BEYOND THE PLAN:

Where Climate Resilience Meets Reality

APPL 5340: Major Project

Morgan McCulloch

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Executive Summary

Climate-related hazards are increasing in frequency and severity across Metro Vancouver, making effective municipal climate resilience planning increasingly urgent. Although municipalities have developed strategies, plans, and policies to address these risks, less is known about their capacity to translate these commitments into action. This study examines the implementation of climate resilience policies across a purposive sample of seven Metro Vancouver municipalities, with particular attention to organizational capacity, resources, governance, accountability, and public transparency.

The research combined comparative document analysis with supplementary practitioner discussions. A total of 549 policy actions were identified and coded by policy type, implementation tool, timeline, and progress with a framework analysis on responsibility, reporting process, funding structure, monitoring indicators, and publicly reported progress. The analysis assessed the extent to which actions had advanced beyond the planning stage.

Findings indicate a persistent implementation and reporting gap. Approximately 20% of coded actions were identified as complete or in progress, while more than half had no publicly accessible progress update. Infrastructure-related actions and measures involving municipal assets showed comparatively stronger progress, likely because they are easier to measure and fall more directly within municipal control. By contrast, actions dependent on advocacy, collaboration, incentives, programs, or additional planning processes generally advanced more slowly. Clear responsibility appeared to support progress reporting, but timelines, monitoring indicators, and reporting commitments alone did not consistently result in visible implementation.

Practitioner discussions reinforced that implementation is shaped by interconnected constraints rather than a lack of municipal commitment. Key barriers include limited and competitive funding, changing political priorities, staffing and organizational capacity, unclear or fragmented responsibility, and insufficient coordination within and across jurisdictions. Participants also emphasized the value of professional relationships and social capital in overcoming capacity constraints and advancing cross-departmental work.

The study recommends three complementary directions: adopt strategically flexible plans that set clear priorities while allowing actions and measures to evolve; prioritize collaboration during plan development so commitments reflect operational capacity and shared regional risks; and strengthen accountability by defining realistic responsibilities, reporting expectations, and achievable commitments. Together, these measures can improve transparency, public accessibility, and the ability of municipalities to adapt their climate resilience work as risks and priorities change. The central conclusion is that effective climate resilience requires more than comprehensive plans; it depends on creating durable organizational conditions that support accountable, coordinated, and adaptable implementation.

1.0 Introduction

I chose this topic because, throughout the Applied Planning program, one lesson was consistently emphasized: the importance of implementation. Across multiple courses, we learned that a policy, plan, or program is only as effective as its ability to be implemented. This has stood out to me as one of the most significant challenges facing planning today and is particularly relevant in the context of climate resilience.

Climate resilience has become a widely used planning concept, however, there is often less discussion about what climate resilience actually looks like in practice and how resilience initiatives can be effectively implemented. As my interest in climate resilience grew and more of my coursework focused on the topic, I began to notice a trend. While there is often an initial push to develop policies and strategies, there can be limited consideration of the practical steps, resources, and long-term commitment required to put them into action.

Through my major project, I wanted to explore this issue in greater depth and better understand why implementation remains such a challenge. Drawing on my background and passion for research, I saw this as an opportunity to apply my skills to an area of planning that I believe deserves greater attention. By examining the state of climate resilience planning and implementation, I hoped to gain a deeper understanding of the barriers communities face and identify opportunities to strengthen practice in this field.

1.1 Context and Significance

Climate change is a global phenomenon that has profound impacts on local communities. In the Metro Vancouver region, 22 municipalities are affected by similar climate-related impacts such as extreme heat, drought, flood risks, wildfires, extreme rainfall, and coastal sea-level rise. Across the region, higher temperatures and reduced precipitation have threatened water reserves and resident health during heatwaves and smoke from wildfires while atmospheric rivers have caused catastrophic damage from flooding and landslides. The natural environment that is experiencing such intense events and at such great risk is what attracts residents and has contributed to the growing population placing further strain on the region. While this occurs, the need for more land to keep up with population growth is being reduced by changes to our sea-level rise and increased landslide risks on our steep slopes. There are limited opportunities to accommodate growth and expansion, and future development may increasingly be directed toward locations with greater hazard risk. This places the region in a precarious position where climate resilience will need to become a core component of future planning to accommodate our growth and preserve our natural and agricultural lands.

Examples of these impacts include the events in 2021, such as the province wide heat dome, wild fires, and flooding. Lytton's devastation from the wildfire and the catastrophic flooding in Abbotsford are just two of the many examples of these events. These events result in hundreds of deaths, billions of dollars in damage, and interruption to the transportation network and supply chains. The Office of the Auditor General of British Columbia examined the role of the provincial government in the recovery of Lytton and found shortcomings in the legal

Figure 1a: *Fires in Lytton caused $78 million in damage and has over 100 residents still displaced. Source: CBC News*

Figure 1b: *The heat dome in 2021 resulted in thousands of hospitalizations and over 650 deaths province wide Source: Sky News*

framework and local capacity needed to support effective disaster recovery (Office of the Auditor General of British Columbia, 2026). This highlights the increasing impacts of climate change on communities and exposes vulnerabilities in existing governance, infrastructure, and planning systems. There was strong recognition that communities must consider proactive climate resilience planning.

As climate change continues to intensify, many climate-related hazards are expected to become more frequent and severe. To combat this, the implementation of climate resilience strategies within local government planning and decision-making will be crucial to reducing the associated damage and costs. Municipalities can address climate-related risks through land use planning, infrastructure investment, environmental management, and community development initiatives. However, the ability of municipalities to implement identified policy actions within climate resilience strategies varies significantly depending on local capacity, resources, and governance structures.

This raises broader questions about the ability of municipalities across Metro Vancouver, particularly smaller municipalities with fewer financial and staffing resources, to develop and effectively implement policy actions of climate resilience strategies. As climate-related hazards become more frequent and severe, understanding how municipal capacity influences climate resilience planning is increasingly important to ensure communities can adapt to future challenges. While substantial literature exists on climate resilience planning, less attention has been given to the factors influencing implementation.

1.2 Scope and Focus

This project focuses on climate resilience planning within the broader field of community planning. Specifically, it examines how municipal capacity influences the implementation of policy actions identified in climate resilience strategies in the Metro Vancouver region. This study will seek to explore the barriers that affect implementation, including organizational capacity, financial structure, implementation frameworks, and competing

Figure 1c: *Numerous landslides in 2021 resulting from an atmospheric river resulting in 5 deaths and 18,000 people evacuated. Source: The Globe and Mail*

Figure 1d: *Atmospheric rivers flooded much of the lower mainland causing millions of dollars in damage and the death of thousands of livestock animals. Source: CBC News*

municipal priorities. By concentrating on implementation rather than policy development, the research aims to better understand the practical challenges municipalities face when incorporating climate resilience considerations into planning and decision-making processes. The findings of this study are intended to provide practical value for planners and governments by improving understanding of the implementation challenges associated with climate resilience planning faced by local governments. In doing so, the study aims to support more effective and realistic policy development across Metro Vancouver.

