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RESEARCH & INNOVATION CENTRE




# Mapping the Urban Tree Value-chain

## Qualitative Interviews of the Ontario Industry

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## Objective

The objective of this project was to describe and depict the Canadian Urban Tree Value-chain to enable sector wide understanding, identify opportunities and challenges, facilitate communication and enable growth through investment in research to create value for the entire sector. We approached this by completing a case study in Ontario as an illustrative example.

For the purposes of this project, a value-chain is defined as all the activities required to create a product from start to finish. In the case of the Canadian Urban Tree Value-chain, this involved understanding all actor groups and activities surrounding tree planting in cities.

## Approach

In order to gain a preliminary understanding of the Canadian Urban Tree Value-chain, 20 qualitative interviews were conducted with members of different actor groups. Actor groups were identified through lists provided by collaborators as well as industry experts. Snowball sampling, in which current participants identify potential participants, was used to discover important actors outside the original list. Interviews were completed by actor group so that information from one group could be verified by another group. The order in which actor groups were interviewed was determined by their proximity to what was preliminarily identified as being the "middle" of the chain. The interviews started with those on the "outskirts" (growers and municipalities) and worked their way towards the centre. This order was used to ensure major actor groups were not missed. Table 1 displays the number of interviews conducted within each group. Interviews were about an hour in length. Each interview consisted of a set of standardized questions as well as questions specifically tailored to each group. The information from these interviews was used to:

1. Define and depict the value-chain
2. Identify Gaps/Challenges/Opportunities

A summary of the results for each group are discussed below

**Table 1. Interviews conducted for each role in the value-chain.**

| Value-chain Members (actor groups) | No. of interviews completed |
|---|---|
| Municipality | 5 |
| Nursery | 3 |
| Consultant | 3 |
| Soil Supplier | 2 |
| Contractor | 2 |

| | |
|---|---|
| Landscape Architect | 2 |
| NGO | 1 |
| Developer | 1 |
| Conservation Authority | 1 |
| Grand Total | 20 |

# Municipalities

## Overview

A total of five municipalities were interviewed to better understand their role in urban tree planting. Three were classified as large municipalities, with populations greater than 500,000, one medium (500,000 – 150,000) and one small (less than 150,000). The targets, specifications and planting plans laid out by municipalities impact all members of the value-chain.

### Targets & Specifications

All but small municipalities have an urban forest management plan (UFMP) or equivalent that is used to guide tree planting and set planting targets. Generally, the target set in the UFMP references 30-40% canopy cover over roughly 20-30 years, with annual planting targets to achieve this larger goal, based on fiscal budget.

Planting specifications are generally written internally by larger municipalities. Many of the municipalities interviewed referenced the Ontario Landscape Tree Planning Guide for best practices and used the resources provided by the consulting firm Urban Forest Innovations Inc. to develop their forest management plans.

### Planting

Tree planting occurs by many methods depending on land type but relies on contracted plantings, own forces (with volunteers), conservation authorities and NGO's. The process by which contractors will gain a contract with the city involves pre-qualification (screening candidates to ensure they have the resources and experience necessary to successfully carry out the contract) and open-bidding (where the application process is open to the public). Most municipalities are required to award the contract to the lowest bidder (lowest bid system).

## Indicators of success

- More communication with growers
    - Strengthen the relationship between growers and municipalities
- Ability to forecast planting and procuring needs
- Diverse canopy cover, with % tree survival rates after 3 years
    - Native trees species being a particular focus

- Public support through resident satisfaction and investment in planting
    - Resident placing value on planting and view as an asset and an investment into their community
- Investment in green technology and infrastructure

# Nurseries

## Overview

Interviews were conducted with three nurseries located in Southern Ontario. These nurseries are suppliers of products to the municipalities either directly or indirectly. For the nurseries interviewed, caliper trees made up about 50% of sales, with the rest consisting of flowering shrubs, perennials and small trees. All nurseries had diverse revenue streams, but the largest percentage of sales were to general landscape contractors, followed by municipalities and conservation authorities.

