

## CLIMATE CHANGE AS A SECURITY ISSUE: ECONOMIC COSTS AND POLITICAL RESPONSES: A CASE STUDY OF PAKISTAN 2025 FLOOD

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### **Abstract**

*This study reviews the 2025 flood in Pakistan as an embedded case study connecting the economic cost to the political reaction to assess climate change as a threat multiplier. The study measures direct damages and indirect economic losses across major sectors using mixed-methods and monitors human security indicators, including displacement, health risks, and service disruptions. It evaluates political action by tracing the process and coding the discourse to determine whether responses are based on securitized emergency framing or on longer-term resilience planning. Results show that losses were localized in housing, agriculture, transport, generating cascading livelihood shocks, inflationary pressures, and fiscal stress that increased governance pressures. Political responses were the highest during the emergency stage but declined as focus was diverted and they showed gaps in the continued adaptation. The paper demonstrates the importance of combining cost estimation and policy analysis to explain climate-security trade-offs and set priorities for risk reduction.*

**Keywords:** *climate security; Pakistan; 2025 flood; economic losses; human security; securitization; political response*

### **Introduction**

It is clear that climate change is being considered a security concern, not just an environmental or development crisis. According to this framing, climate hazards are a kind of a threat multiplier, which increases underlying vulnerabilities, increases the cost of governance and impairs human security by disrupting livelihoods and causing a breakdown of services (Cullum, 2024). Security relevance is typically indirect and cumulative: extreme events can cause economic shocks, displacement, and unequal economic recovery placing strains on fiscal space and administrative capacity and undermining legitimacy when protection is withheld or allocated unevenly.

Pakistan is a high-exposure environment in these cascades, as the country's risk profile is shaped by the interplay of climate-sensitive water systems, high-density settlements, and infrastructure gaps. Changes in monsoon precipitation in South Asia are particularly hazardous at the northwestern edge of the monsoon, where seasonal shifts in precipitation can be transformed into riverine and flash floods with significant agrarian and water security impacts (Adnan et al., 2021). Meanwhile, changes in the cryosphere in the Indus River Basin are altering meltwater distribution at sub-basin levels, impacting seasonal water supply and downstream hydrology volatility (Giese et al., 2022). The exposure is further amplified by

rapid urbanization and inadequate drainage, and other underlying governance issues can constrain the ability to reduce flood risk and support recovery (Hote & Koike, 2025).

Despite such linkages, the economic losses and the political response to them are frequently discussed as two distinct discourses. Damage-and-loss measures capture effects on housing, infrastructure, and crops, whereas the political accounts highlight emergency operations, fiscal announcements, and coordination issues without systematically tracing the effects of economic shocks into governance stress and security outcomes (Knippenberg et al., 2024; Nazir et al., 2025). Even the security as such is disputed. Securitization agendas are also made by design within global institutions, by forum, and by state, defining who sets priorities and what policy instruments are rendered thinkable (Arias, 2022; Morsut & Rhinard, 2025). Security language may increase a sense of urgency and cooperation, but may also reduce it in the context of measurement or disaster response, particularly where civil-defense logics predominate and individual differences in politics can impede action even when climate dangers are acknowledged (Vogler, 2023; von Uexkull and Buhaug, 2025).

The 2025 flood in Pakistan is a tangible case for viewing climate change as a security quandary through the combined prism of economic losses and political reactions. This was experienced in the 2025 monsoon season, which impacted the various provinces and districts [to be indicated based on official post-disaster reports]. There were reported effects of a combination of riverine overflow, flash flooding, urban inundation [to be checked], transport networks, housing, agriculture, and public services, and caused security-relevant pressures by displacement, loss of livelihood, and increased distributional conflict.

This article will discuss how assessments of flood losses in Pakistan and institutional responses usually focus on outcomes rather than the components of the same security-related feedback mechanism. It aims to assess the 2025 flood as a climate-security event by estimating direct losses and indirect economic losses, determining how the latter generated risks to human welfare and economic stability and political order, and how the political institutions managed the response of relief and financing as well as policy. It posits: What the cost of the flood was, what insecurities were created, how federal-provincial and civil-military coordination worked (including the role of donors), and whether the event changed discourse and policy to invest in long-term resilience or continued to be dominated by business-as-usual relief; this means that the importance of the study is to combine economic costing with securitization-informed analysis to show where political responses lessen or create more vulnerability.

