

A Dry Subject: Keeping Toronto Above Water

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TORONTO'S RESILIENCE STRATEGY REDUCES FLOODING AND MEETS UN SDG 11

SUMMARY POINTS

- Toronto's largest rainstorms have been in the past two decades
- Flooding is an issue that affects all of Toronto
- Adopting the Flood-Resilient Toronto Strategy would prepare the city for increasingly worse weather
- Toronto needs a resilience strategy to meet UN SDG 11



1 400 passengers were stranded for seven hours on a GO train stuck in floodwater after a 2013 storm [1].

THE UNITED NATIONS' SUSTAINABLE DEVELOPMENT GOALS

The UN's SDG 11 calls for resilient and safe infrastructure. Implementing the Flood-Resilient Toronto Strategy can help meet these goals:

- 11.1** Ensure access to safe and affordable housing
- 11.5** Reduce amount of people affected by disaster and the economic loss
- 11.b** Increase the number of cities with resilience plans

INTRODUCTION

Toronto is wetter than it has ever been before. A city not designed for summer deluges is now required to deal with them. Summer storms are disrupting travel, flooding homes, and costing the city. Additionally, Toronto's lack of a flood-resilience plan means that the city is falling behind in its meeting of UN Sustainable Development Goal (SDG) 11, which calls for safe and reliable infrastructure that is resilient to natural disaster (including floods). As well, the city adopting a resilience plan would be in keeping with SDG 11.b.

Fortunately, though, Toronto has developed the Flood-Resilient Toronto Strategy that should be adopted. This strategy aims to first compile all of Toronto's flood data and create a flood-risk map that can be easily understood and updated. Then city departments (and perhaps the public) can see what needs work first. The Flood-Resilient Toronto Charter, part of this strategy, also calls each city department to consider flooding when they build or renovate their infrastructure, and also implements a collaborative framework to improve intra-city communication and reduce redundant work. These tools will help Toronto ensure safe housing and reduce the impacts of flooding disasters, in keeping with UN SDGs 11.1 and 11.5.

FLOODING IS A PROBLEM

Toronto is getting hotter, wilder, and wetter. A city never designed for wet weather is finding itself having to cope with intense rain storms (shocks) and long stretches of constant drizzle (stresses). The city will have to be able to cope with more of these events going forward as the climate becomes more aggressive [2, p. 91].

Today's Toronto is built on mostly flat land with deep ravines on either side. This means that when rains do fall, water tends to pool until it can drain out through one of these ravines. Of Toronto's four major floods from 1914-2014, two have been in this century. The rainfall causing those two floods was larger than any previously recorded rainfall. Post-Hazel flooding management is no



ADOPT THE FLOOD-RESILIENT TORONTO STRATEGY

Flooding is the largest problem facing Toronto's infrastructure today. There is not much point building infrastructure if it is going to end up underwater. Also, Torontonians are keen for something to be done about flooding in the city, and floods affect many parts of the city, as opposed to more localized disasters.

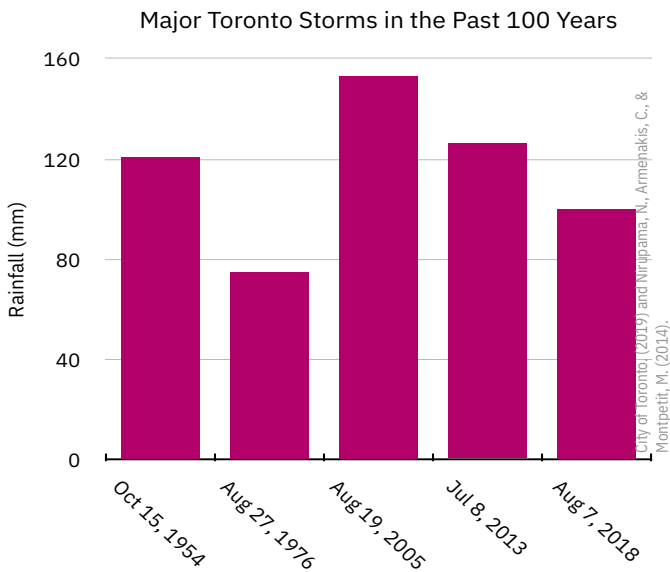
Reducing flooding in Toronto would easily help meet SDG 11.5, as flooding is so widespread. In addition, flood reduction would aim towards Goal 11.1 as safe houses do not flood.

