Team

04.

Collaborative Strategies for Flood Resilience: Partnerships Between Insurers, Municipal Governments, and Policymakers.

FloodSmart: Reimagining flood insurance as a tool for not just recovery but also prevention

As flood damage costs rise, insurers risk being seen as reactive and profit-driven.



Flood risks keep increasing, but decision-makers often lack real-time, location-specific data to plan effectively. In Canada, 90% of the financial risk from flooding is found in just 10% of homes, but most insurance companies avoid covering these high-risk areas. FloodSmart fills this gap with a system that uses advanced imaging and a community certification program to support targeted flood resilience.

Methods

Step 1: Assess existing programs and propose a new model

The team created a Flood Resilience Certification (FRC) by looking at successful programs like LEED (a green building certification) and home energy loans, suggesting a simple reward system where governments and insurers help cover the cost of protecting homes from floods.

Step 2: Build a risk mapping system

The team used satellite data and tools like Google Earth Engine to track signs of flooding, like water levels and plant health. This helps create live flood maps, set fair insurance prices, and speed up claims by checking damage remotely.

A collaborative project with:

University of Toronto

York University

Aviva

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Insights

1. **94%** of residents in high-risk flood zones are **not aware they are at risk.**
2. Flood risk is highly concentrated but poorly covered: 90% of the risk lies in just 10% of homes, many of which are uninsured. A targeted approach, like the **Flood Resilience Certification (FRC)** can help protect these properties through incentives and upgrades.
3. **Policy and incentives drive real change.** Case studies show that cities made the most progress when flood protection was supported by financial incentives or building code requirements.

Recommendations

FloodSmart

The team developed a 2-part strategy to help Aviva Canada and city planners shift from reactive payouts to proactive protection.

1. Flood Resilience Certification (FRC)

Certified homeowners receive insurance discounts, tax breaks, increased property value, and low-interest loans. The process:

1. Homeowners assess floodrisk
2. Complete home upgrades
3. Earn certification

Gold | Silver | Bronze

Participants earn Bronze, Silver, or Gold status based on the level of upgrades completed.

2. Advanced Flood Modeling

The team proposes an enhanced flood modeling tool using hyperspectral and multispectral satellite imagery, to track signals, enabling:

- Early detection
- Smarter Planning
- Fairer Insurance

Next steps?

The team's limited access to high-resolution hyperspectral data, along with institutional hesitation to adopt new technologies, highlights the need for improved datasets and on-the-ground validation.

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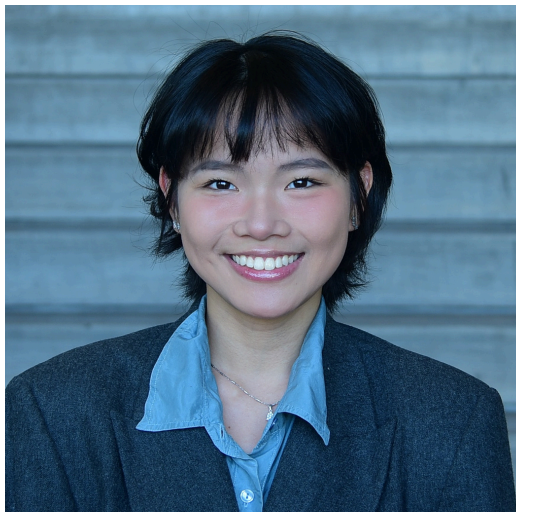
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