Sagacity: A Multidisciplinary Research Journal ISSN: 2583-7540 July-Dec 2025, Vol.4, No.2.

Administrative Boundaries and Flood Control: Political and Geographical Challenges in Punjab

Ms.Vanshika
Assistant professor,
Department of Social Science,
Khalsa College for Women,
Amritsar

Ms.Muskan Arora,
Assistant professor,
Department of Social Science,
Khalsa College for Women,
Amritsar

Abstract

The devastating floods of Punjab, highly affected districts like Amritsar, Ferozpur, pathankot, kapurthala, fazilka, and inundated over 1,900 villages, highlight the combined impact of physical geography and political-administrative structures on disaster outcomes. Punjab's river systems, flat alluvial plains, and heavy monsoon inflows intensified flood severity, while governance gaps, dam-release decisions, and interstate coordination issues shaped the extent of damage. Communities in flood-prone Bait tracts faced disproportionate losses due to weak preparedness and limited institutional support. The study examines these interactions between natural systems and administrative frameworks, including cross-boundary river management. It concludes with recommendations for strengthening resilience through improved coordination, transparency, and adaptive flood-management strategies.

Key words: Punjab, Floods, crops, governance, river system, cusecs, dams, financial assistance, democracy

Introduction

Punjab is a relying from one of the worst floods in recent times. The state government has revealed that 23 districts as flood hit. The data from 8 September 2025(The Indian Express) showed that 1,902 villages have been swamped. More than 3.8 lakh people affected and more than 11.7 lakh hectares of farmland destroyed. This flooding is not entirely out of the ordinary: the geography of Punjab, the land of five rivers makes the region naturally flood - prone. Democracy helps to resolve problems like floods by people participation (vote for leaders who priorities disaster management), insuring accountability and enabling better planning and response. Transparency is the major element for the people as well as government in making budgets so that people know how and when disaster funds are used this can help to reduce the miss use of money for flood control Democracy plays a great role in solving environmental issue

(Povitkina,2018) with the following few factors . Rights allows an individual to express their views and information to become more aware about environmental issues like floods tsunami, cyclones ,tides and urge the governments to take action immediately such issues arise. In addition the second the most important factor is the government ability and efficiency to

answer. Political leaning is the third factor in democratic countries like India. The fourth factor is internationalism where government can actively participate to address issues.

Floods remain recurrent and damaging natural hazards in northern India and Punjab's geographical and political location makes it particularly vulnerable to such extreme events. The interplay of geographical conditions and political-administrative structures plays a decisive role in shaping flood exposure and management outcomes in Punjab. While natural features such as the river network, alluvial plains, soil composition, and flat topography determine the physical pathways and intensity of flooding, administrative boundaries, governance frameworks, and interdepartmental coordination shape the effectiveness of planning and response. Triggered by extraordinarily heavy and prolonged rainfall, the floods caused extensive destruction across over 1,200 villages in 23 districts. Many areas experienced unusual and excessive water discharge from major dams such as Bhakra Dam, alongside the overflow of critical rivers including the Sutlej, Beas, and Ravi, resulting in widespread inundation of settlements (Wikipedia, The Hindu 2023).Punjab, often known as the "Granary of India" due to its crucial role in national food production, suffered a significant setback(patel,2025). The state witnessed an alarming scale of crop damage, with approximately 3.7 lakh acres of agricultural land submerged. This devastation severely impacted the livelihood of thousands of farming families. Among these waterways, the Indus and Chenab serve as Pakistan's major river systems (Ahmad et al., 2021) and are frequently associated with intense flood events, especially during the summer monsoon months (UNDP, 2019) .Communities living in close proximity to these rivers commonly occupy and cultivate the Bait tracts for agriculture. However, when monsoon floods occur, these Bait regions fall directly within the flood-prone zone, making them extremely susceptible. During such events, residents experience significant losses, including destruction of crops, livestock deaths, structural damage to houses, ruined infrastructure, and occasional loss of human life because both the Indus and Chenab rivers flow parallel across the southern part of the province, this region is considered one of the most flood-sensitive areas of Punjab (PDMA, 2017). The farming households residing in Bait settlements face more severe livelihood disruptions from repeated floods compared to agricultural communities in other regions. Their vulnerability remains high due to insufficient preparedness, weak flood-mitigation practices, and limited capacity to manage disaster risks. Additionally, poor communication systems, minimal engagement of disaster-related institutions, and inadequate government support for mitigation measures further escalate the exposure of Bait communities Ahmad & Afzal, 2021).

