Municipal Assessments

Urban Forestry and Stormwater Management Plans

Clean Air Partnership

Our Research Questions

Who are the **leading municipalities** integrating **climate change** into municipal **plans?**

What **differentiates** an urban forestry/stormwater plan that **incorporates climate change** from one **that doesn't?**

Project Goals & Overview

What makes official plans that incorporate climate change different from those that do not?

Plan Analysis

Analysis of Ontario municipalities' urban forestry and stormwater plans

Interviews

Ask staff from leading municipalities about points of interest in their plans

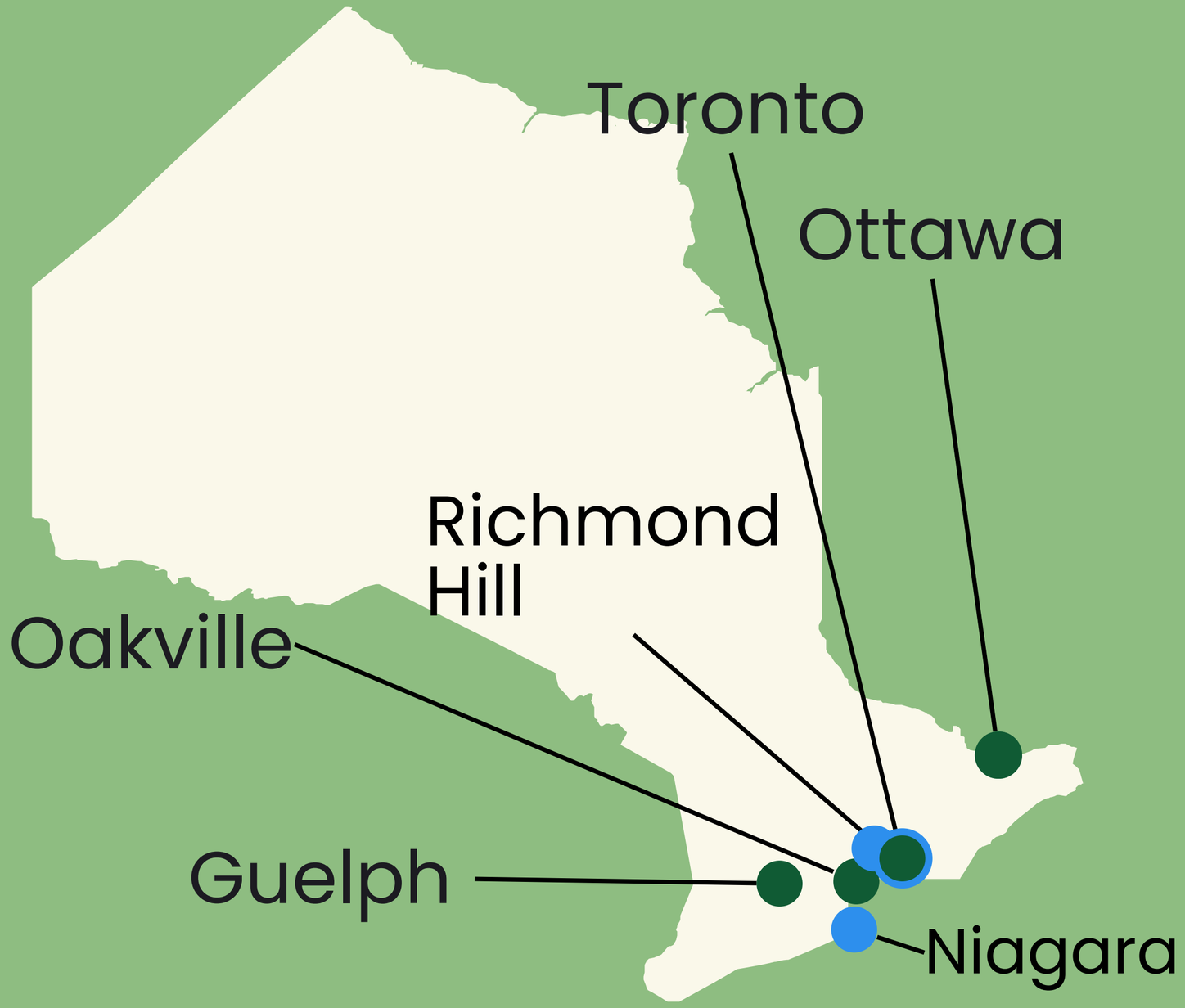
Primers

Synthesized findings into primers - comparisons, leading practices, and examples

Municipalities

- Urban Forestry
- Stormwater

- Toronto and Region Conservation Authourity (TRCA)
- Credit Valley Conservation Authority (CVC)



Urban Forestry Team

Alyssa + Casper + Kiana + Megan

Current Practices
Urban Forestry

Natural Capital Valuation:
Assessing the monetary value of various natural assets

- Many resources required
- Various tools can be used to help

Ajax's Urban Forest Study

- Monetary values derived from **i-Tree:**
  - Structural value of all trees: $363 million
  - Air pollution removal: $798,300
  - Stormwater benefits: $536,000
  - Energy Savings: $501,700
  - Carbon Sequestration: $570,000
  - Carbon Storage: $22.1 million
- These values helped **set a direction** for goals

Current Practices
Urban Forestry

Urban Heat Islands

- Addressing **urban heat islands** through urban forestry -> creating resiliency against more frequent extreme heat events
- Strategic tree planting locations identifies **high-risk areas** through prioritization index (Guelph-Peel)