In order to meet Goal 11.b, Toronto needs a resilience plan (including flood resilience). Fortunately, Toronto has been working on this. Currently, Toronto's flood reduction measures are scattered and outdated. Updating programs such as the Wet Weather Flow Master Plan and The Basement Flooding Protection Program to account for the new weather the city is getting and integrating them into the more comprehensive Flood-Resilient Toronto Strategy will help reduce redundant work and improve the city's flood resilience, while meeting Goal 11.b.

Related to this, Toronto should create a centralized flood map. Toronto has many repositories of flood information, but they are not shared. Toronto should combine these datasets into a comprehensive flood map in order to better see areas that are at risk for flooding and should be focused on first. This will also help improve collaboration between different city departments and reduce the amount of redundant work that is done, and prioritize meeting and seeing where the city is falling short of Goal 11.5.

The Flood-Resilient Toronto Charter (FRTC), part of the Strategy, is an important first step in that it encourages city departments to all consider flooding in their projects, and to work together to build flood-resilient infrastructure. For such a (literally) wide-reaching problem, having a commitment to work together is necessary, and a good place to start.

The FRTC also includes clear public communication, an important part of any plan that is to ultimately be successful. Clearly communicating and showing what the city is doing to tackle flooding (using tools like that integrated flood map) will help reinforce that this is a serious issue, but something is being done about it, and help people feel like it is their project too, because they can follow along with what is going on. This will be important for such an extensive project: the public needs to be behind it if it is to continue. Clearly communicating what is going on is important to this.



In the past hundred years, three of Toronto's worst storms have been in this century. Two of them have been larger than the "benchmark storm" of Hurricane Hazel in 1954 that killed 81 people [3].



longer adequate, as evidenced by these floods [3]. Since 2014, three more floods have hit the city, resulting in a stranded GO train, nine damaged streetcars, 700 flooded basements, 300 000 Torontonians without power, and numerous other issues [2, p. 94].

This is an issue that is well-known to Torontonians, too. 78% of Torontonians expressed concern over the effects of climate change in the city, and 16 000 residents were left without power after a 2018 rainstorm [2, p. 55]. Flooding can leave behind E. coli and mould infestations, leaving behind a health problem even after the waters have receded [4]. Flooding has become such a common problem for the city that a Toronto Fire platoon chief remarked that a storm that closed several streets was "... nothing out of the ordinary..." [5].

As infrastructure ages, this problem will become more noticeable, too. Toronto also does not have a clear mandate for tackling flood resilience, something that should be considered before renovating old infrastructure [2].

REFERENCES

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- [1] P. Kuitenbrouwer, “‘It felt like a sinking boat’: Police rescue 1,400 passengers from waterlogged commuter GO train,” *National Post*, Toronto, ON, Jul. 09, 2013. Accessed: Sep. 21, 2021. [Online]. Available: <https://nationalpost.com/news/toronto/commuter-go-train-partially-underwater-after-toronto-floods-passengers-evacuated-by-zip-line>
- [2] City of Toronto, “Toronto’s First Resilience Strategy,” Toronto, ON, Jun. 2019. Accessed: Sep. 17, 2021. [Online]. Available: <https://www.toronto.ca/services-payments/water-environment/environmentally-friendly-city-initiatives/resilientto/>
- [3] N. Nirupama, C. Armenakis, and M. Montpetit, “Is flooding in Toronto a concern?,” *Nat Hazards*, vol. 72, no. 2, pp. 1259–1264, Jun. 2014, doi: 10.1007/s11069-014-1054-2.
- [4] The Canadian Broadcasting Corporation, “Toronto floods cause E. coli risk in homes,” *Gale OneFile: CPI.Q*, Aug. 02, 2013. https://go.gale.com/ps/i.do?p=CPI&u=rpu_main&id=GALE%7CA338551983&v=2.1&it=r&sid=summon&asid=945b14e0 (accessed Sep. 19, 2021).
- [5] CBC News, “Severe thunderstorm downs trees, floods roads across Toronto” *CBC*, Jun. 29, 2021. <https://www.cbc.ca/news/canada/toronto/toronto-rainfall-heat-warnings-stormy-weather-1.6084849> (accessed Sep. 20, 2021).
- [6] United Nations, “Goal 11,” *Department of Economic and Social Affairs*, 2021. <https://sdgs.un.org/goals/goal11> (accessed Sep. 20, 2021).