## Challenges

**Need to better be able to forecast demand**

- Several nurseries mentioned that to meet the diversity (including native species) and volume requirements for a project they often needed to outsource growing or work as a broker because they do not have the space or time needed to grow the trees themselves.
- The ability to forecast would allow growers the option of growing more trees themselves or contracting out growing at a better rate, ultimately putting them in a better position to meet the requirements of the contract.

**Species Selection**

- Landscape architects (LA) drive the trends and influence tree lists.
    - More communication between LA and nursery: plans should be based on tree type that are suited to the environment, and consideration of the time of year it will be planted.
    - More resources need to be available for LA to make informed planting decisions.

## Indicators of success

- Trees that survive to maturity
- Ability to forecast demand: 3-5 years notice on what to grow or next 20 years' tree list
- Nurseries have greater influence on LA species selection and planting specification

# Consultants

## Overview

Three consultant firms were interviewed to better understand their central role in the urban tree value-chain. Generally, consulting firms are hired by municipalities or developers for

their specific skillset. For example, the consultant firms interviewed specialized in preparing arborist reports, creating planting specifications, best practice documents and providing legal advice.

## Challenges

**Finding Quality Tree Stock & Enforcement**

- Working within the lowest bid system can make it difficult to source quality stock, as the budget for trees is limited.
- Often trees are not inspected before they are planted and maintenance is not enforced.

**Tree Survival Rates**

- Lack of historical information on tree survival rates prevent accurate forecasting.
- Documented longer-term tree survival rates would help with new policy adoption.

**Break in communication between information available and implementation**

- Due to the transient and seasonal nature of the workforce, landscape contractors are not always given the training needed to carry out contracts.
- A lack of timely communication between landscape contractors and consultants also contributes to the disconnect between the information available and implementation.

## Indicators of success

- Municipalities establishing long term growing contracts. Inspect stock before it is planted, and enforce maintenance by contractors (quality & survival improvements).
- Standardize planting framework across all municipalities for greater success (similar to building codes).
- Landscape contractors to be empowered to make informed choices (reduce information-implementation gap).
- Consideration of the economic investment by the entire value-chain

*"From an economist's standpoint, once you see all the actors involved and all the money going into it, that should be motivating to make sure tree plantings are successful and provide a good return on investment.*

*It would never be acceptable for grey infrastructure to fail, so it shouldn't be acceptable for trees not to establish and grow to their design size."*

# Soil Supplier

## Overview

Two soil supply companies were interviewed. The largest percentage of sales for come from landscape contractors who are purchasing for either commercial, residential or municipal clients.

## Challenges

**Communication and better education for other members of value-chain on soil**

- Often soil specifications are outdated or unrealistic
- Little understanding on how to interpret soil analysis results and implication for plant species selection to match the site specifications

**Investment in innovation to support business growth and opportunities for soil re-use**

- Processing equipment specifically for soil
- Policy regarding soil salvage and re-use

## Indicators of success

- Evidence based soil solutions (grants for processing equipment, guidelines)
- Meaningful dialogue with members of the value-chain. Time for landscape contractors, municipalities and consultants to ask questions and go back-and forth.
- Input in the soil specifications for planting.
- Sustainability (less soil to landfills), focus on soil salvage and re-use.

# Landscape Contractor

## Overview

Two landscape contractors were interviewed. These contractors mainly dealt with municipalities but also worked with developers and conservations authorities.

## Challenges

**Lack of communication with landscape architects**

- Need more discussion around species selection and substitutions.

**Maintenance work isn't defined/established in the tender document**

- Itemized to specify exactly what is expected

**Education is not always available to project leads**

- Need more education and access to resources so they can make informed decisions on site when problems arise.

## Indicators of success

- More sustainable practices, including a greater use of green infrastructure
- Maintenance specification and budget in tender document and contracts
- Better soil specification resources
- Better employee training resources for those on the ground
- Increased communication and input into Landscape Architect plans

# Landscape Architect

## Overview

Two landscape Architects were interviewed, both work on municipal and commercial projects. Both developed their own soil and planting specifications using a combination of resources available (like the Canadian National Landscape Standard) and their expertise in the field.