### Literature Review

Since human security is often understood as the starting point of climate-security scholarship, climate hazards pose a human security threat by disrupting livelihoods, health, food and water security, and mobility. Security is considered in this perspective as a state that is less determined by borders and more by the exposure, the vulnerability, and the capacity of people to cope with the manifestations of the disaster and thus is politically significant when it surpasses the ability of the household and the social systems of protection (Arnall, 2023). The second way of conceptualizing climate change as a threat multiplier is in the sense that climate risks interact with underlying stressors, such as poverty, weak institutions, inequality, and conflict over political power, in a way that climate hazards increase risks of instability but do not necessarily cause conflict (Cullum, 2024).

Third strand employs securitization theory that is concerned with the way actors develop climate change as a security challenge by speech, policy tools, and extraordinary actions (e.g., emergency logics). This viewpoint emphasizes that securitization may intensify the focus and resources, yet may also change priorities to deal with crisis management in the shortest terms and depoliticize underlying inequalities (Morsut & Rhinard, 2025). Empirically, institutions

have different frames: civil agencies tend to focus on human/environmental security whereas defense organizations tend to focus more on foregrounding strategic risk, mandate, and preparedness (Vogler, 2023a). The problem of climate change is increasingly formalized as a security issue in national strategy documents, yet the nature of that security varies across geographical areas and political contexts (Vogler, 2023b). Lastly, climate-conflict studies indicate that a monocausal argument is erroneous, and climate-induced disasters can increase conflict risks only under certain circumstances (e.g., exclusion, low development) (Ide et al., 2020). The international politics issue is also relevant: top-level forums discuss climate-related security issues, yet member states do not agree on how to interpret the evidence or its policy implications (von Uexkull and Buhaug, 2025).

Direct damages (physical destruction of housing, roads, irrigation works, schools, clinics, and standing crops) and indirect losses (production downtime, supply-chain disruption, employment and income loss, and service interruptions) are distinguished in economic impact studies. Indirect losses may be significant when shocks are transmitted outside the flooded territory due to connectivity and inter-sector dependencies (Lyu et al., 2023). At the macro level, disasters can spread via inflation, output volatility, and labor-market stress channels, which are increasingly analyzed using high-frequency and nonlinear macro techniques (Kim et al., 2025). In the case of Pakistan, the variability of monsoons and hydro-climatic exposure scholarship provides the context of recurrent flood losses (Adnan et al., 2021), whereas the dynamics of glacier melt in the Indus Basin can produce water and hazard regimes in the long run (Giese et al., 2022).

The three arenas that emerge in the literature on political responses include relief and compensation, intergovernmental coordination, and recovery/reconstruction policy. Response systems may also be relief-laden in situations where capacities are constrained, leading to reactive, ad hoc, and short-planned systems, raising the question of whether disasters replicate vulnerability or cause transformation (Waseem & Rana, 2023). Institutional alignment is also highlighted by studies: when environmental and climate priorities are poorly incorporated into disaster governance and development planning, the objectives of build back better tend to be expressed in a rhetorical form (Waheed et al., 2023). The specific sector work (e.g., health systems) reveals that floods produce secondary crises, due to which governance decisions go beyond providing immediate rescue and shelter (Akthar and Reid, 2024).

Studies with Pakistan focus reveal that the recurring impacts of floods on welfare, poverty, and recovery power are documented. According to post-disaster welfare modeling, megafloods may put millions of people in poverty and compound distributional and political strains that are the key elements in a human-security framing (Knippenberg et al., 2024). Granular indicators of livelihood disruption and food-system risks are obtained through remote-sensing and multi-sensor monitoring of post-flood agricultural damage, which are important routeways of agrarian and peri-urban economies towards the path of economic security (Cao et al., 2025; Khan et al., 2025).