- Acknowledge the importance of **canopy cover**

Urban Canopy Cover

- Targets for expansion specific to public and private land
- Asses current coverage -> set goals -> create maintenance recommendations
- **30-40% coverage** -> alliance with USDA recommendation based on urban forestry capacity for carbon sequestration

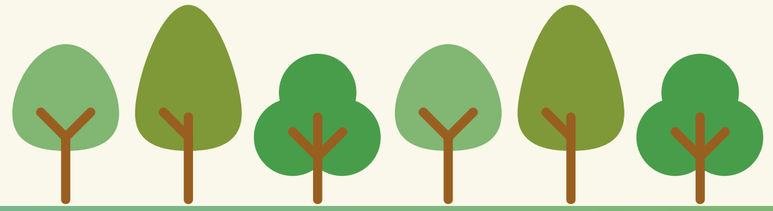
Leading Practices
Urban Forestry

Include evidence-based analysis in the target-setting process to avoid establishing unattainable goals.

Place equal importance on both the construction and maintenance of the canopy.

Integrate trees into asset management planning to ensure recognition of their value as a natural capital asset.

Adapting Urban Forestry Plans to a Changing Climate



1

Identify frequency, type, and impact of risk to the region

Hazard Identification & Risk Assessment

2

Opportunity Gap Analysis

Understand the current tree selection process and conduct valuation of natural assets

3

Analyze the impact of extreme weather events and increased flooding on tree resilience

Watershed Integration

4

Strategy Development

Set a vision statement, identify trends. and connect data from previous actions to set targets

5

Who will take action and when? Engage with the community to achieve targets

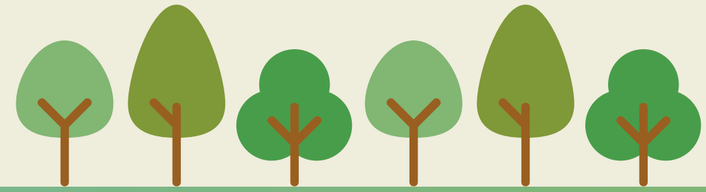
Implementation

6

Monitor & Maintain

How will you know when the desired outcome is achieved? Monitor results of planting initiatives

Resource Toolbox



Tree Selection & Planting

- Planting Tree Species Selection Tool - Richmond Hill
- Tree Planting Prioritization Index - Peel Region
- Actions to Affirm Toronto's Tree Canopy Target
- Putting Down Roots for the Future - Ottawa

