Climate Accountability Toolkit:

A Roadmap for Municipalities

Clean Air Partnership

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Executive Summary

This toolkit provides a roadmap to support municipalities in adding accountability to their climate commitments and actions. Climate accountability is ultimately the state of being answerable and transparent about the actions required to effectively mitigate and adapt to climate change. To work towards climate accountability, municipalities should consider the five "onramps" presented in this toolkit.

These are:

1. Climate emergency declarations
2. Accountability in climate action planning
3. Climate lens
4. Carbon budgeting, and
5. Task Force on Climate-related Financial Disclosures (TCFD) framework.

Each of these onramps play a crucial role in fostering climate accountability. Climate emergency declarations provide a powerful statement of intent, signaling the municipal commitment to addressing climate change urgently. Climate action plans offer a strategic roadmap, outlining specific goals, targets, and actions to mitigate greenhouse gas emissions and build climate resilience. Incorporating climate lenses into municipal decision-making processes ensures that climate considerations are systematically integrated into policy, planning, and infrastructure development, enabling more climate-conscious choices.

Carbon budgets offer a framework to limit emissions, encouraging municipalities to integrate climate into their regular financial budgeting processes. The TCFD framework, with its focus on financial risk disclosures related to climate change, enhances accountability by promoting transparency and aligning financial decision-making with climate goals.

While each onramp has its distinct purpose, they are most effective when implemented using a combined approach. There are numerous overlaps and synergies between these onramps that reinforce and amplify their impact. For example, climate emergency declarations and climate action plans inform and support the integration of climate lenses into decision-making processes. Carbon budgets provide a quantifiable basis for meeting targets outlined in climate action plans. TCFD enhances financial risk assessment and decision-making, aligning with the broader goals of climate action plans.

Many municipalities have already established a path towards climate action. Incorporating accountability can happen at any stage in this journey, regardless of how far along you are. This Guide provides an accountability framework that allows municipalities to initiate efforts, build on existing foundations, and continually improve their climate accountability processes.

1. Background

1.1 Importance of Municipal Climate Action

Municipalities play a crucial role in combatting climate change, with direct control over about 3 – 8% of total community energy use. In addition, through land use and transportation decisions, municipalities have influence over 40 – 60% of their community's energy use and therefore have a significant opportunity to address community greenhouse gas emissions.

By decarbonizing major sources of emissions such as buildings, transportation, and energy, municipalities can achieve multiple benefits. Reducing carbon contributes to the global effort of fighting climate change and helps municipalities save money, create new employment opportunities, attract investment, and improve the quality of life in their communities.

The urgency for action is reinforced by the substantial cost of climate change on Canadian municipalities. Extreme weather events have become more frequent and intense, resulting in significant infrastructure damage and property loss. These events place an additional burden on municipal finances, increasing expenses for infrastructure investments, emergency response and recovery efforts. Moreover, the impacts of climate change disproportionately affect our most vulnerable community members, amplifying social and economic disparities.

The urgency to address the climate crisis is paramount, and municipalities have an important role to play in driving change. By taking concrete steps to reduce GHG emissions while building resilience against extreme weather events, municipalities can create a positive ripple effect, saving money, creating jobs, attracting investments, reducing risks, and improving the overall well-being of their communities.

1.2 Current State of Municipal Climate Action

Municipal governments across Canada are already taking significant steps to address climate change. Many municipalities have committed to reaching net-zero carbon emissions by 2050. Working towards this goal, municipalities are reducing GHGs from municipal buildings, rightsizing and electrifying municipal fleets, advancing green development standards and home energy retrofit programs, among other actions.

To protect their communities from the effects of climate change, municipalities have also been investing in climate resilience measures. Some of these measures include enhancing infrastructure to improve flood protection and reduce heat island effects, updating storm water management practices, and improving emergency preparedness.

Despite these actions, the reality is that most municipalities are currently not on track to meet their netzero targets and they are still at risk to climate change. The urgency of the climate crisis demands a stronger commitment and increased accountability.

1.3 Climate Accountability

Climate accountability refers to the need to take ownership of municipal decisions that affect climate (ex. energy and GHG emissions) and are affected by climate (ex. extreme weather impacts). For municipal governments, climate accountability also means being answerable and transparent aboutemission sources, the actions required to reach net-zero emissions, the actions that could work against climate commitments, and the mechanisms that will be used to monitor and report on progress. It also means being answerable and transparent about local climate risks and impacts, the actions required to be resilient to a changing climate, the actions that could work against this resilience, and the mechanisms that will be used to monitor and report on climate adaptation work.

Municipalities can demonstrate accountability by implementing governance structures, processes, and policies that directly connect long-term climate commitments to near-term policies and decision making. Climate accountability requires public commitments, detailed planning, and regular, transparent progress reporting.

Climate accountability can be achieved though the following five onramps:

1.   Climate emergency declarations
2.   Accountability in climate action planning
3.   Climate lens
4.   Carbon budgeting, and
5.   Task Force on Climate-related Financial Disclosures (TCFD) framework.

This toolkit describes the concepts and benefits of these onramps, provides examples of how they are being implemented, outlines strategies for successful implementation, and identifies common challenges and mitigating actions to circumvent them.

2. Climate Emergency Declarations

2.1 Introduction to Climate Emergency Declarations

Climate emergency declarations are municipal council resolutions that acknowledge the urgency of theclimate crisis and commit to climate leadership. These declarations are a response to the growing recognition that climate change poses a threat to humanity and that it requires immediate and transformative action.

The motivations behind climate emergency declarations are varied, but many of them cite the scientific consensus on the severity and urgency of the climate crisis, whereby the Intergovernmental Panel on Climate Change (IPCC) has warned that the world is rapidly approaching a point of no return, beyond which it will become increasingly difficult to prevent the worst impacts of climate change.By declaring a climate emergency and committing to climate action, municipalities are taking the necessary first step to enhance and protect their communities.

2.2 Benefits of a Climate Emergency Declarations

Municipal climate emergency declarations can generate a range of benefits, including:

- Increased awareness and understanding of the urgency and severity of the climate crisis among municipal staff, elected officials, and the community.

- Increased municipal climate accountability through public and time-bound commitments.

- Greater political will to advance further climate actions or accelerate existing actions.

- Improved collaboration between and within municipal departments, leading to more coordinated and effective actions.

- Enhanced reputation of the municipality as a leader in climate action.

2.3 Review of Climate Emergency Declarations

Over 650 Canadian municipalities have declared a climate emergency, representing communities both small and large, urban, and rural, across all provinces and some territories. Despite these differences, municipal climate emergency declarations have many common elements:

2.3.1 Structure

Most climate emergency declarations follow the structure of municipal resolutions which are used to express the municipal position on an issue. They are typically made up of two parts:

- **Preamble:** Declarations often begin with a preamble or recitals section that provides background information and context for the declaration. This section may reference scientific reports, international agreements, or local climate data to support the declaration.

- **Resolutions:** Declarations typically provide a series of statements or resolutions outlining the municipal commitment to addressing the climate emergency. These declarations may express intent, set targets, or outline specific actions to be taken.

2.3.2 Targets

Climate emergency declarations commonly include targets and timelines for reducing community wide emissions. Many municipalities in Canada have committed to reaching net-zero emissions by 2050 which corresponds with the IPCC's recommended pathway to limit global warming to 1.5°C, though some have committed to earlier timelines. For example, the _City of Toronto_ has committed to reaching carbon neutrality by 2040 and the _Town of Halton Hills_ aims to reach net-zero emissions by 2030 - making these some of the most ambitious targets in North America.

Many municipalities also establish interim targets on their path to net-zero emissions. It is common that alongside a commitment to reach net-zero by 2050, municipalities also commit to a 40-45% reduction in emissions by 2030.

While climate emergency declarations often mention local climate impacts and the importance ofadaptation, these declarations rarely include adaptation targets. This is because it is challenging to identify a single quantifiable metric that can be used to measure adaptation.

2.3.3 Actions

Climate emergency declarations often outline actions that municipalities will take to work towards stated climate targets and commitments. These actions are typically written as motions to direct municipal staff to engage in research, planning, implementation, or reporting activities. They are often directed at specific departments and are often accompanied by timelines. Actions often found in climate emergency declarations include:

- Advance a corporate and/or community GHG reduction plan.
- Advance a corporate and/or community climate adaptation plan.
- Participate in a program such as *Partners for Climate Protection (PCP)* or networks such as *Clean Air Council.*
- Develop budgets and funding strategies to fund climate commitments.
- Develop implementation teams and hire staff to fulfill climate actions.
- Develop metrics and reporting mechanisms to track progress on climate commitments.
- Engage and educate the public on climate change and climate action.
- Advocate for funding, authority, and policy alignment from higher levels of government.
- Collaborate with other municipal governments, scientists, businesses, community organizations,

Some declarations go further, directing staff to:

- Explore green investment and fossil-fuel divestment opportunities.
- Incorporate climate change into all municipal actions and policies.
- Investigate the implementation of a climate budget.

The motions listed in climate emergency declarations are not intended to be detailed, but rather provide direction and expectations for staff.

2.3.4 Example Climate Emergency Declarations

Below are some examples that represent different community archetypes (e.g., rural, urban, small, large, upper-tier and single-tier municipalities), and that incorporate many of the common elements described above.

- *City of Nanaimo, BC*
- *Dufferin County, Ontario*
- *Durham Region, Ontario*
- *City of Peterborough, Ontario*
- *City of Hamilton, Ontario*

For more examples, see the CEDAMIA webpage on Canadian jurisdictions that have declared a climate emergency. These examples can serve as a starting point for drafting a municipal climate declaration.

2.4 Climate Emergency Declaration Implementation

The steps involved in passing a municipal climate emergency declaration can vary depending on the processes and protocols unique to each municipality. However, the following elements are common in most declarations:

1. **Research and preparation:** Council and/or staff may research and prepare content for the declaration that can include the impacts of climate change, climate targets and timelines of other jurisdictions, actions that could be taken by the municipality and the language and content of existing climate emergency declarations.

2. **Drafting the declaration:** Based on the research, council and/or staff may draft the declaration that outlines the commitment to act. The declaration may include:
   - A preamble to provide context and justification for the declaration.
   - A clause clearly declaring or acknowledging the climate emergency.
   - Climate targets and timelines.
   - A series of actions to work towards stated targets and timelines.

3. **Council review, amendments, and vote**: The draft declaration may be reviewed and debated by council, who may make changes to the language or content of the declaration. Once amendments are made and approved, the declaration is voted on. If the declaration passes, staff can implement the directions outlined in the declaration.

2.5 Challenges

Municipal climate emergency declarations may be stalled or prevented by several challenges, including:

1. **Political resistance:** Elected officials or community members may be resistant to declaring a climate emergency. This could be due to a resistance to changes that may result from it, or a misinterpretation of the term "emergency", which under certain provincial emergency management acts, has unrelated legal and financial implications.

2. **Limited resources:** Municipalities may have limited resources, knowledge, or staff capacity to implement the necessary actions that would likely result from a climate emergency declaration.

To overcome these challenges, municipalities can take steps, such as:

1. **Building political support:** By engaging with elected officials to address questions and concerns and building public support for climate action, municipalities can overcome political resistance and increase the likelihood of passing meaningful climate emergency declarations.