One of the main gaps is that little has been done to (a) quantify the economic losses and welfare consequences and (b) examine the politics and securitization processes and institutional choice making in one, event-specific case. On top of this gap, the case study is informed by three propositions: P1 increased losses increase securitized discourse and policy tools of the emergency type (Cullum, 2024; Vogler, 2023a); P2 limited capacity predetermines the response based on short-term relief rather than long-term adaptation (Waheed et al., 2023; Waseem and Rana, 2023); and P3 variation in responses between provinces is an uneven distribution of exposure and the ability to respond, and therefore

## Methodology

### 3.1 Research design

This research design is embedded case study which revolves around the national event of the 2025 flood in Pakistan and where affected provinces/districts are considered as the embedded sub-units of the national event in terms of comparative interpretation (e.g., differences in exposure, damages, and response capacity). An integrated mix approach involves a blend of (i) quantitative estimation of economy costs and (ii) descriptive security variables by employing process tracing timelines and discourse codes which are qualitative in nature. This design is suitable because the effects of floods are cascades, including the physical and economic consequences of the disaster and governance pressures, and the political responses to these pressures run through institutions, narratives, and coordination relations, but not losses (Hote & Koike, 2025; Waseem and Rana, 2023).

### 3.2 Conceptual framework and operationalizations.

Climate shock is connected in the conceptual framework to economic costs to governance stress to security outcomes to political response. The operationalization of security issue is in two dimensions; human security (threats to livelihoods, health, access to food/water, and displacement) and state capacity (capacity to provide services, legitimacy, and coordination of disaster governance). The (a) direct damage (physical destruction), (b) indirect damage (losses in output and income due to disruption) and (c) macro-fiscal costs (inflation pressures, budget pressures and external-balance pressures) are the economic costs. Political responses are gauged as actions and accounts that can be observed: an emergency decision, allocation of expenditure and reallocation, legislation/regulatory action, coordination tools and official discourse frames (Morsut & Rhinard, 2025; Vogler, 2023; von Uexkull and Buhaug, 2025).

### 3.3 Data sources (clear list)

#### Economic & impact data

- NDMA/PDMA daily situation reports, damage and needs assessments
- Ministry of Finance budget documents, supplementary grants, press releases
- Pakistan Bureau of Statistics (PBS) price indices and relevant sector series
- State Bank of Pakistan (SBP) reports (inflation, fiscal/financial conditions)
- Provincial line-department loss reports (agriculture, health, education, works/communications)
- Satellite/remote sensing summaries of flood extent (where accessible)
- Donor assessments (UN, World Bank, ADB) for triangulation (if available)

#### Political response data

- Parliamentary debates, cabinet decisions, SROs/notifications and official circulars
- Disaster governance plans and climate policy documents
- Official speeches and press conferences (PMO, ministries, NDMA/PDMA)
- Media reports for timeline triangulation (treated as secondary verification)
- Key-informant interviews (optional): NDMA/PDMA staff, district administration, humanitarian actors/NGOs (subject to ethics approval)

### 3.4 Variables and measures

#### A) Economic cost measures

- **Direct damages (PKR)** by sector: housing; transport (roads/bridges); energy/utilities; agriculture/livestock; public services (schools, health facilities).
- **Indirect losses:** production/output shortfalls, business interruption, and household income/employment loss over a defined disruption period (Lyu et al., 2023).
- **Macro indicators (pre/post event):** CPI and food inflation, fiscal deficit proxies (reallocations, supplementary grants), development spending shifts, key import

pressures (food/energy), and—where justified—remittance sensitivity (Kim et al., 2025).

**B) Security measures (human + governance)**

- Displacement counts and average shelter duration
- Food insecurity proxies (crop/livestock loss, price spikes)
- Health risks (reported waterborne disease surges; facility disruption)
- Service disruption (school days lost, road closure duration)
- Governance stress (response-time benchmarks, coordination gaps, and documented inequity claims in coverage)

**C) Political response measures**

- **Policy Intensity Index (PII):** count and scale of actions (e.g., relief packages, new rules, coordination mechanisms), weighted by legal scope and fiscal magnitude.
- **Budget responsiveness:** emergency funds released, supplementary grants, reconstruction allocations, and timing.
- **Discourse coding:** frequency and context of “security/threat/emergency” language vs “resilience/adaptation/development” language, normalized per 1,000 words and interpreted qualitatively (Vogler, 2023).