## Challenges

**Canadian National Landscape Standard needs to be updated to:**

Include better guidance on soils which would allow for more standardized practices across contracts

**Tight timelines and pressures to complete the project**

- Soil analysis results not received in time to amend for site
- Need earlier and more frequent communication with developers and contractors

## Indicators of success

- More value placed on green infrastructure design and specifications
- Better soil specification in tender documents
- Soil analysis and inspection happening with time to implement amendments
- More communication with contractors and growers on project plans and implementation

# Developer

## Overview

Developers work with municipalities to meet their specifications and hire the required consultants and contractors to complete a project. When completing a residential project, trees are usually planted in a 1:1 ratio with houses built. When the project is commercial, there is more emphasis on landscape features, like shrubs, bushes and transitions.

## Challenges

**Requirement to provide high quality plantings**

- Quality stock, diversity and instant canopy
- Maintenance budget (Landscape Contractor is responsible)

## Indicators of Success

- Environmentally responsible (e.g. renewable energy, green roofs etc.) and collaborative development

# Non-Government Organization (NGO)

## Overview

One NGO was interviewed. The NGO received most of their funding from municipalities and government grants.

## Challenges

**Need sustainable funding sources and champions to support them**

**Trying to move away from landscape contractor role**

- Focus on education, arborist services and policy development

## Indicators of success

- Committed government funding for urban tree planting initiatives
- Working with municipalities to implement and expand green infrastructure

# Conservation Authority

## Overview

Any planting near a waterway falls under the discretion of the Conservation Authority. Conservation authorities purchase their own trees from wholesale nurseries, and do their own planting (with volunteers). They are sometimes contacted by other entities like developers to do their planting for them.

## Indicators of success

- % forest coverage
- Private land owners engaged in the conservation process

## Interview Summary

Three common themes emerged: Communication, Education and Planning (See Figure 1). Communication being the central theme, with breakdowns in communication impacting both education and planning.

## The value-chain

Before conducting interviews, a preliminary version of the value-chain  was created. This value-chain  was shown to all participants during the interviews as a starting point for discussion (Figure 2).

