Mumbai Floods – An analysis

What is the issue?

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Flooding seems to recur almost every year in Mumbai, with this year being particularly severe.

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How does Mumbai's drainage network look?

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- Massive underground sewers built during the colonial era dating back to 1860-1900 are impressive with some of it still in use, but is limited to South Mumbai.
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- The suburbs of Mumbai are served mostly by open drains, into which tonnes of garbage are dumped each year by citizens.
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- Pre-monsoon 'desilting' exercises are carried out every year, which has proved to be ever-inadequate.
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- Much of these sewer networks flow several kilometres through congested localities before discharging into the sea, often through outfalls located below mean sea level.
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- This means if it's raining heavily when the tide is sufficiently high, drainage is impossible.
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How to deal with the Tides?

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- The problem is that Mumbai's flood waters are simply discharged in the Arabian Sea through gravity.

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- There are international examples of balancing reservoirs and deep tunnel systems for underground storage of flood waters to be pumped out later when the tides are low.
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- Best practices also involve adopting and conserving rainwater within a catchment area itself, through local storage and recharging alongside filtration systems.
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What is unusual about the current floods?

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- Although, the rainfall was only one-third of the rainfall that caused the 2005 deluge, flood water failed to recede and the reasons remain much the same.
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- Dozens of de-watering pumps for localised relief also suffered technical glitches, as conceded by the municipal commissioner.
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- While, even after the highest tide had subsided, flood waters in many places did not recede, which is clear validation of clogged drains.
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What are the problems plaguing Mumbai’s drainage?

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- **Insufficient Drains –** Although the drainage capacity of the entire city isn’t impressive as such, experts have explicitly conceded that at least major roads and traffic junctions fall far short of the required.
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- **Brimstowad Project –** After much delay this project got a go ahead, with resources being spent on measures such as standard operation protocol, better-equipped disaster cells and forecasting systems.
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- Yet, incredibly, a range of long-term measures, accepted in principle, were left incomplete.
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- **Contour mapping -** Although contour maps for drains were prepared it remains incomplete for the rest of the city.
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- This means, although the prediction of the drainage flow is possible, there is no data point to predict how a river's flood waters will rush out.
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- **Other Issues** - Recommendations to protect the Sanjay Gandhi National Park within the city limits, construct detention basins for flood water, demarcate flood-prone zones were never undertaken
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- Also, recommendations to empower the Maharashtra Pollution Control Board to ensure compliance of environmental regulations by municipalities were never undertaken.
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What is the impact of river overflows?

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- River floods are different from floods caused by undue, sudden pressure on local drainage networks.
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- **Mumbai's Context -** Mumbai and its immediate suburbs are home to at least four separate river systems.
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- Extensive encroachments have reduced their width to barely a couple of metres in some places.
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- The arterial Western Express Highway and Lal Bahadur Shastri Marg were both inundated recently, partially because of the overflowing rivers.
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- **Recommendations -** One of the key recommendations of an extensive report submitted after the 2005 deluge was to restore degraded rivers and river-banks and to probe pollution.
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- The report also stressed on the encroachment problem, identifying specific boundaries for each river and establishing buffer zones.
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- **Current Status -** Sadly, a grand plan for the rejuvenation of the Mithi, has been abandoned midway.
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- A holistic revival of the river systems and early warning systems for has

been long ignored.
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How has the disaster response been?

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- **The Positives -** Casualties were fewer than in July 2005 and it was apparent that the state's response has come a long way since then.
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- The hotline for connecting various agencies, introduced after 2005, proved critical.
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- Also, the depth and reach of social media for dissemination of advisories and real-time updates was found to be tremendous.
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- **Areas Needing Betterment -** Although 'Doppler radar-based weather forecasting system' was installed, advisories to stay indoors came too late.
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- Also, the CCTV camera network, which can monitor areas of traffic congestion and rising floods, seems to have been activated a little late.
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- Improvisation is needed for drafting detailed but precise advisories that are accurate, localised and accessible to everybody.
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Source: IndianExpress

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