The quality of climate resilience strategies is outside the scope of this study. Additionally, community engagement and engagement with Indigenous stakeholders are incredibly important components in creating climate resilience strategies. Given the focus of this study on implementation and limited resources, they are outside of the scope of this project. However, I did an initial analysis and found that only the City of Vancouver had a clear section on engagement with Indigenous stakeholders. This is a shortcoming of our regional reconciliation efforts when considering the impacts of climate change on the ancestral and unceded land of the Indigenous people in the Metro Vancouver region. Further research should incorporate meaningful collaboration with Indigenous peoples when creating climate resilience strategies.

1.3 Research Problem

Despite extensive existing literature on how resilience frameworks can be incorporated into climate change strategies, there remains a gap in understanding the organizational and institutional barriers that influence implementation and how municipalities can address them.

In the current context, it's been three to five years since many of Metro Vancouver's municipalities have introduced their climate resilience strategies. Progress should be underway for identified policy actions, yet there seems to be uneven implementation. Municipal capacity and fragmented governance structures may be limiting implementation.

1.4 Objectives and Research Questions

To address the above research problem, this study will focus its analysis through seeking answers to the following questions:

1. Are municipalities within the Metro Vancouver region able to complete the policy actions outlined in their foremost climate resilience strategy or plan?
2. What, if anything, is currently preventing municipalities from implementing resilience-related policies and actions in their climate resilience plans?

To answer these questions, the following objectives were identified:

- Examine the extent to which municipalities in the Metro Vancouver region have implemented their foremost climate resilience strategy or plan, how they are proposed to be implemented, and progress of implementation.
- Connect with working professionals from identified municipalities to explore perceived and operational barriers affecting implementation of policy actions in climate resilience strategies or plans.
- Note: Every municipality has a different approach to these strategies and as such may not include the same content. A direct comparison is not meaningful, but examining them can provide a general understanding of the state of climate resilience planning.

When investigating these objectives, this study has a heavy focus on using a resilience lens. Given that part of resilience is public awareness/education, it will also be analyzing the above objectives through a lens of accessibility from the perspective of residents. As a student researcher with some knowledge on the subject, it is a unique opportunity to explore how the 'average' resident may have difficulty accessing or understanding relevant documents. Strategies should be easily accessible on municipal websites and have clear language, without an overwhelming amount of content for readers. It should be a transparent process that the public has easy access to and doesn't require scouring through municipal documentation.

1.5 Roadmap

To provide context for the following analysis, a brief literature review will provide an overview of how resilience frameworks are developed, the recommended best practices for developing climate resilience plans. This will help provide necessary background information for the study. The chosen methodology, including the selection of municipalities included in the analysis, how policy actions were coded for examination, and how discussion with practitioners was done will be provided and the resulting findings from analysis. From this process, main takeaways were identified to inform the recommendations: prioritizing collaboration, strategic flexibility, and understanding responsibility.

2.0 Existing Literature

A literature review was conducted to inform the theory and language used in climate change research and to understand the best practices for creating climate resilience strategies. This was used to inform the analysis framework for the study.

2.1 Climate Resilience

Climate-related hazards and environmental risks have increasingly become an agenda item for policymakers and planners with a focus on ways to enhance long-term community resilience. Frameworks have expanded to move beyond reactive approaches and to addressing the underlying factors that influence a community's ability to withstand and adapt to disruption. Within the resilience framework, an event is considered a 'shock' when it is a sudden-onset event such as earthquakes, floods, and extreme weather (City of Vancouver, 2019). The severity of a shock can be exacerbated by the 'stress' a community is experiencing outside of shock events (City of Vancouver, 2019). These are conditions that weaken the fabric of a community on a daily or recurring basis, such as social isolation, poverty, or racism or climate hazards with slower consequences like sea-level rise (City of Vancouver, 2019). Within the context of this study, it will focus on 'shocks' that are impacted by climate change and the community's capacity to prepare for and adapt to the impacts of these events. While stresses are an important component of resilience planning, they are beyond the scope of this study.

Climate resilience is defined as "capacity of social, economic and ecological systems to cope with a hazardous event or trend or disturbance" (Intergovernmental Panel on Climate Change, 2022, p. 7). Given the global impacts of climate change, the United Nations has developed the Climate Action Pathway for Climate Resilience. It identifies six steps to build climate resilience (United Nations Framework Convention on Climate Change, 2020):

1. Awareness-raising and advocacy – Be clear that the future will not resemble the past; base this on science and examine different scenarios (e.g. 1.5-degrees and higher) and their impacts.
2. Carry out climate risk assessments at national, local (city/region), sectoral or organizational level and use a systems approach.
3. Develop and implement appropriate actions and interventions.
4. Mobilize resources – Build capacity and scale up actions.
5. Monitor and track progress.
6. Share knowledge, experiences and solutions.

Within the context of climate resilience planning, these priorities are reflected in two broad areas of action:

- Mitigation: Reducing the sources of greenhouse gas emissions or enhancing "sinks" of greenhouse gases that remove them from the atmosphere (European Environment Agency [E.E.A], 2024).
- Adaptation: Changes in processes, practices, and structures to moderate potential damages or benefit from opportunities associated with climate change (E.E.A, 2024).

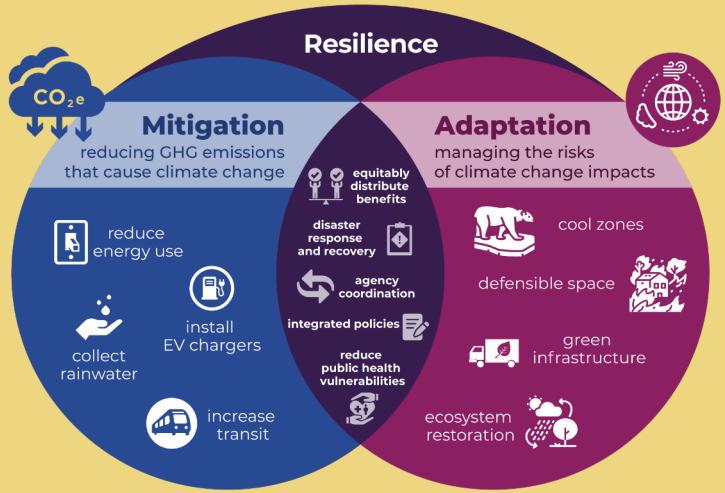

Figure 2. Examples of mitigation and adaptation policies.

Mitigation and adaptation can take many forms. Occasionally, policy actions can overlap and work together to address climate change impacts.

Source: San Diego Association of Governments.

