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Natural Disasters And Our Preparedness

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From time immemorial, man has built civilisation beside rivers, on floodplains and slopes, trusting that nature will remain benign. But nature does not bargain. It can awake with tremors, unleash torrents, or scorch lands with drought. Natural disasters, earthquakes, floods, cyclones, droughts are inevitable; yet much of their tragedy lies in our unpreparedness. "we shape our buildings; thereafter they shape us", Winston Churchill said. Similarly we prepare or remain vulnerable and the disasters that follow shape our lives forever. The recent Aug 2025 flood in Pakistan, devastating millions, remind us while disasters cannot always be prevented, their damage certainly can be reduced if we prepare intelligently.

Pakistan lies in a region highly vulnerable to natural disasters. The country's geography mountainous north, monsoon-prone plains, river systems like the Indus and its tributaries makes it prone to floods, glacial lake outbursts, landslides, and earthquakes. Add climate change, human encroachment, deforestation, poor urban planning, and weak infrastructure, and we have a recipe for repeated catastrophe. In mid-2025, heavy monsoon rains, swollen rivers, and dam water releases brought massive flooding to Punjab, Sindh and other provinces. Over 4.4 million people in Punjab alone were affected; more than 4,500 villages are submerged.

According to NDMA (National Disaster Management Authority), since 26 June 2025 floods and torrential rains have killed at least 789 people, injured over 6,018, destroyed or damaged over 6,630 homes, and caused the death of 5,548 live stock.

The economic losses are estimated around Rs 409 billion ($\pm$ USD 1.4 billion), with agriculture suffering the most. These facts are hard to ignore: they show both the scale of damage and the necessity of preparedness.

Why do disasters that are foreseeable still devastate so much? What does "preparedness" really entail? And how must Pakistan improve if more catastrophes are to bring fewer casualties and

less damage? In the following discussion, I will explore what preparedness means, examine Pakistan's current deficiencies and what the 2025 floods taught us, assess the socio-economic cost of disasters, and finally suggest steps that can make a difference, small in cost ~~per~~ perhaps, but lifesaving in effect.

Preparedness is more than having a few boats and relief camps ready. It is a chain of linked factors: accurate risk assessment; early warning systems; infrastructure designed for resilience; effective governance; community awareness and participation; and swift, coordinated action when disasters strike. When one link breaks, the chain fails. Globally, countries like Japan, Bangladesh, and California are cited as models: strict building codes, flood zoning, early warnings, public drills. Bangladesh's cyclone shelters and warning networks save thousands; Japan's earthquake engineering limits collapse; the U.S. west coast's fire alert systems and evacuation plans - though imperfect - are continuously refined. Pakistan must borrow lessons, adapt them, act.

In Pakistan, many of the links in that preparedness chain are weak or missing. For instance, early warning systems are often late or fail to reach the people who need them. River management and dam cooperation, especially when rivers cross international

border is politically sensitive, so warning of dam water releases is often delayed. In the 2025 floods, rivers like Ravi, Sutlej, Chenab were breached or overflowed; estimated 1.3 million acres of crops were submerged in Punjab. Housing damage is extensive: of over 6,600 homes damaged or destroyed, more than 1,500 were completely destroyed. Roads and bridges were washed away. Inaccessible areas could not receive timely assistance. Sometimes rescue boats capsized, eleven rescued, others lost because boats or teams were overwhelmed. These failures are not for lack of brave people they are system failures: underfunded agencies, lack of infrastructure, lack of drills, lack of clear roles among authorities.

The human and economic costs of such failures are huge. Life is worst loss: hundreds died, thousands injured, many children among them since floods hit rural areas where houses are weak. Beyond deaths, the displacements, families uprooted, homes lost create trauma, disrupt schooling, health, livelihoods. Millions in Punjab had crops destroyed: rice, cotton, sugarcane stores lost. Food inflation, already a concern, is likely to worsen by 20-30% in affected areas due to crop losses and disrupted supply chains. Agriculture output may drop by 15-20% in flood-affected districts.

GDP growth projections have been revised down because agriculture contributes less. Rs 302 billion (~USD 1.0 B) was lost by farming alone. Transport and communication sectors lost another Rs 97.6 billion. Homes damage, housing losses, loss of livestock, these directly affect poor communities. Poor people cannot rebuild easily; often they lose everything and fall deeper in poverty. The fact that over 5,500 livestock died is not only loss of animals; for many rural households livestock is savings, income, surplus food.

preparedness is not cheap. But the cost of not preparing is far greater. Insurance, resilient infrastructure, planning, education do cost money. But compare that to floods costing USD 1.4 billion nearly 0.33% of GDP just in a few weeks. If even a fraction of that had been invested earlier in drainages, in river embankments, in early warning systems, in flood plain zoning the losses would have been much less.

