

DISASTER MANAGEMENT IN PAKISTAN: CHALLENGES AND WAY FORWARD.

OUTLINE:

1: Introduction

1.1 Hook

1.2 Background

1.3 Thesis Statement

2: Understanding the Disaster Landscape in Pakistan.

2.1 Geographic vulnerabilities: Location on
Seismic belt, climate sensitive Zones.

2.2 Ranges of disasters: natural and man-made

3: Core challenges in Disaster Management

3.1 Institutional Fragmentation

3.2 Absence of local - level disaster risk planning

3.3 Inadequate funding and poor infrastructure

3.4 weak early warning system and delayed
response.

3.5 climate change aggravating natural disasters

4: Way Forward

4.1 Institutional reforms and capacity building

4.2 Investment in early warning, data, technology

4.3 community level preparedness, education and
local government role.

4.4 climate adaptation and resilient infrastructure

4.5 International cooperation and funding mechanisms

5: conclusion.

when the water rises and earth trembles, a nation's true test is not simply in enduring the storm but in how it rises afterwards. In Pakistan, where mountains doom and rivers carve valleys, where monsoons bring life but also destruction, the interplay between nature and society is relentless.

Pakistan faces disaster not as a possibility but as a persistent reality. From floods that swallow entire villages to earthquakes that shatter buildings, from urban fires to droughts, the country's vulnerabilities are many. Yet these threats are not just acts of nature, they are exacerbated by human choices, institutional gaps and climate trends. In such a context, the question is not whether a disaster will strike, but how prepared we are to respond, recover and build back stronger. This essay argues that although Pakistan's disaster exposure is severe and growing, its disaster management system remains plagued by institutional inefficiencies, insufficient funding, weak preparedness and implementation gaps; but a path forward exists through robust reforms; strengthening institutions, deploying early-warning systems and modern data, building resilient infrastructure, empowering communities, adapting climate change, and engaging international and private partners. With timely action, what is

today a vulnerability can become a cleared pathway to resilience.

Pakistan's unique geography and climate make it inherently susceptible to a wide array of hazards. Sitting at the junction of the Indian and Eurasian tectonic plates, the northern and western regions are prone to high-magnitude earthquakes. Rivers such as the Indus, Chenab, Ravi, Sutlej and Jhelum traverse from mountainous catchments to plains, making them vulnerable to glacial-lake-outburst floods (GLOFs), flash flooding and riverine flooding. Meanwhile, monsoon seasons and summer thunderstorms bring heavy rainfall that often overwhelms drainage and river systems. Droughts also affect many southern and western regions in dry seasons. ~~In Pakistan~~ In short, Pakistan must contend simultaneously with natural hazards of tectonic, hydrological and meteorological origin as well as the cascading disasters that human settlement and infrastructure mismanagement trigger.

The catastrophic floods of 2022 submerged nearly one-third of the country, displaced around eight million people and caused direct damages of approximately US \$14.9 billion. Then, in mid-2025, Pakistan again bore the brunt of monsoon floods: by early ^{sep} ~~August~~, at least 863 deaths and 1,147 injuries had been reported, with the provinces of Khyber Pakhtunkhwa (KP) and Punjab hardest hit. The 2025 floods destroyed thousands of houses, damaged hundreds of kilometres of roads,

and devastated crops and livestock. These events are not isolated, they reflect an intensifying trend. According to the Pakistan Economic Survey 2024-25, the country has experienced 224 major natural disasters since 1980, with floods events increasing five-fold over four decades.

Despite this daunting landscape, Pakistan's disaster-management apparatus has struggled to keep pace. The first major challenge lies in institutional fragmentation and weak coordination. The National Disaster Management Authority (NDMA) is mandated at the federal level, while each province houses its own provincial Disaster-Management Authority (PDMA). Despite this structure, persistent overlap of responsibilities, unclear roles and lack of coordination hamper timely responses. For example, relief operations often face delays because district authorities await directives from higher levels rather than initiating immediate local action. Local governments, who are closest to vulnerable communities, often remain under-equipped or bypassed entirely. Institutional inertia means that basic systems such as evacuation protocols, inter-agency drills and pre-positioned supplies are often inadequate.

