Understanding Cities as Systems: Making a Case for Foresight

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Abstract

This paper explores understanding the city as a system and the current climate in using foresight. To achieve this, the study engaged several staff and external consultants to understand their current approaches and challenges in the use of futures tools and implementing strategic foresight. The findings suggest that cities are at various levels of maturity and readiness to adopt strategic foresight, let alone futures thinking and various methods. This paper puts forward a series of recommendations, inviting cities to explore futures thinking as part of their strategic and operational planning and service delivery.

Keywords: Cities, Canada, Municipalities, Systems Thinking, Actors, Systems Map, Causal Layered Analysis, Iterative Inquiry, Intervention Strategy, Foresight, Futures, Futures Thinking, Strategic Foresight

Gratitude

For anyone that needs a reminder to embrace the nonlinear process and the good things that come when you remove the self prescribed fear based guardrails and replace it with courage. This MRP is a love letter to cities and the messy system that they are, to the people that live, work and play in them and to the people who are responsible in stewarding cities by election, appointment or hiring to be livable, affordable, vibrant and resilient for future generations to come.

Thank you to my family for your encouragement and support to go back to school. To my advisor Helen Kerr for your thoughtful questions and gentle nudges to ask questions differently. And to my SFI cohort, I am thankful for all of it - from starting at the Waterfront campus, Thursday hangouts at Chef's Hall and the friendships and bonds created.

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Introduction & Rationale

Context

What are the defining features of a city? Depending on who you ask, different responses will be provided. Cities can be intrinsically linked to culture, and where there is a strategic function to the wider community, and it's seen as having importance as a civilizing force besides its part in facilitating the market (Paddison, 2001). While Jan Gehl describes “A good city is like a good party - people stay longer than really necessary because they are enjoying themselves” (Power, 2023). In 2020, the UN Habitat proposes a global unified description of a city. The study landed on two working definitions, the first has cities defined by its urban extent (built-up and urbanized open space) and the second by its degree of urbanization (DEGURBA). Project for Public Spaces (n.d.) highlights how Jane Jacobs saw cities as being "organic, spontaneous, and untidy," and views the intermingling of city uses and users as crucial to economic and urban development.

In the Canadian context a census metropolitan area (CMA) is formed by one or more adjacent municipalities centred on a population centre (known as the core). A CMA must have a total population of at least 100,000, based on data from the current Census of Population Program, of which 50,000 or more must live in the core based on adjusted data from the previous Census of Population Program (Statistics Canada, 2022). As of July 2023, over 74% of people in Canada live in CMAs and each of the six CMAs with a population of over one million (Calgary, Edmonton, Vancouver, Toronto, Montreal, and Ottawa-Gatineau) experienced their fastest growth since 2001/2002 (Statistics Canada, 2024).

Cities are facing unique challenges, and adaptability and readiness have never been more important than they are now. Infrastructure deterioration (from libraries, to public transit, pipes and sewers) are in dire need of upkeep and repair. Over the next 10 years Toronto is said to need 26 billion to keep infrastructure in its current condition (Spurr, 2024). Many cities also face serious challenges such as increased demand for access to services, extreme weather events, other aging physical infrastructure, revenue generation constraints, affordability and housing supply shortages. These challenges are evident in city priorities across Canada, influencing strategic planning, operating budgets, and future projections. Notably, they are increasingly driving some cities to explore and adopt futures thinking and by extension strategic foresight methodologies as a way to step up and face these emerging challenges.

Strategic foresight within Canada’s federal government is relatively well-established and measurable, particularly through the institutionalization of foresight practices in organizations like Policy Horizons Canada. However, at the municipal level, the application of strategic foresight remains limited in terms of coordination, exploration, documentation, and comparative analysis. Despite this gap, literature review and participants reveal there is a growing consensus among Canadian cities on the importance of becoming more anticipatory, future-proof, and future-ready—a recognition of the need to address local challenges and opportunities with a forward-looking approach. Evergreen Canada’s work on creating Future Cities Canada is important groundwork and foundation for this approach. Beginning in 2015 a project formed

called We Are Cities Action Agenda, which asked citizens to expressively collect the kinds of cities they want. In 2018 the TD Future Cities Centre opened followed by various summits and reports.

For strategic foresight to be considered a core government capability, it requires embedding the capacity to systematically anticipate, prepare for, and shape future developments into the very fabric of government operations. This involves integrating foresight methodologies into decision-making processes, policy development, and organizational culture.

Research Purpose

Cities are often short-sighted, responding to urgent and present day needs, all while collecting data on future projections and trends. The purpose of this research project is to ground cities in their systemic nature and the challenges and complexity they face while making a case for the value of adopting longer term thinking to make decisions today to positively impact the future. “Traditional planning tools and methods rely on the past and current factors, whereas futures and foresight methods embrace uncertainty and encourage the analysis and consideration or a range of future possibilities to inform decision-making and public policy” (OECD-OPSI, n.d.). This project seeks to better understand the current challenges and opportunities faced by cities in their efforts to embed futures thinking.

This research study investigates the primary research question: How might we enable cities to be ready to adopt a foresight-infused strategy to enhance their service delivery in the face of future challenges? In addition, secondary research questions explore topics relating to governance structures and leadership, values, organizational readiness and case studies and best practices that may impact this change.

As research evolved the research question has become **How can cities be understood as complex systems in order to identify key leverage points for enabling the integration of foresight in cities?**

The approach of this research is to first understand the city as a system and to report where the gaps or needs are. The intention is to analyze cities as organizations and describe the barriers that are preventing a more fulsome approach to futures thinking from surfacing. It begins to articulate where transformative change is most likely to be effective by highlighting the system’s leverage points.

This inquiry is relevant because it addresses the need for cities to proactively manage uncertainties and disruptions. By integrating foresight, cities can improve their strategic planning, build resilience against future shocks, and position themselves as leaders in urban innovation. This approach not only supports better decision-making but also aligns with the growing demand for adaptable forward-thinking in an ever-changing world.

Research Methodology and Approach

A series of research methods and approaches were applied throughout this research project. Phase 1 involved a literature review to explore the problem space, Phase 2 included secondary

and primary research through interviews with city workers and practitioners to understand the current state. Phase 3 includes further secondary and primary research to explore how futures may be applied by examining leverage points.

Literature Review: Literature explored ranged from academic journals, grey literature (including podcasts) and professional reports published by research centres or membership based organizations representing municipalities that provided a way to better understand and map out cities and their functions.

Systems Thinking Tools and Frameworks: All tools and frameworks were initially informed by secondary research and later were adapted with insights from the interviews conducted where applicable and appropriate. Systems Tools included; Actors Map, Iterative Inquiry, Systems Map, Stakeholder Matrix, Causal Layered Analysis (CLA), and Intervention Strategy. The Actors Map was created to identify key individuals that interact with the system. The Iterative Inquiry involved framing how foresight is used in cities and assisted in understanding where the functions, structures and processes fall short. A Stakeholder Matrix consisting of key stakeholders was created to understand how the hierarchy of their needs is impacted when power and influence is added into the equation. Causal Layered Analysis enables a systemic exploration of the multiple layers that influence how a city operates and how it negotiates, resists, or adapts to emerging futures and changing conditions. The Intervention Strategy outlines opportunities to intervene in the system from lowest to highest impact or least to most complicated.

Futures Tools and Frameworks: Employed throughout the research study, individual futures tools like Horizon Scanning were used to support the broader research topic and answer the research question. Horizon Scanning is a systematic process of detecting and monitoring signals, trends and emerging issues that may impact the future and was undertaken to better understand how cities are engaging with foresight and futures practices.

Interviews With Practitioners and City Staff: Through interviews with practitioners and city staff I further gained an understanding of the appetite for futures thinking, and the barriers in including this mindset and various foresight tools. Affinity mapping was used cluster themes to draw findings and insights. Findings and insights have been embedded throughout the research and are not in one specific section.