2. **Building capacity and partnerships:** Municipalities can support staff training, research, and partnerships with municipal peer networks (see Appendix A) to build the necessary expertise to develop strong climate emergency declarations.

2.6 Conclusion

Addressing climate change is complex, and municipalities may need to navigate some challenges to successfully draft and pass climate emergency declarations.

Guided by the need to demonstrate municipal and community accountability, and informed by the experience of over 650 Canadian municipal climate emergency declarations, municipalities can overcome these challenges and take one of the necessary first onramps in climate accountability. From here, they can advance other onramps to climate accountability which will help continue to demonstrate leadership in the fight against climate change.

3. Climate Action Plans

3.1 Introduction

Municipal climate action plans serve as roadmaps that outline the necessary actions and resources needed to meet municipal climate commitments. For some municipalities, climate action plans are the primary relied-upon tool for achieving the targets and commitments often set out in climate emergency declarations. This highlights the importance of developing climate action plans that are detailed, datadriven, and accountable.

3.1.1 Focus and Scope of Climate Action Plans

Some municipal climate action plans focus solely on reducing GHG emissions or building resilience to climate impacts. Others integrate mitigation and adaptation into one plan. Integrated plans often recognize the synergies and efficiencies that can be achieved from actions that advance both mitigation and adaptation goals. Climate action plans may also differ based on the scope of actions they cover. Some plans concentrate on internal corporate actions while others encompass actions aimed at sectors within the wider community, outside the direct control of the municipality.

Regardless of focus and scope, all climate action plans should begin by creating a vision, terms of refence, and governance and accountability models to direct and manage the plan. They should then speak to relevant baseline data, and establish objectives and targets, describing the mechanism and policies that will accomplish the actions, the budget

allocated to plan implementation, and the monitoring, evaluation, and reporting frameworks that will track progress.

It is important to note that while climate action plans are a common and important part of municipal climate action, many plans lack the detail and accountability elements that will ensure climate targets are met.

3.2 What Makes a Climate Action Plan Accountable

Municipal climate action plans become accountable the following key elements are included:

- Strong governance and oversight
- Standardized data and reporting
- Clear outputs and outcomes
- Detailed action identification, lead responsible, and budget allocation
- Monitoring, evaluation & reporting

3.2.1 Strong Governance and Oversight

Clear governance structures and mechanisms for oversight build accountability. Establishing roles and responsibilities, assigning responsibility to specific entities or departments, and ensuring leadership support create a framework for effective implementation. A governance structure ensures plans are developed collaboratively, implemented effectively, and tracked transparently.

The structure should include key internal and external groups and individuals with specific responsibilities to help formulate and manage the plan and keep it accountable.

Table 1 provides examples of groups and individuals that may be part of this governance structure, their responsibilities, and benefits they provide to climate accountability. Appendix A provides further resources for establishing strong governance structures.

Table 1: Potential Members of a Climate Governance Structure

GROUP OR INDIVIDUAL	RESPONSIBILITIES	BENEFITS
Council	- Reviews and approves governance structure. - Supports, reviews, and approves climate plan. - Provides direction to staff. - Leads advocacy efforts to other levels of government.	- Sends a signal that the municipality is taking plan development seriously. - Encourages an all-of-government approach within the municipality. - Encourages other levels of government to advance climate accountability.
Committee of Council	- Chaired by Councillor(s), reconfirmed periodically - Composed of Councillors and external stakeholders. - Meets regularly to oversee implementation of climate action plan and reports back to Council.	- Provides a platform for public participation. - Creates a direct link between council and members of the public. - Increases transparency through open public meetings and meeting minutes.

GROUP OR INDIVIDUAL	RESPONSIBILITIES	BENEFITS
Executive Team (e.g., City Manager, CAO, Commissioners)	• Assumes responsibility for climate plan at the highest municipal staff level. • Keeps departmental staff accountable • Reports on climate progress across municipality to council and stakeholders.	• Ensures accountability at the executive level. • Encourages climate literacy, understanding and accountability from the top down.
Climate staff	• Provides staff to lead climate plan development, implementation, and reporting. • Leads internal and external steering committees. • Contributes to advocacy efforts to other levels of government. • Recruits public stakeholders to external steering committee.	• Ensures there is strong and centralized role that can lead and stay committed to climate action.
Other staff (E.g., finance, planning, engineering, public health, transportation, economic development, parks and recreation)	• Takes part in internal steering committee work. • Implements department or project level actions as directed by senior leadership.	• Ensures that different municipal departments affected by and contributing to climate change are part of plan development.
Internal/staff committee	• Composed of municipal staff from different departments. • Facilitates inter-departmental meetings. • Guides and reviews the climate action plan. • Acts as centralized staff committee for all climate action work.	• Provides a mechanism for inter-departmental collaboration and alignment. • Coordinates feedback on plan development from staff. • Maintains staff accountability.
Climate Advisory Panel	• Provides data and technical expertise	• Brings data and technical expertise to the forefront of all climate plan conversations.
Public	• Takes part in external steering committee and or citizens' panel. • Provides input on climate action plans.	• Provides different perspectives and feedback. • Creates a sense of public transparency and accountability to plan development and implementation.

Municipalities use different governance structures to reflect their local contexts. For example, the City of Toronto, through the _Accountability and Management Framework_ for the TransformTO Net Zero Strategy creates relationships of advisement and accountability for implementation of the Strategy by establishing: a Climate Advisory Group made up of community members; a Joint TransformTO Implementation Committee made up of City staff and labour union organizations, and; a TransformTO Climate Leadership Table made up of internal, inter-divisional City senior management staff. Each advisory group has terms of reference which outline its purpose, management processes, members, and roles that will guide the City's accountable and inclusive implementation of the Net Zero Strategy.

The City of Edmonton developed several committees over the course of their climate action planning. The City's Office of Environment partnered with Alberta Climate Dialogue and the Centre for Public Involvement to create the _Citizens' Panel on Edmonton's Energy and Climate Challenges._ The 60-personpanel was provided with resource materials including _Edmonton's Energy Transition Discussion Paper_ to learn about climate change and energy vulnerabilities. They were then asked to provide feedback on the recommendations of the discussion paper: their acceptability, how far and how fast to implement them, and areas of common ground and divergence among citizens.

Edmonton also created the Energy Transition Climate Resilience Committee, made up of 15 Edmontonians who serve a 2-year term and help implement 2 strategic plans: _Edmonton's Community Energy Transition Strategy_ and _Climate Resilient Edmonton: Adaptation Strategy and Action Plan._ The Committee encourages and promotes the strategies, provides advice to Council regarding their implementation and assists Council in developing performance measures. It provides a wide and strategic perspective on issues relating to energy transition and climate resilience in Edmonton. The Committee's establishment, mandate and terms of reference are outlined in _Bylaw 18881._

3.2.2 Standardized Data and Reporting

All climate action plans should include regular and standardized data collection to assess baseline performance and track progress over time. Reporting on this data should be transparent, consistent, and accessible to stakeholders, providing evidence of achievements and areas that may require further action. For mitigation plans, a baseline greenhouse gas inventory is needed. For adaptation plans, a baseline climate risk and vulnerability assessment is needed.

3.2.2.1 Greenhouse Gas Inventories

Corporate and community mitigation plans require a GHG inventory, which provides a baseline understanding of the sources and magnitude of emissions generated within the municipal boundary and is essential for setting reduction targets, designing effective strategies, and tracking progress over time. To have an accountable climate action plan, the GHG inventory must be public, transparent, and reasonably current. There are three key elements of accountability for GHG inventories:

1. **Alignment with Existing Protocols and Standards:** Internationally recognized protocols and standards guide municipalities when creating emissions inventories. These protocols provide methodologies for inventories creation and target setting. Appendix B provides examples of key protocols.

2. **Documentation and Transparency:** Document all methodologies, assumptions, and data sources used in the inventory process.Maintain transparency by making the inventory report publicly available and accessible to stakeholders, allowing for review and questions.

3. **Periodic Updates:** Commit to regularly updating the inventory to reflect change over time. Municipalities may consider committing to GHG inventory updates annually, bi-annually or every five years, based on resource availability, and potential for temporal changes to emissions.

3.2.2.2 Climate Risk and Vulnerability Assessments

A corporate or community adaptation plan will require a baseline assessment of the municipality's risks and vulnerabilities to climate change and its capacity to adapt and build resilience. A climate risk and vulnerability assessment (CRVA) identifies hazards, risks, and impacts to municipal sectors and informs actions that increase resilience. To ensure the assessment is accountable, several key elements and steps should be considered:

1. **Alignment with Existing Standards and Guides:** There are numerous resources available to support and guide CVRAs and adaptation planning more broadly, providing methodologies, tools, and guidance materials to assist municipalities in conducting robust and effective assessments and prioritizing resilience actions. Appendix C provides a series or resources to support municipal CVRAs.

2. **Reporting and Communication:** Clearly document the findings of the risk and vulnerability assessment in a comprehensive report. Communicate the results to stakeholders and the wider community using accessible language, visualizations, and engagement strategies. Foster transparency and accountability by sharing the methodology, assumptions, and data sources used in the assessment.

3. **Review and Update:** Regularly review and update the risk and vulnerability assessment to account for new data, changing climate conditions, and evolving knowledge. Incorporate feedback from stakeholders and use emerging best practices in climate risk assessment and adaptation planning.

3.2.3 Clear Outputs and Outcomes

Outputs refer to the tangible deliverables and results of specific actions or activities undertaken to address climate change, such as the implementation of renewable energy projects or the enhancement of green infrastructure. Outcomes, on the other hand, represent the broader impacts and changes resulting from these actions, such as reduced greenhouse gas emissions or enhanced community resilience. To be accountable, the desired outputs and outcomes of climate action plans must be clearly communicated. When developing outputs and outcomes, it is important to consider these principles.

1. **Specificity:** Outputs and outcomes should be specific and well-defined. They should provide a sense of direction and purpose for the plan's implementation. Avoid vague or ambiguous statements and provide clear details about what will be achieved.

2. **Measurability:** Ensure that outputs and outcomes can be quantified or measured. Use specific metrics or indicators to track progress and assess the extent to which the desired outputs and outcomes are being achieved. This allows for meaningful monitoring and evaluation.

3. **Periodic Updates:** Set timelines and deadlines for achieving outputs and outcomes. Breaking down the outputs and outcomes into short, medium, and long-term targets can provide a clear roadmap for implementation, and aid in resource allocation. These sub-targets provide steppingstones towards larger goals and enable municipalities to assess achievements and adjust plans as needed.

3.2.4 Detailed Action Planning

A robust climate action plan outlines strategies and actions that will be taken to achieve the defined goals. The strategies should be feasible, realistic, and supported by evidence and best practices. Clear actions with assigned costs, budgets, and human resources increases accountability for implementation.

3.2.4.1 Identifying Actions

Identifying and prioritizing climate actions in a transparent and accountable manner is crucial for effective municipal climate planning. Here are key steps that municipalities can take to achieve this:

1. **Stakeholder Engagement:** Engage a diverse range of stakeholders, including staff, community members, businesses, organizations, and experts, throughout the process. Ensure that this stakeholder engagement process is clearly and widely communicated across multiple channels. Use multiple engagement methods that are inclusive and accessible for all to participate. For transparency and accountability, document the stakeholder engagement process and outcomes, including meeting summaries and participant feedback, and make this information publicly available.