Academic, policy-oriented, and public discussions on climate variability and extreme weather events have intensified over the last decade, largely due to the growing scientific evidence linking human-induced climate change with escalating climate hazards (IPCC, 2018). These climatic changes pose serious challenges to environmental and human systems by influencing hydrological cycles, agricultural productivity, infrastructure stability, water availability, and public health. While extreme weather events occur naturally within the climate system, they often escalate into disasters when they intersect with vulnerable populations, inadequate preparedness, or fragile infrastructure, leading to significant mortality, property loss, and long-term socioeconomic disruption (Slettebak, 2012). This interplay between climatic hazards and societal vulnerability highlights the urgency of strengthening resilience, enhancing early-warning mechanisms, and improving risk-reduction policies in regions most exposed to climatic extremes (IPCC, 2021).

Objectives

1. To analyse how the physical geographical features of Punjab—such as river systems, floodplains, topography, and soil characteristics—interact with administrative and political boundaries in shaping flood vulnerability and disaster management effectiveness.
2. To examine the influence of political governance structures, institutional coordination, and policy decisions on the allocation, development, and maintenance of flood-control infrastructure across Punjab.
3. To recommend suggestions for better future flood management

4. To analyse cross-boundary water flows among districts and neighbouring states (interstate river management), and to assess how political agreements, disputes, and administrative fragmentation affect flood intensity, preparedness, and response.

Review Of Literature

Chan et.al(2022) studied a systematic review of the flood vulernability using geographical information system. Findings showed that flooding is the natural event that causes wide spread distruction about 350 million people in the world are affected by floods it is also

predicted that flood destruction will be triple by the end of 2050. In future the impact of flooding will increase as population increases.

Singh(2018) conducted study on Punjab Floods: Some Lessons Learnt for Future Flood Management. The study proved that in spite of the existing flood management plans, the districts along the rivers recorded damage to cropped area, settlements and infrastructure during Punjab floods of 2013. The major reasons were breaching of temporary embankments along rivers; increasing encroachments on the floodplains of the Sutlej, Beas and Ravi rivers; and blocking of canal drains. Districts administrations had flood management plans but their operations were delayed and limited to only fewer areas. A well prepared flood management plan can greatly help to manage the floods in the state.

Soral (2025) studied Future Causes of The 2025 Punjab Floods And The Likely Effects On The Indian Economy. The results revealed that in late August 2025, the state of Punjab experienced devastating floods that drowned thousands of villages and hundreds of thousands of hectares of agricultural land due to abnormally intense rains, flooded rivers, and ruptured embankments.

Geographical And Political Challenges

Double trouble situation: Punjab faces a recurring challenge during every monsoon season as the responsibility of managing excessive river flow on three major dams located upstream of the states perennial rivers. These dams play a crucia; role in regulating water discharge, but when extreme rainfall occurs heavy releases become unavoidable. This creates a situation where punjab is exposed to heightened flood risk, making dam dependent flood management a persistent and serious problem for the state.

- **Broader governance issue**: Punjab's floods situation reflects the major governance hurdle where as experts note that poor dam coordination , delayed communication between upstream and downstream officials and a weak maintenance of embankments have intensified the damage. These management lapses combined with illegal mining and lack of timely action show a depper administrative shortcoming that continues to worsen flood risks in the state.

