

Q Pakistan is repeatedly hit by devastating floods.....

Introduction:

Pakistan since its independence is extremely vulnerable to climate change. Natural disasters due to climate change have affected millions of people and caused huge losses in terms of livestock and infrastructure. Severe floods are one of those catastrophes that have befallen Pakistan since its independence and it intensifies every coming year. Pakistan's vulnerability to floods is a consequence of climatic, geographical, hydrological, and human-induced factors.

Reasons for Devastating Floods in Pakistan:

Gilbert White once said
"Floods are act of God
but flood losses are largely
acts of man".

The reasons for these severe floods can be categorised into these two broad domains: Act of God, i.e. unavoidable triggers and Acts of man,

the systemic amplifiers.

A The Act of God: The Unavoidable Triggers.

1. Monsoonal Intensity and climate change.

Pakistan's hydrology is dominated by the Indus River system, fed by the monsoon rains and Himalayan glaciers.

• Intensified Monsoon:

Climate change has altered monsoon patterns, leading to more intense, concentrated, and unpredictable rainfall events. In late July 2025, districts in Punjab received intense rain in 48-hour period, causing flash floods that affected over 2 million people. Similarly, the 2022 floods saw rainfall 3-4 times the national 30-year average causing one-third of the country underwater.

• Glacial Lake Outburst Floods (GLOFs):

Northern Pakistan faces increasing risk of glacial lake outburst floods, as a result of glacial melt due to global warming.

A report in June 2025 by

Pakistan Meteorological Department (PMD) warned of a "high to

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very high" risk of GLOF from several lakes in Gilgit - Baltistan.

2- Geographical and Topological Realities:

The Indus River basin naturally funnels water from the northern highlands to the Southern plains. The 2025 floods highlighted the vulnerability of the flat topography in Sindh and Southern Punjab, where floodwaters from the north caused widespread stagnation for weeks, destroying Kharif (monsoon season) crop on an estimated 1.5 million acres.

B The Act of Man: the Systemic Amplifiers.

1- Crippling Deficits in Water and Basin Management:

• Obsolete Infrastructure:

The Taunsa Barrage in Punjab operated at dangerously high water levels, with its century-old design struggling to manage the peak flows. The reliance on aging multi-purpose dams can only so severely limit flood management capacity.

• Encroachment and Deforestation:

Rampant deforestation and river encroachment continued.

Satellite imagery from 2025 showed that over 15,000 illegal structures identified for removal in Khyber Pakhtunkhwa's flood zones since 2002 were still standing, and many were destroyed by rains.

2. Unplanned Urbanization and Encroachment on floodplains:

This is another significant amplifier. In Karachi and Lahore, 2025's urban flooding was exacerbated by clogged drainage systems and construction on natural waterways. The data on the damages in Punjab shows that 60% of damaged property in 2025 were located on illegally occupied flood zones.

3. Weak Governance and Institutional Failure:

• Reactive, not proactive approach:

The national strategy remained centered on disaster response. While early warnings for the 2025 rains

were issued by the PMD, the capacity of management and evacuation was limited, leading to last-minute, chaotic evacuations.

- **Corruption and Mismanagement:**
Inequitable distribution of relief supplies and politicization of aid in certain districts of Sindh during the 2025 floods were highly reported, repeating a familiar pattern of governance failure.

4. Agricultural Practices:

Water-intensive crops like sugarcane and rice in flood-prone areas increased vulnerability, with vast amount of these crops destroyed, representing a massive economic loss.

Policy Recommendation: A Shift from Relief to Resilience:

Pakistan needs a fundamental shift from a reactive disaster management model to a proactive, integrated one. The 2025 floods make this shift even more urgent.

1. Institutional and Governance Reforms:

- Establishing a National Water Authority
Create a powerful body with overarching authority for integrated water resources management (IWRM)

- Mainstream Disaster Risk Reduction (DRR)

Legislate and implement the National Disaster Risk Reduction fund. The 2018 experience shows that every dollar spent on measures like levees and drainage saves ten dollars in post-flood reconstruction.

- Strengthening Local Governance.

Empower district administration for local flood preparedness and enforcement of land-use zoning.

2. Infrastructure and Engineering Solutions

- Prioritizes storage and Modernization, completion of Diamer-Basha Dam and initiation of a national program for the desilting of existing reservoirs and barrages.

- Investing in 'Sponge City' and Green Infrastructure.

Reclaiming natural drainage channels in cities. In rural areas, investing in watershed management through reforestation and check dams.

3. Legal, Regulatory, and Enforcement Measures

- Strict Enforcement of Flood zone zoning: Use GIS to digitally map floodplains and legally mandate the relocation of all critical infrastructure from these zones within five years.
- A Deforestation-Free pact with provinces: Launch a national afforestation drive coupled with a stringent ban on logging in high-risk timber regions.

4. Technological and Early Warning Enhancement

- Develop a 'Smart Water Grid': Integrate sensors at major confluences to highlight the need for a central data-driven system.

- Revamp Early Warning systems:
Translate forecasts into actionable alerts in local languages and conduct mandatory mock drills.

5. Economic and Social Practices:

- Developing a National Climate Resilience Fund:

Seeking international climate finance and national funds.

- Promote Climate-Resilient Agriculture, shifting subsidies towards drought and flood-resistant varieties. The 2025 crop losses underscore the economic irrationality of promoting sugarcane in flood-prone lands.

Conclusion:

The 2025 floods were a devastating confirmation of Pakistan's entrenched vulnerabilities. They demonstrated that without systemic change, the nation will remain trapped and the only solution lies in a shift from managing disasters to managing risks. The cost of inaction is a reality, as the floods of 2022, 2023, 2024 and now 2025 have proven.