

WRAP Exams · wrapexams.com

Prelims PYQ, Mains model answers, and copy evaluation. Write to the desk for this paper, a doubt, or the AI waitlist.

ask@wrapexams.com · +91 85951 84903 · wrapexams.com

Q18

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

UPSC Civil Services Mains 2024 · GS III · 15 marks · Disaster Management

Disaster and disaster management.

Core demand of the question

- Discuss causes of climate-linked urban flooding in India
- Mention features of two major urban floods in the last two decades
- Describe Indian policies and frameworks that aim to tackle such floods

Revision summary

Climate-linked urban floods come from heavier downpours on sealed soil, lost wetlands, clogged drains and tidal lock.

Mumbai on 26 July 2005 combined record rain, a choked Mithi and high tide; rails and the airport stopped.

Chennai in late 2015 saw prolonged monsoon rain, tank and river overflow, and city-wide disruption tied to wetland loss.

National response sits in the **Disaster Management Act**, NDMA urban-flooding guidelines, **AMRUT**/Smart Cities, and Wetlands Rules.

- **The binding failure is still local:** encroachment and drains that exist on a map.

Introduction

A city flood used to be called a **drainage problem**. It is now also a **climate-induced disaster**: a **shorter, harder rain** falling on **concrete, clogged drains and missing wetlands**. Mumbai in 2005 and Chennai in 2015 are the two large, well-documented shocks of the last twenty years. Policy has caught up in **guidelines and missions**. The water still finds the old drain.

Body**Causes**

Climate is loading the dice: warmer air holds more moisture, so extreme daily rainfall is more likely. **Urbanisation** seals soil with asphalt. **Wetlands, tanks and floodplains** - the city's old sponges - are **plotted and built**. **Storm-water drains** are undersized, blocked with solid waste, and often **combined with sewage**. **Encroachment on riverbanks** (Mithi, Cooum, Adyar, many nallahs) removes the channel. **Tidal lock** in coastal cities stops drainage at high tide. **Upstream dams and sudden releases** can add a pulse. **Poor mapping and**

housing on low ground put the poor in the first storey of the flood. The disaster is therefore **climate plus planning plus garbage**, not rain alone.

- **Peg:** Extreme rain is the climate limb; the sealed floodplain is the governance limb.
- **Peg:** Solid waste in a drain is a flood policy failure, not a civic footnote.

Two major floods

Mumbai, 26 July 2005. A record **single-day downpour** over the city, with the **Mithi** overflowing, **airports and rails stopping**, and **large loss of life in low-lying and slum belts**. **Features: an extreme rain event, a river-turned-drain, high tide**, and a megacity whose suburbs had eaten the catchment. The **Fact-Finding Committee** (Chitale) and later work made the Mithi and storm drains a public file.

Chennai, November-December 2015. Weeks of **excess northeast-monsoon rain**, overflow of **Chembarambakkam** and other tanks, the **Adyar and Cooum** in spate, a city-wide halt, and a death and livelihood toll that made it a **national disaster**. **Features: a reservoir-and-tank** system that could not be operated only as flood control, **wetland loss** (including the IT corridor's relationship with the marsh), and rainfall that sat far above what the colonial-era drain assumed.

(Other large events exist - Uttarakhand 2013 is more mountain than city; Kerala 2018 was statewide; Hyderabad 2020 and Bengaluru 2022 were serious urban floods. The question asks for two; Mumbai 2005 and Chennai 2015 are the clearest megacity pair.)

- **Peg:** Mumbai 2005: one brutal day, Mithi, tide, transport collapse.
- **Peg:** Chennai 2015: a monsoon month, tanks and rivers, wetland memory.

Policies and frameworks

The **Disaster Management Act, 2005**, and **NDMA** guidelines on **urban flooding (2010)** ask cities for **drainage master plans, wetland protection, and early warning**. **State disaster plans** and city **Heat-and-Flood SOPs** sit under **SDMAs**. **AMRUT** and **Smart Cities** fund storm-water and some lake revival. **National Water Mission** and **wetland rules** (including the Wetlands Rules, 2017) try to keep sponges legal. **Model Building Bye-Laws** and some State rules require **rainwater harvesting** and, in a few cities, **zero-dumping into nallahs**. **NGT** orders on lakes and construction-and-demolition waste are a judicial track. **National Cyclone Risk Mitigation** and coastal zone rules matter for tidal cities. The gap is **municipal capacity and encroachment politics**: a guideline does not move a mall off a drain. Climate policy (National Action Plan, State Action Plans) now names **urban flooding** as an adaptation item, which is the right heading if the budget follows the drain, not only the flyover.

- **Peg:** NDMA urban flood guidelines plus the DM Act are the national framework; **AMRUT/Smart Cities** are the money pipes.
- **Peg:** Wetland Rules and lake litigation are the ecological half of the same policy.

Flow diagram

Extreme rain -> Urban flood
Sealed wetland -> Urban flood
Blocked drain -> Urban flood
Mumbai 2005 -> Urban flood
Chennai 2015 -> Urban flood
NDMA AMRUT wetland rules -> Urban flood

Conclusion

Urban floods combine harder rain with sealed catchments and dead drains. Mumbai 2005 and Chennai 2015 showed a megacity can stop in a day or a month. India has NDMA guidelines, wetland rules and urban missions. They work only if the floodplain is not sold before the next cloud.

Facts & figures

Mumbai, 26 July 2005

Extreme one-day rainfall, Mithi floods, major loss of life and a shutdown of transport, including the airport.

Chennai, 2015

Northeast-monsoon urban flood with reservoir and river overflow and large economic disruption.

NDMA urban flooding guidelines, 2010

National guidance asking cities for drainage plans, mapping and preparedness specific to urban floods.

DM Act, 2005

Creates NDMA/SDMA/DDMA and the legal frame for treating a city flood as a disaster, not only a municipal nuisance.

Wetlands (Conservation and Management) Rules, 2017

A Union framework to notify and protect wetlands that cities otherwise plot.

AMRUT

Urban mission that can fund storm-water drainage and water-body work in selected cities.

WRAP Exams · Write. Read. Analyse. Practice. · <https://wrapexams.com/upsc/mains-answers/gs-3/2024/flooding-in-urban-areas-is-an-emerging-climate-induced-disaster-discuss-the-causes-of-this-disaster-mention-the-features-of-two-such-major-floods-in-the-last-two-decades-in-india-describe-the-policies-and-frameworks-in/> · ask@wrapexams.com · wrapexams.com