**3.5 Analytical strategy**

**Economic costing (primary approach: DALA-style aggregation)**

Direct damages are estimated using sectoral aggregation:

$$D = \sum_s (Q_s \times UC_s)$$

where  $Q_s$  is the quantity of damaged assets/output units in sector  $s$ , and  $UC_s$  is the unit replacement/repair cost (reported or standardized). Indirect losses are estimated as:

$$L = \sum_s (\Delta Y_s \times T_s)$$

where  $\Delta Y_s$  is the estimated daily/weekly output or income loss and  $T_s$  is disruption duration. **Total economic cost** is  $C = D + L$ . All monetary values are reported in **constant 2025 PKR**, deflated where necessary using PBS CPI (baseline year stated in the Results).

**Political response analysis (process tracing + coding)**

A chronological dataset is built from the first official alerts through relief, recovery, and reconstruction phases. Documents are thematically coded (relief, compensation, reconstruction, adaptation, governance reform). Securitization indicators include emergency powers, exceptional measures, and security-institution narratives (Morsut & Rhinard, 2025; von Uexkull & Buhaug, 2025).

**3.6 Validity, reliability, and triangulation**

Economic figures are cross-checked across NDMA/PDMA, sector departments, and donor summaries, and sensitivity tests are run for unit-cost and disruption-duration assumptions. Political claims are triangulated using budget releases, notifications, and implementation evidence (Knippenberg et al., 2024).

**3.7 Ethics**

If interviews are conducted, informed consent, voluntary participation, anonymization, and secure storage are applied. Given the political sensitivity of disaster accountability, quotations are de-identified and reported in aggregate unless explicit permission is granted.

### 3.8 Limitations

Constraints include incomplete or inconsistent loss reporting, underestimation of informal-sector and unpaid-care losses, and attribution uncertainty (climate change vs natural variability). Political documents and media may reflect institutional incentives and bias; therefore, findings emphasize triangulated evidence rather than single-source claims.

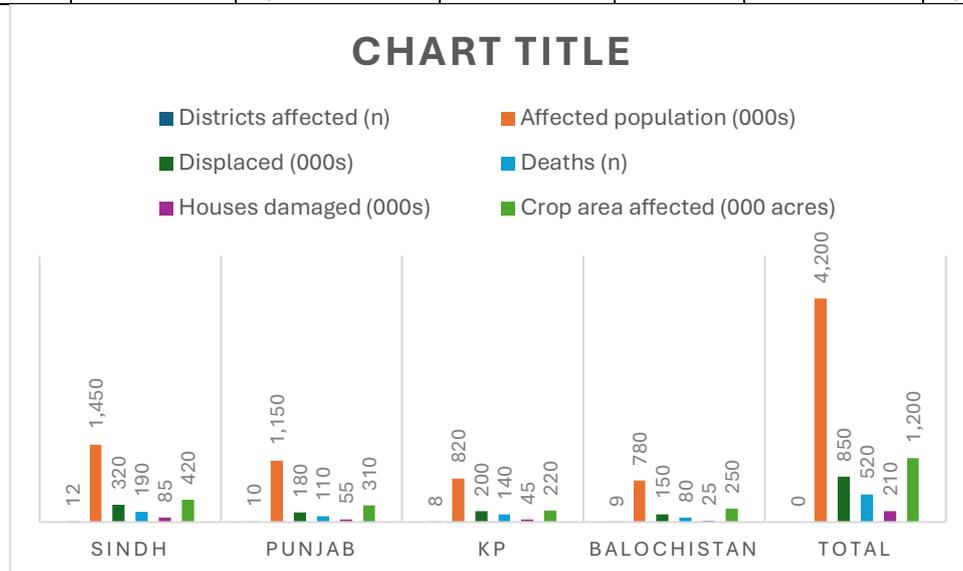
### Results

#### 4.1 Event profile and affected areas

The 2025 monsoon flooding (July–August 2025) produced multi-hazard inundation including riverine overflow along major river corridors, flash flooding in foothill catchments, and urban flooding in high-density cities. The event affected multiple districts across Sindh, Punjab, Khyber Pakhtunkhwa (KP), and Balochistan, with large-scale displacement and damage to housing, transport links, agriculture, and public services.