Understanding Cities as Systems

“A system is any group of interacting, interrelated, or interdependent parts that form a complex and unified whole that has a specific purpose. The key thing to remember is that all the parts are interrelated and interdependent in some way. Without such interdependencies, we have a collection of parts, not a system” (Kim, 1999). Systems thinking allows us to imagine cities in all their parts and their relationships with one another. This section will recognize important system characteristics of cities and thus define a systems approach to explore cities. By using an actors map and systems map, it will show cities as interconnected entities.

Framing Boundaries

A city is a type of municipality and according to Statistics Canada there are 5,127 municipalities in Canada (2016). The largest in Canada are Toronto with a population of almost 2.8 million people, Metro Vancouver area with 2.6, while Montréal hovers close to 2 million (1.8 million), and Calgary (1.3 million), Edmonton and Ottawa complete the list of Canada's municipalities home to more than 1 million people (Statistics Canada, 2022). Interviews were conducted to gain deeper understanding of futures thinking approaches in Canadian cities. Participants included city staff and external consultants who have worked with numerous cities across Canada represented some of Canada's top 10 largest Census Metropolitan Areas (CMAs) and one town. Two CMAs represented were part of a region.

Municipalities are one of Canada's three levels of government and they are responsible for providing services and programs to residents. Because there is more than one type of municipality within the Canadian context, some may consider Canada as having four levels of government. For the purpose of this research, all municipalities are considered one of these three levels however they have structural differences. In Canada, a municipality is a city, town or village. British Columbia, Ontario and Quebec also have upper and lower tier municipalities. A single-tier municipality doesn't form part of an upper-tier municipality and assumes all municipal responsibilities that are set out under the Municipal Act and other Provincial legislation. A lower-tier municipality forms part of an upper-tier municipality. Municipal responsibilities set out under the Municipal Act and other Provincial legislation are split between the upper-tier and lower-tier municipalities (Government of Canada, n.d.). A regional government is a type of Upper-tier municipality, which provides services better suited to larger geographic areas. Regions are federations of the lower-tier municipalities within their boundaries, and while they do not manage the lower-tier governments, their councils have representation from lower-tiers (Association of Municipalities of Ontario, n.d.). There are differences between regional municipalities across Canada which are important to highlight. For instance British Columbia has regional districts which are modeled as a federation composed of municipalities, electoral areas, and in some cases, Treaty First Nations, each of which have representation on the regional district board (Government of British Columbia, 2025).

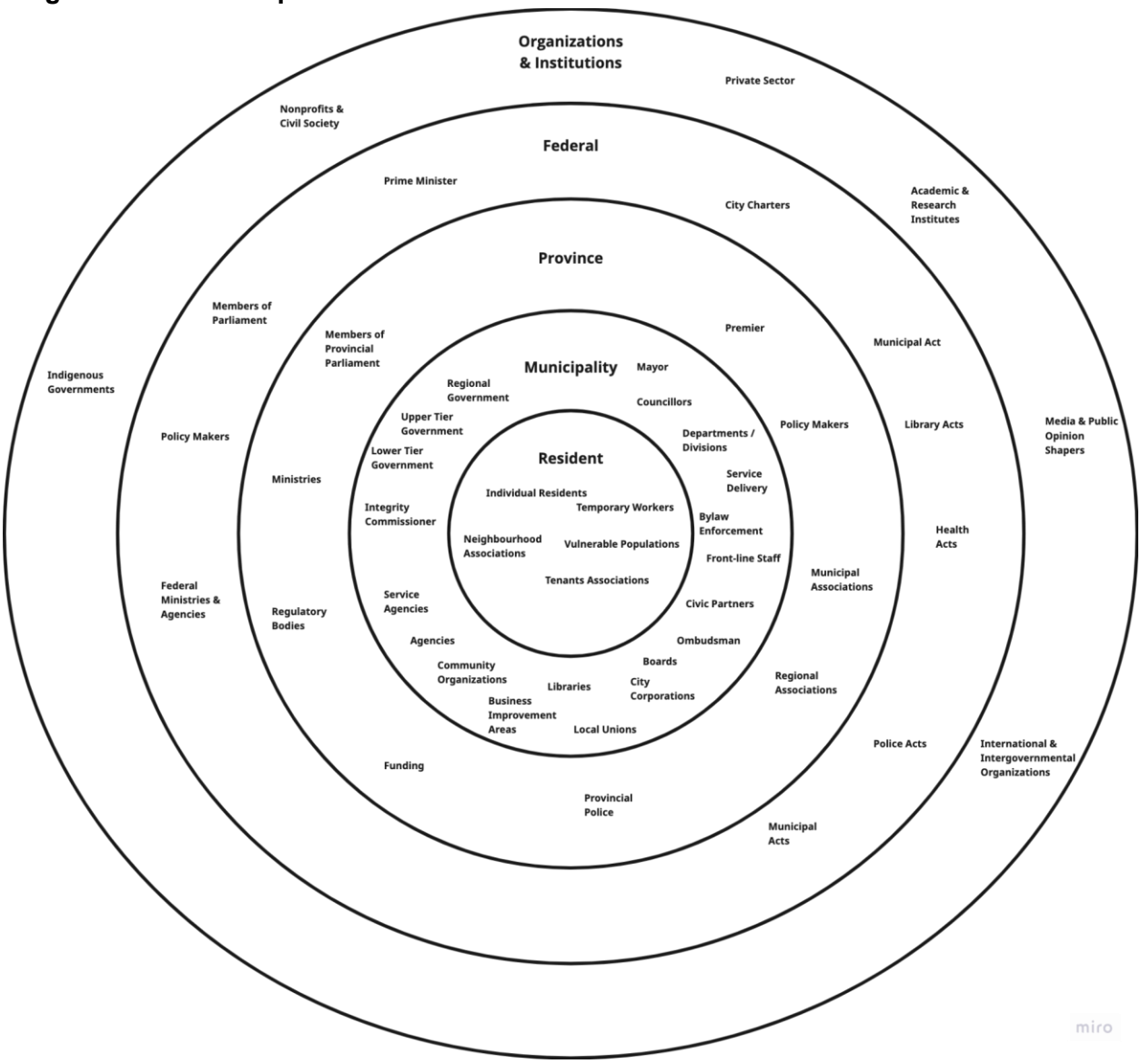
Actors Map

An Actors Map is a "depiction of the key organizations and/or individuals that make up a system, including those directly affected by the system as well as those whose actions influence the system" (FSG, 2021). Key participants (organizations, individuals, human and nonhuman agents) have been first mapped to gain an understanding of the different layers of the system. Their hierarchy of needs is explored in a Power and Influence Diagram and the relationship between one another is explored in the Systems Map that follows.

The actors map below identifies the system participants under study. It includes five concentric circles. Each circle represents a social and organization system. The inner circle represents residents, the second represents the municipality, the third represents the province, the fourth

the federal government and the fifth and final represents organizations and institutions that did not fit within the other circles.

Diagram 1: Actors Map



At the centre of the actors map are residents, the community and civil society. For the purpose of this research, residents encompass individual residents (temporary workers, students, permanent residents or citizens) and include housed and unhoused persons, as well as other vulnerable populations. The community and civil society can make up neighbourhood and tenant associations.

The next circle (municipality), are the elected and administrative participants. This includes mayors, city councillors, various departments and staff employed by cities including those responsible for delivering services and enforcing local laws (bylaws). Councillors are elected by the residents of the City for a four-year term. Councillors represent City wards.This circle includes institutions or organizations as well that are at the municipal level. Cities have various boards, agencies or commissions all playing a different role. There are community organizations

that partner with cities both in the capacity of delivering services and in receiving funds directly from cities. There are also independent offices that are responsible for investigating the integrity of city officials and departments.