2. **Clear Evaluation Process:** Establish clear criteria for evaluating potential climate actions. Consider factors such as emission reduction potential, cost-effectiveness, co-benefits, equity considerations, and community acceptance.

3. **Clear Prioritization Process:** Clearly define the criteria and rationale for prioritizing climate actions. This helps stakeholders understand how actions were selected and ensures transparency in decision making. Consider factors such as urgency, feasibility, impact, and alignment with community priorities which may be outlined in a municipality's strategic plan.

3.2.4.2 Financial Resources

Clearly identifying resource requirements, budgets, and funding sources increases accountability and improves the chance that actions will be sufficiently resourced. To ensure a robust and accountable cost estimation of a climate action plan, municipalities can follow these guidelines:

1. **Comprehensive Data Collection:** Collect relevant data and information to estimate the costs associated with each climate action. This may include equipment and infrastructure costs, installation and implementation costs, operational and maintenance costs, and any other expenses related to the action.

2. **Cost Breakdown:** Provide a detailed breakdown of costs for each climate action, including capital costs, recurring costs, and any associated revenues or savings. Table 3 provides examples of climate action plan costing studies.

3. **Financing Options and Funding Sources:** Identify and evaluate various financing options and funding sources available to support the implementation of the climate action plan.

4. **Public Reporting:** Clearly present the cost estimation results for each the total costs, cost breakdowns, financing options, and funding sources. Provide clear references to the data sources used and ensure the document is easily accessible to stakeholders.

Many municipalities have created costing studies for their climate action plans. For example, the _Zero Carbon Whitby Costing Study_ provides a schedule and costing analysis that details the financial resources and work required for the Town to become a net-zero corporation by 2045. The study details its methodology, assumptions, and data sources used. It also identifies how funding sources would be utilized to create a Zero Carbon Revolving Reserve Fund to finance plan implementation. A financial table is provided, detailing balances, payments out, and funding in for every year of the plan. These components make it an example of a detailed accountable costing study. Similarly, the City of Winnipeg has created a _Community Energy Investment Roadmap (CEIR),_ which is a technical analysis identifyingthe investments and actions needed to be a net-zero community by 2050.

3.2.4.3 Human Resources (Staffing and Partnerships)

Accountable climate action plans identify adequate human resourcing. Municipal staff possess valuable institutional knowledge, understanding of local contexts, and the ability to coordinate efforts internally. On the other hand, external partners, such as consultants, researchers, and community organizations, offer specialized skills, technical know-how, and can enhance the effectiveness and inclusivity of the climate action plan by incorporating diverse perspectives and accessing additional resources.

3.2.5 Monitoring, Evaluation & Reporting

Monitoring, evaluation, and reporting (MER) are crucial for the success and accountability of municipal climate action plans. MER helps track progress, ensure accountability, facilitate learning, and support evidence-based decision making. Municipalities implement monitoring, evaluation, and reporting in various ways, and produce various types of reports and documents as part of their MER efforts. These may include _quarterly community newsletters_, _annual or biennial progress reports_, _sustainability reports_, case studies, _data dashboards_, or _5-year reviews and updates._

3.3 Conclusion

Here are some key takeaways for municipalities to have accountable climate action plans:

1. **Stakeholder Engagement:** Strong Governance and Oversight: Establish clear governance structures and mechanisms to provide oversight and accountability for the climate action plan. Define roles and responsibilities, assign authority, and ensure that decision-making processes are transparent and accountable.

2. **Clear Outputs and Outcomes:** Establish and communicate the outputs and outcomes that will be achieved by the climate action plan. These should be specific, time-bound, and measurable.

3. **Comprehensive Stakeholder Engagement:** Engage a wide range of stakeholders throughout the planning and implementation process. Ensure that stakeholder engagement is transparent, inclusive, and responsive to diverse perspectives.

4. **Resource Planning and Accountability:** Estimate costs of climate actions, identifying human resources, upfront investments, and long-term operational and maintenance costs. Identify funding sources, explore financing options, and ensure financial accountability by tracking and reporting on the allocation and use of funds.

5. **Robust Monitoring, Evaluation, and Reporting (MER):** Develop a robust MER framework to track progress, evaluate the effectiveness of actions, and report outcomes to council and stakeholders. Regularly monitor and assess the implementation of the climate action plan, measure key performance indicators, and transparently communicate the results.

6. **Documentation and Transparency:** Document methodologies, assumptions, and decisions made throughout the development and implementation of the plan. Maintain clear records of data sources, analysis, stakeholder input, and decision-making processes to ensure transparency, accountability, and the ability to track progress over time.

By incorporating these key elements, municipalities can ensure that their climate action plans are not only effective enough to reach desired climate goals but are also transparent and accountable to municipal decision-makers, the public, and other community stakeholders.

4. Applying a Climate Lens into Muncipal Decision Making

4.1 Introduction to Climate Lenses

Beyond the actions outlined in climate action plans, municipalities have recognized the importance of addressing climate change across many other municipal areas. This requires a climate lens, which refers to the deliberate consideration of climate change across all municipal decision-making. A climate lens helps staff and Council identify potential positive and negative impacts a decision will have on emissions and climate risks.

Climate lenses can be applied by estimating a decision's climate implications or through integration of climate change into municipal plans and policies. While they are not the only ways a municipality can integrate climate considerations into municipal decision-making, they are both tested and effective at identifying climate implications and opportunities. Climate lenses therefore play a crucial role in helping municipalities meet their climate commitments and enhance their climate accountability. Use of a climate lens often requires a degree of staff training or capacity building and serves as a useful opportunity to raise climate literacy in general municipal staff.

4.2 Benefits of Climate Lenses

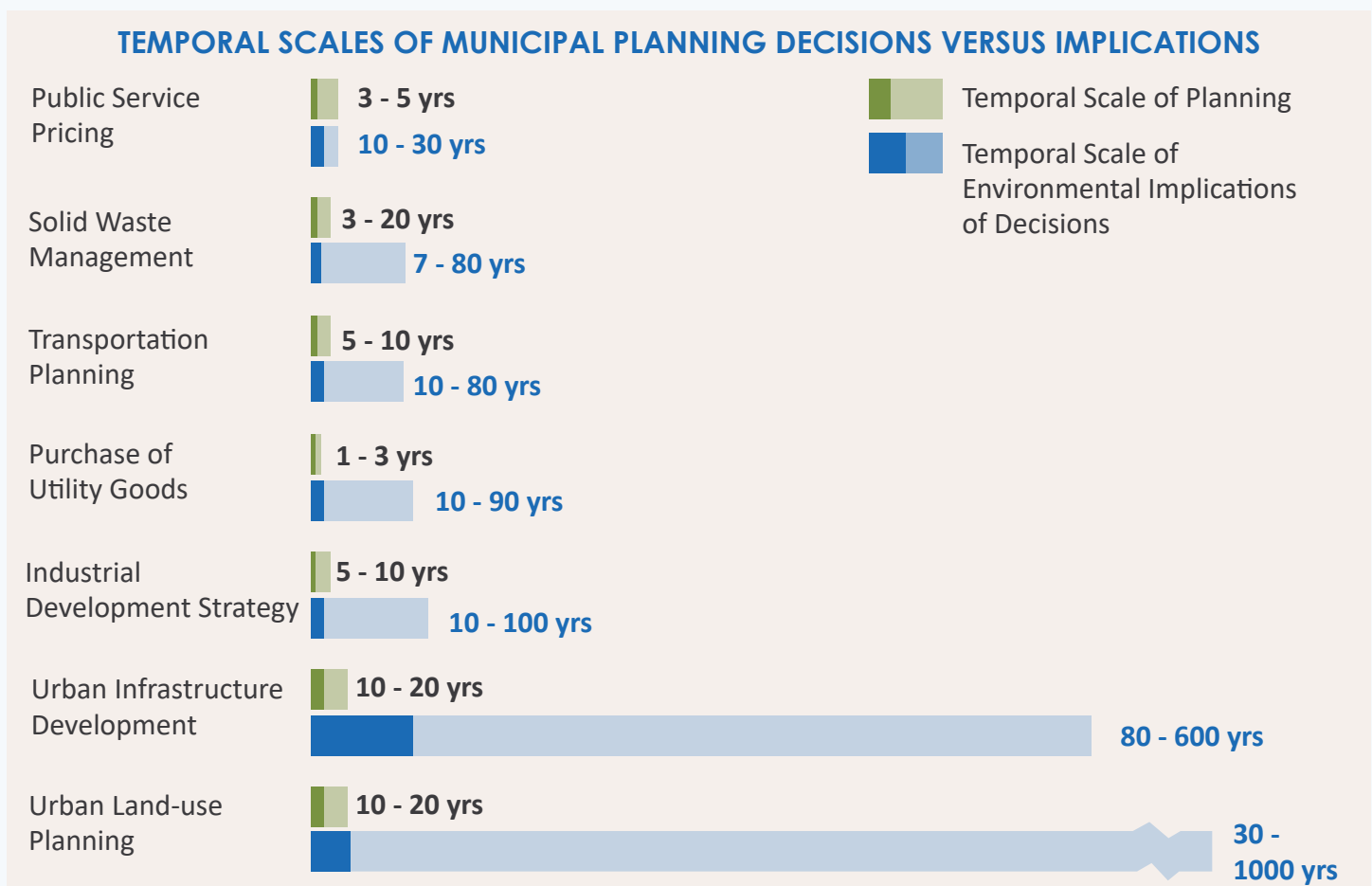Incorporating a climate lens into municipal decision-making and planning offers several benefits:

Long-Term Planning: Climate lenses encourage municipalities to consider the future impacts of their decisions and make informed choices that are resilient, adaptive, and sustainable. This approach helps avoid potential pitfalls and enhances their ability to navigate the challenges posed by climate change. This long-term thinking is illustrated by the Region of Halton's *Climate Change Discussion Paper – Regional Official Plan Review* (2020) which compares the temporal scales of municipal planning decisions versus implications (Figure 1).

Coherence and Consistency: A climate lens provides a standardized framework to consider decisions and how they impact climate action plans and targets. By integrating climate considerations, municipalities can avoid conflicting strategies and promote a holistic climate action approach.

Cost Savings: Climate lenses can lead to cost savings by avoiding potential costs associated with retrofitting or adapting infrastructure, responding to climate-related emergencies, or dealing with the consequences of inadequate planning.

Climate Accountability: A climate lens helps identify opportunities to reduce emissions and improve resilience. The lens helps decision-makers evaluate the climate impact of various choices, and report transparently on the final decision, keeping municipalities accountable for decisions that could advance or hinder their climate goals.

