Review Article

Urban Flooding in Lahore: A Review of the August 2025 Catastrophe

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Abstract

During the last week of August 2025, Lahore faced one of its most devastating flood episodes that was driven by intense monsoon rainfall and abrupt upstream water releases. This review synthesizes current news coverage and pertinent literature to scrutinize the causes, urban vulnerabilities, administrative and managerial responses, public health implications, and technology-based resolutions for flood resilience in urban settings of Lahore. The insights gained and recommended policies will also be shared with the readers.

Keywords: health implications, monsoon rainfal, urban vulnerabilities

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Introduction

August 2025 brought catastrophic flooding to Lahore, which is widely regarded as Pakistan's cultural and economic hub. The convergence of record monsoon precipitation, interrupted exchange of hydrological data, and sudden dam releases led to an extensive surge. This narrative would enable the readers to paint a comprehensive picture of the disaster and its broader implications.

Population and Geography of Lahore

Lahore's geography is situated in the upper Indus plain on the Ravi River, and it has coordinates between 31°15′—31°45′ N and 74°01′—74°39′ E. The city's population is one of the largest in Pakistan, estimated at over 15 million residents, with a high growth rate driven by immigration.

Drivers of the August 2025 Flooding

1. Monsoon Extremes and Climate Change

Lahore's flooding was driven by record-breaking monsoon rainfall. According to weather records, Lakshmi Chowk alone received up to 76 mm of rain on August 27, with other parts of the city experiencing heavy localized torrents earlier in August1. These storm events align with broader patterns of climate change, driving increased rainfall variability across the region2.

2. Hydrological Shock from Upstream Dam Releases

A major catalyst was the collapse of gates at India's Madhopur barrage with resultant uncontrolled water flow into the Ravi River. Compounding the hazard, New Delhi had suspended its obligations under the Indus Waters Treaty, stalling routine transboundary water data sharing. Pakistan's Planning Minister noted that incomplete data substantially hindered flood preparedness. Indian officials initially claimed efforts to manage the flow at the Ranjit Sagar Dam and later dispensed humanitarian cautions with inadequate details3.

3. Urban Impact: Lahore's Vulnerability Exposed

3.1 Flooding of Key Neighborhoods

Five residential localities—Shafiqabad, Farrukhabad, Tallat Park (near Shahdara bridge), Theme Park, and Park View—were rapidly flooded by the Ravi River overflow. Proximity to the river and constrained drainage set-up exacerbated the flood risk4.

3.2 Flood Surge Metrics

Flood Forecasting Division (FFD) predicted high floods in Lahore and Gujranwala in August 20255. River flow measurements surged to approximately 220,000 cusecs—distressingly close to the Ravi's design capacity of 250,000 cusecs—arousing memories of the 1988 floods, then peaking at 345,000 cusecs6. In Shahdara, explicitly, rose to record levels, prompting emergency evacuations7.

3.3 Structural Failures and Evacuations

At Park View Housing Society, the protective embankments gave way, causing floodwaters to inundate several housing blocks, as shown below in Figure 1.



Fig 1: Park View Housing Society submerged in crisis

Residents were compelled to evacuate quickly for survival8. Education was disrupted: 16 colleges across the Lahore Division suspended classes, while Punjab Public Service Commission (PPSC) examinations were also postponed9.

3.4 Broader Regional Displacement and Health Impact

By late August, Punjab saw an estimated 1.2 to 1.5 million people affected, with approximately 1,400 villages submerged10. At least 20,000 people were evacuated from Lahore's outskirts, with provincial death tolls reaching up to 17—a probable undercount amidst floods11. Displaced populations are prone to develop diarrhea, malaria, and skin diseases. Relief efforts encompassed over 1,100 relief and medical camps across Punjab. Controlled breaches were made in embankments to divert floodwaters away from urban areas12.

4. Governance, Disaster Management, and Response

4.1 Government Coordination and Political Oversight

Punjab Chief Minister Maryam Nawaz Sharif chaired high-level coordination meetings to activate hospital readiness and deploy relief resources. Effective efforts included the assembly of 130 boats, 1,300 life-saving jackets, and medical and veterinary services. Over 150,000 people and 35,000 livestock were transferred to relief camps13.

4.2 Organization of Relief Infrastructure

Flood relief authorities established 81 relief camps and 28 medical centers. Rescue 1122, Pakistan Disaster Management Authority (PDMA), National Disaster Management Authority (NDMA), and army units worked as frontline warriors in this disaster. Villages, farmlands, support structures, and public utilities throughout Punjab were profoundly affected, including Kartarpur Sahib and upstream districts14. Around 150,000 to 265,000 people were shifted to secure areas, based on varying sources2.

5. Technological Approaches and Future Resilience

5.1 Advanced Flood Mapping Techniques

Reviewing the literature on flood mapping reveals the usage of potent tools for future preparedness. For instance, integrating Sentinel-1, Sentinel-2, and Landsat-9 imagery enabled accurate flood extent mapping during the 2022 floods, offering models for identifying population exposure zones. SAR-based urban flood mapping techniques—resilient to cloud cover—are gaining traction in research; however, constraints in data accessibility hamper revision of existing policies15.

5.2 Predictive Modeling Enhancements

Emerging frameworks like FloodCast leverage satellite and hydrodynamic modeling to rapidly forecast flood events. The GeoPINS model is meant for large-scale flood modelling16. Flood forecasting hereby is of paramount significance in disseminating forthcoming hazard information and hence to reduce the likelihood of devastation on a mass scale17.

Developing a predictive model by machine learning enables to perceive the significance of landscape data in future planning and hence to mitigate the catastrophic effects of upcoming disaster18.

6. Humanitarian and Health Implications

Countless fatalities were ascribed to rapidly flowing floods. Victims were not only deprived of basic life provisions but also became vulnerable to post-disaster outbreak of life-threatening communicable diseases like typhoid, cholera, hepatitis A & E, malaria, and dengue. Evacuees were not only subjected to severe climate but also prone to live in poor hygienic conditions, where inadequate services for disease surveillance led to further complications of the distressing scenario 12. Karachi floods 2020 also made circumstances quite problematic for the general public19. Urban preparation and disaster readiness must involve public health organizations and the emergency services department in flood setups.

7. Lessons Learned and Policy Recommendations

Concurrent and immediate sharing of dam water release and river flow data can substantially enhance downstream alertness. Development incursions and impassable canals hinder flood resilience and should logically be managed to avoid overflow. Predictive modelling can facilitate for flood risk assessment to a great extent, provoking water and environmental cleanliness, promoting mobile clinics for healthcare, and applying vector control measures, particularly integrated approaches can prove beneficial in a drastic decline of disease frequency. Law execution and dissuading illegitimate constructions are the need of the hour for justifiable urban planning and sustainability.

Conclusions

The August 2025 floods in Lahore of represent depicts numerous vulnerabilities primarily in South Asian megacities due to climate change. Innumerable man-made factors have turned the monsoon rains into a calamity. The current scenario across Punjab demands urban planning reform, technological revolution and vigorous health preparedness.

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