

Escalating Flood Hazard in Pakistan: causes and implication

Outlines

- 1- Introduction
- 2- Statistical overview of flooding in Pakistan

The 2025 flash floods have claimed 706 lives, 965 injured and 3.8 million people displaced

[The Guardian]

- 3- System analysis of escalated flooding in Pakistan

climatic drivers of flooding

a- Intensified monsoon winds.

case in point: rainfall from June to August have exceeded

21% above normal, with 36% increase in Punjab having recurrent cloud bursts.

b- cryospheric forces with accelerated glacial melt.

2-

Environmental and Land use Causes of flooding

a-

Deforestation and catchment
degradation

b-

Loss of wetlands and siltation
of rivers and canals.

3-

Structural and Infrastructure Causes of escalated flooding

a-

Urban drainage deficiencies

b-

Weak and aging embankments

4-

Urbanization and Human settlements

a-

Encroachment on floodplains

Case in point: settlements on

Ravi bed washed away by
rising Ravi waters.

b-

Increased population density
in flood-prone areas.

5-

Weak early warning system and transboundary challenges

4-

Implications of escalating flood hazard
in Pakistan

a-

Humanitarian and social implication

b-

Economic and livelihood implications

c-

Infrastructure and developmental implications

d-

Environmental implications

5

Measures to prevent flood hazard in Pakistan

a-

Ecological restoration as natural flood defense

b-

Modern infrastructure and urban planning

c-

Institutional reforms and governance strengthening

d-

Leveraging international support and climate finance

b-

Improve your arguments

Work on your Articulation

Give one idea in one point

humanitarian and societal impacts are two different points

Proper use of adjective

Avoid grammatical mistakes

Adopt formal writing style

Avoid unnecessary word usage

The Essay

"When skies sigh, nations tremble!"

This timeless observation finds its most haunting reality in Pakistan, a country where the waters of blessing repeatedly turn into waves of destruction. From the great deluge of 2010 to the devastating floods of 2022 and, most recently, the unprecedented inundations of 2025, Pakistan has endured cycles of misery that erodes its social fabric. The

resilience of such catastrophe is mix of climatic factors like excessive rainfall with melting of glaciers coincided with urbanization, encroachments on skies banks, deforestation and governance inefficiencies, all of which geoparadise developmental aspirations of Pakistan. These, in reverse have grave implications at

Write thesis statement atleast in the introduction

Social, ^{Economic and environmental} and environmental scales. Pakistan has to face these fateful implications every other year. It's from liability of government to take substantial steps, within no time, including governance reforms to save the state from such future vulnerabilities.

Focus on sentence structure

Before delving into analysis of causes of escalated flooding hazard, it is imperative to understand statistical picture of flooding in Pakistan. Pakistan has witnessed severe overflow of waters in form of 2022 and 2025 flooding. In case of **2025** flooding, nationwide flash floods since June claimed 706 lives, 965 injured with 123 death in Punjab and 323 in KPK, with 3.8 million displaced in Punjab. Apart from these, Pakistan has borne the loss of

Thousands of acres ^{been} land ^{been} ^{cultivation}
 rice, wheat and vegetables and ^{livestock}
 loss. These losses in various forms
 have wreaked havoc on country.

The essay sheet light on
 the detailed analysis of causes of
 escalating flood risk in Pakistan
 in subsequent section.

First of all, climatic drivers
 of flooding ^{encompassing} ^{intense monsoon}
 and ^{coastal} ^{processes}, ~~flights~~
~~Significant role in flood disaster in~~
~~country. Pakistan in 2025 received~~
~~torrential rains in Punjab, KPK~~
~~and Sindh, swelling the Ravi, Chenab~~
~~and Sutlej ^{tides} beyond dangerous level.~~
~~Rainfall from June to August 2025~~
~~have exceeded to 21% above normal~~
~~with 36% increase in Punjab, having~~
~~various cloud bursts [Dawn News].~~
~~from this, ^{erosion} ^{coastal} ^{process} which~~

includes melting of glaciers was rampant in same period. This huge snowmelt and glacier adds huge water volumes to rivers. Pakistan hosts 7000 glaciers many retreating due to intense warming. In 2025, glacier lake outburst floods were reported in Gilgit-Baltistan, exacerbated river flooding downstream. Thus, these climatic drivers are one of the major causes of intense flooding.

Furthermore, environmental degradation including deforestation, loss of wetland and siltation of rivers and canals are the significant factors behind water subgence. deforestation and catchment degradation in areas such as Swat, Dir and Punjab has stripped away natural protective cover of hillside and greenland. It reduced water absorption and increased soil erosion. As a result, water rushed more in deforested

Date: 1/20

causes and triggers more heavy flooding in those deforested areas.

Similarly, the loss of wetland and the problem of siltation in rivers and canals further exacerbate the problem. These wetlands destruction has eliminated vital ecological buffers. For instance, the large tract of delta wetland in Sindh which absorbed extra water, have been converted into farmlands. Heavy soil erosion deposits silt in rivers and reduce carrying capacity. In 2025, NDMA reported heavy siltation in the Sutlej and Ravi rivers. Resultantly, these rivers swelled with heavy water.

In addendum, structural and infrastructural factors also caused ^{of} flooding hazard in Pakistan. These factors include weak drainage systems

in urban areas in particular. These clogged drainage system and encroachment on these water channels cause urban flooding, even moderate rainfall paralyzed urban centers due to poor wash away capacity of drainage system. Alongside, weak and aging embankments breakdown in face of rising water. These are poorly maintained and constructed decades ago. In September 2025, breaches at Panjnad headworks led to inundation of 2000 villages in Punjab. Thus, Pakistan's infrastructure vulnerabilities have multiplied the devastations of deluge.