Figure 1: Temporal Scales of Municipal Planning

TEMPORAL SCALES OF MUNICIPAL PLANNING DECISIONS VERSUS IMPLICATIONS

Public Service Pricing
- 3 - 5 yrs
- 10 - 30 yrs

Legend:
- Temporal Scale of Planning
- Temporal Scale of Environmental Implications of Decisions

Solid Waste Management
- 3 - 20 yrs
- 7 - 80 yrs

Transportation Planning
- 5 - 10 yrs
- 10 - 80 yrs

Purchase of Utility Goods
- 1 - 3 yrs
- 10 - 90 yrs

Industrial Development Strategy
- 5 - 10 yrs
- 10 - 100 yrs

Urban Infrastructure Development
- 10 - 20 yrs
- 80 - 600 yrs

Urban Land-use Planning
- 10 - 20 yrs
- 30 - 1000 yrs

4.3 Climate Implications Reporting and Tools

To integrate climate change considerations into decision-making, some municipalities include dedicated climate change implications sections in staff reports to council, providing an assessment of how proposed initiatives align with climate action goals. They outline the potential impacts of the decision at hand, specifically focusing on how it may impact the municipality's climate adaptation and mitigation work. To support these climate implications sections, some municipalities have developed tools to describe or quantify metrics such as potential emissions.

4.3.1 Steps to Adopt Climate Implications Reporting

To adopt dedicated sections on climate change implications in staff reports to council, municipalities typically follow several steps:

1. **Policy Development:** Develop a policy outlining the requirement for dedicated sections on climate change implications in staff reports. This policy should define the purpose, scope, and expectations for integrating climate change considerations into decision-making.

2. **Staff Training and Capacity Building:** To ensure consistent application, those involved in preparing staff reports need a high-level understanding of climate change concepts and impacts.

3. **Template Development:** Use a standardized templates that provide clear guidance on the type of information to be included, such as potential emissions, climate risks, and recommended mitigation or adaptation measures. This template may also be generated by a climate lens toolwhich can also produce quantitative and/or qualitative implications data and can be appended to staff reports.

4. **Implementation and Monitoring:** Once climate change implications sections are incorporated into staff reports, monitor their effectiveness, and adjust as needed. Evaluate the quality of the information provided, track the integration of climate considerations into decision-making, and seek feedback from council and staff.

4.3.2 Tools and Resources

Table 2 provides examples of tools and resources that can be used to support the identification and potential quantification of climate implications for staff reports.

Table 2: Climate Implications Resources

Clean Air Partnership - Municipal Climate Lens Tool	This tool was designed to provide a preliminary, qualitative understanding of whether a municipal decision will affect climate (through emissions production) or be affected by climate (through increased exposure to temperature or precipitation). The Tool is designed to be used by all staff in a municipality and is designed to be broadly applicable to any decision. It is free to use for any municipality and produces a pdf output which can be appended to a staff report.
Climate Implications Repository	This repository provides municipal staff with a list of key municipal decisions and their potential climate implications. Decisions are searchable and are broken down by municipal sector.
Integrating Climate Considerations: Governance and Operations	This resource details key climate questions municipal staff should around specific decision points, and links to tools that can be used to integrate climate change considerations into municipal operations.

4.4 Climate Integration in Municipal Plans

Municipalities are actively integrating climate change into many municipal plans. Climate change is already inherently integrated into some plans such as climate action plans and electric vehicle (EV) strategies. However, there is a need to explore additional plans where climate change implications are significant but traditionally have not been considered. These include official plans, strategic plans, asset management plans, water management plans and transportation plans. These plans should be given priority for climate change integration, considering the substantial influence of climate change on these plans and their potential impacts on climate change.

4.4.1 Official Plans

The direction and principles that govern local decisions about land use, development and infrastructure are laid out in OPs. By integrating climate change considerations into OPs, municipalities can encourage strategic decision-making that considers climate-related risks and opportunities over the plan's duration. Incorporating climate change language into an OP identifies how the community's growth and land use management will affect GHG emissions and climate change vulnerabilities to its service delivery, infrastructure, residents, and businesses, particularly those who are most vulnerable. Municipal OPs provide an opportunity for climate change education within the planning department, other municipal departments, and council. As OPs require public consultation, there is an opportunity for climate education within the community.

Examples:

For examples of how climate change is integrated into municipal OPs, see Clean Air Partnership's report on *Integrating Climate Change into Municipal Official Plans.*

4.4.2 Strategic Plans

Municipal strategic plans provide an ideal framework for integrating climate change due to their longterm and strategic nature. Climate change affects various aspects of municipal operations, and a strategic plan allows for the systematic integration of climate considerations across all relevant areas, including policy development, infrastructure planning, community engagement, and resource allocation.

Integrating climate change into the strategic plan enhances integration and collaboration among different departments. It breaks down silos and facilitates cross-departmental coordination, ensuring that climate considerations are consistently addressed throughout the organization.

The integration and consideration of climate change in strategic plans are only as effective and accountable as the strategic plans themselves. Strategic plans are ideal for climate change integration so long as key elements of accountability are committed to in the strategic plan, including:

Extensive and inclusive community and staff engagement

Transparent methodology for identification of strategic plan priorities, objectives, and indicators

Specific and measurable actions

Integration with municipal budgeting and departmental planning processes

Clear monitoring and reporting processes

Examples:

Halton Region's 2023-2026 *Strategic Business Plan* sets the strategic direction and priorities for Council's four-year term of office and the region's future. One of the four pillars of the plan is Climate Change and the Environment which identifies four key goals related to climate action.

The City of Toronto's *Corporate Strategic Plan* outlines four strategic priorities which will improve quality of life for its residents. These priorities were determined based on public engagement, directions and budget decisions from City Council, discussions among the City's leadership teams, and in response to the challenges facing Toronto and other major urban areas.

The *2019-2023 Region of Waterloo Strategic Plan* includes five focus areas, one of which is Environment and Climate Change. Under this focus area, the plan identifies five strategic objectives and 17 specific actions. The strategic plan also indicates how it aligns with other plans.

4.4.3 Asset Management Plans

Climate change significantly impacts the performance and lifespan of infrastructure assets. Increased temperatures, changing rainfall patterns, and more frequent extreme weather events accelerate asset deterioration and decrease their functionality. By considering climate change in asset management plans, municipalities can make informed decisions regarding asset design, materials, maintenance practices, and renewal strategies that account for projected climate conditions. This helps extend asset lifespans, reduce the risk of premature failures, and optimize asset performance in a changing climate.

Integrating climate change into asset management planning factors the costs of climate mitigation and adaptation measures, allowing municipalities to better prioritize investments, allocate resources, and develop financial plans that address both routine maintenance and climate change. This proactive approach helps optimize financial planning, avoids reactive or ad hoc asset upgrades, and achieves longterm cost-effectiveness in asset management.

Examples:

The City of Guelph's *Strategic Asset Management Policy* (2018) provides a framework for managing risks in asset management plans, including climate change mitigation and adaptation. The policy promotes an integrated approach, considering asset vulnerabilities and costs across many areas including operations, levels of service and lifecycle management. The policies promote the consideration of adaptation opportunities to address these vulnerabilities, and integration with GHG reduction goals, disaster planning and contingency funding.

In 2018, the City of Richmond Hill conducted a climate change risk scan to better understand the impacts of climate change on municipal operations. In response, the City committed to systematically consider the impacts of climate change on infrastructure through its asset management policy. Specific actions related to integrating climate change considerations into the City's asset management planning approach can be found in the City's *2021 Asset Management Plan.*

4.4.4 Water Management Plans

Water management plans can include stormwater plans, water and wastewater plans and watershed plans. Integrating climate change into water management plans supports long-term planning and resilience-building efforts. By considering climate projections, municipalities can anticipate future waterrelated challenges and develop adaptive strategies. This includes assessing the lifespan and capacity of existing infrastructure, integrating climate-sensitive design criteria into new projects, and promoting sustainable water management practices to enhance the resilience of water systems to climate change impacts.

Example:

The Region of Peel's *Stormwater Servicing Plan for Regional Road Infrastructure* (2022) incorporated climate change considerations in several ways. The plan incorporates detail on expected changes in climate including temperature and precipitation into the 2080s for the Region. These projections inform updated Intensity-Duration-Frequency (IDF) curves which describe the likelihood of future extreme rainfall events. It also recommends regular updates to this IDF curve as new climate data emerges. To ensure the financial ability to maintain critical infrastructure and plan for environmental factors such as climate change, the plan has initiated a discussion on cost-sharing policies and user rates.

4.4.5 Transportation Plans

Transportation plans typically address various transportation systems, including roadways, public transit, cycling, and pedestrian facilities. The importance of transportation as a climate action is typically recognized in climate action plans but not always considered in transportation plans. By incorporating climate change considerations into transportation plans, municipalities can prioritize strategies and actions that will help meet GHG reduction goals. This can include promoting the use of low-carbon transportation modes like public transit, cycling, and walking, as well as encouraging the adoption of electric vehicles.

Integrating climate change into transportation plans also encourages the design and development of resilient infrastructure. By incorporating climate resilience measures into infrastructure design and maintenance plans, municipalities can minimize disruptions, enhance safety, and ensure the continuity of transportation services in the face of climate-related challenges.

Example:

In April 2023, the City of Ottawa updated its *Transportation Master Plan* (TMP) with new policies to guide decision-making on Ottawa's transportation system over the next two decades. Under the theme of building "sustainable and resilient transportation system" the TMP identifies eight policy goals that deeply and significantly integrate with the goals of Ottawa's Climate Change Master Plan. Under each policy goal, the TMP identifies key actions related to both climate mitigation and adaptation.

4.4.6 Tips for Integrating Climate Change into Municipal Plans

While every type of municipal plan will have its own focus and objectives, integrating climate change into each plan often involves the same key steps

Internal Engagement

When a plan reaches its next scheduled update, the staff responsible should assemble an interdepartmental team to ensure climate change is strategically and thoroughly integrated into the plan update. To help integrate climate change into most municipal plans, some common questions should be asked.

1. **How is climate considered in the plan at present?**

2. **How does the plan advance relevant actions set out in the climate action plan?**

3. **How aligned are the plans?**

4. **What needs to be done to better align them?**

5. **Has the plan's GHG emissions been quantified?**

6. **Has a climate vulnerability and risks assessment been undertaken for the plan?**

7. **What future climate data is used or should be used to inform the plan update?**

8. **What direction from Council could strengthen climate change integration into the plan?**

Appendix E provides further questions and resources to support integrating climate change into each of the specific plans discussed in this section.

Public Engagement

Public engagement helps ensure transparency and public accountability. The municipality should undertake this step as it normally would, ensuring that the same climate change integration questions are posed to the public in addition to internal staff. This can serve as an educational opportunity for describing how climate change impacts or is impacted by the plan, and a reference for how decisions will now be made as a result of integrating climate change into the plan.

4.5 Conclusion

Incorporating climate lenses into municipal decision-making is crucial for achieving climate commitments and demonstrating accountability. Two major approaches that facilitate this integration are the inclusion of climate implications sections in staff reports and the integration of climate considerations in municipal plans.

Both approaches recognize the extended temporal scale of climate implications of municipal decisions. By instituting these approaches, decision-makers have access to all the relevant and necessary data and perspectives to make good long-term decisions for their communities and the climate.

5. Carbon Budgets

5.1 Introduction to Carbon Budgets

A carbon budget is the maximum quantity of emissions that can be released into the atmosphere while keeping global warming within a specific limit. On a global scale, to keep the Earth within 2°C of warming, the remaining carbon budget is approximately 994 gigatons (as of October 2023). This is according to the *Carbon Clock* which exclusively draws on data from the IPCC.