The broader ecosystem comprises provincial and federal governments, including law and policy makers. It includes the various acts that give powers to cities, how they govern and outline their responsibilities. For example this includes municipal, library and police acts. Systems Map Meadows (2008) suggests that there are no separate systems, that the world is a continuum and where you draw a boundary around a system depends on the purpose of the discussion. For the purpose of this research, the boundary of the city as a system is framed upon seeking to understand how a city functions, operates, and changes. The system characteristics are captured in the systems map below. The system takes as much into account as possible in language variations and referencing in city departments and areas, while recognizing that cities across Canada are not uniform and because they vary size their functions and operations may look a bit different. Key organizations and individuals that make up a city have been mapped to gain understanding of how the system works while highlighting the relationships between the actors.

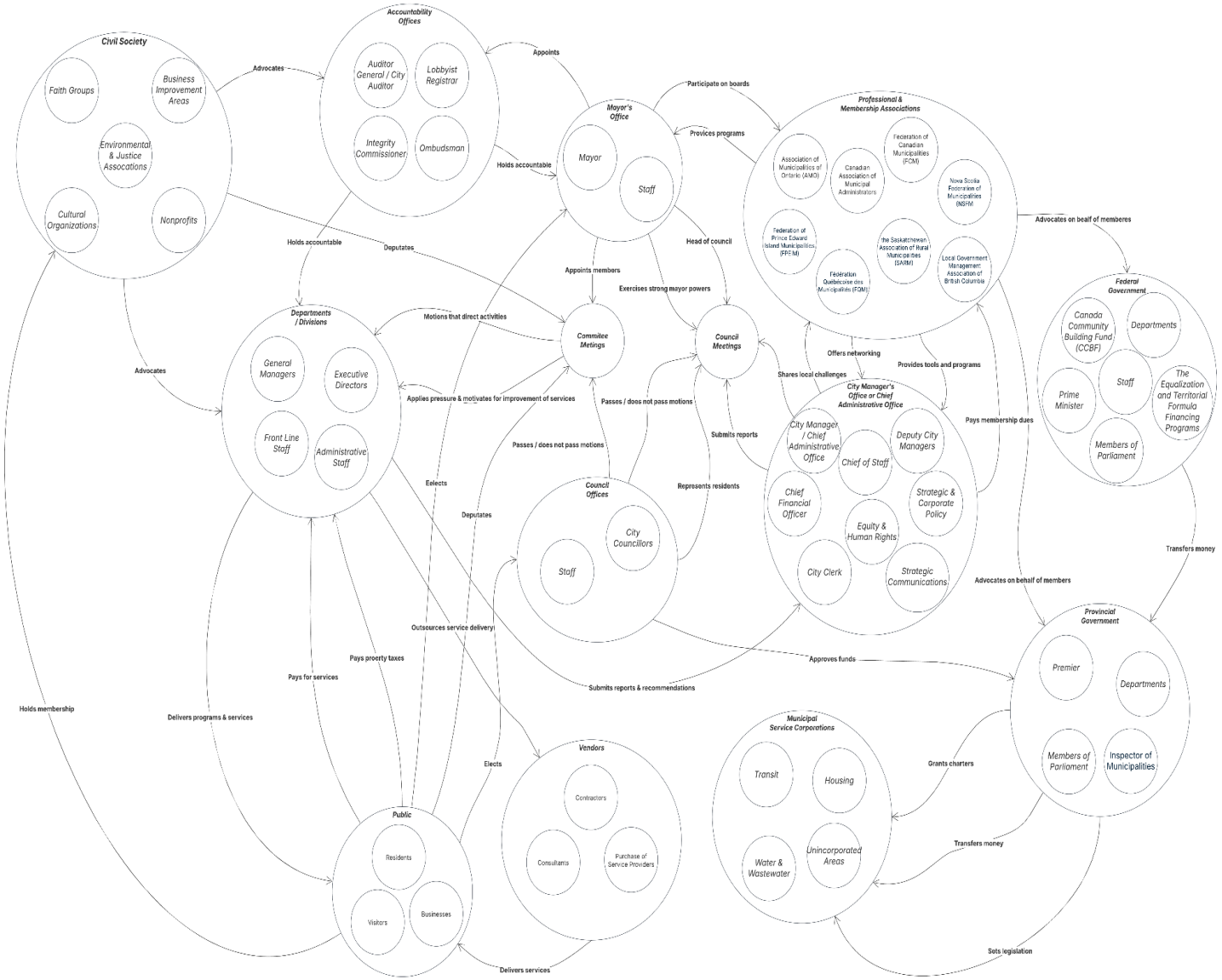
The systems map includes nodes representing organizations and other levels of government such as the federal and provincial government. It connects and shows relationships between all three levels of government, emphasizing the flow of funding and responsibilities passed onto cities legislatively from the Canadian Constitution. Furthermore, some cities have been granted special status referred to as Charter cities, which is “a city that operates under its own “stand-alone” legislation, or Charter, designed to meet the particular needs of that city and provide for powers and responsibilities not contained in the municipal acts of general application” (Government of Canada Publications, 2021). Vancouver, Winnipeg, Montreal and Saint John are Charter cities.

The relationship provinces have with cities are quite direct. Often referred to as downloading and uploading responsibilities, cities gain and lose responsibilities from the province they reside in. Referred as “creatures of the province” cities (local governments) are described as “legally subordinate to provincial governments, the only sources of authority and revenue available to municipalities are those that are specifically granted by provincial legislation” (2001). Introduced in 2002, strong mayor powers were provided to Ontario mayors giving them direct power and influence over council by being able to override decisions and thus giving direct power and influence on service delivery.

Professional and membership based associations represent another node, highlighting the unique relationship in advocating on behalf of cities regionally within provinces and at a national level. Cities (staff and residents) also interact with various accountability offices, they typically include an Auditor General (who is concerned about the use of public funds while holding City Council and staff accountable to taxpayers), an Integrity Commissioner (responsible for overseeing conduct of elected officials), a Lobbyist Registrar and an Ombudsman.

A significant component of the systems map is the public itself. It makes up residents, businesses and visitors. Each group has various levels of power and influence which is exercised through deputations (expressing issues or concerns on topics) to council and city staff, access and agency to contact council offices directly or the city staff directly. Members of the public may also participate in advisory groups or steering committees as members of a represented group with lived experience expertise. For instance the City of Toronto has its Lived Experience Advisory Group (LEAG) and the City of Calgary has a committee called Age Friendly Calgary that has seniors participate.

Diagram 2: Systems Map



Causal Layered Analysis

Sohail Inayatullah's contribution of the Causal Layered Analysis (CLA) is impactful for both Systems Thinking and Futures. For this study, the CLA was used as an input to understand the behaviour, complexity, mindsets and attitudes of cities. Inayatullah states that “as a theory it seeks to integrate empiricist, interpretive, critical and action learning modes of knowing. As a method, its utility is not in predicting the future but in creating transformative spaces for the creation of alternative futures. It is also likely to be of use in developing more effective – deeper, inclusive, longer-term – policy” (2009). It is an opportunity to see multiple perspectives. Informed by secondary research and the one-on-one interviews, the (CLA) seeks for ways to provide an answer for what changes are happening within Canadian cities. Additional questions were asked for each respective layer of the tool. At the litany level; what public stories and news about cities are most active right now? At the structure/system level; what underlying causes are holding up structures and systems? At the worldview level; what ingrained worldviews, values and paradigms perpetuate these issues? And at the fourth and final level - myth; what assumptions are made about Canadian cities? Research participants were specifically asked about emerging trends or challenges that are significantly impacting cities.

The litany level exposes events and trends that are impacting cities. It is combined with the pressures cities are facing in their function as organizations to deliver and address service needs (e.g., budget constraints, downloading of responsibilities from the province to cities) and how citizens themselves may speak about the changes that are happening (e.g., poor air quality, affordability and fentanyl crises, decaying trust in government).

The structure and systems level examines the underlying causes of what is occurring at the litany level by looking at structural issues in society, technology, economy, environment, political, legal and values that are underpinning the litany level.

Prioritization and urgency play a vital role in influencing how cities respond to crises, they are difficult to filter between being identified as acute or chronic, which can lead to cities responding in inefficient ways. This results in crises being misinterpreted, or confused with decisions driven by the loudest voices rather than thoughtful validation often leading to resources being redirected without pausing to assess the complexity of the situation.