- **Flat plains and poor drainage**: much of Punjab consists of flat, low lying agricultural plains with a gentle gradiant, particularly the southern malwa region. This topography slows down the natural flow of water, leading to swere and prolonged water logging when the drainage systems are overwhelmed.
- **Upstream catchment ares**: a significant amount of of the water that floods Punjab originates from heavy monsoon rains and cloudburst in the upstream catchment areas of himachal

Pradesh and J&K. this sudden , high volume in flow of water rapidly swells the river downstream in Punjab.

- **Soil ultraion due to agriculture**: decades of extensive paddy (rice) monoculture have created an a artificial hardpain in the soil which significantly reduces the natural water absorption rate. When fields are already saturated or this layer prevents absorption , surface run of increases, exacerbating floods.

- **Education sector**: due to heavy floods education sector has been badly hits under which 3300 government and private schools were damaged across the state. schools were closed for more than a week this incidence has disrupted learning for thousand of children.
    - **Health sector** : the health sector has faced vast destruction due to the water logging from which the risk the higher risk was observed in cases of dengue, cholera, typhoid hepatitis .The risk of snake bites are also increased many medical teams including health officers were performing their duties door to door to check and provide assistance like medicines in flood hit areas.
- **Finacial support** : At the political level the leaders of Punjab appealed to the centre for greater financial support cope up with the flood damages . Therefore, Punjab government passed a resolution of Rs 1,600 crore to be transferred to the state treasury.
- **Madhopur Barrage destroyed**: on 26 August ,2025 two gates of the madhopur barrage near pathankot were destroyed and the flow of water in the Ravi exceeded 50,000 to 2 lakh cusecs , causing a deluge in the districts of pathankot , gurdaspur and Amritsar.
- **Issue of Waterlogging**: incessant rain in Punjab made things worst most embankments on the satluj held up, heavy rain in Malwa region led to serve waterlogging in the districts of Ludhiana, Jalandhar, nawanshahr and Moga.

Government Contribution

In August–September 2025 floods Punjab faced the worst pain in decades over a thousand villages were highly affected , dozens of snake bites , thousands of hectares of cropped area flooded, and significant populations displaced. Even the residents faced unhygienic conditions , foul smell from flood affected areas which became a major concern for people, government and health authorities. As per the survey 2300 villages were flooded and the damage estimate is Rs 13,800 crore for rebuilding infrastructure, schools, colleges, restoring power and sanitation and agriculture land, According to reports the AAP government under Chief Minister Bhagwant Mann prioritized rescue and relief by setting up teams like **NDRF**

(National Disaster Response Force), **SDRF** (State Disaster Response Force) and Indian Army. They also use helicopters like(Mi-17s and Chinook) for airlifts . Moreover, Air force provided large scale relief and dropped materials too. The Prime Minister Narendra Modi announced a financial help of Rs 12,000 crore to the state government as disaster relief. In addition, CM Bhagwant Mann launched a mission Chardikala in September 2025 to raise money for flood rehabilitation. It was a global campaign which means eternal optimism even in adversity. Mann government aimed to rebuild Punjab with strength, resilience, empathy and hope. AAP MLAs and MPs pledged to donate one month salary to the Punjab CM's relief fund. Not only political leaders but also Celebrities, Ngo's, highly contributed by donating steamer boats , tractors, clothes, food and ambulances for victims. As deputy commissioner of Amritsar, Sakshi Sawhney coordinated so well on the ground by interacting with the people of Ajnala subdivision and provide food, water, shelter as well as medical aid. Not only this she waded through floodwaters in rain and decided to set up a 24 hour control room to monitor calls for help and deploy resources. Her dedication and contribution towards Punjab highly inspired many people and youngsters. The flooding in Amritsar was massive and the challenges were huge.