A second challenge is the chronic underfunding of disaster preparedness and infrastructure. While Pakistan invests in relief post-disaster, investment in preventive measures remains disproportionately low. Poorly maintained

embankments, under-resourced rescue services, limited stockpiles of tents and shelters and aging drainage systems are recurrent problems. The 2025 floods damaged over 671 km of roads and destroyed 239 bridges by early Sep alone. Furthermore, early warning systems, which require significant investment in sensors, communication networks, and human capacity are patchy. Communities frequently cite receiving little or no warning before flash floods or landslides. This puts response on the back foot rather than proactive.

Thirdly, the response capacity, especially at the local community level is weak, and this is amplified by insufficient preparedness. Disaster risk reduction (DRR) efforts remain uneven; many schools, hospitals and community centres are not designed or retrofitted for hazard resistance. Urban and rural populations alike often lack basic training in evacuation, first aid or awareness of hazard zones. This gap means that when a flood, landslide or quake strikes, the human cost escalates rapidly. In the 2025 floods, many children and women were among the casualties and thousands of houses collapsed due to weak structural design, landslide-prone slopes or poor drainage.

The fourth major challenge arises from the climate change and its role in amplifying both the frequency and intensity of disasters in Pakistan. As the 2024-25 economics survey notes, flood events have surged and now affect over 100 million people

with cumulative damages of US \$ 36.4 billion since 1980. Rising temperatures accelerate glacial melt, increasing glacial-lake outburst flood risk in northern Pakistan; intensified monsoons produce heavier rainfall in shorter spans, causing flash floods and landslides. For instance, the August 2025 Buner district flash flood stemmed from a cloud-burst which dumped over 150mm of rain in an hour. The frequency of such extreme weather events challenges traditional design criteria and preparedness assumptions.

Another factor that weakens disaster resilience is rapid and often unplanned urbanisation, encroachments of flood plains, deforestation, and poor land-use planning. Urban centres such as Lahore, Islamabad and Karachi often suffer drainage failures and urban flash floods because natural watercourses have been blocked, wetlands filled, and developments allowed in high risk zones. The 2025 monsoons flood affected over 1400 villages and 1.2 million people in eastern Punjab after multiple rivers burst their banks. Encroachments and absence of zoning enforcement meant the impact was magnified.

These challenges have severe human and economic consequences. The human cost of disasters is high and often hidden. Deaths, deaths of children, injuries, trauma and displacement leave enduring scars. In the 2025 floods children accounted for hundreds of casualties and injuries, while entire families were uprooted. The prolonged displacement, loss

of homes and livelihoods also contribute to mental-health issues, though Pakistan's mental-health infrastructure is under-resourced. Economically, the damage is vast: crops washed away, livestock lost, roads and bridges destroyed, business interrupted. For example, in Khyber Pakhtunkhwa, Gilgit-Baltistan and Azad Jammu and Kashmir, losses were initially estimated at Rs 63.79 billion (about US \$227 million) by mid-September 2025. Agriculture is especially vulnerable, and schooling and health services are disrupted for weeks or months. A study of the 2022 floods found that Rabi-season crop sowing was significantly delayed, directly affecting food-security and incomes.

Turning to the case of the 2025 floods provides a sharp lens on these dynamics. Starting 26 June 2025, heavy monsoon rains combined with glacial melt and dam discharges (including cross-border water releases) triggered flooding across Khyber Pakhtunkhwa, Gilgit-Baltistan, Punjab and Sindh and Balochistan. By early September, at least 883 fatalities, 1,177 injuries, 9,261 houses damaged, and 6,180 livestock dead had been reported in one data set. The scale of the event exposed multiple fault lines. First, the warning systems and evacuation pathways proved insufficient in mountainous and remote terrain; remote communities in Buner, Swat and Batta-Gram were cut off, and when torrents arrived via cloud-bursts the response was too slow. Second, infrastructure such as roads,

bridges and communications lines were often destroyed or inaccessible, hampering relief. Third, the national and provincial disaster bodies lack integration with local actors and community rescue. Although agencies such as the NDMA, Pakistan Army, and PDMA were mobilised, they often were reacting rather than anticipating.