Cities have also grown from their original size and intent. This is not meant to be interpreted as a negative trait but rather indicates that cities may be taking actions that are better suited to the size of the city previously versus the size and how it should function today. Related to this are big cities that are still acting like small towns and cities.

Each level of government also contributes to the top most layer. While entrenched in policy and legislation, the Canadian constitution impacts the ability of cities to respond to and take appropriate actions.

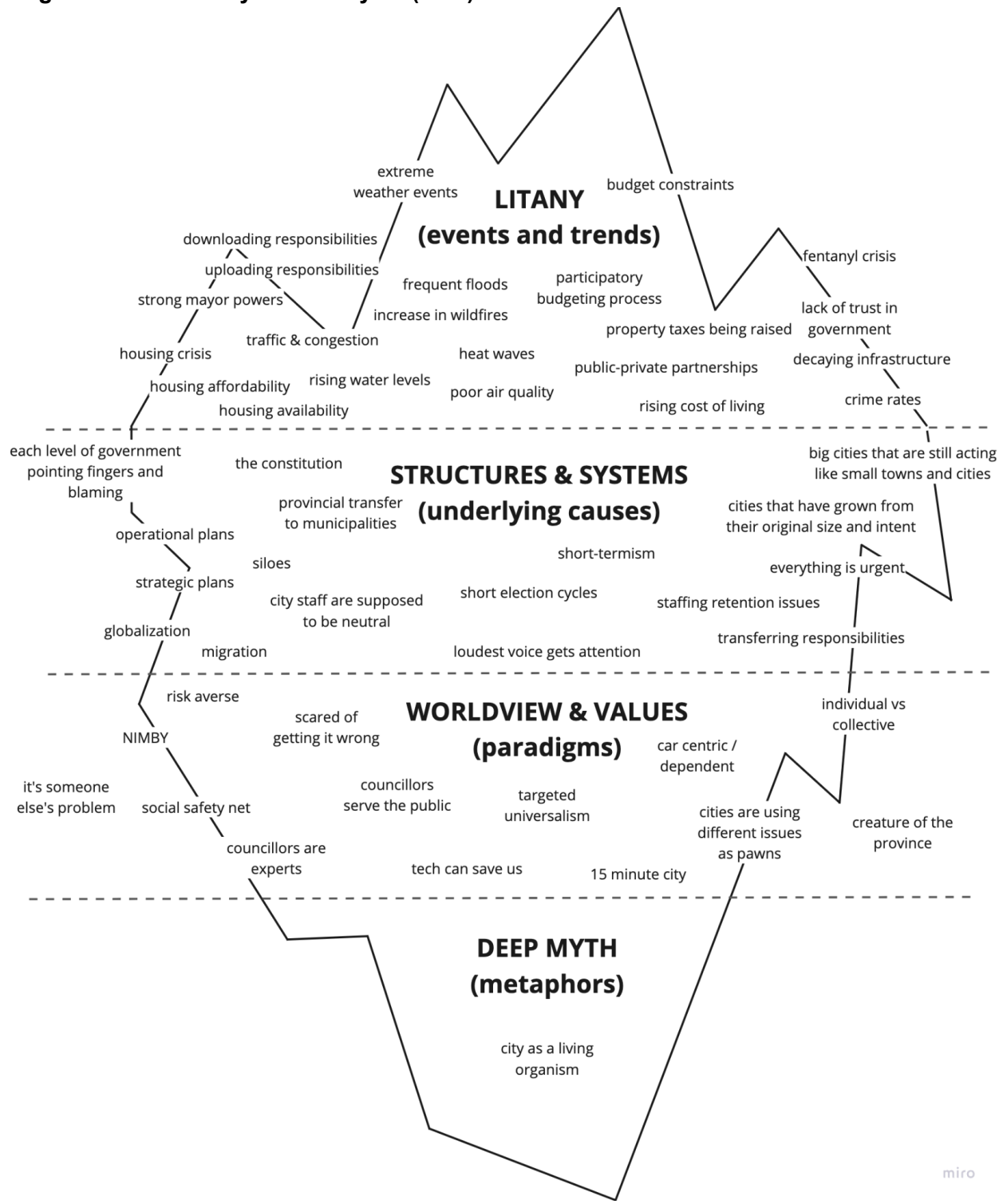
Diving deeper by one layer, cities are met with worldviews and values that support systems and structures over time. A research participant shared their view on the structure and system that are cities today, they also highlighted their belief in there being consequences in not anticipating. This CLA analysis of cities taking place is a step towards understanding the dominant worldview that upholds cities today as expressed by research participants. When it comes to society and community, the idea of individual versus the collective can be explored in how issues are addressed as well. An example to the antithesis of the collective or community is the idea of NIMBY (not in my backyard), where individuals are concerned with specific services and program expansion such as housing density and mental health organizing in their communities. Cities also provide a social safety net to residents, trying their best to fill cracks that exist so everyone's needs are met.

Councillors can be seen as having a purpose to serve the public, while also maintaining some kind of expertise.

As expressed by research participants, cities can also be attributed to being risk averse and afraid of getting it wrong. This level of scrutiny impacts innovation, and taking bold leaps to making systemic changes are deemed necessary.

The fourth and final layer describes deep myths or metaphors that encapsulate the system attributes based on the examination of the system. They are the unconscious beliefs that make it possible for cities to exist the way they do. Despite cities being a non-living organism it is possible to compare the functions and structures of a living organism. That is why cities as a living organism metaphor represents the system attributes the best, it is a reflection of the complexity of cities, where they have the capacity to grow and adapt. Like a living organism, cities can stay in a state of homeostasis as a way to maintain balance in times of crises. Furthermore cities also have subsystems and there is an interconnectedness if not dependency on other subsystems.

Diagram 3: Causal Layered Analysis (CLA)



Foresight in Practice

Contextual Trends and Emerging Signals

There is a growing interest in foresight and futures thinking in cities, and it is evident that cities across Canada are beginning to engage in strategic foresight. While not a comprehensive list, the table below is a collection of publicly available reports, media announcements and publications which highlight futures oriented projects that cities in Canada have undertaken. The table focuses on describing the purpose of the projects and the futures methodologies that were employed. Links are available in the Works Cited List.

Table 1: Municipal Case Studies

City	Project / Year	Description	Futures Methods	External Consultants
City of Stratford	Engagement & Strategic Priorities with City of Stratford 2019	Lead community engagement and support the city in developing strategic priorities based on engagement	Unknown	Overlap Associates
City of Kitchener	Kitchener 2051	A 20-year vision and four-year strategic plan that focuses on the challenges posed by increasing complexity due to the polycrisis.	Unknown	Flourishing Enterprise Institute
City of Kitchener	Kitchener 2051 Official Plan Review		Trends. Forecasting	Region of Waterloo
City of Vancouver	Vancouver 2050	A scenario planning process to undertake a new citywide planning program	Horizon scan, Scenarios, Worskhops	KerrSmith Design

Region of Waterloo	2023-2027 Corporate Strategic Plan	A series of foresight activities to inform the corporate strategic plan	Trends, Scenarios, Workshops	Creative Futures
City of Calgary	Future Focused Calgary Toolkit (2020)	An approach for applying future scenarios to present day decision-making.	Horizon scanning, trends identification, scenarios	Creative Futures & Evergreen
City of Toronto	Resilience Strategy	Participating with other cities, it comprises a vision, goals, and actions to help Toronto survive, adapt and thrive in the face of any challenge.	Horizon scanning, Three horizons	Perkins & Will, Resilient Cities Network
City of Montreal	Resilience Strategy	Participating with other cities, it comprises a vision, goals, and actions to help Toronto survive, adapt and thrive in the face of any challenge.	Horizon scanning, Three horizons	Resilient Cities Network
City of Calgary	Resilience Strategy	Participating with other cities, it comprises a vision, goals, and actions to help Toronto survive, adapt and thrive in the face of any challenge.	Horizon scanning, Three horizons	Resilient Cities Network

The recruitment survey and interview analysis reveals various foresight methodologies that cities are using. These methods are; horizon scanning, trends analysis, STEEPVL (a framework for understanding Social, Technological, Economic, Environmental, Political, Values and Legal topics into broad categories) and scenarios. Interviewees shared that foresight methods are

being used to support large city plans and visions, and are being used with community groups and partners to explore possible futures within their city,

Cities have varying degrees of futures awareness and literacy. Miller (2007) defines futures literacy as “the capacity to explore the potential of the present to give rise to the future” and suggests there are levels that are pre-requisites to one another (level one is awareness, level two is discovery and level 3 is choice). Research participants had a higher rate of futures literacy compared to other team members and departments across their organizations. However, future awareness is on the rise due to the active work of city staff in some organizations.

