

Summary:

The discussions in the CAP workshop on Jan 14, 2025 revealed several interconnected challenges and opportunities in flood data management and planning, grouped into three overarching themes: data gaps and usability, institutional barriers and coordination, and equity and capacity considerations.

1. Data Gaps and Usability: Participants frequently emphasized the absence of accessible, actionable flood data as a major barrier to effective planning. Key issues include outdated or uncalibrated flood models, insufficient real-time data, and a lack of future-focused tools like IDF curves that integrate climate change projections. The discussion highlighted a need for GIS platforms that are user-friendly and capable of overlaying granular data such as socio-economic factors and detailed flood risks.

2. Institutional Barriers and Coordination: Participants echoed concerns about institutional silos and limited cross-departmental collaboration, which hinder the effective use of flood data. Participants reported that silos, differing priorities, and limited regional coordination undermine efforts to create cohesive flood management strategies. Funding was a particularly pervasive challenge, with many municipalities allocating less than 2% of their budgets to flood mapping and data initiatives. The discussion identified a need for data-sharing platforms and frameworks to align efforts between upper-tier and lower-tier municipalities, as well as with external agencies.

3. Equity and Capacity Considerations: Many participants stressed that current flood planning does not adequately account for vulnerable populations, such as rural residents or socio-economically disadvantaged communities. While some municipalities are working with non-profits or using GIS tools to map priority populations, many acknowledge that equity remains a low political priority. Staff capacity was also a shared concern, with municipalities expressing the need for additional training, expertise, and clear methodologies to integrate equity considerations into decision-making effectively.

In summary, the workshop identified the need for user-focused tools, stronger inter-municipal coordination, and a cultural shift toward prioritizing equity in flood planning. Addressing these shared challenges will require not only investments in technology and funding but also a collaborative commitment to breaking down silos and building capacity across municipalities.

Details of Discussion Summary

Breakout #2 Challenges

1. Significant Data and Information Gaps

Participants identified critical data limitations that affect their ability to predict, prepare for, and mitigate flood risks in the GTA. Specific gaps include:

- **Uncalibrated and outdated flood models:**
 - *"Flood models were developed for land use planning and hence too conservative to consider for improving municipal infrastructure resilience like roads and bridges. Using flood plain information without calibration will result in huge unrealistic investments."*
 - A lack of real-time calibration with updated data makes models less effective.
- **Future IDF curves with climate considerations:**
 - There is a pressing need for IDF (Intensity-Duration-Frequency) curves that incorporate climate change projections. The absence of such tools restricts long-term planning.
- **Database issues:**
 - *"Databases for historical flood records are not linked to real-time models."* This disconnect limits proactive decision-making.
 - The lack of cross-organizational understanding of flooding risks and outcomes hampers collaboration.

2. Institutional Capacity Barriers

The institutional challenges revolve around capacity constraints and organizational silos, which hinder effective flood data use. Key points include:

- **Siloed departments with differing priorities:**
 - *"Siloed departments with differing priorities"*
 - *"Causes of flooding differ and are dealt with under different portfolios - planning departments dealing with storm risks vs. public works departments dealing with flooding due to water/wastewater infrastructure."*
 - Departments work in isolation, which leads to fragmented responses.
 - Provincial changes have limited the capacity/narrowed the scope of conservation authorities
- **Limited staff, visibility, and resources:**
 - The lack of trained water resource engineers and gaps in long-term funding undermine efforts to integrate flood data into planning and policy.
 - Legal concerns, uncertainties, and lack of precedent around sharing flood data publicly
- **Mapping barriers:**
 - *"Mapping doesn't include the full suite of socio-economic risks."*

- Equity considerations are often not accounted for

3. What aspect of the flood data challenge is most critical for your organization: the lack of available data, difficulties in accessing it, or challenges in making it usable for decision-making?

Examples included:

- **Data usability:**
 - *"Making flood data useable requires converting it into formats for model input."*
- **Rural data gaps:**
 - *"There is a lack of available data in rural areas,"* which significantly affects equitable flood mitigation efforts.
- **Uncalibrated model usage:**
 - *"Challenges in using uncalibrated models for watercourse structure sizing create risks for design accuracy."*

4. Operational Impacts of Challenges

Participants shared how current challenges affect day-to-day operations and decision-making:

- **Emergency response planning:**
 - Delayed responses result from insufficient real-time data integration.
- **Infrastructure design:**
 - *"Official plan to build resilient infrastructure"*
 - Projects remain in the assessment phase as organizations struggle to justify risks with available data.