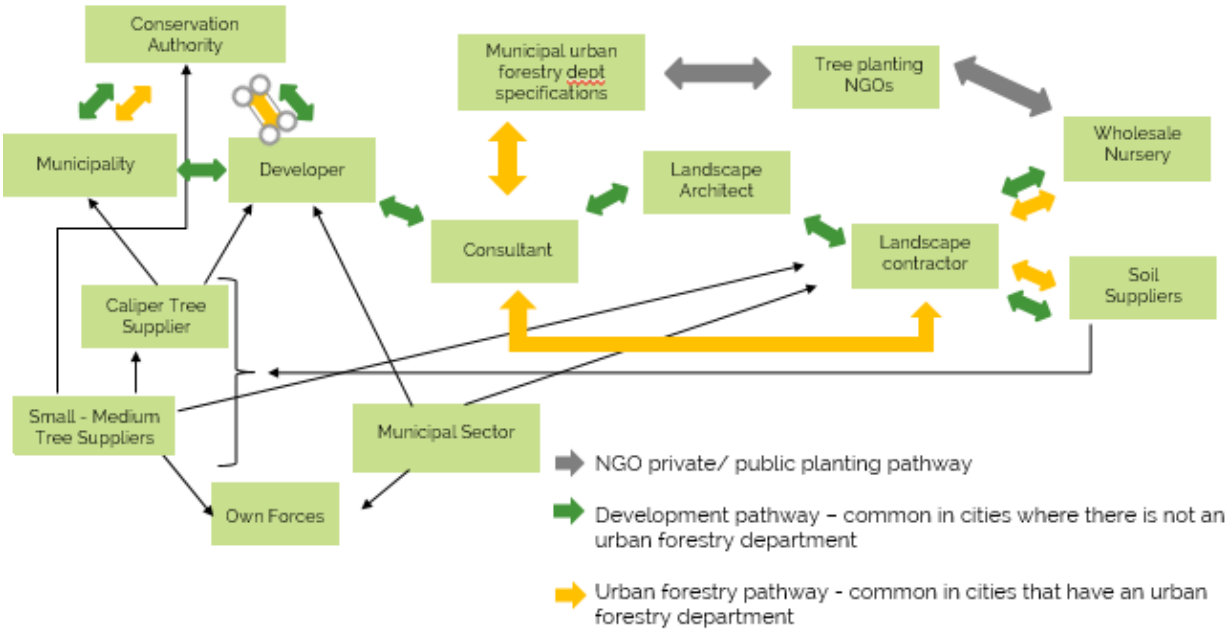


**Figure 2. Urban Tree Planting Value-chain Version 1**

Based on those discussions the value-chain was modified to reflect the value-chain as perceived by its members.

Two value-chain s emerged: one based on the flow of products (Figure 3) and one based on the flow of knowledge and communication (Figure 4). This separation was necessary as the flow of products and knowledge do not always follow the same route. Furthermore, communication is a central issue that many members identified as needing improvement. Therefore, it was important to separate the communication chain from the product chain in order to identify areas for improvement. Unsurprisingly, there were many more connections in the communication chain than there were in the products chain. Due to the number of connections and their bi-directionality it can be helpful to think of the communication chain as an ecosystem: a complex and inter-dependent set of connections.