Based on secondary research, the recruitment surveys and research interviews indicate that cities are engaging in foresight methodologies across various departments and functions. For instance the City of Vancouver in 2019 put out a Request for Proposal for a city-wide plan that uses scenario planning, the Chicago Metropolitan Agency of Planning in 2024 did something similar and the City of Stratford in 2023 awarded a bid to Overlap Associates to work on a Strategic Framework that uses foresight. Creative Futures another consultancy has also worked with Region of Waterloo, Regional Municipality of Durham and the City of Calgary on strategy and planning initiatives that have a futures lens.

However, cities as organizations are not currently coordinating a strategic foresight agenda. Cities are expressing the need to be anticipatory, future ready and future proof. A crucial objective is to strategically support cities as organizations in overcoming their challenges regardless of provincial governments downloading responsibilities to them.

Of participants that are directly employed by a city, they usually function as a team of one dedicated to strategic foresight or bringing a futures lens to their department. Two participants work in city-wide strategic planning, one works with community partners, and the last works in emergency management and preparedness.

Foresight in practice within city organizations is beginning to take shape through a mix of grassroots efforts and structural support. A key enabler across all cases is direct manager support. Despite being solo practitioners, each participant emphasized that their immediate supervisors played a crucial role in legitimizing their work. This backing provides the space both in terms of time and organizational permission for futures thinking to take root and grow. Without that support, it would be far more difficult to prioritize long-term exploration in environments often dominated by short-term demands.

City employees are also building futures-oriented ecosystems with their organizations. One example is the emergence of “scanning clubs”: informal and formal groups that gather to explore signals of change and trends. These clubs are fostering a culture of future awareness among participants and helping to activate systems thinking across departments. By encouraging curiosity and collaboration, scanning clubs are laying the groundwork for more robust foresight practices. Connected to this is the idea of seeing foresight as a capability by establishing formal foresight and futures design capabilities within cities.

City staff and external consultants have learned the importance of meeting leadership and staff where they are at currently. Taking shape in many ways, this includes using different terminology so futures thinking appears less intimidating and digestible and starting with incremental use of futures methods rather than adopting a full strategic foresight approach. A participant shared that “one of the lessons I learned is I got to go to where people are at, not where I think they should be. And so if people are still at the basics of futures and they still are short term thinkers, then I need to start there.” Another way to meet others where they are at is by inviting individuals to come and “play” as emphasized by a research participant who stated that “it’s how you approach it that gets people excited”.

Barriers to Adoption

There are many barriers to adoption of strategic foresight in cities. These barriers can be found in leadership, organizational culture and structures.

One significant challenge is the short election cycle. While not unique to Canadian cities, research participants noted that city councils typically operate on four-year terms, which makes it hard for leaders and staff to look beyond the immediate political horizon. That kind of built-in short-term focus makes it tough to commit to long-term planning or maintain momentum on strategic initiatives.

Another barrier is the pervasive sense of urgency imposed by councillors and senior leaders. This urgency often forces staff to prioritize immediate concerns over future-oriented thinking. The pressure to deliver quick results can stifle innovation and prevent the exploration of alternative futures, which are central to strategic foresight.

Shifting paradigms within city governance also present obstacles. One participant expressed pessimism about the possibility of meaningful change, even from within the system: “I feel pessimistic about that happening even as someone like on the inside now. Or I guess maybe especially as somewhat on the inside, I feel pessimistic about that.” This sentiment reflects a broader skepticism about the capacity of municipal institutions to evolve and embrace new ways of thinking.

The hierarchical nature of city structures further complicates the adoption of foresight. Critical thought and dissenting voices often struggle to surface within bureaucratic systems. As one participant observed, “Having like dissenting voices or dissenting thoughts are difficult when you're kind of at the bottom. And yeah, they’re sort of like don’t make it through the filters on the way up.” This filtering effect limits the diversity of perspectives that reach decision-makers and reinforces existing paradigms.

Foresight and futures thinking leadership are not fully committed to the practice and staff are looking at other levels of the organization to invite in. Research participants shared how “we keep focusing on trying to convince leadership, but I gave that up [a] long time ago”. The lack of commitment may also be attributed to perceived risk averseness or sense of traditionalism as noted by another participant “Even exploring foresight in the past has been seen as too cutting

edge…this is too out there. Like maybe we don't want to be the first ones to explore this. I don't know if like again things are changing so quickly".

Coordination is another critical missing component to adoption."City governance increasingly involves separation and specialization of bureaucratic departments. Each of these departments deal with a specific urban sector, such as water, transportation, electricity, parks, food, health, etc., with little to no coordination let alone communication among them. This fragmented institutional structure reflects both the need for increasingly specialized knowledge and the sheer scale of the challenges of modern urban management" (Brondizio, et al, 2016).

Finally, there is a perceived lack of agency among city staff. Many feel that their role is simply to execute the council's agenda, rather than to shape it, as shared by one participant who described this dynamic as serving council and their agenda. This sense of powerlessness can dampen motivation and reduce the willingness to engage in strategic foresight, which requires initiative and a belief in one's ability to influence the future.