Mitigation tends to primarily be focused on lowering the environmental contributions that increased climate change impacts such as rising global temperatures (E.E.A, 2024). Adaptation acknowledges that there is some inevitability to these events and tries to adapt our communities to be better prepared for shock events (E.E.A, 2024). A well-balanced strategy for climate resilience has elements of both. While it's important to continue to do what we can to lower our environmental contributions to avoid worst case scenario climate events, there is some inevitability for the impacts like those experienced in 2021.

Historically, the approach to incorporating climate resilience into planning has been focused on a top-down approach centered primarily on physical systems such as infrastructure (Liu et al., 2025). This is most present in mitigation. More recently, there has been a shift toward community-centered approaches that prioritize resident well-being, equity, and social capacity (Liu et al., 2025). This is mostly reflected in adaptation. However, it is widely recognized that effective climate resilience planning requires a holistic approach that incorporates elements of both top-down and bottom-up strategies (Gonzalez et al., 2021).

2.2 Climate Resilience Plans and Strategies

As the impacts of climate change have become increasingly concerning in recent years, organizations around the world have developed best practices and guidance documents for local governments when creating climate strategies or plans. Consistently, effective practices emphasize addressing a broad range of issues, as climate change has widespread impacts, across housing, transportation, infrastructure, public health, and the environment (Anderson, 2025). It is suggested strategies and plans should consider how these sectors interact with one another and seek to integrate policy actions across them given climate change impacts are far reaching and often occur simultaneously. Additionally, planners should consider not only physical hazards but the underlying social, economic, and

political factors that contribute to vulnerability, or risk when creating interventions (Climate Change Academy, 2025). Without considering these factors, interventions can worsen the problems they seek to address.

Climate resilience planning is an ongoing process that requires continuous monitoring and adjustment due to the evolving and unpredictable nature of climate change (Climate Change Academy, 2025). Strong plans include detailed actions that assign roles and responsibilities, establish implementation timelines, identify resource requirements and funding mechanisms, and encourage collaboration and coordination across departments and levels of government (E.E.A, 2025).

The organization of climate change adaptation and emergency management responsibilities within governments has also evolved. In British Columbia, the provincial government has historically played a central role in climate adaptation and emergency management initiatives (Birchall, Goulet, et al., 2026). However, in recent years greater responsibility has shifted to local governments given the specific impacts of climate change on a community are strongly influenced by local conditions and are often most effectively addressed at the local level (Birchall, Goulet, et al., 2026). While responsibilities have shifted there has not always been a corresponding transfer of resources, creating a gap in the ability of local governments to implement policy and related programming (Birchall, Goulet, et al., 2026). Existing funding sources are often provincial grant programs that focus on identifying risks rather than addressing them and are typically highly competitive (Birchall, Goulet, et al., 2026).

While governments play a central role in advancing climate resilience, responsibility is increasingly shared across a broader network of stakeholders, including non-profit organizations, businesses, community groups, and residents. For example, non-profit organizations often play an important role in public education, environmental stewardship initiatives, and or during emergency events (Birchall, Goulet, et al., 2026). Collaboration with stakeholders is essential to developing comprehensive strategies and should be actively pursued by local governments.

Research within the field outlines general frameworks for building resilient communities, but relatively few studies examine the organizational and institutional factors that influence implementation. Existing research identifies funding, capacity, competing priorities, and political support as important considerations, but significant gaps remain regarding municipal implementation practices (Birchall, Kehler, & Weissenberger, 2025).

Figure 3. Core components of a strong climate resilience plan. Author created.

3.0 Methodology

Below outlines the general process used to collect data for analysis. The goal was to understand the current state of climate resilience policy action implementation and then explore what barriers may be experienced by municipalities.

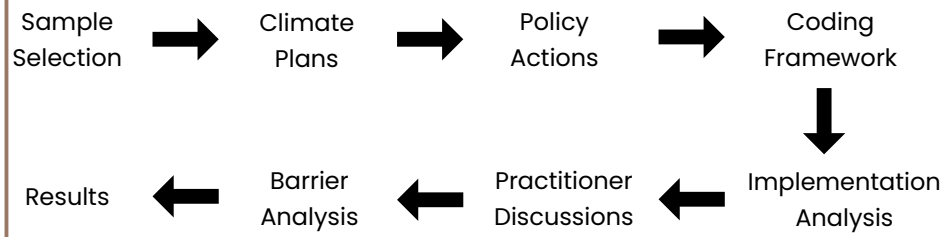

Figure 4. Methodology workflow. Author created.

3.1 Research method

A comparative analysis of climate action-related documents from seven municipalities across the Metro Vancouver region was conducted (Figure 5). A purposive sampling technique was utilized to select municipalities that were broadly representative of the region's diversity. Key factors considered included geographic size, population density, and unique environmental factors to capture a diverse range of conditions across Metro Vancouver (Appendix 1). The sample includes municipalities that vary in these factors to provide a broad representation of the region, as outlined in the table below. Using this sampling technique allows for comparison across a range of municipal contexts while maintaining a manageable number of case studies.

3.2 Data sources

After identifying the seven municipalities, official municipal websites were reviewed to identify climate resilience related documents. The following plans were selected as the primary climate mitigation and adaptation strategies related to climate resilience.

Municipality	Main Plan	Year
Bowen Island Municipality	Climate Action Strategy	2020
Delta	Community Energy and Emissions Plan	2023
District of North Vancouver	Climate Change Adaptation Strategy	2017
New Westminster	7 Bold Steps	2019
Richmond	Community Energy and Emissions Plan	2022
Township of Langley	Climate Action Strategy	2021
Vancouver	Climate Adaptation Strategy 2024/2025	2023

Table 1. Sample municipalities and their included strategy or plan. Author created.

It is important to note that additional documents, strategies, or plans related to climate change actions may exist; however, these documents were selected because they were the most prominently displayed or directly related climate strategies