What are the major challenges that make good preparedness difficult in Pakistan?

Firstly, institutional weaknesses. Agencies like NDMA, PMMA (Provincial Disaster Management Authorities) have mandates but limited resources. Coordination between federal and provincial authorities is often inefficient. Sometimes departments overlap; communications are delayed.

In 2025, we saw delays in evacuations in some vulnerable districts. Relief camps were established but reaching remote villages was hard due to destroyed roads or bridges. Boats, helicopters, drones were deployed, yes but often too late for some. The quote by Benjamin Franklin, "By failing to prepare, you are preparing to fail", seems very apt.

Secondly, infrastructure is fragile. Many homes are built without standards; many rural houses are of mud or simple structures that collapse. Drainage systems in cities are blocked; storm-water channels (nullahs) are encroached; flood plains built upon. Bridges, roads not built to stand severe weather. In the 2025 floods, dozens of bridges were damaged.

According to the reports, over 239 bridges were damaged by early September. Many roads over 670 km of ~~also road~~ road also damaged.

Houses: over 9,200 houses damaged (some completely destroyed) as of early September.

Thirdly, lack of public awareness and community participation. Many people live in flood-prone or unstable zones without knowing how to prepare; no drills, no emergency kits, no clear idea of how to evacuate. Sometimes warnings arrive but people do not trust them or delay leaving because they do not want to abandon livestock or property. In the

2025 floods, rescue teams reported resistance from locals unwilling to leave without their livestock.

Fourth, climate change: the intensity and frequency of extreme weather, monsoon rains, glacial melting is increasing. Designers of policy or infrastructure may plan for past norms, but past is no longer reliable. The 2025 monsoon was unusually intense rainfall in some regions surpassing averages by large margins.

Fifth, financial constraints. Pakistan is facing economic pressures: inflation, debt; limited budget, competing needs (health, education, defence). It is hard to allocate large sums to disaster preparedness when immediate needs loom large. Also, funding of recovery often comes in after disaster, not before. Preventive infrastructure tends to be underfunded.

Given these challenges, what practical measures can Pakistan take to improve preparedness so that when nature strikes, damage is reduced?

One step is better risk mapping and early warning systems. Use satellite data, river monitoring, rainfall forecasting, glacial lake monitoring. Warnings should reach people via local media, mobile phones, mosques, schools. A reliable system to warn of dam releases and coordinate with upstream/downstream areas is

essential. Remote sensing and flood mapping can help identify which villages or regions are most exposed. For example, studies using Sentinel-1, Sentinel-2, and Landsat have helped map flooded areas and population exposure. Building resilient infrastructure is another.

Embankments, better drainage, raising homes in floodplains, making bridges stronger, building flood shelters. Urban planning must avoid building on floodplains.

Third, community-based preparedness. Educating people from school level: what to do in floods, earthquakes etc. Prior knowledge of safe zones, shelters, routes. Fourth, integrating disaster risk reduction into national and provincial policy, allocating budget for it. It cannot be afterthought. Fifth, climate resilience: reforestation, watershed management, controlling soil erosion, better land use. Also cooperating with neighbours in transboundary river management: upstream dam releases must be communicated, coordinated. Sixth, better disaster response systems: pre-positioned relief stocks, ready boats, mobile health units, rapid response teams. When disasters strike, delay costs lives. Quick and coordinated rescue saves many. Pakistan may not have resources to do everything alone. Help from UN agencies, donor countries, NGOs, for both funding and ~~technical~~ technical expertise.

preparedness also means mental readiness: when people know what to do, panic lowers, coordinations improve. The value of leadership counts: clear directives from government, clear communication, avoiding rumors. "Expecting the world to treat you fairly because you are a good person is a little like expecting the bull not to charge because you are a vegetarian," said Dennis Wholey. In disasters, you cannot depend on hope alone; you need plans.

To measure progress, Pakistan should set targets; reduce flood mortality by say 50% over next 10 years; ensure that all flood prone villages have early warning access; ensure that new infrastructure is resilient. Policy must be long term; building after the flood costs more and takes years.