A municipal carbon budget scales down this global carbon budget to the community level based on population and other factors, producing an allocated maximum quantity of emissions that can released by that community. A municipality may spread this total budget over time, creating annual or multi-year carbon budgets which gradually decrease as emission reduction activities increase. This provides a limit within which a municipality can make operating and investment decisions.

There is no one correct or standardized approach to operationalize a carbon budget. However, two methods are most frequently used, the Cumulative Emissions Approach, or the Emissions Pathway Approach.

The Cumulative Emissions Approach considers the total emissions from human activities over a specified period. It is based on the principle that global temperatures are closely related to cumulative CO_2 emissions. By calculating the remaining cumulative carbon budget from a starting year to a future target year this approach allows for setting limits on total allowable emissions to stay within a specific temperature target.

The Emission Pathways Approach examines different trajectories of greenhouse gas emissions over time and the associated probabilities of staying within a specific temperature limit. Instead of focusing solely on a cumulative total, this approach examines the rate and timing of emissions reductions. Various scenarios, including business-as-usual, rapid reductions, or even negative emissions (through carbon capture and storage, reforestation, etc.), are modeled to determine the likelihood of meeting a temperature goal.

5.2 Benefits of Carbon Budgets

Establishing and operationalizing a carbon budget offers several benefits to municipalities:

Centralized and consistent decision-making: municipalities can consistently prioritize, implement, and track annual emission reductions alongside existing municipal financial budgeting processes

"Whole of government" approach: climate action and accountability are spread throughout government, where all departments are accountable for their emissions.

Enhanced accountability and transparency: Setting specific emission caps and regularly reporting on progress enhances accountability and transparency.

Highlights importance of intergovernmental collaboration: emphasises how municipalities need to be supported by higher levels of government to achieve their climate goals.

5.3 Examples of Carbon Budgets

5.3.1 Oslo, Norway

The *Oslo Climate Budget* informs Oslo's plans to reduce emissions by 95% by 2030 compared to 2009 levels. Oslo fully integrates annual carbon budgets into the regular financial budgeting process and is managed by the finance department. It outlines emission limits, targets, and specific measures to be implemented, including estimated emission reductions and associated costs, which are used to support decision-making on each measure.

The climate budget serves three key purposes: tracking emissions alongside finances, distributing responsibility for emission reduction across the city government, and ensuring transparency and accountability. To stay within budget, the city focuses on sectors with the highest emissions, such as road transport, waste incineration, and other sources like construction sites and industrial machinery.

The Oslo climate budget exemplifies the city's proactive approach to climate action, demonstrating a clear roadmap, financial commitment, and collaboration with various stakeholders to achieve ambitious emission reduction targets.

5.3.2 Edmonton, Alberta

The *City of Edmonton* incorporates carbon considerations directly into the City's standard financial budgeting process. During the budget cycle, all approved requests within the capital, operating and utility budgets are brought into one carbon budget document. The City then calculates the amount of carbon eliminated or added from each request using various carbon accounting methods. The City's emissions forecast, and remaining carbon budget are then updated based on the total emissions for each budget request. This only includes requests that were approved by Council and could be quantified.

In December 2022, Edmonton released Canada's first municipal *carbon budget report* for the period of 2023-2026. The report indicated that Edmonton was on track to deplete its carbon budget of 176 Mt CO2e by 2037 and would fall short of its 2050 net-zero target.

Despite these findings, Edmonton's commitment to the carbon budgeting process is still encouraging. It provides residents with access to up-to-date information on the climate impacts of all municipal capital and operating decisions. This transparency empowers residents and Council to hold the City accountable for its actions and serves as a catalyst for municipal decision-makers to reassess their strategies and make necessary corrections.

5.4 Carbon Budget Implementation

The process for implementing and using a carbon budget varies depending on the selected approach. For this toolkit, the section below describes a process that closely resembles the Edmonton process.

5.4.1 Establish the Carbon Budget

Determine the total global remaining carbon budget using the IPCC data on maximum allowable emissions between now and the end of the century for a maximum warming scenario of 1.5°C or 2°C. The *Carbon Clock* provides estimated figures based on IPCC data.

Determine how much of this the global carbon budget should be allocated to the municipality. Methodologies for determining this figure may vary. A simple population-based methodology would allocate a municipality's carbon budget based on the size of its population. For example, a city with the population of 1 million (0.0125% of the global population) would be allocated 0.0125% of the global carbon budget. Another method uses a "fair share" approach that ensures that municipalities that have historically benefited from a high-carbon economy have a greater responsibility for reducing emissions quicker than those that have not benefited (see *The Climate Equity Reference Calculator*, or *1000 Cities Carbon Calculator*).

5.4.2 Operationalize the Carbon Budget

1. **Establish the baseline emissions and time-period for the first carbon budget.** Consider using existing emissions data from corporate and community GHG inventories. Carbon budgets may be produced annually or in multi-year periods. Methods, tools, and resources to support this initial GHG inventory are explored in Section 3 of this toolkit.

2. **Consider how each subsequent budget fits into long-term emissions reduction planning.** Many municipalities have developed scenarios or projection of emissions as part of their climate action planning process. As part of this, they may have identified long-term emission reduction targets for (e.g., net-zero by 2050, or reducing a certain level of emissions by 2030).Municipalities should spread their carbon budget over time, creating annual or multi-year carbon budgets, and gradually decrease emissions to reach their target emissions, ideally to netzero by 2050 at the latest to align with the Paris Agreement.

3. **During the regular budget cycle, assess the emissions of all budget requests.** For each request, complete a qualitative and, where possible, quantitative assessment of both the direct and indirect GHG emissions impacts resulting from the request. See Table 5 for available quantification resources. Not every budget request will have emissions, and not all emissions can be easily quantified.

4. **Delegate responsibility for implementing the requests to the relevant municipal entities and require them to report on its GHG impact in a similar manner to how they would report on finances.**

5. **Present carbon budget for Council review.** In one document, assemble all financial and GHG impact information gathered on the budget requests, and prepare an updated forecast on GHG emissions and remaining carbon budget for the municipality.

6. **Report on carbon budget.** Publicly outline the entire carbon budgeting process and outcomes for each budgeting period, including methods and assumptions, GHG impacts of budget decisions, costs, carbon surpluses or deficits, and the remaining carbon budget for the municipality. For transparency and public accountability, the City of Edmonton provides all of this information in their *2023-2026 Carbon Budget report* and corresponding *news release.*

Table 3: Tools and Resources for GHG Impact Quantification

City Inventory Reporting and Information System (CIRIS)	CIRIS is an accessible and easy-to-use Excel-based tool for managing, calculating, and reporting city greenhouse gas emissions inventory data. CIRIS provides a systematic and templated way for cities to input information and use it for a variety of processes. It is based on the Global Protocol for Community-Scale Greenhouse Gas Emission Inventories standard, and facilitates a transparent calculation and reporting of emissions for all sectors.
ClimateOS	ClimateOS is a collaborative decision-making platform for cities to plan, simulate and execute their net zero carbon transition. ClimateOS provides the following benefits: • Operationalizes emission inventory for reporting and planning. • Provides what-if scenario analysis for target setting & strategy development. • Allows policy building for impactful action planning. • Provides clear and interactive visualizations for citizens & stakeholder engagement.
ASAP	C40 multicriteria analysis tool used to help cities select and prioritize their ambitious climate actions, through a comparison of action benefits and challenges.
Integrated Impacts Assessment Tool, IIAT or IMPACTS	A pilot project-level accounting tool from C40 allowing cities to measure emission reductions linked to climate action at the scale of projects.

5.5 Conclusion

Municipal carbon budgets are a key onramp for municipal climate accountability, serving as centralized tools for climate-considerate decision making that works within or alongside financial budget processes. They encourage an "all of government" approach, fostering collaboration and coordination across departments to operationalize climate action effectively.

While the concept of carbon budgeting is relatively straightforward, operationalizing it is still a relatively new and challenging process. Data collection may be manual and uncoordinated, calculating GHG impacts of budget items is challenging, and municipalities may approach these in different ways.

Despite these potential imperfections and complexities, it is essential to take the first steps and begin implementing carbon budgets, recognizing that even imperfect data and initial hurdles can pave the way for continuous improvement. As more municipalities undertake carbon budgeting and share their experiences, the process will become more refined and streamlined. By embracing carbon budgeting, municipalities can take significant strides towards achieving their climate goals and ensuring climate accountability.

6. Taskforce on Climate-related Financial Disclosures (TCFD)

6.1 Introduction to TCFD

The Task Force on Climate-related Financial Disclosures (TCFD) is a global initiative established by the Financial Stability Board in 2015. TCFD aims to improve the understanding and disclosure of climaterelated financial risks and opportunities by organizations within their annual financial filings, enabling investors, lenders, and other stakeholders to make more informed decisions.

Municipalities face unique challenges related to climate change, including managing infrastructure, providing essential services, and ensuring community resilience. TCFD for municipalities provides a framework to assess and disclose climate-related information, helping municipal governments effectively manage these challenges and make informed decisions.TCFD provides a voluntary framework for organizations to disclose information on their climate-related risks, impacts, and strategies. These recommendations are organized around four core elements:

TCFD provides a voluntary framework for organizations to disclose information on their climate-related risks, impacts, and strategies. These recommendations are organized around four core elements:

Governance: disclosure about governance structure and processes for overseeing climaterelated risks and opportunities.

Strategy: disclosure around climate-related risks and opportunities and how they impact the organization's strategy, business model, and financial planning

Risk Management: disclosure around processes for identifying, assessing, and managing climate-related risks.