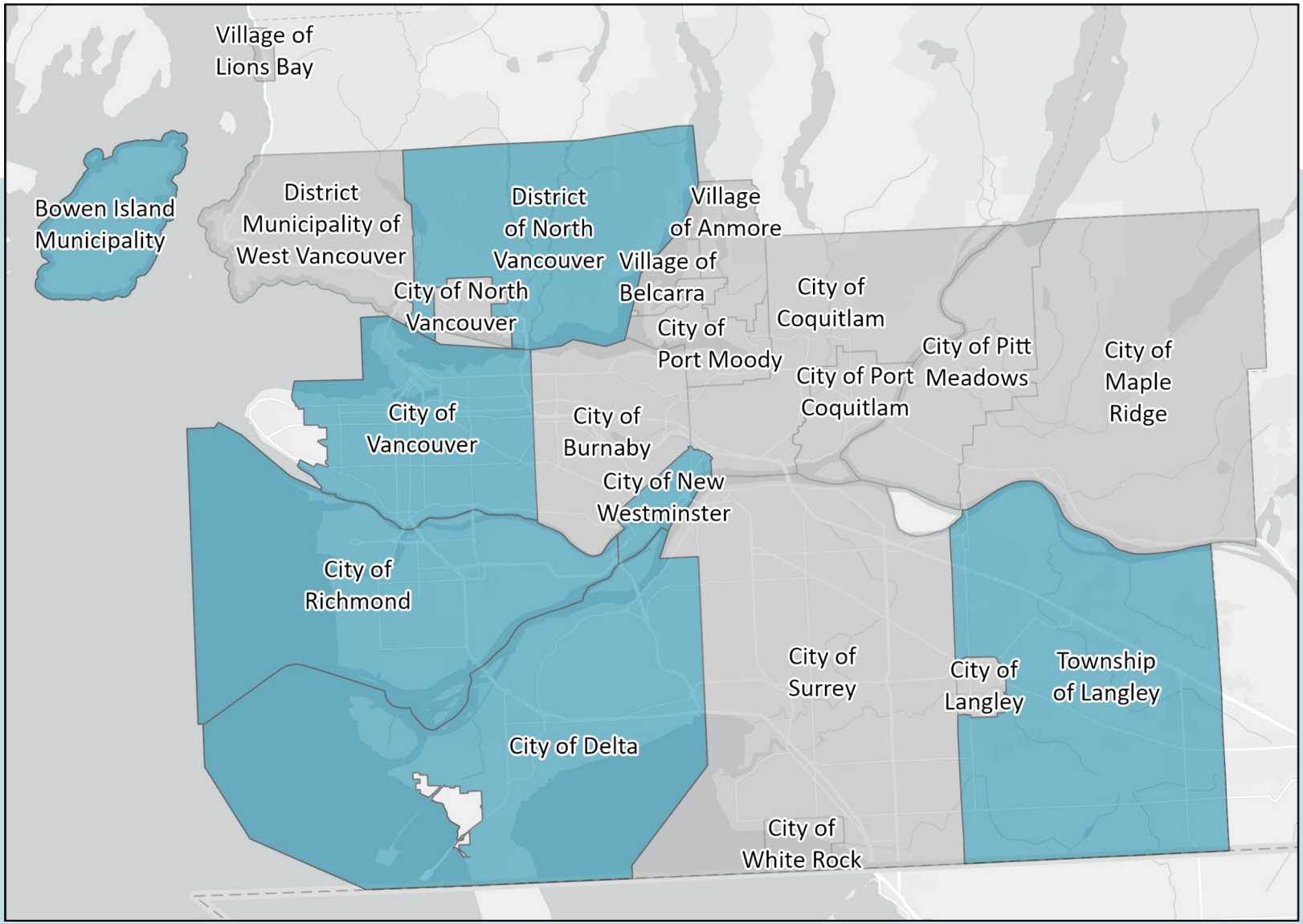

Figure 5. Map of study sample municipalities. Author created with data from BC Open Data.

Selected municipalities offer a range of population density, geographic size, and environmental factors.

identified by each municipality.

Important to note, New Westminster's '7 Bold Steps' strategy is unique compared to the others included in this analysis. It has a higher-level framework rather than specific policy actions, resulting in fewer code-able actions. However, it was included due to New Westminster's unique status as a small, highly urbanized city and the strategy itself is highly regarded within the planning community.

3.3 Document Analysis Framework

The document analysis framework was developed to assess whether climate resilience strategies incorporated key principles consistently identified within literature.

To evaluate these elements, the following questions were used to guide the analysis:

- Does the strategy clearly identify who is responsible for implementation?
- Does it provide a clear reporting process and method for tracking progress?
- Does it provide an update in policy action implementation progress?
- Does it provide information regarding funding sources or financial requirements?
- Does it identify key performance indicators (KPIs) or monitoring measures?
- Does it provide a clear timeline for implementation?

3.4 Coding Process

Each policy action was compiled into an Excel document, including relevant source information, and coded across four categories: 'Main Policy Type', 'Main Implementation Tool', 'Timeline', and 'Progress'.

Framework	Categories
Main Policy Type	Transportation & Mobility, Buildings, Critical Infrastructure, Green Infrastructure, Natural Environment, Health & Preparedness, Agriculture, Waste Systems, Leadership & Implementation, Risk Analysis, Resource Management
Main Implementation Tool	Policy and regulation, Incentives, Collaboration and partnerships, Advocacy, Outreach and capacity building, Municipal assets, Additional plan/strategy, Programs
Timeline	Short, Medium, Long
Progress	Not provided, Not started, In progress, Completed

Table 2. Categories for policy action theme coding. Author created.

Assigning policy types and implementation tools allowed for the identification of patterns in policy approaches, implementation methods, and their relationship to climate resilience. Across the seven strategies, 549 policy actions were identified and coded.

Categories were developed through a review of existing classifications within each municipal plan and the identification of additional categories as necessary. Where existing categories were applied, they were generally maintained unless another category developed for this study more accurately represented the policy action.

When coding 'main policy type', the primary consideration was the underlying behaviour, outcome, or system that the policy

was intended to influence. Given the large volume of policy actions analyzed, some actions could reasonably be categorized under multiple policy types or implementation tools. However, the primary category was selected to identify the main theme of each action and ensure the analysis remained focused and manageable.

When coding the implementation tool, the primary consideration was the mechanism required to implement the policy action. Similar to policy types, some actions could involve multiple implementation tools; however, the tool considered most essential to implementation was selected. Many municipal strategies already identified implementation approaches or themes, which informed the coding process. However, additional detail and consistent terminology were applied where necessary to allow for comparison across municipalities.

To track implementation progress, municipal webpages where the original strategy documents are located were primarily reviewed. Most documents were located on these dedicated climate action or sustainability webpages. If not, a broader search of the municipal website was conducted. This was a limited search and municipal documents, such as council meeting minutes, were intentionally not reviewed to identify additional progress updates. This approach was used to ensure that progress information reflected updates that were accessible to the public without requiring extensive searches through internal municipal documentation.

Additionally, 'timeline' and 'progress' categories were coded to ensure consistent terminology across documents. These categories were based on the information provided within each municipal strategy, and no major changes were made to the original intent of the information. 'Progress' was categorized into four groups: completed, in progress, not started, and no update available. The no update available' category represents actions where publicly accessible information confirming implementation progress could not be identified. This category was retained within the dataset to acknowledge limitations in publicly available reporting; however, it was excluded from comparative progress charts because it represented a substantial proportion of policy actions and would have limited the ability to identify meaningful patterns among policy actions with identifiable progress outcomes.

For an in-depth description of coded themes, see the Appendix 2.

