

Response policies to recent floods reveal similar challenges to the those of earlier times, though some gradual signs of improvement can also be noticed. As (Dr. Gulshan Majeed 2023) research pointed out, the NDMA has improved in term of centralizing data collection, issuing situation reports, and coordinating with provincial authorities, but it is still short of operational capacity for large-scale crises. The 2022 and 2025 floods responses are showing almost the same kind of problems: late evacuation orders, logistical failures in delivery of food and medicines, and provincial differences in damage assessment methods. The research (Arifeen and Eriksen 2020) suggest that such gaps result from the absence of community-centered governance; mostly top-down, technical and short-term interventions are implemented, which neither consider local

knowledge nor structural causes of vulnerabilities. The research by (Mian 2014) , brought up the idea of adaptive governance failure that fits here very well, institutions in Pakistan react after disasters instead of instead of before them, hence the same scenarios of crisis and lack of preparedness keep repeating. According to (Wang et al. 2024b) even though there are improvements in technological means for flood detection, their use in policy is still very limited that leads to the refusal of taking anticipatory actions.

By examining governance and economic failures during 2025 flood crisis the researchers (Engr. Muhammad Arshad et al. 2025) come to the conclusion, that mismanagement of finances, delays in releasing the budgets, and poor coordination among the agencies aggravated the situation despite improvements in remote sensing, communication, and early warnings. Besides that, their findings also indicate that climate governance is still caught in a reactive model, where policies are developed after extreme disaster instead of being part of the long-term development planning.

Together these reports and research papers indicate that Pakistan's flood governance difficulties are not merely due to the lack of funds, but they stem from deep rooted, institutional, political and structural issues that hinder effective policy implementation. So, boosting disaster governance capacity calls for comprehensive changes in the system, involvement of the community, forward-looking planning and institutional learning which are the components that have been pointed out in the literature but not have not been sufficiently put into practice.

Methodology

This study employed qualitative, case study design and comparative methodology to analyze the socio-economic impacts of Pakistan's 2022 and 2025 floods. The study is based on secondary data sources that include the and government reports, Post Disaster Need Assessments, NDMA publications UN and humanitarian agency reports, and peer-reviewed literature covering health, education, livelihoods, infrastructure and governance responses.

The data was categorized based on different types of literature. The analysis was supported by the Pressure Release Model (PAR) and Sustainable Livelihoods

Framework (SLF), that explained how deep-rooted vulnerabilities and lack of good governance transformed climate hazards into long-term socio-economic crisis, making it possible to have a more comprehensive understanding of the flood impacts.

Socio-economic Impacts of 2022 and 2025 Floods

The floods in Pakistan, 2022 and 2025 created compound social and economic impacts that went far beyond the immediate physical destruction. (Zahidullah et al. 2022). The exposure to these events has not only affected people's livelihood but resulted in lower quality and less availability of public services, and the governance systems have become burdened at the same time, thus strengthening existing structural vulnerabilities and limiting recovery capacity.

The following sections analyse these interrelated effects in various crucial sectors.

Livelihood and Economic Impacts

The floods of 2022 and 2025 caused widespread disruption to livelihoods and economic stability across Pakistan, particularly affecting rural and agrarian communities. Agriculture, a sector which directly or indirectly employ about half of the total labor force of the country and heavily depended on natural factors, suffered severe losses during both flood events. (Jamil et al. 2022a)

In the case of 2022 floods alone, more than 33 million people were affected, and total damages reached over USD 33 billion, which is almost 10 % of Pakistan's GDP. Agricultural production declined sharply, especially in the Sindh province where the main Kharif Crops, rice, cotton and sugarcane had the production levels halved, to only 20%, and 12 % respectively, with the losses being USD 1.3 billion. (Jamil et al. 2022a) On top of that satellite-based studies have shown widespread cropland flooding in Punjab as well as Khyber Pakhtunkhwa, which has further aggravated the food insecurity and erosion of rural livelihoods. (Qamer et al. 2022)

Livestock losses further compounded economic hardships, with tens of thousands of animals lost in flood-affected districts. (Jamil et al. 2022b). The destruction of transport infrastructure, including roads and bridges disrupted the supply chain severely. Meanwhile, it also restricted the market

access and delayed recovery process. Similar livelihoods vulnerabilities were observed during the 2025 floods where heavy rainfall, urbanized development, and lack of drainage system once again destroyed the crops, houses and sources of livelihoods. Such recurring disasters have intensified poverty and decreased household resilience especially among informal workers and small-scale farmers (Khan 2025).