Metrics and Targets: disclosure of metrics and targets related to climate change.
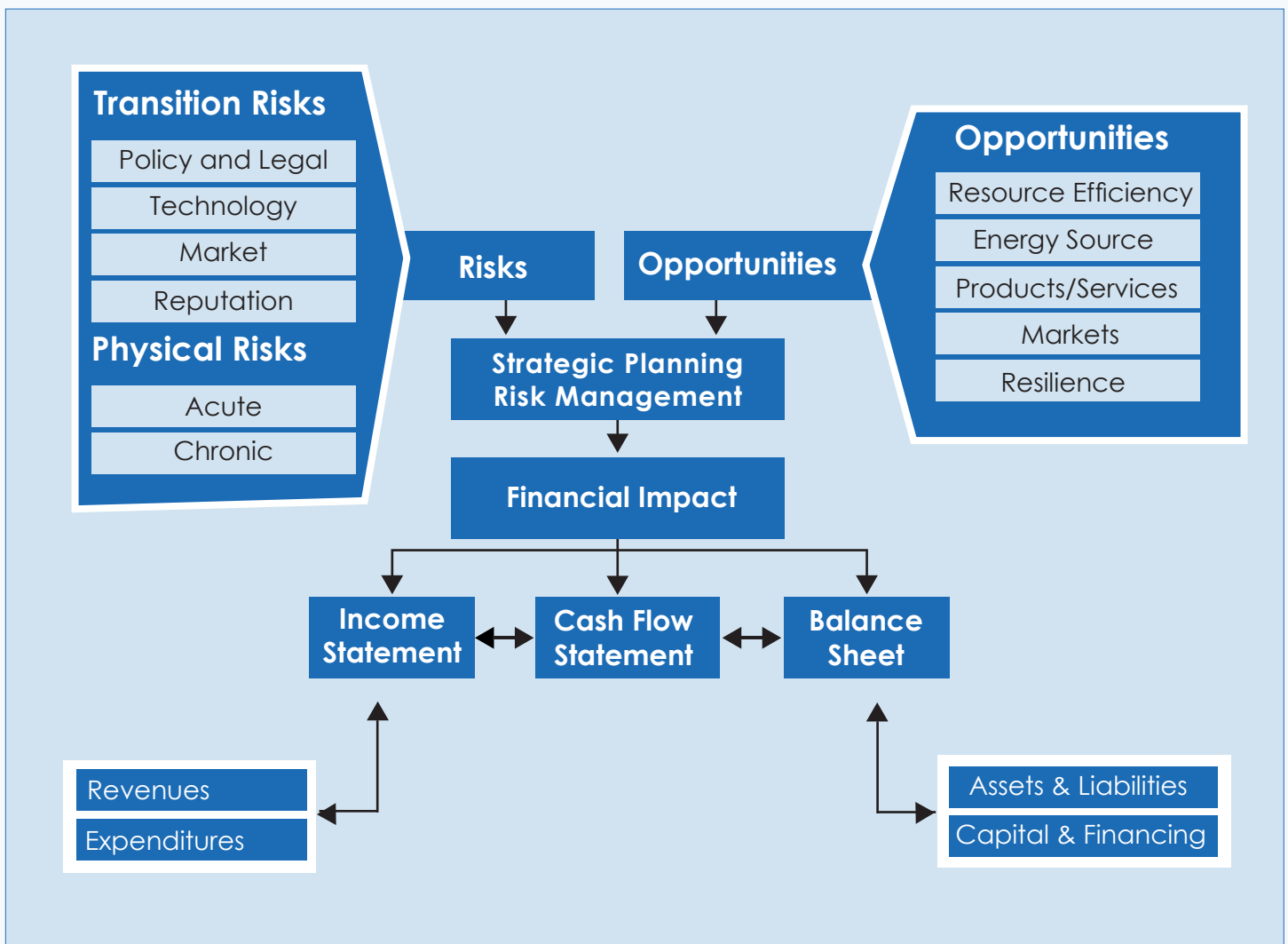
By following TCFD recommendations, municipalities can enhance transparency, improve risk management, and facilitate better decision-making. TCFD has gained significant support from various stakeholders, including governments, financial institutions, corporations, and creditors, as it helps align the private and public sectors with the goals of the Paris Agreement and promotes a more sustainable and resilient economy.

6.2 Benefits of TCFD

The adoption of TCFD recommendations into municipal financial reporting can bring about several benefits for municipalities. Here are some key benefits:

- **Enhanced understanding of climate risks:** By following the TCFD recommendations,municipalities can assess both physical risks (such as extreme weather events and sea-level rise) and transition risks (such as policy changes and technological shifts), enabling them to make informed decisions and take appropriate actions.

- **Improved risk management:** TCFD reporting supports municipalities in integrating climaterelated risks into their existing risk management processes leading to improved resilience, reduced financial impacts, and better protection of municipal assets and infrastructure.

- **Enhanced financial planning:** The TCFD framework incorporates climate-related risks and opportunities into financial reporting processes allowing municipalities to assess the financial impacts of climate change, identify investment needs, and allocate resources accordingly. This can contribute to more effective budgeting, investment decision-making, and long-term financial sustainability.

- **Stakeholder engagement and trust:** TCFD reporting helps municipalities communicate their climate-related risks, strategies, and progress to stakeholders, including residents, businesses, creditors, and regulatory bodies

- **Alignment with global standards:** TCFD reporting aligns municipal reporting with globally recognized standards and frameworks. As TCFD adoption continues to grow internationally, municipalities that report using the TCFD framework can benefit from consistency and comparability in reporting, making it easier for stakeholders to understand and compare their climate-related performance against peers and industry benchmarks.financial sustainability.

Figure 2: Climate-Related Risks, Opportunities, and Financial Impact | Source: TCFD (2021)

6.3 Implementing TCFD Recommendations

Implementing TCFD recommendations in municipal financial reporting involves several steps. Here is an overview of the typical process:

6.3.1 Research TCFD Recommendations

Review the _TCFD recommendations report_ and related guidance materials to understand the four core recommendations and associated recommended disclosures (See Table 4).

Table 4: TCFD Core Recommendations and Disclosures

CORE RECOMMENDATION	RECOMMENDED DISCLOSURES
1. Governance: Disclose the organization's governance around climate-related risks and opportunities.	a. Describe Council's oversight of climate-related risks and opportunities.
	b. Describe management's role in assessing and managing climate-related risks and opportunities.
2. Strategy: Disclose the actual and potential impacts of climate-related risks and opportunities on the organization's businesses, strategy, and financial planning where such information is material.	a. Describe the climate-related risks and opportunities the organization has identified over the short, medium, and long term.
	b. Describe the impact of climate-related risks and opportunities on the organization's businesses, strategy, and financial planning.
	c. Describe the resilience of the organization's strategy, taking into consideration different climate-related scenarios, including a 2°C or lower scenario.
3. Risk Management: Disclose how the organization identifies, assesses, and manages climate-related risks.	a. Describe the organization's processes for identifying and assessing climate-related risks.
	b. Describe the organization's processes for managing climate-related risks.
	c. Describe how processes for identifying, assessing, and managing climate-related risks are integrated into the organization's overall risk management.
4. Metrics and Targets: Disclose the metrics and targets used to assess and manage relevant climate-related risks and opportunities where such information is material.	a. Disclose the metrics used by the organization to assess climate-related risks and opportunities in line with its strategy and risk management process.
	b. Disclose Scope 1, Scope 2 and, if appropriate, Scope 3 greenhouse gas (GHG) emissions and the related risks.
	c. Describe the targets used by the organization to manage climate-related risks and opportunities and performance against targets.

6.3.2 Assess Current Alignment with TCFD

Evaluate how your municipality's current governance, risk-assessment, and risk-management practices align with TCFD. This can be done by using the TCFD Maturity Assessment Framework which is provided in the CPA's *Enhancing Climate-related Disclosure by Cities Guide.* The Assessment helps municipalities determine how far they has progressed towards alignment with each of the four core TCFD recommendations. Progress is generally categorized into three phases of maturity, getting started, evolving, and highly integrated.

The *Enhancing Climate-related Disclosure by Cities Guide* provides a further breakdown of the three major phases by each recommendation area. It is recommended that municipalities review these phases and conduct the self-assessment on TCFD Maturity before advancing to the next steps.

6.3.3 Develop a TCFD Governance and Implementation Team

Developing a comprehensive governance and implementation team is essential for municipalities to effectively identify, assess, and manage climate-related issues with financial implications. As such, municipalities should form a cross-functional team within the municipality that includes representatives from asset management, finance, and climate action planning, with oversight from senior staff, executives, and Council. Establish roles and responsibilities for each member of this governance and implementation team. This importance is further emphasized by the TCFD requirement to disclose how municipalities are governing climate-related issues. Municipalities need to demonstrate that their governance framework is effective, transparent, and accountable.

6.3.4 Identify and Evaluate Climate-Related Financial Risks and Opportunities

Conduct an assessment to identify and evaluate the climate-related risks and opportunities that could have financial implications for your municipality. If applicable, leverage existing assessments such as climate vulnerability and risk assessment (CVRA), which are typical in adaptation planning. An existing CVRA will identify relevant data sources, physical climate risks, and a methodology for assessing and organizing these risks. Similarly, risk management teams are likely to have previously identified a range of other related risks around health and safety, cybersecurity, or human resources.

In addition to leveraging existing assessments, the municipality may review and adapt risk assessments by other municipalities of a similar size and/or geography or collect new data. Regardless of the method, it must be documented under Risk Management, and how management participated must be documented under Governance. TCFD requires the assessment to identify and evaluate both thephysical and transitional risks that may impact municipal finances. Table 5 provides descriptions of key of climate-related risks and opportunities.

Table 5: Descriptions of Climate-Related Physical and Transitional Risks and Opportunities

TRANSITIONAL RISKS	**Policy and Legal Risks:** There is growing climate policy aiming to constrain actions contributing to climate change and promote mitigation and adaptation activities. The increase in climate-related litigation may potentially pose legal risks for municipalities. Claims against corporations and higher levels of government have already arisen from failures to mitigate or adapt to climate change and inadequate disclosure of financial risks.
	Technology Risk: Technological advancements that support the transition to a low-carbon economy can have a significant impact on municipalities.
	Market Risk: Climate change and the shift towards the low-carbon economy is impacting the supply, demand and quality of commodities, products, and services.
	Reputation Risk: Climate change is a potential source of reputational risk tied to community perceptions of a municipality's contribution to climate change or resistance to the low-carbon economy.
PHYSICAL RISKS	**Acute Risk:** Physical risks that are event-driven, including increased severity of extreme weather events.
	Chronic Risk: Physical risks that are longer-term shifts in climate patterns.
OPPORTUNITIES	**Resource Efficiency:** Municipalities can reduce operating costs by improving efficiency across their services, assets, and operations. This can be efficiency in relation to energy, water, materials, and waste.
	Energy Source: The trend toward decentralized renewable energy sources and improved storage capabilities can present opportunities for municipalities to shift their energy sources and reduce costs.
	Products and Services: Municipalities that innovate and develop new low-carbon services may improve their reputation and community participation.
	Markets: Municipalities that pro-actively seek opportunities in new types of assets may be able to better position themselves for the transition to a lower-carbon economy.
	Resilience: The concept of climate resilience involves municipalities developing adaptive capacity to respond to climate change to better manage the associated risks and seize opportunities, including the ability to respond to transition risks and physical risks.

6.3.5 Determine Materiality of the Climate-Related Issues

Once climate-related issues and their potential financial impacts are identified, the next step is to identify those that are material to the municipality. In determining whether information is material, the TCFD recommends that organizations determine materiality for climate-related issues consistent with how they determine the materiality of other information included in their financial filings, and that organizations do not prematurely conclude that climate-related risks and opportunities are not material based on perceptions of the longer-term nature of some climate-related risks. To support this determination, the I*nternational Accounting Standards Board* and *Chartered Professional Accountants Canada* have developed definitions and guidance around materiality.

Climate-related risks and opportunities with financial impacts that are deemed material must be disclosed in the municipality's annual financial statement along with the processes for prioritizing climate-related risks, including how materiality determinations are made.

6.3.6 Develop a Plan to Manage Climate-Related Issues

After identifying and evaluating climate-related risks and opportunities and determining those with material significance, develop a plan for managing them and targets and metrics to monitor progress.

This plan should be closely linked to existing climate action plans to ensure alignment with broader climate work and should also integrate with existing risk management plans where available. Through TCFD, the plan (and how it is integrated into general risk management) is disclosed in the municipality's annual financial statement. Management's role in plan creation must also be disclosed.

Along with the management plan, progress metrics must be identified and disclosed, consistent with the seven climate-related metric categories developed by TCFD:

1. **GHG Emissions:** Absolute Scope 1, Scope 2, and Scope 3; emissions intensity.