**Figure 3. Urban Tree Planting Value-chain: Flow of Products**

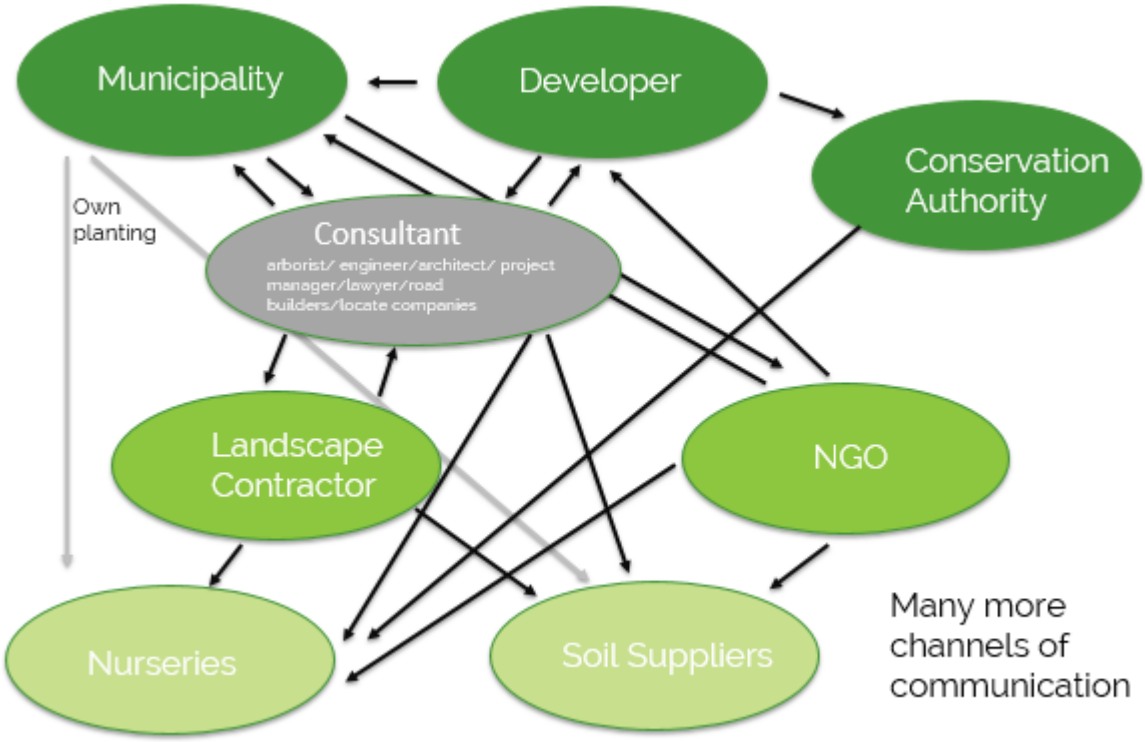


**Figure 4. Urban Tree Planting Value-chain: Flow of Knowledge**

Based on the feedback from the workshop a new value-chain emerged (Figure 5) which recombined the two chains (flow of products and flow of communication) but separated out the actions involved in tree planting and tree maintenance. This change was made to reframe the value-chain and emphasise what is necessary for successful tree establishment, as these two streams require different inputs from members of the value-chain. The final product can be seen below, with different arrows indicating different types of communication between members. This new configuration allows direct comparison between the actors in the tree planting and tree maintenance chain and allows for breakdowns in each chain to be examined though a communication lens. These breakdowns can be seen as opportunities to grow and strengthen the sector, and come with their own unique challenges.