3.5 Supplementary Practitioner Discussions

In addition to the document analysis, three informal discussions were held with professionals in the sustainability planning and emergency management fields to provide additional insight into the challenges faced by municipal staff in implementing climate resilience action policies. These conversations were intended to provide a greater understanding of the practical barriers and considerations that may not be evident within formal strategy documents.

The discussions were semi-structured and guided by general topics of interest rather than a formal interview questionnaire. This approach was selected because, while some prior knowledge existed based on previous discussions, the specific themes that would emerge were not predetermined. A flexible approach allowed for additional topics and insights to be explored as they arose.

These conversations were not intended to serve as a formal research component but rather as supplementary context to support interpretation of the document analysis. However, several relevant themes emerged that contributed to a broader

understanding of the challenges associated with climate resilience implementation.

3.6 Limitations

While efforts were made to select a sample representative of the Metro Vancouver region, not all municipalities were included in this analysis. Each municipality has unique circumstances, governance structures, resources, and environmental conditions that influence their approach to climate resilience planning and implementation. The chosen municipalities may not have elements relevant to climate resilience that are present in other Metro Vancouver municipalities.

The primary documents analyzed included Climate Action Strategies, Climate Change Adaptation Strategies, and Community Energy and Emissions Plans. While these plans share many similarities, particularly between Climate Action Strategies and Climate Change Adaptation Strategies, Community Energy and Emissions Plans are technically distinct documents. Climate Action and Adaptation Strategies typically address both mitigation and adaptation, while Community Energy and Emissions Plans primarily focus on mitigation. Despite these differences, there are significant areas of overlap between the plans, allowing for comparison across municipalities. Additionally, municipalities face different climate-related hazards and risk factors, which influence the types of policies and actions included within their strategies.

The coding of policy types and implementation tools includes an element of subjectivity. Although the categories were informed by planning education, existing literature, and the content of municipal strategies, some degree of interpretation was required when assigning categories to individual policy actions.

4.0 Analysis

4.1 Implementation Status

Progress

Overall progress for policy action implementation is limited, with approximately 20% of the policy actions either complete or in progress. However, over half of the policy actions do not have a progress report to provide an update on their status.

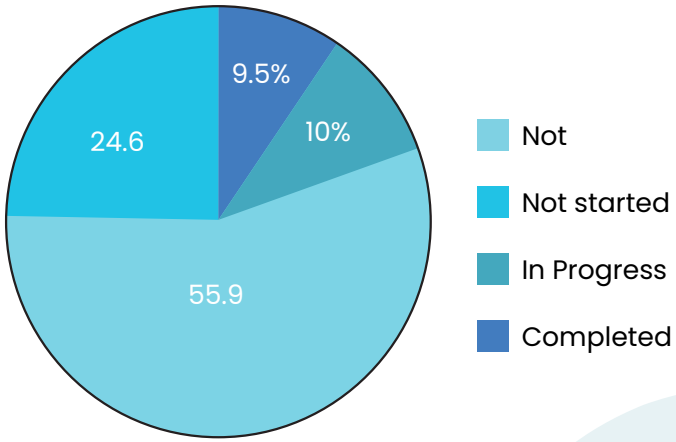

Figure 6. Progress of policy action implementation. Author created.

Implementation could be further along than this analysis finds, but there is a gap in the progress updates. The absence of publicly available updates limits the ability to assess implementation outcomes and reduces transparency regarding municipal climate resilience efforts.

It is important to note, the Township of Langley plan had over 140 actions and no subsequent update, potentially inflating this result.

Timeline and Implementation Progress

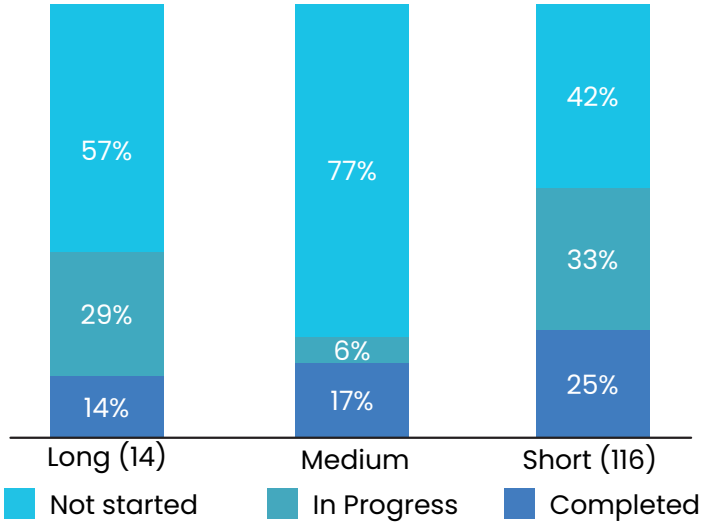

Figure 7. Progress of policy action implementation by timeline. Author created.

The relationship between identified timelines and implementation progress was also assessed. Short-term policy actions have the most complete actions, however each of the plans has exceeded the short-term timeline (2 to 3 years) and should be significantly further along in progress. There is an ongoing gap between identifying policy actions to address climate change impacts and achieving implementation.

Policies categorized as having a medium timeline demonstrated a lower completion rate compared to other categories; however, this category may be influenced by the characteristics of the dataset. The long timeline category contained the smallest sample size, with only 24 actions compared to over 100 actions

in the other timeline categories, limiting the ability to draw strong conclusions.