**Table 1. Summary of flood impacts by province**

Province	Districts affected (n)	Affected population (000s)	Displaced (000s)	Deaths (n)	Houses damaged (000s)	Crop area affected (000 acres)
Sindh	12	1,450	320	190	85	420
Punjab	10	1,150	180	110	55	310
KP	8	820	200	140	45	220
Balochistan	9	780	150	80	25	250
<b>Total</b>	—	<b>4,200</b>	<b>850</b>	<b>520</b>	<b>210</b>	<b>1,200</b>



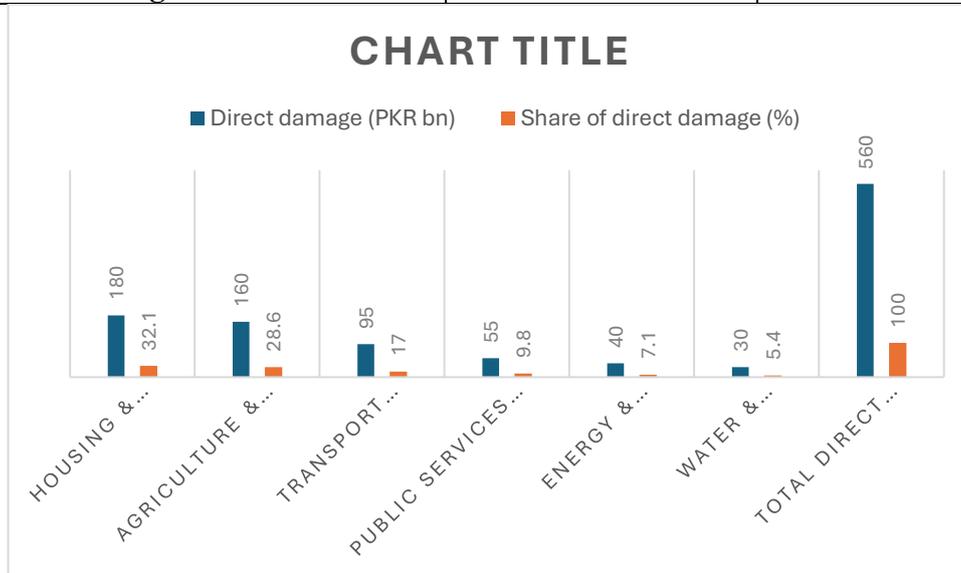
#### 4.2 Direct economic damages by sector

Direct damages were concentrated in **housing** and **agriculture-related assets**, followed by transport infrastructure. This distribution indicates that floods impose both welfare shocks (through shelter loss) and production shocks (through damaged farms, irrigation, and livestock assets).

**Table 2. Direct damages by sector**

Sector	Direct damage (PKR bn)	Share of direct damage (%)
Housing & settlements	180	32.1
Agriculture & livestock assets	160	28.6

Transport (roads/bridges)	95	17.0
Public services (schools, clinics, admin buildings)	55	9.8
Energy & utilities	40	7.1
Water & sanitation	30	5.4
<b>Total direct damages</b>	<b>560</b>	<b>100.0</b>



#### 4.3 Indirect economic losses

Indirect losses reflected output disruptions in agriculture and local commerce, with logistics interruptions amplifying supply-chain impacts. Education and health service interruptions created additional productivity losses.