Health Impacts

The floods of 2022 and 2025 severely strained Pakistan's public health system, and also exposed major flaws in the healthcare infrastructure and the capacity of an emergency response. Health facilities were damaged or destroyed, medical services were interrupted and the water supply was also polluted by the flood waters, therefore leaving people at a high risk of disease outbreaks (Iqbal 2022). After the 2022 floods, there was a sudden surge in cases of various diseases including diarrheal diseases, respiratory infections, and vector borne diseases like malaria, dengue fever, and cholera, these diseases exerted a lot of pressure on already fragile healthcare systems. clinical research highlights that the post floods environment in South Asia provides optimal conditions for enteric infections and skin diseases, with Pakistan being among the most impacted countries (Shah et al. 2025)

The flood victims (displaced population) were also subjected to more health risks due to overcrowding, poor sanitation, and shortage of medical supplies. Studies have shown that there was a sharp rise in the cases of acute malnutrition among displaced women and children, which was further aggravated by the food supply disruption, as well as scarcity of essential medicines (Iqbal 2022). The trends were also displayed in the 2025 floods as healthcare system was paralyzed with the closure of healthcare centers, disease surveillance systems were overstretched, and the waterborne infections due to floods were spreading like a wildfire in flood-impacted areas, despite the emergency response (Fahim, Qureshi, and Sethi 2025). During, both flood incidents, the scale of health damage shows that there are still major gaps in preparedness, access to health facilities, and post-disaster public health management.

Educational Impacts

The 2022 and 2025 floods have severely affected the education sector of Pakistan, particularly, in the flood prone and the poor areas. During 2022 floods, over 22,000 schools in different provinces were either severely damaged or destroyed, resulting in long-term school closures and massive disruptions to student learning (Sujaya, Abdul-Haq, and Imran 2023). Displacement of families led to the further disruption of the children's education and increased the risks of dropouts, particularly among girls and children in vulnerable families. The humanitarian organizations research reveal that these educational losses are rarely reported, but they have very serious effects on the development of the human capital and social mobility in the long run.

The 2025 floods exposed the same situation because thousands of children were disconnected from temporary learning facilities, clean water, and health care facilities. Lack of proper emergency education planning, and limited availability of temporary learning centers have caused a prolonged period of educational discontinuity in flood affected areas. Reoccurrence of flood related activities has resulted in deterioration of education, reduction in rates of attendance, and an increase in the level of inequality between urban and rural population (UNICEF 2025). such effects emphasize how the education sector in Pakistan is vulnerable to disasters caused by the climate changes and why effective education infrastructure and comprehensive recovery strategies are needed to avoid setbacks in development in the long-term. (Sujaya, Abdul-Haq, and Imran 2023)

Governance and Institutional Impacts

The 2022 and 2025 floods revealed several continuing failures in disaster governance and institutional response mechanisms in Pakistan. Studies that focus on disaster governance have always pointed out delayed evacuation orders, lack of coordination among federal, provincial, and district level authorities, and uncoordinated/reactive disaster management as the major shortcomings during both flood events that led to the problems (Dr. Gulshan Majeed 2023). Even though there are institutional frameworks like the National Disaster Management Act (2010) and the National Flood Protection plan, their effectiveness during large scale emergencies was

limited by implementation gaps. The research shows that Pakistan's flood governance is still mostly reactive and that there is hardly any institutional learning from the past disasters. By 2025 there were some improvements in data collection, early warning systems, and situation reporting, but these improvements were not sufficient to prevent the similar loss (Hote and Koike 2025).

Studies on the 2025 floods emphasize that there are still issues of financial mismanagement, delayed release of the budget, and lack of inter-agency coordination, all of which have resulted in a very slow relief and recovery process (Engr. Muhammad Arshad et al. 2025). The failures in governance that keep repeating show that the flooding in Pakistan is not just a climatic hazard, but deeply rooted in the structural, political, and institutional limitations that prevent effective disaster risk reduction.

Conclusion

Pakistan went through extremely tough and complex situations caused by the floods disasters during 2022 and 2025, these flood events severely affected different sectors of the country and disrupted the development process on a large scale. The study reveals that the floods were not only natural hazards but the outcomes of climate extremes aggravating social and economic inequalities, poor governance, and limited adaptive capacity over time. Climate change and global warming have caused the rapid melting of glaciers, and changes in monsoon patterns has increased the intensity as well as the frequency of floods. As a result of these, Pakistan is now among the most climate vulnerable countries of the world to such disasters, although Pakistan barely contributes to the world's carbon emission.

Both flood events caused considerable and long-lasting damage to livelihoods and to other various sectors, such as healthcare, education, and infrastructure. The agriculture disruption, destruction of homes, damaged transport networks, and displacement, with other factors severely undermined economic stability, especially in rural areas and among low-income households. Furthermore, the health and education sectors were affected with diseases outbreaks, malnutrition, interruption of immunization service, and school closures for a long time, which eventually led to a loss of human capital in the long run. The

2025 floods responses showed some decent institutional improvements; however, there was still critical weaknesses in early warning dissemination, inter-agency coordination, financial transparency, and recovery planning. This study is based on Pressure Release Model and Sustainable Livelihoods Framework (SLF), points out that the flood disaster in Pakistan mainly result from social vulnerabilities and governance failures rather than natural climate hazards alone. The results point to the necessity of shifting away from the mere reactive disaster response and towards a resilience-oriented governance that mainly focuses on adaption to climate change, strengthening of institutions and protection of livelihoods.

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