4.2 Policy Characteristics

Policy Type Analysis

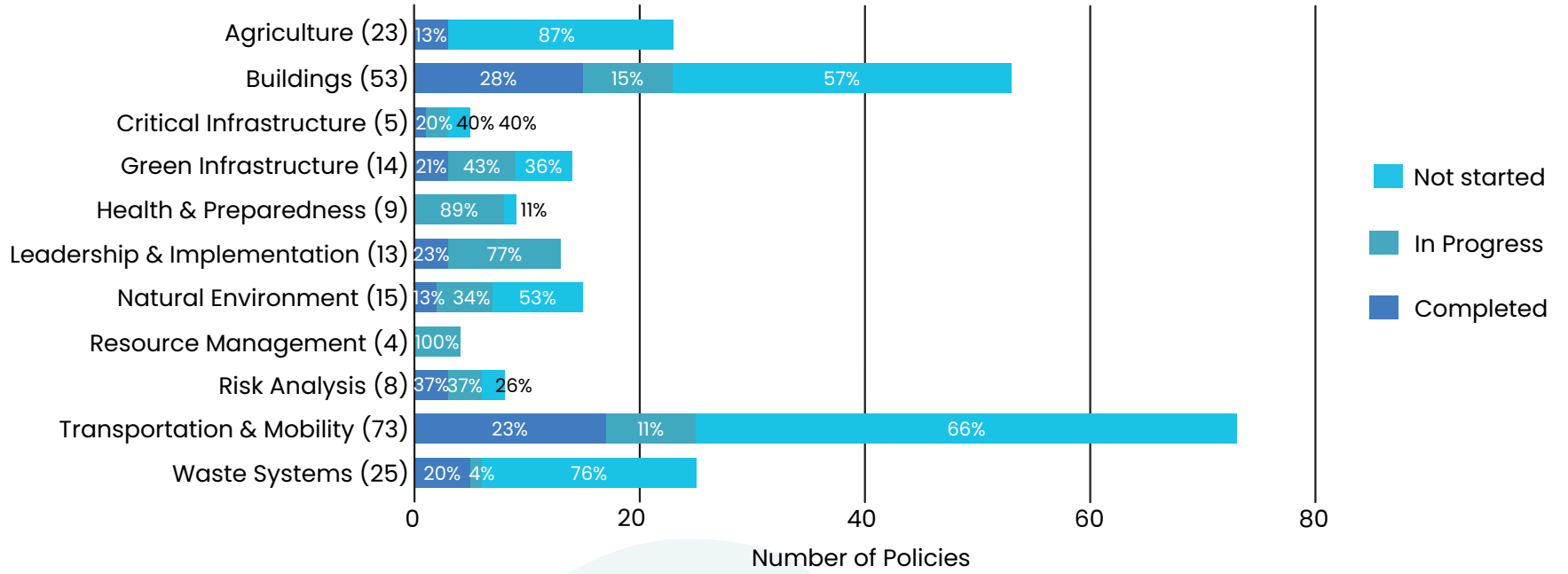

Figure 8. Progress of policy action implementation by policy type. Author created.

Policies related to infrastructure and infrastructure-related behaviour demonstrated some of the highest completion rates, such as 'Buildings', 'Transportation & Mobility', and 'Critical Infrastructure'. Often projects related to these categories have an end product that can be quantified or seen. This may reflect the relative ease of measuring and implementing physical changes related to mitigation compared to broader social or institutional actions such as 'Health & Preparedness' which is more related to adaptation. Other categories such as 'Green Infrastructure' may have difficulty in moving to the completion stage as they are often related to policy actions surrounding urban canopy improvements which can take several years.

The relatively high level of progress observed in the 'Risk Analysis' category is likely due to the fact that municipalities have a legal obligation to complete risk assessments under the Emergency and Disaster Management Act.

Certain policy types may be easier to implement because their outcomes are more readily measurable. Additionally, they make up a higher proportion of the implementation tools utilized

further suggesting they may be easier to implement. While it is still important, as climate change evolves the need for policy actions for adaptation is increasing, yet policy actions appear to lag behind this growing need.

Implementation Tool Analysis

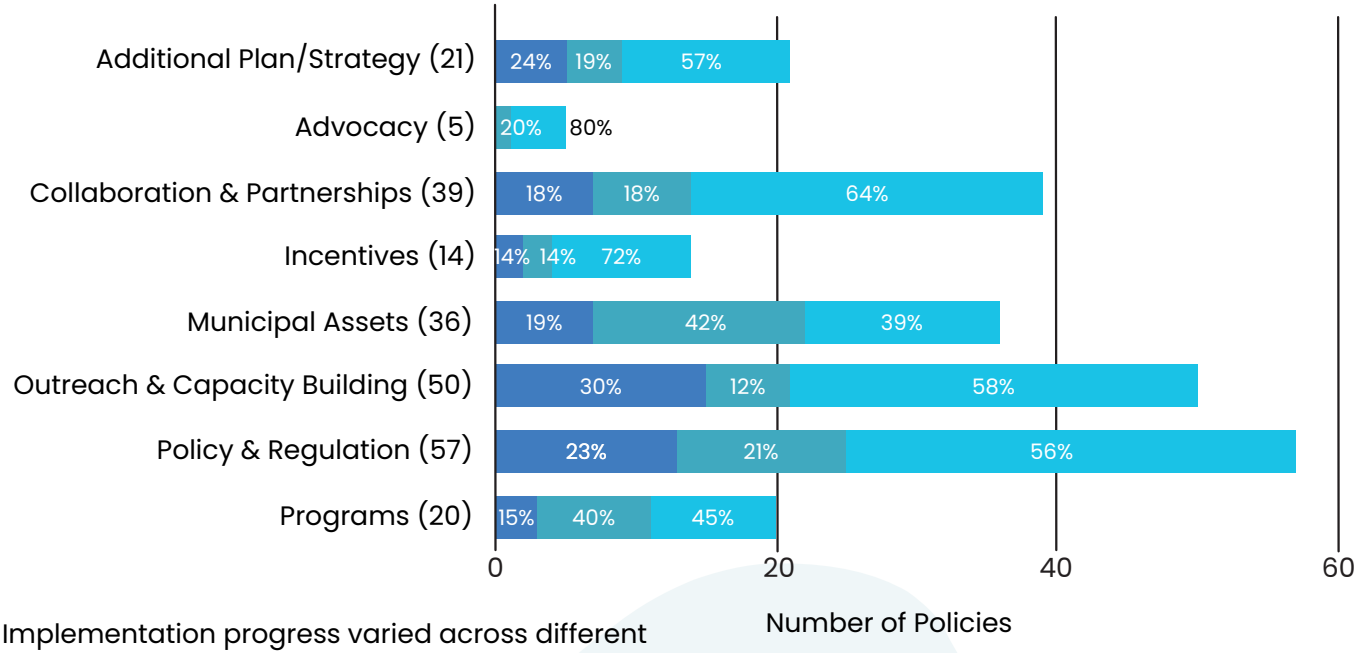

Figure 9. Progress of policy action implementation by implementation tool. Author created.

Implementation progress varied across different implementation tools. Tools that rely on external stakeholders such as 'advocacy', 'collaboration', 'incentives', and 'programs' have lower completion rates. This is to be somewhat expected given that these actions are reliant on others, such as provincial, federal governments or other community stakeholders and can be difficult to measure. For example, programs may be difficult to evaluate because implementation can be measured in different ways, including participation rates, program delivery, or long-term outcomes. Another example is advocacy, which is typically an ongoing process rather than a discrete action with a defined endpoint.

'Municipal asset' related actions demonstrated comparatively higher progress, which aligns with the fact that municipalities have greater control over their own operations, infrastructure, and services compared to actions requiring external participation.

'Additional plans and strategies' had lower levels of completion, with fewer than half of identified actions either completed or underway. This is expected, as developing additional strategies often involves longer timelines, coordination between multiple departments, and potential delays associated with planning processes.

A gap exists in engaging external stakeholders to see policy actions through to completion. Collaboration between municipalities and stakeholders could be a barrier in achieving outlined policy actions.