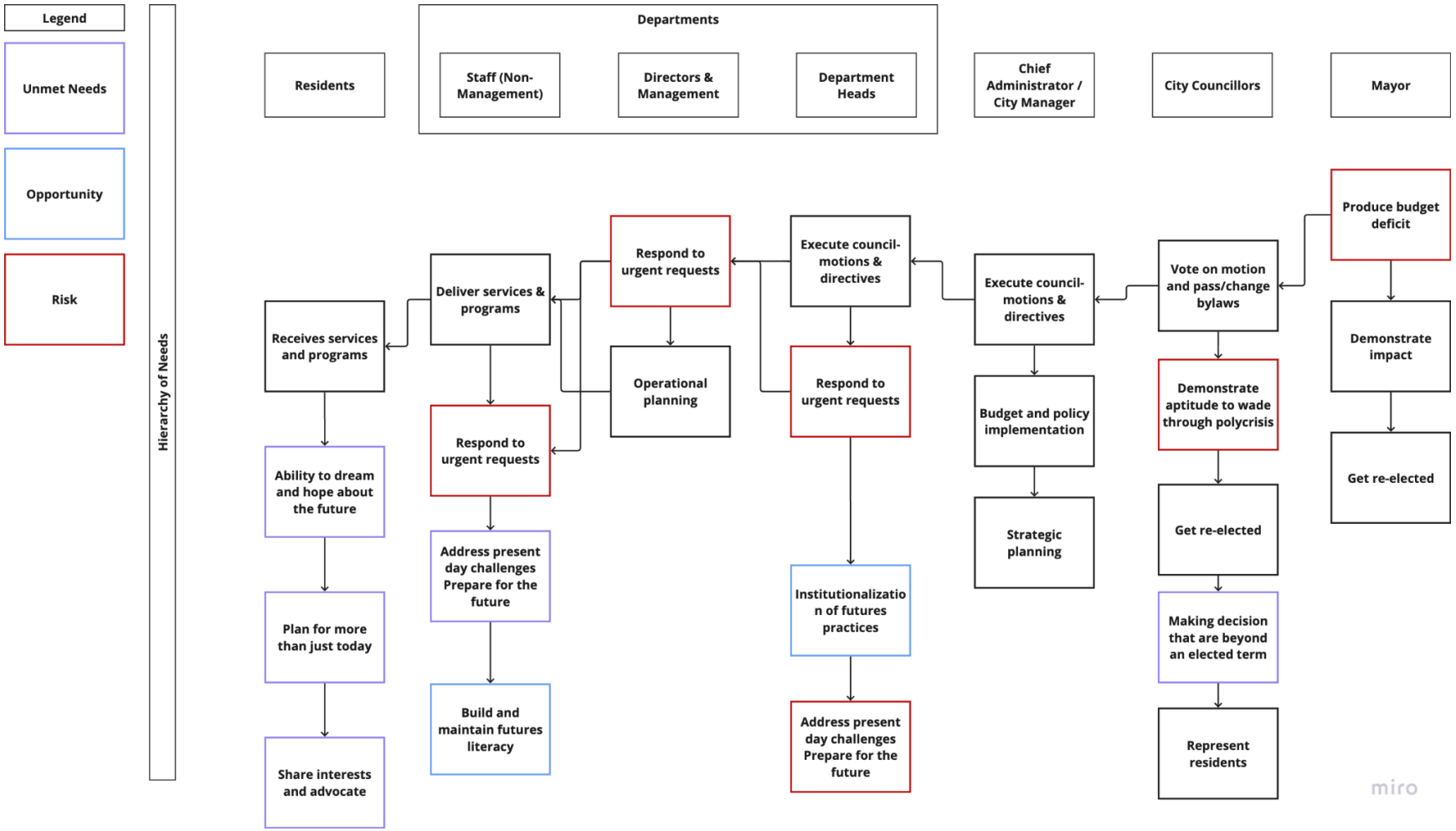
Stakeholder Matrix

The stakeholder analysis examines power and influence in relation to adopting futures thinking and using strategic foresight, which is informed by the interviews conducted as part of this research. It seeks to further understand the roles, responsibilities and actions of identified stakeholders and why relationships within a city matter. Understanding where power and influence reside in the city system is a critical step in analyzing the current state and laying the groundwork in identifying unmet needs, risks and opportunities. In the context of adopting futures thinking and using strategic foresight, relationships matter because they can champion and support the need for change.

Overwhelmingly opportunities, unmet needs and risk associated with futures thinking and strategic foresight is lower in the diagram. This is because cities are prioritizing the status quo in terms of values, ways of working and responding to challenges. However the diagram also highlights that by prioritizing "urgent requests" it also puts cities at risk. Ultimately producing a budget deficit and demonstrating impact are of utmost importance for some however it must be balanced by passing motions and changing bylaws which impact operational planning and service delivery.

A stakeholder analysis is included in this section, depicting identified stakeholders from the actors map with their intersectional influence mapped. The stakeholders are plotted across the top while the functional description of power and influence is in descending order from greatest impact to lowest. Amongst this hierarchy all roles are still valuable and critical, however when compared and plotted against one another, there are some responsibilities that are given greater importance based on systemic power and influence. The hierarchy of influences was determined through literature review and first person research.

Diagram 4: Stakeholder Matrix - Power & Influence



Iterative Inquiry

John Dewey's formal approach to inquiry starts with generating knowledge with research, and it begins with using existing beliefs and prior knowledge to interpret and define an experience (Morgan, 2020). The iterative inquiry produced as part of the research was informed by the experiences of city staff who are using foresight methods and a futures approach as part of their responsibilities.

The starting point of the iterative inquiry focuses on how cities in Canada state they need to be future proof and be prepared for tomorrow's challenges. The accompanying boundary is institutionalizing or building futures thinking as a capability beyond a single staff within a business unit, however this approach can act as a starting point and cascade into other parts of the city as an organization (and for some it has just done that).

For the purpose of this inquiry, the Iterative Inquiry has four layers (micro, meso, exo and macro). The function can be understood as a single main activity or need that triggers the first occasion of a process. The structure fulfills the function through roles, agencies and settings The processes are activities and practices and they are the activities that take place in the structures identified. Lastly the context or purpose is the defining state of the entire system (Jones et al, 2022).

As the Iterative Inquiry progressed the Meso, Exo and Macro layers became increasingly difficult to map out as cities in Canada are currently focused mostly on the Micro and a little bit on the Meso layer. The increasingly difficult layers are aspirations and room for growth.

Micro: Individual staff or units within the city working on operational plans.

Its context and purpose is to enable frontline staff and departments to adapt and evolve operational plans with foresight, ensuring responsive, efficient, and flexible public services that meet immediate community needs while anticipating near-term uncertainties.

Meso: The city as a whole (its institutions, governance, and cross-sector relationships).

Its context and purpose is to position the city as a future-ready governance system that balances short- and long-term needs, fosters inclusive and adaptive policymaking, and acts as a steward for equitable, resilient urban futures in the face of complex socio-environmental change.

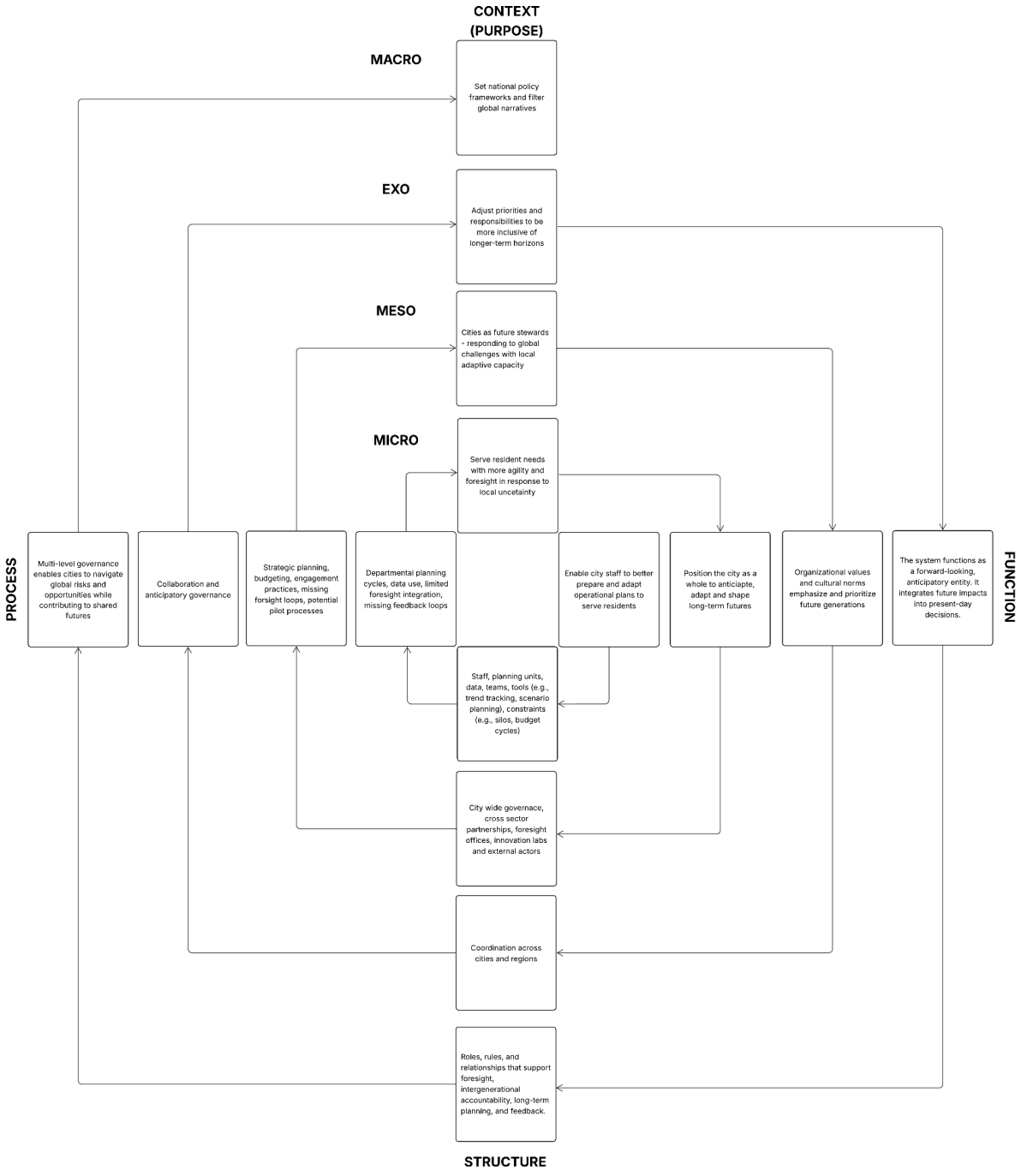
Exo: The broader systems outside the city but influencing it directly - e.g., regional governments, metropolitan authorities, infrastructure providers, economic regions, and neighboring cities

Its context and purpose is to provide a collaborative, resource-sharing, and policy-coordinating environment beyond the city's boundaries that supports integrated infrastructure, regional resilience, and cross-jurisdictional futures thinking — ensuring city futures align with and benefit from broader regional systems.

