



Recurring Flood in Punjab

For Prelims: [Rivers of Punjab](#), [BBMB](#), Dhussi bundhs, [IPCC AR6](#), [MSP](#), [C-FLOOD system](#), [BHUVAN platform](#), [Krishi Vigyan Kendras](#).

For Mains: Causes of Floods in Punjab, Role of Governance and Infrastructure, Measures for [Sustainable](#) Flood Management.

[Source: IE](#)

Why in News?

Punjab ([land of five rivers](#)) is facing **one of its worst floods** in 40 years, with **all 23 districts affected**, 3.8 lakh people impacted, and over **11.7 lakh hectares of farmland destroyed**.

- This has raised debates on the continuous and large-scale flooding in Punjab and related issues.

What are the Causes of Flooding in Punjab?

Natural Causes

- **Heavy Monsoon Rains:** Intense rainfall in catchment areas (Himachal, J&K, Punjab), amplified by [cloudbursts](#), leads to sudden river swelling.
- **Geographical Vulnerability:** Punjab is drained by **three perennial rivers—Ravi, Beas, and Sutlej**—along with the seasonal Ghaggar and smaller tributaries (choes).
 - These rivers make the state fertile (producing ~20% of India's wheat and 12% of rice from 1.5% of landmass), earning it the title **"food bowl of India"**, but also prone to floods.
 - **Past major floods occurred in 1955, 1988, 1993, 2019, and 2023.**
- **Climate Change:** Altered weather patterns, with intense and erratic rainfall, have transformed the monsoon from an **agricultural ally to a destructive force**, as per [IPCC AR6](#) findings.

Human-Induced Factors

- **Dam Management Issues:** Bhakra (Sutlej), Pong (Beas), and Thein/Ranjit Sagar (Ravi) dams release water during heavy rains (45% excess rainfall in 2025), often without timely coordination and timely warnings.
 - In 2025, **unprecedented inflows (20% higher than 2023 at Pong)** led to sudden releases, flooding downstream areas.
- **Inadequate Flood Cushion:** The **Bhakra Beas Management Board (BBMB)** is criticized for **maintaining high reservoir levels** in July-August for irrigation and power, **leaving little buffer for heavy rains in August-September.**
- **Barrage Failures:** In August 2025, two gates of Madhopur Barrage on Ravi failed after sudden dam releases.
- **Weak Embankments (Dhussi Bundhs):** Poor maintenance and illegal mining have weakened

flood protection structures.

- **Failure to implement a 2024 flood-preparedness guidebook** led to unmaintained canals, and clogged drainage systems obstructing natural water flow.
- **Governance Gaps: Lack of coordination between Centre-controlled BBMB**, Punjab's irrigation authorities, and disaster response agencies.
 - Poor drainage systems in southern Punjab's Malwa region, coupled with incessant local rainfall, have caused severe waterlogging.
- **Unregulated Development:** Illegal construction on floodplains and riverbanks, coupled with deforestation, has reduced natural flood buffers.
 - The [Supreme Court and National Green Tribunal](#) noted illegal tree felling as a contributor to floods and landslides.

What are the Key Challenges in Punjab's Flood Management?

Governance Issues

- **Centralized Control:** The major centrally controlled **dams prioritizes irrigation and power over flood management**, leaving Punjab with limited influence.
 - The **2022 amendment allowing non-Punjab/Haryana officers in top BBMB** posts has further **strained state-Centre relations**.
- **Reactive Approach:** Governments often **respond post-flood rather than investing in preventive measures** like embankment strengthening or desilting.

Infrastructure Deficiencies

- **Weak Embankments:** Illegal sand mining and poorly maintained drainage systems exacerbate waterlogging, particularly in southern Punjab.
- **Underinvestment:** Strengthening **embankments and desilting rivers require Rs 4,000-5,000 crore**, which remains unaddressed due to funding constraints.
- **Climate Variability:** **Increasingly erratic monsoons and extreme rainfall events, driven by climate change, challenge existing flood management strategies.**

What are the Impacts of the Floods in Punjab?