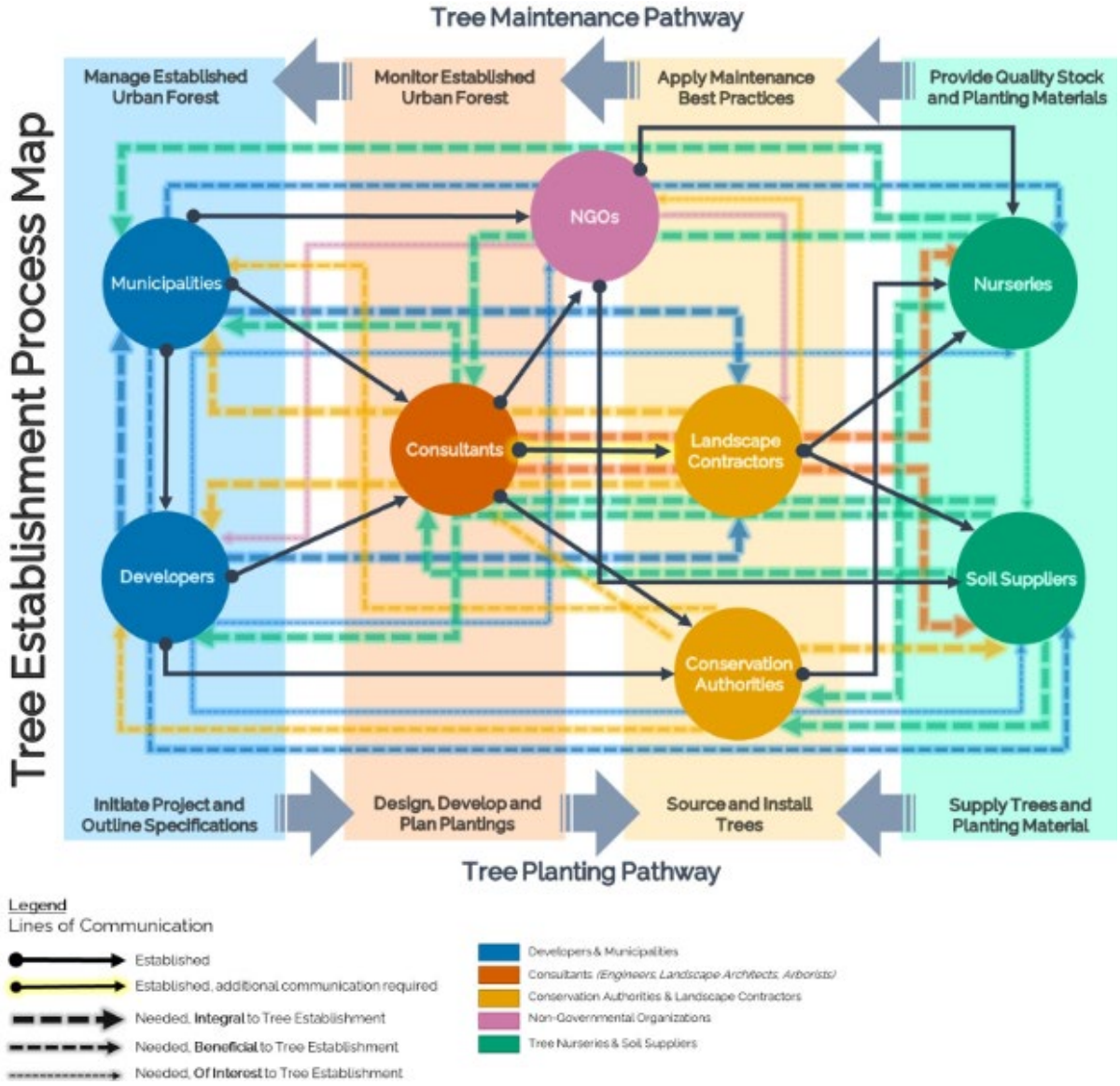


**Figure 5. Urban Tree Planting Value-chain: Based on Ontario Case Example**

## Opportunities, Challenges

By examining how information and products flow through the value-chain several opportunities and challenges were identified (Figure 6). Opportunities focus on strengthening communication with the goal of improving relationships and education across the value-chain as well as increasing planning capabilities. Challenges include the time and means needed to build the supporting infrastructure and resources for effective communication.

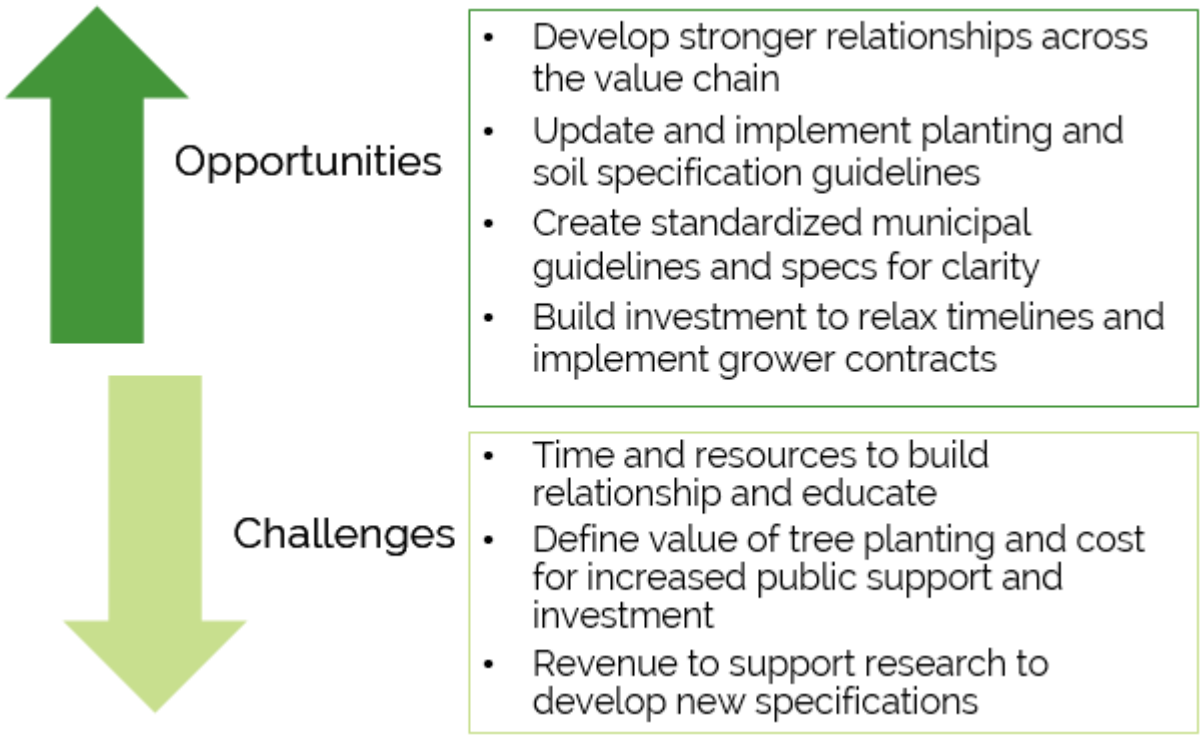


**Figure 6. Challenges and Opportunities for the Urban Tree Planting Sector**

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