Macro: The highest level (national policy, global trends, international networks, and large-scale forces shaping city futures).

Its context and purpose is to set the overarching policy frameworks, global narratives, and resource flows that shape the conditions for cities and regions. Which fosters multi-level governance coherence and enables cities to navigate global risks and opportunities while contributing to shared planetary futures.

Diagram 5: Iterative Inquiry



Exploring the Possibility Space

Leveraging System Change

One research participant shared their experience in helping a city navigate complexity, they shared how “municipalities don't generally sign up to transition from conventional towards systemic strategic management practices across the board. And so this means we need to find some kind of meaningful motivating entry point”. There are endless points of intervention to enable foresight in a city, with each intervention point can have varying degrees of impact. This section examines looking at places to intervene within a city.

Leadership
City leadership is a critical leverage point in ensuring the disconnection between the process of strategic foresight, the organization and the necessary systemic change is reduced significantly if not entirely eliminated. While some research participants shared they have “given up” on convincing leadership they are an important stakeholder when the time comes.

Organizational Culture
It might be too simple to state that cities, as organizations, measure what elements are reflected in their values. However looking closely at organizational readiness as a cultural mindset, and creating accountability to becoming more resilient and adaptive are opportunities to explore. Organizational culture also includes the value of coordination or lack thereof. This is further emphasized in Brondizio, et al., “Cities cannot act alone to achieve global urban change. Many of the decisions and feedback that give rise to urban dynamics take place beyond urban boundaries, and involve actors and institutions outside the city. These feedbacks can span several jurisdictions, operate simultaneously both locally and at a distance, often involve non-linear processes, and frequently give rise to unintended and displaced consequences” (2016).

Structures
Dator (1995) argues that for futures studies to be useful it needs to precede, and then be linked to strategic planning, and then to administration. The conditions to determine day-to-day decision-making by an organization's administrators must first include identifying, envisioning and creating preferred futures to then guide the necessary planning activities.

There are various structures within cities and they can each have a role to play in influencing change to enable futures thinking. One option is analyzing where futures and foresight as a capability sits within the city structure today and examine where it best can sit moving forward. This work would include analyzing the organization’s purpose and ability to adapt to continuously changing environments by using the Viable Systems Model (VSM) as championed by Stafford Beer. Specific structures that can go under review are development and planning, operational and service delivery and strategic planning.

Institutionalization means embedding strategic foresight within the formal structures and processes of city governance and operations. Rather than relying on occasional or standalone

foresight efforts, it ensures that foresight is consistently incorporated into long-term planning, resource allocation, and policy evaluation.

Anticipatory governance enables governments to proactively address future challenges and opportunities by leveraging foresight, experimenting with innovative approaches, and maintaining flexibility in decision-making and change management.

Coordination ensures that strategic foresight is not confined to a single department but actively connects across all parts of the city. When foresight is linked to service delivery, it creates valuable feedback loops that inform other areas of the system. This exchange allows teams to share insights, learn from real-world outcomes, and align their efforts toward a shared vision for the future.

Intervention Strategy

An intervention strategy tool was used to map out and define intervention in cities, in how they may be able to look beyond the current landscape and identify the points of intervention in the system to enable foresight. Much of the positioning of interventions focus on reducing barriers in the system to champion futures thinking. The tool was adopted from Design Journeys through complex Systems Practice Tools for Systemic Design by Peter Jones and Kristel Van Ael and outlines the relative system impact of leverage points.

Cities have the ability to add, remove and change their targets. While they may be influenced by national priorities, targets relating to the future of city services and programs should be informed by data and adjusted to meet future needs.

The system could become more stable if there is an increase in capacity for funding of new staff roles and the necessary engagements (within the organization and externally with residents). Cities like Calgary and Edmonton have dedicated staff in these roles and consideration needs to be made to determine the cost of not increasing funding to expand teams not just for these two cities but for others. If this way of working is becoming increasingly important, there may be a cost to not supporting these types of roles. This buffering of dedicating resources can ensure that this work becomes and remains a priority while not re-allocating people's time to be stretched across multiple projects. Jones et al (2022) explain buffering as "the volumes that the system can contain". This can look like enough staff to undertake a futures approach and having enough money to pay for said staff and engagements with residents.

There are many tools that can become part of a staff member's toolbox depending on their role and goals within their business unit (team) and department. To introduce tools staff need to be trained and become skilled in understanding when to use one foresight tool over another. Tools can be adapted to fit the needs of a city and there are ways to use them within physical and digital spaces. Not all staff need to become practitioners but awareness and increased literacy in this school of thought will be beneficial in planning, delivering of services and addressing challenges as they will be able to see challenges through lens and have new tools to address them. There will be a learning curve regardless.

Meadows (1999) describes “the state of the system is whatever standing stock is of importance”. The stock that is given importance occurs based on what is important at the time but may not reflect the goal of the system. A large portion of the intervention strategies focus on feedback loops. Feedback loops are information that causes the flows of the system to change and they can be reinforcing, balancing, negative (sometimes referred to as correcting loops) and positive (Meadows, 1999). Meadows (1999) suggests there are two types of feedback loops, “one controlling the inflow and one controlling the outflow”.

In some instances the leverage points outlined are about controlling the flow of information, in other cases it is important to reduce critical delays in capacity and upskilling of staff. When external consultants are hired by cities to create a strategy that is informed by foresight and uses tools within the discipline, staff need to be upskilled to know how to either replicate and adapt for other use cases and also implement the strategy afterwards. When this is not part of the scope of work for external consultants it can have a negative impact on the time between creating the strategy and beginning to implement it.

Stability of the system for staff dedicated to foresight can be increased by leaders in management roles pushing back on “urgent requests” that can significantly derail existing workplans and resourcing. As futures literacy and awareness is established into planning cycles, teams can become better prepared in anticipating stresses and responding accordingly.

Reinforcing feedback loops are just as critical as creating stable ones if they are missing from the system. Interventions could include stronger connections between city plans and visions, and departmental plans and operations. Cross departmental planning can demonstrate that work cannot be planned let alone actioned in siloes, it can better prepare for resourcing as well. Creating communities of practice for foresight leaders, innovators or those that are curious to learn can create a positive space where learning can be exchanged, for members to feel supported and also gain a better understanding of other departments in the city that otherwise they may not think there is a connection point.

Rules and regulations can be formal and informal, however they do require an accompanying change in values, culture, social or possibly even legal structures within cities. Foresight can be introduced in components of a plan by introducing tools. This can happen at various places within a city’s hierarchy from central planning offices to departmental ones. An extension of that can be creating central foresight units/offices that are responsible for coordinating across city departments. Depending on the city, departments require mandates, and a central office may need this to support their coordination, this could help accelerate the willingness of adoption, and in time the readiness.