The Interactive Role Of Geo-Politics And Administrative Boundaries In The 2025 Punjab Floods

The disaster exposed clash between geo hydrological realities (river basin and reservoir operations& administrative boundaries district states, central agencies and trans-boundary relations. The central government and Punjab also engaged in a visible exchange over forecast accuracy, fund usage and dam operation protocols.

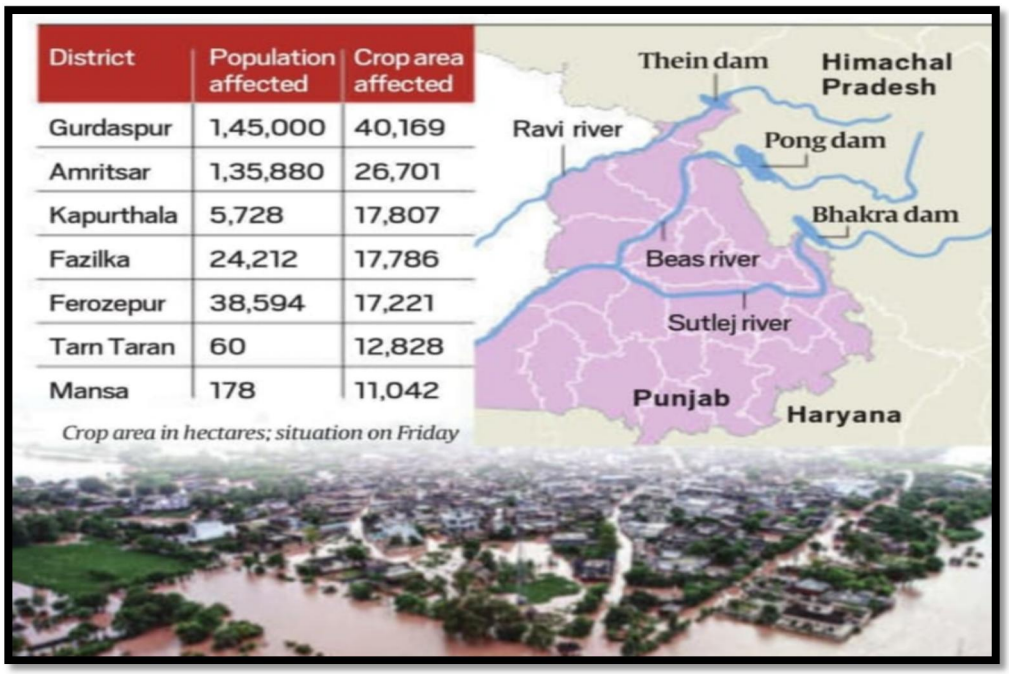
As water enter Punjab it naturally spread across its historic floodplains, many of which cross multiple districts such as Ropar, Hoshiarpur, Jalandhar, Kapurthala And Ferozpur because these hydrological zones do not align with district boundaries some regions experienced sudden flooding even when local rainfall was moderate.

Pong dam on the beas also reached near full capacity in mid to late august , prompting a sequence of high volume releases (**peaking around 75,000 cusecs on 21-22 aug**). These flows moved swiftly downstream through Gurdaspur,Amitsar , Kapurthala and Tarn taran, aggravating inudation in fields and villages.

Bhakra dam on the sutlej , one of the nothern India's Most critical multipurpose storages , rose to within three feet of its full reservoir level by 3 september 2025to prevent overtopping

and ensure dam safety,the bhakra beas management board **(BBMB)** had to make controlled releases, increasing downstream discharges.

The convergence of the sutlej and beas waters at harike headworks, and further downstream at hussainiwala , became key points of stress . At harike ,inflows touched nearly 3.5 lakh cusecs on 3 september , forcing the authorities to open gates fully this had cascading effect on the lower sutlej corridor through ferozpur and fazilka , where embankments and floodplains were heavily tested.