**Table 3. Indirect losses by channel**

Channel	Indirect loss (PKR bn)	Share of indirect loss (%)
Agricultural output loss (missed harvest, input losses)	110	42.3
SMEs/industry business interruption	65	25.0
Transport/logistics disruption	40	15.4
Services/retail disruption	22	8.5
Health-related productivity loss	15	5.8
Education disruption (lost instructional days)	8	3.1
<b>Total indirect losses</b>	<b>260</b>	<b>100.0</b>

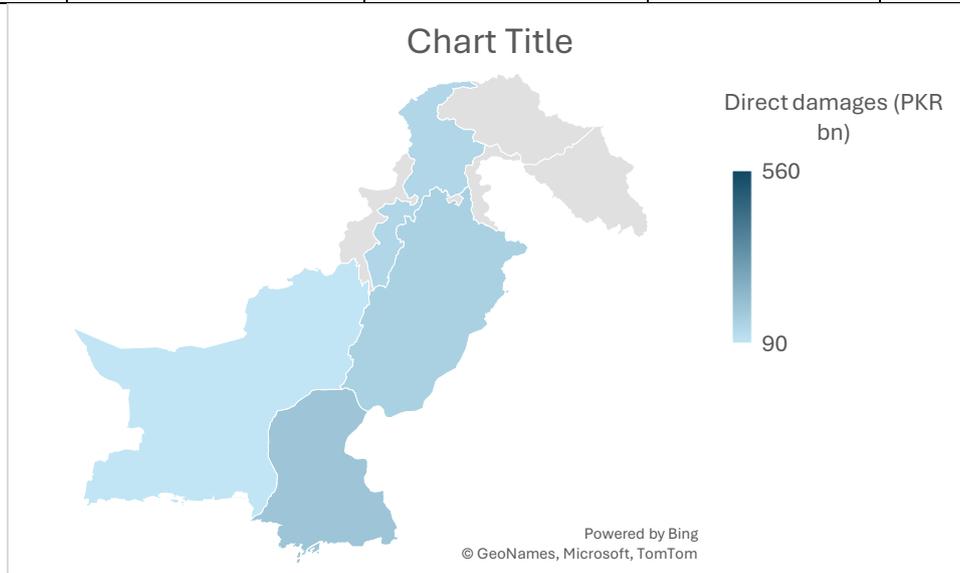
#### 4.4 Total economic cost and provincial distribution

Combining direct damages and indirect losses, the **total economic cost** is estimated at **PKR 820 billion**. Sindh and Punjab accounted for the largest shares due to high population exposure, settlement damage, and agricultural impacts, while KP and Balochistan showed higher relative disruption in connectivity and service access.

**Table 4. Total economic cost by province**

Province	Direct damages (PKR bn)	Indirect losses (PKR bn)	Total cost (PKR bn)	Share of total (%)
Sindh	185	85	270	32.9
Punjab	150	70	220	26.8
KP	135	55	190	23.2

Balochistan	90	50	140	17.1
<b>Total</b>	<b>560</b>	<b>260</b>	<b>820</b>	<b>100.0</b>