Informally there can be self-organizing working groups. Self organizing of individual staff requires support. This can look like sponsorship of leadership which gives recognition to the staff’s work and also greenlights it. Beyond that leaders should also become champions of foresight themselves. When leaders are able to articulate the benefits or create space for their staff to advocate for foresight, then other leaders can adopt similar approaches.

Increasingly difficult but perhaps more impactful is looking at the goal of the system and evaluating what objectives of a city need to change. The purpose of the city plan can be updated to include longer time horizons, and a change in language in concepts to include resilient and evergreen. As defined in the City of Toronto Resilience Strategy (2018), “resilience is the capacity of individuals, communities, institutions, and systems within a city to survive, adapt, and thrive in the face of the chronic stresses and acute shocks they experience. Research participants shared that evergreen relates to not having a time horizon on a vision as it is something you are constantly working towards.

These terms of course should not just be added without due diligence in the city creating meaning around it and creating targets that they would want to work towards. Closely connected is also updating the function of how city planning takes place. Participants expressed that city planning is too traditional and does not reflect the changing needs of cities.

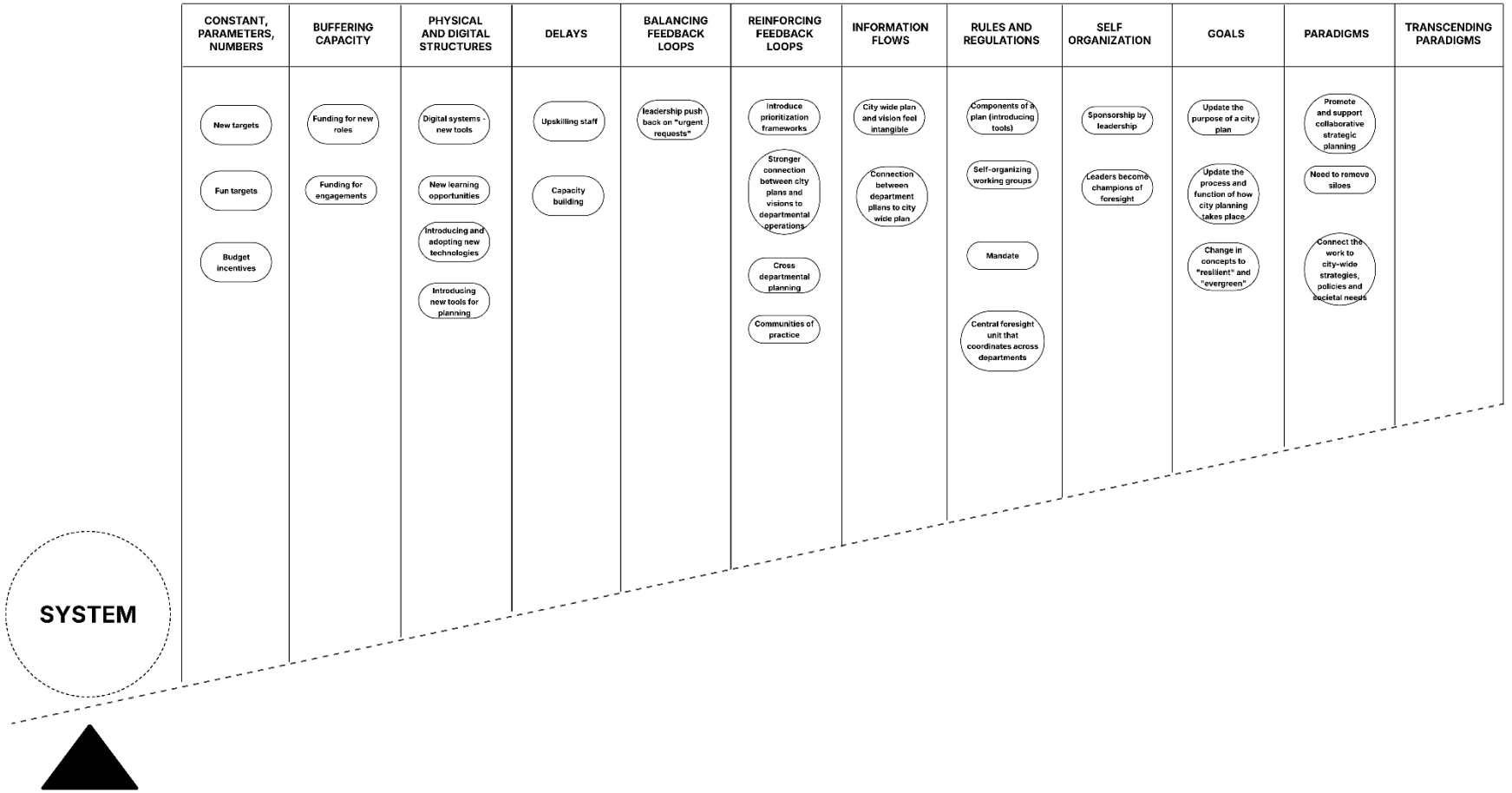


Diagram 6: Intervention Strategy

Limitations

This research study faced several limitations that shaped the scope and depth.

Access to Open Source Data: It was challenging to find publicly available data on external organizations that have engaged cities in strategic foresight. Many relevant initiatives and partnerships are not well-documented or accessible through open sources.

Indigenous Epistemologies and Ways of Knowing: As key communities and stewards of this land, Indigenous epistemologies were not part of the research scope or framework.

Time Constraints: The research was conducted within a limited timeframe, which impacted the breadth of data collection and analysis.

Sample Size and Interview Scope: While numerous cities, departments, and staff have participated in strategic foresight activities or training, this study did not include an exhaustive list of interviews. The sample included a mix of consultants and municipal staff, which, while diverse, may not fully represent the range of experiences and approaches across jurisdictions.

Despite these limitations, the research offers valuable insights into the current challenges cities face and highlights innovative examples of how they are addressing these issues through strategic foresight.

Conclusion

We are at a clear inflection point. If cities continue to ignore the signals of change and the increasingly complex challenges they face, those challenges will only deepen. The real question is: what will serve as the catalyst to shift the current mindset? How can we work together to move beyond short-term thinking and adopt a paradigm that embraces long-term planning and foresight?

This study set out to explore how cities can better prepare to embed strategic foresight into their planning processes, with the goal of enhancing service delivery and building resilience to future disruptions. Adopting a systems lens, the research applied Causal Layered Analysis and Iterative Inquiry to uncover underlying patterns of behaviour that influence how cities function. Leadership, cultural values and norms, and organisational structures emerged as key factors, informing a set of recommendations to help cities integrate futures thinking as a strategic and sustained practice.

It’s clear that cities across Canada vary significantly in their readiness and appetite for strategic foresight. Moving toward full integration will require a series of incremental steps. The challenge remains two-fold: demonstrating the value of strategic foresight and whether cities are ready to

embrace not just the tools and methods, but also identifying the deeper shifts in mindset, values, and ways of working needed to truly serve the evolving needs of their residents.

Next Steps & Further Research

Throughout the interview process, participants expressed interest in wanting to know what methods and tools other cities, departments and staff are using and how they are being used (at a team level or higher within the organization). There is a desire to connect across cities and regions, whether it be for knowledge exchange or working together to address similar challenges.

Building on the findings of this study, several avenues for future work and exploration are recommended:

Expanding the Interview Pool: Future research could include a broader range of participants, including more municipal staff, external consultants, municipal associations and councillors involved in strategic foresight initiatives.

Longitudinal Studies: Tracking cities over time would provide deeper insights into how strategic foresight practices evolve and influence policy and planning outcomes.

Comparative Analysis Across Jurisdictions: A comparative study of cities with varying levels of foresight maturity could help identify best practices and common barriers.

Integration with Other Municipal Functions: Further research could explore how strategic foresight is integrated into other areas of municipal governance, such as budgeting, infrastructure planning, and emergency management.

Data Accessibility and Transparency: Investigating ways to improve access to open-source data on foresight activities could support more robust and inclusive research efforts.

These next steps aim to deepen understanding of how cities can effectively use strategic foresight to navigate complex challenges and build resilient futures.

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