4.3 Implementation Frameworks

Framework	No	Lacks Clarity	Yes
Responsibility	Bowen Island Municipality, New Westminster, Richmond, Township of Langley		District of North Vancouver, Delta, Vancouver
Reporting Process	Bowen Island Municipality	Richmond, Vancouver	District of North Vancouver, Delta, New Westminster, Township of Langley
Report Update	District of North Vancouver, Township of Langley, Richmond	Delta, Bowen Island Municipality	Vancouver, New Westminster
Funding structure	Bowen Island Municipality, Township of Langley	Delta, New Westminster, Richmond	District of North Vancouver, Vancouver
KPI/Monitoring Indicators	Bowen Island Municipality, Richmond		District of North Vancouver, Delta, New Westminster, Township of Langley, Vancouver
Timeline		New Westminster, Richmond	District of North Vancouver, Bowen Island Municipality, Delta, Township of Langley, Vancouver

Table 3. Implementation frameworks for each municipal strategy. Author created.

The document analysis framework assessed whether municipal climate resilience strategies included key elements that support effective implementation: clear responsibility, reporting processes, progress updates, funding structures, monitoring indicators, and a timeline.

Overall, most municipal strategies identified timelines for completing actions; however, fewer strategies provided clear reporting processes, and an even smaller number provided publicly available updates on progress. This suggests that while municipalities often establish intended timelines, mechanisms for tracking and communicating implementation progress are less consistently developed. The prevalence of actions with no publicly available progress updates further highlights challenges related to implementation transparency and accountability. While the absence of an update does not necessarily indicate that an action has not progressed, it limits the ability to assess implementation outcomes and determines whether identified actions have advanced beyond the planning stage. This creates a challenge when evaluating climate resilience implementation, as progress may be occurring without being consistently communicated through publicly accessible reporting mechanisms.

The presence of a timeline, reporting process, or monitoring indicators does not necessarily correspond with visible progress

updates. However, identifying clear responsibility appears to be an important factor associated with implementation progress. Municipalities that assigned responsibility for specific actions were more likely to provide updates on progress, suggesting that accountability structures may play an important role in supporting implementation.

The review also identified variation in how municipalities structure climate strategies. While some municipalities relied on detailed action plans, others, such as New Westminster, adopted broader strategic frameworks. This suggests that municipalities may balance specificity and flexibility differently when designing climate resilience strategies.

4.4 Practitioner Perspectives on Barriers

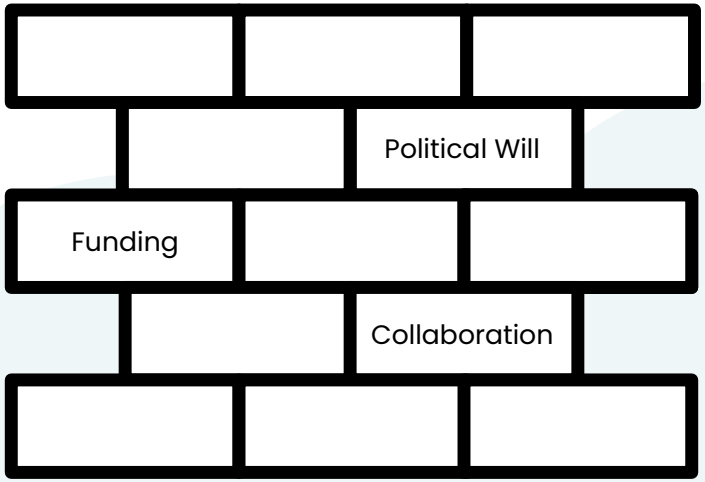

Figure 10. Visual representation of practitioner barriers. Author created.

Three individuals working in the fields of planning and emergency management were consulted to gain additional insight into the practical processes involved in developing climate resilience plans and moving policy actions from creation to implementation. The purpose of these discussions was to better understand how municipal staff approach implementation considerations throughout the planning process.

Through initial discussions with an advisor, some background understanding of municipal planning processes had been developed, allowing the conversations to focus more specifically on implementation challenges. Discussions were generally guided around three overarching themes: political will, funding, and collaboration. Additional themes that emerged throughout the conversations included the importance of personal relationships in supporting implementation and how the structure and complexity of climate resilience plans can influence their effectiveness.

Political Will

Political will was identified as a significant factor influencing climate resilience implementation, as municipal staff are ultimately guided by Council direction and priorities. The events of 2021, including several major climate-related hazards, contributed to increased attention and urgency surrounding climate resilience planning. This can be observed through the development of several climate-related strategies in the period shortly after these events. However, the intensity of this urgency has varied over time and, depending on the municipality, has gradually declined.

Political considerations can be particularly challenging during election periods, as elected officials may be more sensitive to public perception and community response. Climate resilience planning often involves long-term objectives that extend beyond election cycles, which can create challenges in maintaining consistent political support. As an example, during the analysis, the Township of Langley was contacted to locate the annual reports outlined as a promise of their Climate Action

Plan. However, staff informed that 'due to changing council direction' no report updates were completed.

Funding

Funding was identified as a significant factor affecting the ability of municipalities to implement climate resilience actions. While municipalities may develop ambitious plans and strategies, implementation is limited without sufficient financial resources.

Many climate-related funding opportunities are provided through provincial programs. However, these are often competitive and restricted to specific project types or outcomes. These funding programs frequently emphasize tangible deliverables, which may result in infrastructure-based projects receiving greater support because their outcomes are easier to demonstrate and measure.

This may contribute to the prevalence of infrastructure-related policies within climate resilience strategies. Mitigation actions, such as building upgrades and electric vehicle programs, are often easier to quantify than adaptation measures. Adaptation actions can involve less tangible outcomes, such as strengthening community relationships or improving social capacity, which can be more difficult to measure. This is reflected in the comparatively stronger progress of the 'Buildings' and 'Transportation & Mobility' policy categories.

Additionally, the type and severity of hazards facing a municipality can influence the feasibility and cost of climate resilience actions. For example, municipalities such as Delta face challenges related to coastal and Fraser River flooding, where mitigation measures can be complex and require significant financial investment.

Internal Collaboration

Internal collaboration was identified as an important factor influencing implementation, particularly given the broad and interconnected nature of climate resilience. Climate-related actions often cross departmental boundaries, making clear communication and coordination essential.

Participants noted that responsibility for climate-related policy actions is not always clearly defined, which can contribute to challenges in implementation. In larger organizations, there can sometimes be a tendency for departments to operate independently rather than collaboratively, creating situations where departments focus on their own responsibilities rather than collectively advancing shared objectives.

A disconnect can also occur between policy development and implementation. Planning departments may develop high-level climate policies, while other departments, such as emergency management, are responsible for translating these goals into specific programs, workshops, or operational actions. Maintaining communication between departments throughout the process can help ensure that policies are realistic, informed by operational knowledge, and capable of being implemented.

