YOUR CITY

# Toronto is seeing more intense rain — but is it prepared for flooding?

Experts warn rising rainfall and urban pressures are increasing flood risks, as Toronto invests billions but still faces preparedness gaps.

POSTED 6 DAYS AGO BEATRIZ FERREIRA


FILE/Cars are partially submerged in flood waters in the Don Valley following heavy rain in Toronto, on Tuesday, July 16 2024. (THE CANADIAN PRESS/Arlyn McAdorey)

## What to know

- Climate change is driving more frequent and intense rainfall across Canada, increasing flood risks in cities like Toronto.
- Toronto has already experienced major floods in 2013 and 2024, exposing vulnerabilities in transit, power infrastructure, and urban drainage systems.
- Experts say flood risks are worsened by urbanization, population growth, and development in floodplains, with vulnerable groups like basement apartment residents often overlooked.
- The city is investing heavily in mitigation, including a $1.15B Basement Flooding Protection Program, a $3B Don River stormwater project, and other infrastructure and data-monitoring initiatives.
- Despite these efforts, experts argue Toronto still needs stronger planning policies, better data on at-risk populations,

and more climate-adapted development measures to fully prepare.

As climate change effects ramp up, Toronto is about to start seeing more intense rainfall and risk of flooding. But is the city really prepared for it?

On Wednesday, the City of Greater Sudbury declared a state of emergency in light of ongoing flooding and projections from Conservation Sudbury.

The decision is a preventative measure, which the city says will allow for rapid action and support for residents, including moving any necessary evacuations or coordinating volunteers' response.

Sudbury is not the only city in Canada that's about to have to deal with more flooding.

On Thursday, the Canadian Climate Institute (CCI) updated its fact-sheet on flooding and climate change, revealing that global temperature changes are expected to increase rainfall across most

regions in the country, leading to elevated flood risks, including in urban areas.



Nidhi Subramanyam, an associate professor at the University of Toronto's department of Geography and Planning, told Now Toronto that these effects are already happening across the country.

"I think it's already started to happen. There is definitely greater frequency of certain high-intensity events. And high-intensity just

means more amounts of rainfall in a very short period of time. And those kinds of events are returning at a much more frequent rate," she explained.

In addition to climate change, Western University Civil and Environmental Engineering Professor Slobodan Simonovic said more frequent floods result not only from other factors, including fast urbanization, higher migration levels, and accelerated development.

"You have pretty serious issues. People migrating, people living in the floodplains, people being highly exposed. So, when you combine this together with climate change, which is mostly represented in the change of the precipitation frequency and precipitation magnitude, then you end up in a serious flood situation," he said.

## How can cities tackle flooding?

Although flooding events from past years may serve as an indication of what is to come, Subramanyam says there's still a lot experts need to understand about how these events may impact vulnerable populations.

To her, understanding what impacts these communities could face is the first step towards getting more prepared for them.

“A good example of that would be people who live in basements or basement apartments. There’s no real database, because basements are kind of informal. There’s no real tracking of how many people live in basement units, in which parts of the city and so on,” she explained.

“In a way, we need to understand how much affordable housing is concentrated in flood vulnerable locations, and how we can develop housing going forward in a way that we’re not going to put people in harm’s way.”

From an engineering perspective, Simonovic shares there are three ways cities could prepare for the events:

- Developing and adopting infrastructure that could protect those living in the floodplains, which are flat areas near streams of water that get most affected by floods. These include dikes that act as a barrier parallel to bodies of water, reservoirs, and retention basins.
- Incorporate nature-based solutions in developments, which slow down the flow of water, including green roofs, permeable roads, wetlands, and more.
- Adopting risk management, which includes assessing the situation and making decisions on what measures to implement to manage the impact of the event.

## How is Toronto preparing?

In Toronto, flooding is managed by the Toronto Region Conservation Authority and the city's Emergency Management Office, which work to monitor conditions and respond to risks. Additionally, intense rainfall risks are addressed through sewer design and capacity programs, stormwater management and infrastructure improvements.

According to Krystal Carter, a City of Toronto spokesperson, the city has several programs in place to manage risks, including:

- Several tools and processes, including a new reporting tool that supports timely updates and an internal resource hub, so teams have real-time access to information such as water levels, transit alerts, and traffic cameras.
- A multi-year Basement Flooding Protection Program, which aims to reduce flood risks by adopting targeted infrastructure upgrades

across the city. Between 2019 and 2025, over 13,700 properties in the city have benefited from it, with $1.15 billion in investments.

- A Current and Future Climate report that provides analysis of present and future data to inform planning, operations and adaptation.

“Flooding can take different forms, and the City of Toronto plans for each. We work closely with conservation authorities and emergency management partners to address river-based flooding, and we’re also investing heavily in sewer, stormwater and neighbourhood infrastructure to manage the impacts of intense rainfall,” Carter added.

In addition, the city is investing in future infrastructure to prevent and manage risks, including:

- Its largest stormwater management initiative in history at the Don River and Central Waterfront to be completed in 2034, with more than $3 billion to improve the system during rainfalls.
- A long term strategy to reduce flooding and protect water quality by managing rain and melted snow in the city.
- Numerous projects to upgrade the city’s older areas to eliminate combined sewer overflows.

- A $1.4 billion tri-government project to protect the city's eastern waterfront from flooding by reshaping the mouth of the Don River and creating an island named Ookwemin Minising.
- Investing in growing the city's tree canopies as a nature-based solution to mitigate climate change.



## When was Toronto last hit by a major flood?

In recent years, Toronto has faced two highly intense flooding events.

One of them was in 2013, when the city was hit with 126 millimeters of rain in just 90 minutes. The event led to flooded roads, intense water influx into subway stations, several abandoned cars on the highways, 300,000 people left without power, and thousands of others stranded on GO trains.

Eleven years later, in the summer of 2024, the city saw a similar scenario, when it was hit by three consecutive thunderstorms in just one day. While Toronto was used to an average of 71.6 mm in one month according to Environment Canada, that day, the city got hit with 96 mm as recorded at Toronto Pearson Airport.

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## Is the city prepared?

As explained by Subramanyam, Toronto still has work to do in terms of understanding the impacts of flooding and mitigating them. For that, the city would have to invest more in studies about these events.



In addition, she explains that the city should also focus on creating measures that require new developments to include infrastructure that is adapted to more intense rainfalls, including the Green Roof Bylaw, which was recently removed by the provincial government.

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“The powers of conservation authorities have gradually been reduced because, historically, [they have] been the institutions that have provided our urban governments with advice on how to regulate development so that it doesn’t contribute to more flooding,” she said.

“I think if we start reducing funding, if you start reducing their powers, the ability to do that is going to be compromised, and if we just speed up development timelines without due diligence, that is [another] issue.”

Overall, she explains that environmental protection measures are also essential to protect cities from intense flooding events.

Meanwhile, Simonovic stresses that the city should invest in mitigating risks for those living in the floodplains, explaining that a large part of development in urban areas falls into that category. Besides impacting life in the city, these events also generate millions of dollars in damage.

“The situation is already severe, and any change, any increase in the precipitation... is reflected in the increase in the flood damage, now around $800 million per year. And when you add the climate change and all the other changing factors, some accounting joins potentially up to $5 billion.”



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