Natural Capital Valuation

- Municipal Natural Capital Valuation - CAP
- Natural Asset Carbon Assessment Guide - CVC, TRCA, LSRCA
- Nature-based Climate Solutions Siting Tool - TRCA
- Integrated Valuation of Ecosystem Services and Tradeoffs (InVest) - Stanford University

UFMP Climate Integration

- Integrating Climate Change into Municipal Official Plans - CAP
- Adapting Forestry Programs to Climate Change - LSRCA
- UFMP Toolkit for Climate Resilience - USDA
- Durham Region's Climate Change Analysis

Stormwater Team

Cathy + Chelsea + Grace + Malika

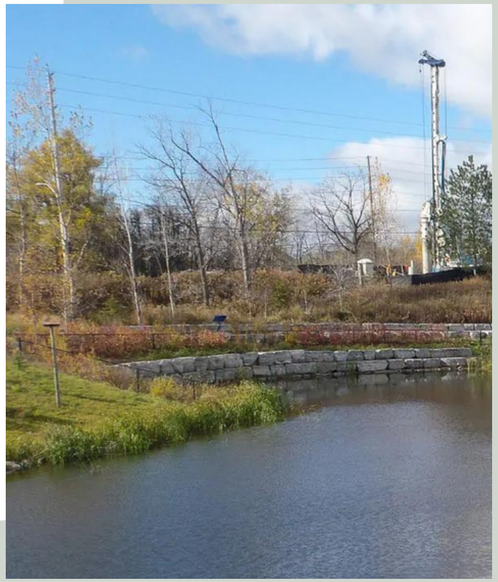
Current Practices
Stormwater

Low-Impact Development Practices

- Reduce impacts of SW at the source
- Minimize environmental damage
- Lower volume of runoff

Green & grey infrastructure

- Green: retention ponds, grass cover, etc
- Grey: constructed means of managing water
- Combine both



Current Practices
Stormwater

Infrastrucuture Design Integration

Example:
Adapt **intensity duration frequency (IDF)** curves to climate change scenarios when designing SWM infrastructure

Address Multifaceted Impacts

Examples of climate change impacts:

- Infrastructure construction can affect habitats
- SWM projects can enhance water quality
- Extreme weather can damage SWM infrastructure

Collaboration Opportunities

- Boundaries of **watersheds extend beyond** municipal borders

- Collaboration opportunities include:
  - *Information, resource &* ***connection sharing***
  - *Project-specific cooperation*
  - *Working with* ***local conservation authorities & Indigenous communities***

Leading Practices
Stormwater

Green Infrastructure

- Green Development Standard framework (**GDS**)
- **Diversify infrastructure**, advocate for commercial use

Low Impact Development

- Prioritize **LID** to maximize environmental protection
- Resilient design: combination w/ **best management practices**

Policy Mirroring

- **Sharing data** and strategies
- Wider adoption of successful policies

Climate Modelling

- Collect **climate data** to create a model for future conditions
    - Adaptation to predicted results (**IDF** curves)

Resource Toolbox

Tree Preservation (TRCA)

- Preserving existing trees for water absorption
- Planning around tree clusters

Region Climate Model (Durham)

- Collaboration with TRCA
- Projected trends show what to be prepared for

Stormwater Ponds (Saskatoon)

- Retention ponds with recreational use
- Potential model for Niagara Region

Adapting Stormwater Management Plans to a Changing Climate

1

Environmental assessment, estimation of LID resources

Assess potential environmental impacts

2

Develop strategies

Reevaluate current SW retention targets

3

Collaboration between municipalities, policy mirroring

Implementation

4

Impact Assessment

Feedback from workshops, engagement in provincial impact assessments

Limitations

- Lack of specialist & industry knowledge
- Focused on select Ontario municipalities
- Interview-based information may introduce biases

Recommendations for Future Research

- Include international research
  - Look at U.S. municipalities, collaboration & learnings
- Potential for cross-sectional investigation
  - Overlap between UF & SWM
  - Intersections between UF/SWM and other municipal plans
- Collaborating with community members & marginalized groups

Thank You!

Note: references listed in the primers