Distribution of flood impact across Punjab districts (2025)

Future Outlook, Recommendations And Conclusion

- Talking about future outlook democratic government can make rules for water management and dam operations. Environmental laws such as (Disaster management Act 2005, Environment protection Act 1986) should be implemented to protect wetlands and reduce flooding .In democracies local bodies like panchayat and municipalities help to control floods by maintaining drainage systems , cleaning drains, canals, sewers regularly , removing garbage to prevent water logging ,building new drains in flood prone areas moreover early warning should be given by informing people about heavy rainfall ,

rising river levels and evacuation plans. Government can not only use local radio, social media platforms , whatsapp groups , to communicate all the important information

- Government should also set up relief camps also set up with food water and medical help, training volunteers for rescue operations, keeping boats , life jackets and emergency supplies ready. Government can work with community by educating people about disaster preparedness to keep rivers and drains clean.
- Climate finance comes from government, banks international funds , private investors which provided financial assistance to help developing countries to fight with climate change which includes reducing emissions, adaptations and helping countries to recover from climate disasters . Developed countries agreed to provide$100 billion per year to developing nations but target was not fully met which has become major source of global tension. India demands develop countries must delivers $100 billion before setting new targets. Finance should be adequate, predictable & accessible moreover India demands equity , CBDR and fair burden sharing.
- Create a multi-state river basin authority, implement strict flood plain zoning, upgrade the drainage and flood control infrastructure, adopt advanced GIS and forecasting tools, use remote sensing and digital elevation models to map risk zone and strengthen early warning systems, to strengthen institutional coordination were the major recommendations can be suggested to control floods.
- Expand Local Monitoring Systems: Install additional rain gauges, river-level sensors, and soil-moisture trackers to improve real-time assessment of flood risks.

References

- Slettebak R.T (2012). Don't blame the weather- Climate related natural disaster and civil conflict.*Journal of peace Research 49*(1), 163-176. : https://doi.org/10.1177/0022343311425693
- Povitkina, M. (2018), 'The limits of democracy in tackling climate change',*Environmental Politics*,23 (3), 411-432.
- Singh.S(2018). Punjab Floods: Some Lessons Learnt for Future Flood Management. *International journal of research and analytical reviews* 5(4), 223-230.
- Ahmad D. Afzal. M. Rauf A. (2021) flood hazards adaptation strategies : A gender based disaggregated analysis of farm-dependent Bait community in Punjab, Pakistan. *Scholarly Journal 23*(1),865-886.

- https://doi.org/10.1007/s10668-020-00612-5

- Chan.S, Abid.S.K.,Sulaiman.N, Nazir.U, Azam.K.(2022) A systematic review of the flood vulernability geographic information system . *Science Direct* *8*(3)1-10 https://doi.org/10.1016/j.heliyon.2022.e09075

- Patel. R.(2025). Bridging psychological and spiritual responses in disaster recovery:A case study of Punjab floods 2025. *International journal of scientific research and engineering development* 8(5),445-450.

- Soral.S. (2025). Future Causes of The 2025 Punjab Floods And The Likely Effects On The Indian Economy. *Journal of Economics and finance*(16)5,13-20.
- https://indianexpress.com/article/explained/why-punjab-keeps-

- www.indianexpress.com

- https://annualreport.undp.org/2019/

- https://pdma.punjab.gov.pk/highlights

- https://ijsred.com/volume8/issue5/IJSRED-V8I5P55.pdf

- https://www.ipcc.ch/report/ar6/wg1/downloads/report/IPCC_AR6_WGI_FrontMatter.pdf

- https://www.researchgate.net/profile/PeterMarcotullio/publication/330090901_Sustainable_development_poverty_eradication_and_reducing_inequalities_In_Global_warming_of_15C_An_IPCC_Special_Report/links/6386062b48124c2bc68128da/Sustainable-development-poverty-eradication-and-reducing-inequalities-In-Global-warming-of-15C-An-IPCC-Special-Report.pdf