2. **Transition Risks:** Amount and extent of assets or business activities vulnerable to transition risks.

3. **Physical Risks:** Amount and extent of assets or business activities vulnerable to physical risks.

4. **Climate-Related Opportunities:** Proportion of revenue, assets, or other business activities aligned with climate-related opportunities.

5. **Capital Deployment:** Amount of capital expenditure, financing, or investment deployed toward climate-related risks and opportunities.

6. **Internal Carbon Prices:** Price on each ton of GHG emissions used internally by an organization.

7. **Remuneration:** Proportion of executive management remuneration linked to climate considerations.

For more information on metrics and targets, the TCFD has produced this _guidance document._

6.3.7 Integrate Climate Disclosures into Financial Reports

Climate-related financial disclosures must be embedded into municipal financial reporting processes. Integrate climate-related information into annual reports, financial statements, and other relevant disclosures, ensuring that it is in accordance with relevant municipal financial reporting standards such as those established by the _Public Sector Accounting Board._ Provide clear and comprehensive information on the financial implications of climate risks and opportunities.

To help achieve high-quality disclosures that enable users to understand the impact of climate change on organizations, TCFD recommends that organizations consider seven principles for effective disclosure:

1. Disclosure should represent relevant information.

2. Disclosure should be specific and complete.

3. Disclosure should be clear, balanced, and understandable.

4. Disclosure should be consistent over time.

5. Disclosure should be comparable among companies within a sector industry or portfolio.

6. Disclosure should be reliable, verifiable, and objective.

7. Disclosure should be provided on a timely basis.

6.4 Examples of Municipal TCFD Reporting

Vancouver, BC

In 2018, Vancouver became the first municipality in Canada to integrate TCFD-recommended disclosures in its annual financial report, allowing for new and important conversations between sustainability, finance, and risk management departments.

The City of Vancouver's *2021 Statement of Financial Information* provides a 20-page report on TCFD, which provides the context and rationale behind the inclusion of TCFD, how the City plans to enhance its TCFD reporting capabilities, and disclosures related to the four elements: Governance, Strategy, Risk Management, and Metrics and Targets.

Vancouver acknowledges where continuous improvement is required to meet the full set of TCFD recommendations. It has committed to further developing its reporting capability, improving risk assessments, developing better data sources and collection methods, and better identifying and quantifying transition risks. More information on Vancouver's TCFD approach is available *here.*

Toronto, ON

In 2018, the City began reporting climate-related information within its annual financial reports based on the TCFD framework. The City's 2020 Annual Financial Report provides detail on key TCFDrecommended disclosures including the rationale and context for TCFD-alignment, results from its Maturity Assessment, and its disclosures for 2020 related to Governance, Strategy, Risk Management, and Metrics and Targets.

The City has committed to ongoing work to improve its identification and management of climate risks and opportunities including performing a climate change vulnerability assessment and developing an enterprise risk management framework that includes climate change considerations. Based on the City's Maturity Assessment, it identified that substantial future action was needed to reach Phase 3 – Highly Integrated in the disclosure categories of Strategy and Metrics and Targets.

6.5 Conclusion

TCFD provides a valuable framework for municipalities to better understand, identify, and manage climate risks and opportunities with financial impacts. By incorporating TCFD recommendations, municipalities can enhance their risk management and demonstrate accountability on climate.

The benefits of adopting the TCFD framework are numerous. It enables municipalities to gain a comprehensive understanding of climate risks, integrating them into existing risk management practices and allowing for informed decisions and development of strategies to mitigate and adapt to climate-related challenges. Additionally, TCFD reporting improves stakeholder engagement by providing transparent and reliable information, fostering communication and trust between the municipality and its stakeholders.

To implement the TCFD recommendations, municipalities can follow several key steps. These include familiarizing themselves with the core recommendation areas of governance, strategy, risk management, and metrics and targets. Assessing current reporting practices allows municipalities to identify gaps and areas for TCFD integration. Establishing a dedicated TCFD governance and implementation team ensures effective coordination and accountability. Conducting a climate risk and opportunity assessment helps identify material climate-related issues, which can then be managed through the development of a comprehensive plan. Finally, integrating climate disclosures into the municipality's annual financial statement enhances transparency and aligns reporting with the TCFD framework.

While there are notable examples of municipalities implementing the TCFD recommendations, it's important to remember that reporting practices continually evolve and improve through implementation and learning. By actively engaging with the TCFD framework and continuously refining their reporting processes, municipalities can effectively address climate-related financial risks and enhance their climate resilience.

7. Putting It All Together: A Combined Approach for Climate Accountability

Taking decisive action on climate change is a pressing concern for Canadian municipalities. To enhance climate accountability, municipalities can implement and combine a range of accountability onramps, including a climate emergency declaration, municipal climate action plan, climate lenses, carbon budgeting, and implementation of the Task Force on Climate-related Financial Disclosures (TCFD) framework. This section explores how these actions can be implemented individually or in combination, identifies synergies between them, and highlights their collective impact in bolstering overall climate accountability.
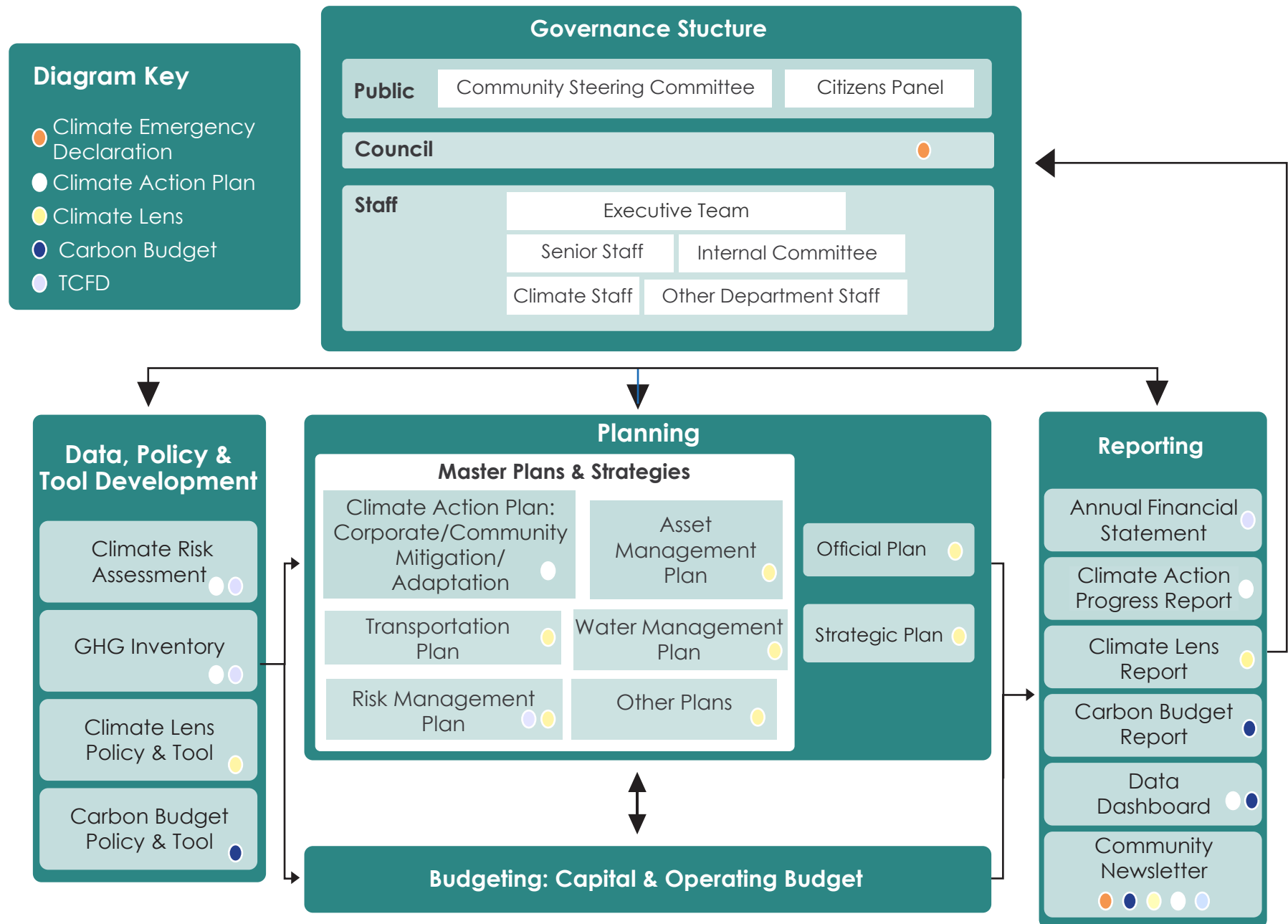
7.1 Synergies Between Climate Accountability Onramps

1. **Climate Emergency Declaration and Climate Action Plan:** The climate emergency declaration and the municipal climate action plan are closely interconnected. The declaration serves as a catalyst, signaling the municipality's commitment to urgent action. It creates a sense of responsibility and provides a strong foundation for the development and implementation of a climate action plan. The declaration's acknowledgment of the climate crisis helps mobilize resources, support, and the political will necessary for effective climate action planning. The action plan, in turn, translates the declaration's intent into specific strategies and measures for mitigating GHG emissions and adapting to climate change impacts. It identifies priority sectors, sets targets, selects climate actions and commits to a monitoring and reporting framework. The two actions work together to provide a clear vision and roadmap for the municipality's climate efforts.

2. **Carbon Budgets and Climate Action Plan:** Carbon budgets provide a mechanism for capping and tracking GHG emissions over time and aligning municipal budget decisions with these caps. This supports the case to approve budget items that can help the municipality stay under these caps, which are typically outlined in the climate action plan. Both the carbon budgeting process and the climate action plan also require regular monitoring and reporting of emissions to track progress and identify areas of improvement.

3. **Climate Action Plan and TCFD:** Climate action plans and the TCFD framework both require that a climate risk assessment and GHG inventory be developed. Producing the relevant data and analysis for both onramps improves the value of this data and reduces potentially redundant data collection and analysis activities. Furthermore, the TCFD framework complements the climate action plan by identifying and addressing the financial implications of climate change, such as physical risks, transition risks, and opportunities. This understanding allows them to integrate financial considerations into climate action planning and prioritization.

4. **Climate Lens and TCFD:** Integrating a climate lens in staff reports and decision-making processes helps identify climate-related financial risks and opportunities associated with proposed projects or policies. The TCFD framework provides a structured approach to assess and disclose climaterelated financial risks, aligning financial strategies with climate objectives. The climate lens and TCFD complement each other by ensuring that climate risks and opportunities are considered from both operational and financial perspectives, leading to more informed decision-making, and enhanced financial accountability.

Overall, these onramps interact synergistically to enhance climate accountability. The climate emergency declaration sets the stage for action, while the municipal climate action plan provides a comprehensive roadmap for addressing climate challenges. Integrating a climate lens ensures that all municipal decisions align with climate goals, while carbon budgets establish clear emissions caps and tracking mechanisms. The TCFD framework enhances financial accountability, aligns financial strategies with climate objectives and provides reporting standards to support year-over-year progress tracking and comparison. Together, these actions create a cohesive framework that maximizes municipal effectiveness in tackling climate change and increasing overall accountability to climate action.