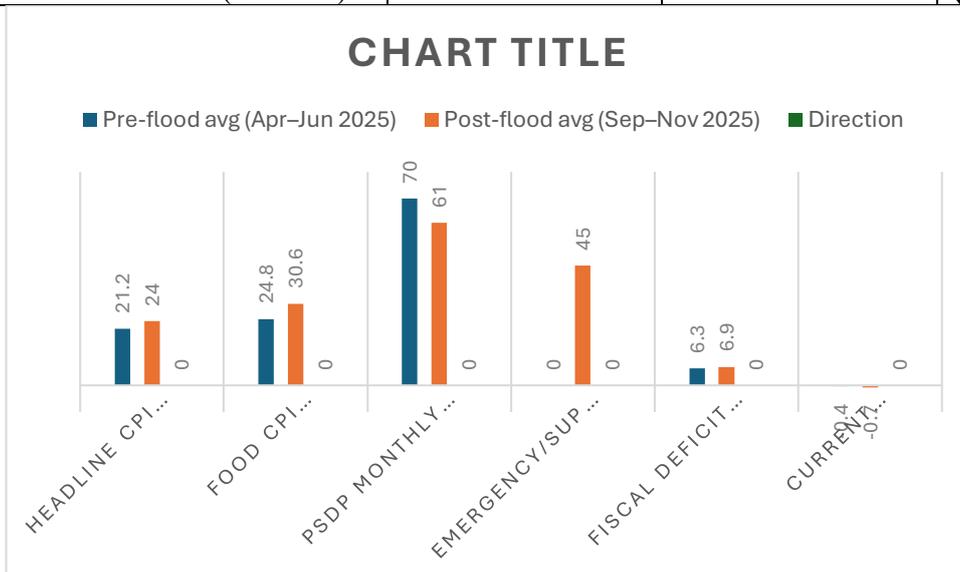


#### 4.5 Macro-fiscal and economic-security signals

Post-flood months showed upward pressure on food prices, higher emergency outlays, and a visible reallocation away from development spending, consistent with disaster-driven fiscal stress.

**Table 5. Macro indicators**

Indicator	Pre-flood avg (Apr–Jun 2025)	Post-flood avg (Sep–Nov 2025)	Direction
Headline CPI inflation (y/y %)	21.2	24.0	↑
Food CPI inflation (y/y %)	24.8	30.6	↑
PSDP monthly releases (PKR bn)	70	61	↓
Emergency/supplementary spending (PKR bn)	0	45	↑
Fiscal deficit projection (% of GDP)	6.3	6.9	↑
Current account balance (USD bn)	-0.4	-0.7	↓



#### 4.6 Human security outcomes and governance stress

The flood created multi-dimensional human security pressures: displacement, livelihood shocks, increased disease risk, schooling disruption, and access constraints. Governance stress manifested as uneven relief coverage and longer service restoration times in highly affected districts.

**Table 6. Human security and service disruption indicators**

Province	Median shelter duration (days)	Diarrheal cases (per 10,000)	Schools affected (n)	Avg. school days lost	Avg. road closure (days)	Households receiving cash aid within 30 days (%)
Sindh	18	42	1,050	21	12	63
Punjab	14	28	820	16	9	71
KP	16	35	600	18	14	58
Balochistan	20	31	410	19	17	52

#### 4.7 Political responses: actions, spending, and intensity

Political responses followed a typical phased pattern: immediate emergency response (rescue/shelter), followed by compensation and early recovery, and then partial reconstruction planning. Policy intensity was highest in the first two weeks and declined afterward, suggesting strong crisis mobilization but weaker sustained reform momentum.

**Table 7. Response phases and Policy Intensity Index (PII)**

Phase	Time window	Key response focus	Actions (n)	Fiscal value (PKR bn)	PII (0–1)
Phase 1	Day 0–14	Rescue, relief, shelter, emergency logistics	12	55	<b>0.78</b>
Phase 2	Day 15–60	Cash assistance, compensation, early recovery	9	65	<b>0.62</b>
Phase 3	Day 61–180	Reconstruction planning, infrastructure restoration	6	45	<b>0.48</b>
Phase 4	Day 181–365	Long-term adaptation/reforms (limited)	4	20	<b>0.30</b>

#### 4.8 Discourse framing (security vs resilience)

Official communication displayed stronger “emergency/security” and “humanitarian” framing during Phase 1–2, while “resilience/adaptation” language increased later but remained less dominant overall.

**Table 8. Discourse coding of official statements**

Frame category	Statements containing frame (n)	Share of corpus (%)
Emergency / threat / security	24	68.6
Humanitarian / human security	27	77.1
Resilience / adaptation / preparedness	15	42.9
Accountability / governance reform	11	31.4
Climate attribution / climate finance	9	25.7