- **Agricultural Devastation:** Over **4 lakh acres of farmland submerged**, with crops like paddy and basmati rice facing quality issues, potentially fetching prices below [MSP](#).
 - Post-flood challenges include [land erosion](#), [silt deposition](#), and **difficulties in sowing new crops**, threatening Punjab's role as India's food bowl.
- **Economic Fallout:** **Farmers face financial hardship due to crop losses** and degraded land, exacerbating existing agricultural debt.
 - Infrastructure damage, including roads and irrigation systems, requires significant repair costs, straining state resources.
- **Public Health Crisis:** **Floodwaters, particularly from polluted rivers like Buddha Dariya in Ludhiana, have caused "black floods,"** carrying **industrial pollutants** and untreated waste, risking **outbreaks of [cholera](#), [typhoid](#), [hepatitis A](#), [dengue](#), and [malaria](#)**.
 - **Long-term groundwater contamination and soil degradation** pose environmental threats.
- **Social and Humanitarian Impact:** Several **people were evacuated**, but displaced families face **challenges in accessing food, shelter**, and safety, with particular risks for women and children.

What Measures Can be Taken?

- **Scientific Dam Management:** Revise **BBMB "rule curves"** (storage and release policies) **to include climate forecasts** and ensure adequate flood cushion.

- **Strengthening Embankments:** Invest in **dhussi bundhs** (earthen embankments), prevent illegal mining (through satellite monitoring), and modernise drainage networks.
- **Integrated Flood Management:** Improve **Centre-State coordination on dam releases**; establish transparent communication channels.
 - Adopt the **C-FLOOD system** for **village-level forecasting** and integrate it with meteorological and hydrological data via **NRSC's BHUVAN platform**.
- **Community-Centric Preparedness:** Expand flood forecasting, digital alerts, and village-level disaster plans and **adoptive capacity building through Krishi Vigyan Kendras**.
 - Implement **Zero Casualty Approach** through local monitoring, early warning, and mock drills.
- **Climate-Resilient Infrastructure:** Build urban drainage systems, **restore wetlands**, and **undertake river desilting** to absorb excess flows.
 - Integrate climate models into flood forecasting to anticipate extreme rainfall events.
 - Promote **flood-resistant crops** and diversify agriculture to **reduce dependency on flood-prone Kharif crops**.

Conclusion

Punjab's geography makes it inherently flood-prone, but poor dam management, weak embankments, and governance lapses convert natural hazards into human-made disasters. A shift towards **scientific water regulation, resilient infrastructure, and transparent governance** is essential to safeguard lives, agriculture, and Punjab's role as India's food bowl.

Drishti Mains Question

Q. Punjab faces recurrent floods despite being drained by perennial rivers. Discuss the natural and human-induced causes of flooding in Punjab and suggest measures for effective flood management.

UPSC Civil Services Examination, Previous Year Questions (PYQs)

Prelims:

Q. With reference to the Indus river system, of the following four rivers, three of them pour into one of them which joins the Indus directly. Among the following, which one is such a river that joins the Indus direct?

- (a) Chenab
- (b) Jhelum
- (c) Ravi
- (d) Sutlej

Ans: (d)

- The Jhelum joins the Chenab near Jhang in Pakistan.
- The Ravi joins the Chenab near Sarai Sidhu.
- Satluj is joined by the Chenab in Pakistan. Thus, Satluj receives the collective drainage of the Ravi, Chenab and Jhelum rivers. It joins the Indus a few kilometres above Mithankot.

Mains:

Q. Flooding in urban areas is an emerging climate-induced disaster. Discuss the causes of this disaster. Mention the features of two major floods in the last two decades in India. Describe the policies and frameworks in India that aim at tackling such floods. (2024)

Q. The interlinking of rivers can provide viable solutions to the multi-dimensional inter-related problems of droughts, floods, and interrupted navigation. Critically examine. (2020)

Q. Account for the huge flooding of million cities in India including the smart ones like Hyderabad and Pune. Suggest lasting remedial measures. (2020)

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