Given these immense challenges, what is the way forward for Pakistan? First, institutional reforms are essential. The NDMA and PDMA must be properly empowered not just in name but in budget, authority, staffing and clarity of roles. Local governments and district disaster-management offices should be central; they need operational autonomy to act immediately. Regular joint drills, multi-hazard simulations, pre-positioned supplies and clear command structures must become routine. The legal framework needs strengthening so that responsibilities across tiers do not overlap or stall.

Secondly, investment in early warning systems, data and technology is non-negotiable. Pakistan must move from ad-hoc alerts to real time, community-centric warning systems; sensors for glacial lakes, rainfall monitors, river flow gauges, remote-sensing inundation mapping. Recent research shows that fusing optical and SAR satellite imagery improved flood-mapping accuracy significantly, enabling better policy design. Real-time hazard mapping must link to local mobile alerts, community evacuation plans, and rescue

Logistics. Budgets - making should allocate dedicated funds for such technology rather than rely solely on external donors.

Third, building resilient infrastructure and climate-adapted land use must be priorities. Embankments must be repaired and upgraded, drainage systems increased, flood-zones strictly zoned, urban sprawl managed, deforestation checked, Glaf-vulnerable lakes monitored. In urban centres, restoration of wetlands, enforcement against encroachment of rivers and nullahs, and runoff control through sustainable urban drainage must be given attention. In rural and mountain regions, roads and bridges must be built to standards that anticipate floods and landslides. The mantra should be build back better.

Fourth; community preparedness and education are vital. In many disaster-hit areas, people are the first responders long before official rescue arrives. Empowering communities through training in evacuations, first aid, hazard awareness, and establishing village-level emergency committees increase resilience. Schools and educational curricula must include disaster-risk reduction modules so that children understand hazards and evacuation procedures.

Fifth, climate change adaptation must be woven into all disaster-management strategies. Pakistan is often ranked among the most climate-vulnerable countries, floods increasing five fold, more than 100 million people affected over decades. Adaptation

Strategies may include: restoring upstreams glaciers and catchment forests to reduce runoff; promoting flood-resistant crops and livelihood diversification; integrating water-storage infrastructure and controlled releases; strengthening dam safety and trans-boundary water management; and aligning urban expansion with climate risk assessments.

Sixth, international cooperation, funding and private-sector partnership must be leveraged. While national budgets are stressed, Pakistan can engage multilateral institutions, bilateral partners and philanthropic funding to support both preparedness and recovery. In particular, public-private partnerships for resilient-infrastructure investment such as flood-resistant housing, modular shelters, community based insurance schemes can reduce the burden on the state. Donor-funded "build resilience before disasters" programmes deliver higher return on investment than relief after the fact. Accountability mechanisms must ensure funds are used efficiently, and learning from each disaster must feed into future policy.

In conclusion, Pakistan lives under the shadow of disaster not because nature is uniquely cruel, but because vulnerabilities have been created and amplified by human choices, weak institutions and a changing climate. My thesis stands; while the scale of exposure is vast and challenges are deep-rooted, Pakistan can turn the tide through deliberate, concerted action. The recurring

DATE: _____

DAY: _____

disasters, like the 2025 floods which left hundreds dead, thousands displaced and billions in losses are calls to reform rather than surrender. The path forward demands institutional overhaul, investment in warning and infrastructure, community readiness, climate adaptation and international synergy. The alternatives are grim: deeper losses, shattered livelihoods and recurring cycles of devastation. The time for action is now. Every flood-wall built, every sensor installed, every trained community member, every resilient road and every updated plan is a vote cast for a future in which Pakistan does not just survive the next disaster but is able to face it with strength, recover with speed, and build back with resilience. Let us choose that future.