Furthermore, Urbanization and human settlement pattern have also intensified flooding hazard in Pakistan. With Pakistan's population exceeding 240 million, pressure on land pushed millions into high risk areas, informal settlements and housing societies on water channels.

have accelerated over the years. Settlements on Ravi River banks and ^{Lahore} encroachments on nullahs in Islamabad were washed away due to heavy outflow, by 2025 floods [Express turbine]. These expansion has paved over natural drainage paths, converting rainfall into surface runoff. The streets in cities turned into temporary river beds during flood-prone period. This shows how poor infrastructure amplify flood vulnerability.

Finally, Weak early warning systems and transboundary challenges have magnified the flood hazard in Pakistan. These failures have allowed the hazard to persist despite of lessons of the past. Early warning systems do exist but are poorly and haphazardly maintained. Many flood areas receive no flood warning or result families have very little to move

household goods and livestock and evacuate themselves. The sudden arrival of waters result in huge loss of lives. Pakistan also vulnerable to transboundary challenge owing to apartheid India. The sudden release of water in Chenab, Sutlej and Ravi rivers by India reflects extreme geopolitical hostilities and unpreparedness of Pakistan give rise to devastating flood in country.

After having analyzed the causes, it's pertinent to highlight the implications of flooding in Pakistan.

First implication is the human and social catastrophe due to escalating floods. Every flood results in million of casualties and tear away social fabric. In 2025, 700 people lost their lives, 2 million displaced in Punjab and 3.8 millions affected nationwide.

(ReliefWb) - Thousands of families

Date: 1/10

seeks shelter in emergency camps, while many are forced to live on embankment with little food and clean water. The loss of sanitation system triggered the outbreak of waterborne diseases. Dengue cases also spike in stagnant water pools. Disruption of social systems deepened the cost of disaster.

Moreover, the economic and social implications after flooding also testify. Economic instability, due to loss of farmland and destruction of rice, wheat, maize and cotton impact various sectors across the country. This devastation results in heavy income loss for small food families and farmers. Pakistan's textile industry is impacted directly. At national level, it pushes inflation further, and reduction in GDP

of country. Loss of livestock, disrupt rural lives and dairy supply chains

Additionally, escalated flooding leads to infrastructure and developmental implications. Cutting off roads access, collapsing of bridges and damage to irrigating canals, supply chain blockage and paralyzing life completely. Schools, health centers and power lines also wash away due to heavy outflow.

The diversion of funds for affected infrastructure strained already fragile fiscal position of Pakistan

Lastly, the environmental implications of floods are horrifying. As floods strip fertile top-soil from vast tracts leaves behind silt and sand deposits. In Sindh, Katcha areas, flood waters damaged forests and habitats critical for

biociversity during 2022 Flood. This
 situated water flood form, pollute
 groundwaters with sewage and industrial
 waste. This environmental degradation
 further brings perilous situations for
 people.

Pakistan, at present, is grappling
 with risks forced by flooding. However, as
 every tunnel has light at its bottom,
 Pakistan can overcome this disastrous state
 by taking certain robust measures.

First and foremost is the
 ecological restoration as natural flood
 defense. Pakistan must restore
 its lost ecological buffers. Large
 scale afforestation campaigns in KPK
 and Punjab particularly would stabilize
 slopes, reduce soil erosion and
 slow runoff. Protecting wetlands and
 natural floodplains in Sindh can
 provide "sponges" that absorb excess

Wanted. Hence ecosystem restoration must be prioritized not as charity but as climate security.

Secondly, modernizing infrastructure and urban planning must be prioritized. Embankments, canals and bridges must be strengthened with modern engineering, while safety audits should be mandatory. Urban flooding requires rethinking city planning, unclogging stormwater drains, preventing encroachments on nullahs, rivets, and introduction of permeable pavements that allow rain water absorption.

Thirdly, institutional reforms and governance strengthening must be key focus. Institutions like **NDMA** and **PDMA** must be given greater autonomy, resources, and training. Disaster preparedness

Should not be limited to issuing warnings but must include pre-positioning relief supplies, retreating evacuation operations and involving local governments. Repeated breaches at same embankment highlight corruption; therefore transparent auditing mechanism must be established to ensure funds must be allocated in right direction.

Lastly, international support and climate finance must be actively pursued. The country must pursue funds from the Loss and Damage Fund established at COP 27, as Pakistan's case for climate justice has grown stronger after 2022 and 2025 floods. Pakistan must ensure that financing is directed to resilience projects rather than short-term relief alone. Partnership with international agencies for flood casting, satellite monitoring

and resilient infrastructure design can help in elaborating mitigating strategies.

To conclude, escalated flood hazard in Pakistan has brought manifold calamitous situation in various sectors. This disaster comes nearly every year, yet unprepared response of government turns this into perilous and highly devastating event.

Various socio-environmental factors are responsible alongside climatic drivers.

Natural events encompassing intensive rainfall, glacial outburst bracketed with man-made situations like human settlements and encroachment and deforestation make country highly vulnerable to deluge in region. Consequently, Pakistan has to bear the brunt of socio-economic and environmental losses with each passing. It is the necessity of the time that

Government adopt robust measures with mitigation strategies to lessen the geohazarding impacts of flooding in Pakistan. As million of people have lost lives, so pragmatic mechanism must be developed to save the country and its assets.