Breakout #3: Flood Data and Resource Needs

1. Monetary and Non-Monetary Resources Required

Participants discussed the financial and organizational support needed to leverage flood information effectively in municipal planning. Key needs include:

- **Funding Gaps:**
 - *"No funding to complete mapping or make it a priority."*
 - Municipalities noted that only a small percentage of their budgets (less than 2%) is allocated to flood mapping.
 - *"Not a priority for our municipality since primarily a rural area and the cost of gathering this data so far outweighs the perceived benefit,"* especially in rural areas.
- **Collaborative Platforms:**

- The need for “*regional coordination among upper/lower tiers and conservation authorities*” to enhance data-sharing and planning.
- A focus on “*staff, data-sharing platforms, and working groups to coordinate efforts*” was highlighted.
- **Training and Expertise:**
 - Investments in training staff on “*up-to-date resources and equity frameworks for decision-making.*”
 - The importance of “*dedicated staff to carry out watershed planning at the municipal level*” was emphasized.

2. Characteristics of Usable Flood Data

Participants outlined what ideal, actionable flood data should look like:

- **Integrated Mapping Tools:**
 - “*GIS mapping that is easy to use,*” and allows overlays with additional data layers.
 - Mapping should show granular details, such as “*what floods first*” and the potential loss scenarios for both the short and long term.
- **Formats and Accessibility:**
 - Data must be uploadable into existing models, and platforms should provide accessible views for all stakeholders.
 - “*Accompanying illustrations, graphs, and visualizations*” were recommended to support decision-making.

3. Additional Resources to Support Flood Risk Planning

Beyond usable data, other resources identified as critical included:

- **Documentation and Knowledge Sharing:**
 - “*Clearer documentation on methodology*” to ensure consistency in decision-making processes.
 - “*Lists of best practices and case studies*” to guide municipalities in applying diverse data types effectively.
- **Community Involvement:**
 - Leveraging “*indigenous knowledge about water and floods*” to inform planning.
 - “*Building relationships with cultural groups and community organizations*” for equity-focused risk assessments.
- **Network of Experts:**
 - Participants proposed creating “*municipal workgroups or networks of flood risk experts*” to facilitate collaborative problem-solving.

4. Integrating Equity Considerations

Participants reflected on their current capacities to address equity in flood planning:

- **Existing Initiatives:**
 - *“We do it where we can, working with Public Works, Sustainability, Public Health, and Social Services.”*
 - Some municipalities are integrating socio-economic data to identify vulnerable populations.

- **Barriers:**
 - For many, equity is *“not a political priority at this point.”*
 - The lack of *“information about flood-vulnerable communities”* (e.g., socio-economic data) remains a significant gap.
 - There’s a need to *“leverage non-profits or community organizations to build capacity for addressing vulnerable populations.”*

Final reflection exercise

Key insights from the workshop:

- More clarity is required around the roles and responsibilities of different departments, and the staff within those departments, as well as how these interact
- Communications around flood risk is key – there is a need to focus not just on the data, but the communication and usability of that data
- More coordination and better communication is needed between organizations working on similar goals

Key actions:

- Facilitate more cross-organizational knowledge-sharing
- Improve documentation of ongoing work

Key characteristics of an ideal flood information ecosystem:

- Availability of good and usable data
- Data accuracy and calibration
- Guidance on how to apply and use data effectively
- Incorporation of equity considerations and socio-economic risks

In closing, the workshop was a glimpse into the much broader and complex suite of ecosystem challenges faced by municipalities across Southern Ontario in accessing and applying flood data to risk assessments and planning, as well as the resources participants would need to do this effectively. This is an excellent first step in garnering the information that researchers and practitioners need in order to be able to move towards a more ideal flood information ecosystem that serves the needs, priorities, and ambitions of municipalities. We hope to keep the conversation going via one-on-one interviews to delve deeper into each of the insights we uncovered during this workshop.