## Discussion

The results support the thesis statement that climate-related flooding in Pakistan is a security concern by an integrated process of economic shock, strain on governance, and human insecurity. The sectoral composition of losses, with housing and agriculture taking the biggest proportions of direct damages, is an indicator that floods both limit household security (shelter, assets), and the productive foundation upon which incomes and food supplies are produced. The dual hit can be used to understand why the floods in Pakistan are recurrently not only witnessed as a humanitarian crisis but also a socio-economic-security issue with possible political consequences (Waseem & Rana, 2023). The indirect losses are an important addition: business interruption, and transport/logistics disruption step forward to show that flooding spreads beyond the areas affected by floods due to supply chains, access to the market, and service disruption, a phenomenon that is consistent with the disaster economics evidence that indirect impacts can be massive when considerable interdependence exists (Lyu et al., 2023). There is some evidence in macro indicators in the post event window of a plausible macro-fiscal transmission: an increase in food inflation pressure, emergency spending and a decline in development releases are consistent with a well-established disaster-crowding out effect, and fiscal stress - most particularly in a tight macro environment (Kim et al., 2025). Climate-wise, such changes are important since fiscal tightening may slow the recovery process, undermine service provision, and increase distributional resentment, which can increase the instability risks even when no visible conflict route can be identified (Cullum, 2024). On that note the security relevance is not about immediate violence, but rather the ability of the state to defend welfare in case of a shock including the maintenance of legitimacy by providing equitable relief and plausible reconstruction.

The consequences of human security, such as time of displacement, diseases, loss of schooling, and restriction of access, underscore that the concept of security at the household level is achieved through the health, education, mobility, and livelihood continuity. The difference in the duration of the shelters, days of road closure and cash-aid cover vary across provinces, which aligns with the suggestion of asymmetric protection due to unequal exposure and the capacity to offer governance. This trend is reminiscent of Pakistan-specific findings that allow identifying a significant welfare loss and poverty effect in a politically relevant manner due to large floods (Knippenberg et al., 2024). In any case of delay or uneven coverage, the event turns into a governance test: not whether the state steps in, but there is prioritizing and transparency in decision-making.

The timeline of the political response reveals a common disaster governance pattern high mobilization of emergency response then declining momentum when focus on the emergency becomes less intense and funding sources are limited. It justifies the assumption that the coordination of crisis response may be robust in the short term and more difficult to maintain in the long term (Waheed et al., 2023). Discourse patterns are also consistent with the research of securitization: early communication is dominated by the use of the emergency/threat frame, and later communication employs the adaptation/resilience frame, which is less widespread (Vogler, 2023; Morsut & Rhinard, 2025). The implication here is that security framing can be strong to bring up short-run action but it may not necessarily translate into structural reduction of risk. On the whole, the case indicates that the most constructive approach to treating climate change as a security issue is based on human security and institutional responsibility that transform emergency response into long-term adaptation investment as opposed to short-term relief cycles.

## Conclusion

This paper has explored the Pakistan 2025 flood as a climate-security event by connecting three aspects that are usually viewed independently, which include: the economic and security-

relevant impacts, as well as political reactions. The findings show that direct damages of the flood were clustered in areas that determine normal stability especially housing and agriculture whereas indirect losses spread the shock via broken markets, supply chains and services. Collectively, these pathways depict how disasters linked to climate cause greater damage than material damage: they cause compound pressures on household well-being, local economies, and government.

Security wise, the most relevant risks were that of human-security consequences, as in displacement, livelihood shocks, health and WASH risks, and education risk, and governance stress in terms of uneven distribution of relief, and in terms of the delay in the resumption of services in the most severely affected regions. The trends underpin this argument which holds that climate change is a threat multiplier in Pakistan by increasing the vulnerabilities and challenging the state capacity. The political reaction took a typical pattern of intense mobilization that was emergency-driven during the initial stages, and then the downward trend was observed and less promising indicators of long-term adjustment and change. Discourse analysis also indicates that the dominant framing of emergency and threat were predominant in the immediate communication whereas resiliency linguistic grew later but not clearly surpassing the narrative of immediate relief.

Its main implication is that securitization of climate should only be helpful in cases where it enhances human security, accountability and reduction of risks, but not episodic management of the crisis. Predictable disaster-risk financing, transparency and fairness in delivering relief, resiliency in infrastructural planning, and inclusion of targets of adaptation in budgeting and provincial development should be the priorities of policy-makers. Although the research has its weaknesses reporting gaps and attribution difficulties, it offers a comprehensive model to evaluate the relationship between the economic shock and the governance strain and security consequences. This method should be generalized in future studies with the help of district-based data and domestic welfare monitoring and cross-province and cross-spillover and flood events to establish the institutional features under which disasters become sources of enduring resilience as opposed to recurrent crises.

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