Figure 3 illustrates further how each of these onramps fit within this framework and create synergies within the stages of data, policy and tool development, planning, budgeting, and reporting.

Figure 3: Climate Accountability Onramp Ecosystem

8. Key Takeaways

When embarking on the journey to enhance climate accountability, a municipality can begin by undertaking the following ten actions:

1. Climate Emergency Declaration: Make an official declaration acknowledging the climate crisis and the municipality's commitment to urgent action. This sets the tone and establishes the groundwork for comprehensive climate accountability. See Section 2.

2. Establish a Climate Accountability Governance System: Create a governance system dedicated to the development and implementation of climate accountability onramps within the municipality. This system should incorporate individuals and groups that can impact and be impacted by the municipalities response to climate change. See Section 3 and Appendix A.

3. Conduct a Climate Vulnerability and Risk Assessment: Evaluate current and projected climate vulnerabilities and risks and identify their potential financial impacts using TCFD guidance. This assessment will provide a baseline understanding of the challenges the municipality faces and inform climate action and risk management planning. See section 3 and Appendix C.

4. Develop a Climate Action Plan: Create a comprehensive plan that outlines specific strategies and measures for both mitigation and adaptation. The plan should include clear targets, timelines, and responsible parties for each action item. See Section 3.

5. Integrate Climate Implications/Lens into Decision-Making Processes: Ensure that climate considerations are systematically incorporated into decision making processes. Establish guidelines and training programs to facilitate the integration of a climate lens across all departments. See Section 4.

6. Engage and Educate the Community: Conduct outreach and engagement initiatives to raise awareness about climate change, the municipality's commitment, and the importance of collective action. Provide educational resources, workshops, and platforms for community input.

7. Establish Carbon Budgets: Implement a system for setting emission reduction targets and allocating carbon allowances to different sectors or departments. This provides a measurable framework for tracking progress and holding stakeholders accountable. See Section 5

8. Implement the TCFD Framework: Assess and disclose climate-related financial risks and opportunities. Align financial strategies with climate goals, ensuring that the municipality's investments and procurement practices are consistent with its climate objectives. See Section 6.

9. Collaborate with Municipal Climate Networks: Engage in partnerships and collaborative efforts with neighbouring municipalities, regional organizations, and national climate networks. Sharing knowledge, resources, and best practices can enhance climate accountability and accelerate progress.

10. Establish Monitoring and Reporting Mechanisms: Develop a system to track and report progress on climate action. Regularly communicate updates, successes, and challenges to stakeholders, ensuring transparency and accountability throughout the process. See Section 3 and Appendix D

Appendix A: Strong Climate Governance Resources

How to strengthen climate governance for an effective climate action plan	This article outlines interrelated principles, as well as tools and resources, that can help cities strengthen governance for climate action plan implementation.
C40 Climate Action Planning Programme Vertical Integration Protocol Template	Supporting resource that can be used to formalise agreement(s) through a Memorandum of Understanding (MOU) between cities and other levels of government (or other stakeholders) aimed at enabling accelerated delivery of climate action through improved vertical integration.
C40 Governance Self-Assessment Guidance Document	Guidance on the governance dimensions outlined in the 'C40 Governance Self-Assessment', listing potential actions to strengthen climate governance, and providing practical examples on establishing good climate governance approaches.
C40 Governance Self-Assessment	An assessment to help cities reflect on key climate governance dimensions to understand which ones should be prioritised and reviewed by the city to enable delivery and implementation of the climate action plan.
C40 Good Climate Governancein Practice	Climate governance best practices from nine C40 cities (Delhi, Durban, Jakarta, Johannesburg, Los Angeles, Lima, Oslo, Rio de Janeiro, and Qingdao), each with their own unique contexts, including governance approaches, success stories, challenges, lessons learnt, and outcomes achieved.
Community Energy Implementation Framework Strategy 3: Develop A Governance Model That Support sA Community Energy Transition	The Community Energy Planning Getting to Implementation is a guide to help communities move community energy plans from a vision to implementation. Strategy 3 focusses on governance.

Appendix B: Protocols and Standards for GHG Emissions Inventories

Protocol/Standard	Applies to Corporate Inventories	Applies to Community Inventories	Description
The Global Protocol for Community-Scale GHG Emission Inventories (GPC)	Yes	Yes	The GPC provides a standardized framework for preparing community-scale GHG inventories, including both municipal corporate and community emissions. It offers guidance on boundary setting, data collection, calculation methodologies, and reporting to ensure consistency and comparability. The GPC has been officially adopted as the standard emissions inventory accounting framework of C40 and the Global Covenant of Mayors, which collectively represent close to 650 cities worldwide.
Local Government Operations Proto-col (LGOP)	Yes	No	The LGOP is a set of common GHG reporting standards and calculation tools that provides guidance on how to inventory GHG emissions resulting from government buildings and facilities, government fleet vehicles, wastewater treatment and potable water treatment facilities, landfill facilities, and other operations.
ISO14064-1: Greenhouse gases - Part 1: Specification with guidance at theorganization level for quantification and reporting of green house gas emissions and removals	Yes	No	Offers guidance for organizations, including municipalities, on quantifying and reporting GHG emissions and removals at the organizational level. It provides principles, requirements, and procedures for conducting a GHG inventory, reporting, and verification.
ICLEI USA-Local Governments for Sustainability's ClearPath	Yes	Yes	ClearPath is a software tool developed by ICLEI that assists municipalitiesindevelopingGHGinventories.Itprovidesastep-by-step process, data management, and reporting functionalities to support the creation of robust GHG inventories and climate action planning.
Partners for Climate Protection (PCP) Protocol	Yes	Yes	The PCP Protocol provides a set ofclear accounting and reporting guidelines for completing the first PCP milestone: inventorying greenhouse gas (GHG) emissions.

Appendix C: Climate Vulnerability and Risk Assessment Resources

Resource	Description
ICLEI Guide and Workbook for Municipal Climate Adaptation	The Changing Climate, Changing Communities Guide and Workbook is a milestone-based framework to assist local governments in the creation of adaptationplanstoaddresstherelevantclimatechangeimpactsassociated withtheircommunities.
Municipal Climate Change Action Centre - Climate Resilience Express Adaptation Planning Guide	The Climate Resilience Express Adaptation Planning Guide provides a flexible approach to climate adaptation planning. It supports municipalities in understanding and prioritizing climate risks and implementing local actions to manage these risks.
CDP Climate Risk and Vulnerability Assessment Training Guide for Cities	This document provides a summary of the key learnings from CDP's capacity-building programme, additional case studies and resources, and is intended as a training guide for cities on conducting their climate risk and vulnerability assessment.
Climate-ADAPT	Climate-ADAPT is an online platform hosted by the European Environment Agency (EEA) that offers a wide range of resources to support climate change adaptation. It provides access to case studies, tools, guidelines, and reports on vulnerability and risk assessments, among other topics.

Appendix D: Monitoring, Evaluation and Reporting Resources

C40 City Monitoring, Evaluation and Reporting Guidance-Guidance for Climate Action Planning Teams	This guidance has been developed to support municipalities develop and implement effective monitoring, evaluation, and reporting (MER) of their climate action plans.
	This matrix includes 106 climate priority actions and proposed result chain indicators, together with a proposed method to identify indicators at an outcome and impact level, including potential data sources and references
C40 City CAP Monitoring, Evaluation and Reporting (MER) Indicators Matrix User Guide	User Guide on the City CAP Monitoring, Evaluation and Reporting (MER) Indicator Matrix.
Community Energy Planning Getting	The Community Energy Planning Getting to Implementation is a guide to help communities move community energy plans from a vision to implementation. Strategy 8 focusses on monitoring and reporting on community energy plan implementation.
Monitoring and Evaluating Climate	This reference guide is for city managers and other city staff who are creating a citywide climate adaptation monitoring and evaluation (M&E) program. The guide details essential components of an adaptation M&E framework and provides a structure for cities to plan and implement an adaptation M&E framework.

Appendix E: Resources for Integrating Climate Change into Municipal Plans

Integrating Climate Change Into Official Plans and Municipal Decision-Making	This primer summarizes the collective input received via those consultations and provides the beginning of a road map for municipalities seeking guidance on integrating climate change into their OPs. It outlines: • Approaches being used to bring climate change considerations into OPs • General areas of agreement and variations in perspectives across municipal departments (ex. planning, energy, stormwater, urban forest, public works, etc. • Case studies of approaches being used by municipalities.
FCM Guide for integrating climate change considerations into municipal asset management	This guide provides a clear roadmap that municipalities can use to understand the issues and systematically build climate resiliency into asset management policies, plans and practices. It is intended for use by municipal staff who need to understand how to address climate change in asset management processes.
FCM's Climate and Asset Management Network	Offers peer learning opportunities, training, and funding to integrate climate change and sustainability goals into infrastructure decision making.
Integrating Climate Change & Asset Management Planning:Sector-wide Considerations	A presentation from Asset Management Ontario which shares guidance on the integration of climate change & asset management planning.
How To Integrate Climate Change Risks Into Water Planning	This article summarizes conventional approaches which can be adopted in practice by the water sector for incorporating considerations of climate change impacts and adaptation within existing modalities for project design, approval,andimplementation.Also,recommendationsaremadeforselecting a suitable approach or a combination of approaches for climate risk assessment.
Integrating Climate Change into Watershed Plans	This presentation summarizes why and how the Toronto and Region ConservationAuthorityundertooktheprocessofintegratingclimatechange modellingandconsiderationsintowatershedmanagementplanning.
Integrating Climate Information into Watershed Planning: Post-Forum Summary Report	This report summarizes the presentations, activities, key messages, and recommendationsfromtheIntegratingClimateInformationintoWatershed PlanningForum,whichwasheldinTorontoonJune11,2018,andhostedby the Ontario Climate Consortium.
Climate Change Adaptation Guide for Transportation Systems Management,Operations, and Maintenance	This guide provides information and resources to help transportation management,operations,andmaintenancestaffincorporateclimatechange into their planning and ongoing activities. It is intended for practitioners involved in the day-to-day management, operations, and maintenance of surface transportation systems at State and local agencies.

Appendix F: TCFD Resources

Enhancing climate-related disclosure by cities: A guide to adopting the recommendations of the Task Forceon Climate-related Financial Disclosures(TCFD)	This report from the Chartered Professional Accountants of Canada (CPA Canada) explains how cities can disclose their financial risks using the TCFD.
Task Force on Climate-related Financial Disclosures:Implementing the Recommendations of the Task Force on Climate-related Financial Disclosures	This annex contains the following information: • directions on the application of the recommendations,including materiality assessments and location of disclosures. • iformation on assessing financial impacts of climaterelated risks and opportunities (collectively referred to as climate-related issues).
Workshops in a Box • **TCFD Fundamentals Workshop** • **Governance Workshop** • **Strategy Workshop** • **Risk Management Workshop** • **Metricsand Targets Workshop**	Workshops in a Box is a set of five presentations for use in introductory workshops on the TCFD recommendations to help support adoption and implementation. The first workshop presentation introduces the TCFD and an overview of the four TCFD recommendations for climate-related financial disclosure. The remaining four workshop presentations provide more details on each of the TCFD recommendations, including example disclosures.

Clean Air Partnership