Collaboration can be challenging within larger organizations due to the number of departments, responsibilities, and processes involved. Successful implementation requires understanding departmental capacity and adapting actions accordingly. In some cases, this may involve adjusting the wording or scope of an action so that it aligns with the responsibilities and resources of the department responsible for implementation. Even strong policy ideas may not progress if there is insufficient capacity to carry them forward.

Conversely, smaller municipalities may have fewer financial and staffing resources but can sometimes benefit from simpler organizational structures and fewer communication barriers, allowing for easier collaboration between departments.

External Collaboration

Climate-related hazards do not follow jurisdictional boundaries, making collaboration between municipalities and external organizations essential for effective climate resilience planning. For example, municipalities located along the Fraser River may be influenced by decisions and infrastructure located in other jurisdictions. Without coordination, actions taken by one municipality could unintentionally shift risks or impacts literally 'downstream' to another community.

Regional collaboration is therefore important to support a coordinated and holistic approach to climate resilience. Similarly, communication and coordination between municipalities is important when responding to climate-related hazards and communicating risk information to residents. Inconsistent messaging between municipalities during events such as extreme heat or flooding can create confusion among the public and reduce the effectiveness of emergency communication. Local governments likely know this but don't necessarily have the capacity to address it while fulfilling mandates and supporting residents. Instead, regional or provincial levels of government are relied on for this part of collaboration and collaboration.

4.5 Practitioner Perspectives on Overcoming Barriers

Despite experiencing barriers, municipal staff shared the strategies they use to overcome these barriers including utilizing personal relationships and shifting to more strategically flexible plans.

Personal Relationships

Utilizing personal relationships emerged as an important factor

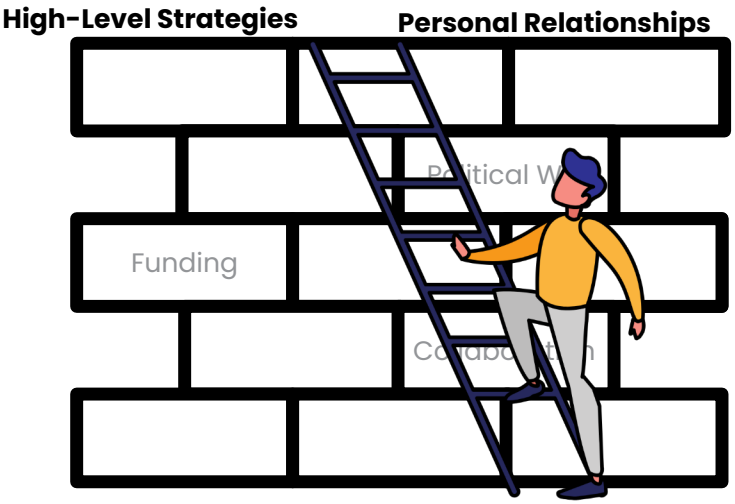

Figure 11. Visual representation of practitioner methods to overcoming barriers. Author created.

supporting climate resilience implementation, particularly when municipalities face limited capacity or financial constraints. Strong working relationships can help staff identify opportunities for collaboration, share resources, and connect with other departments or organizations that may have the capacity to support implementation.

Relationship building is an essential component of implementation, both within individual teams and across departments, particularly because climate resilience requires coordination across many areas of municipal operations. Practitioners highlighted the importance of adapting communication approaches to different teams and recognizing the priorities and working styles of different departments.

A key component of maintaining these relationships is managing expectations and understanding when to advocate for an issue and when to reconsider the timing or approach. Social capital requires ongoing investment and can be affected

if relationships are strained by consistently pushing issues that have limited immediate feasibility. Maintaining these relationships can provide greater opportunities for collaboration when future implementation opportunities arise.

High-Level Strategies

The complexity and structure of climate resilience plans can influence their ability to support implementation. When municipalities have multiple overlapping strategies and documents, it can become challenging to understand how different plans relate to one another and which actions should be prioritized.

Additionally, climate resilience plans often attempt to address a wide range of issues and establish ambitious goals. However, the unpredictable nature of climate change means that priorities can shift over time, and actions identified in previous plans may no longer address the most pressing risks. This may contribute to delays in implementation or require plans to be regularly updated.

Participants also noted that high-level strategies, while sometimes lacking detailed implementation information, can provide greater flexibility. This flexibility allows staff to adapt actions as circumstances change, collaborate with different departments and community partners, and adjust implementation approaches based on available capacity. High-level plans may also be easier to advance politically because they allow municipalities to establish broad commitments while maintaining flexibility in how those commitments are achieved.

Ultimately, climate resilience planning is an iterative process that requires flexibility and ongoing adjustment. Developing strategies at a higher level can allow municipalities to respond to changing conditions, incorporate new information, and work collaboratively across departments to support implementation.

An example would be the Township of Langley. Their plan included more than 140 highly specific policy actions, yet no publicly available implementation updates could be identified. The level of specificity may make it more difficult to adapt the strategy in response to changing political priorities and organizational circumstances.

5.0 Recommendations

The following recommendations are not intended to solve the implementation gap in climate resilience. Rather, they are intended to provide an overall insight into what municipalities are experiencing and provide a direction to move towards that may ease the barriers to implementation.

5.1 Strategic Flexibility

Tracking progress can be difficult, particularly for large strategies with hundreds of actions, and reporting does not necessarily need to occur at the level of every individual policy. However, it is important that municipalities provide sufficient information for the public and decision-makers to understand whether meaningful progress is being made.

A related challenge is measuring climate adaptation outcomes. Mitigation actions often have clear and measurable indicators, such as greenhouse gas emissions reductions. Adaptation outcomes can be more difficult to quantify because they are often focused on reducing risks or impacts that may never occur. Developing better methods to measure and evaluate adaptation remains an important area for future research and practice.

One potential approach may be a shift toward strategically flexible plans that provide broad direction while allowing implementation approaches and metrics to evolve as priorities shift. This may allow municipalities to adapt to new research, changing priorities, evolving climate conditions, and shifts in political support. As seen in the analysis, mitigation related actions make a larger portion of leading climate resilience policy actions. However, adaptation related policy actions are becoming increasingly important. Strategies with flexibility would allow municipalities to be able to more easily adjust their plans to address this need.

An additional benefit may be a reduced reporting burden for staff. A higher-level, strategically flexible strategy would likely have less specific policy actions needed to track. Instead, KPIs and monitoring indicators could be used and adjusted more easily as priorities evolve. It would allow for multiple ways to report on progress, beyond numbers, like community testimonials or qualitative measurements. Additionally, this could improve the transparency between the public and municipalities. By not being able to provide promised progress reports, it could sow distrust between the public and a municipality which can damage potential future collaboration efforts.

Such an approach may also be more accessible and less overwhelming for the public to understand and engage with. Transparency between a municipality and the public is important not only so they may be held accountable, but because the public is the most important stakeholder that is affected by climate resilience work.

5.2 Prioritize Collaboration

Due to the nature of climate-related hazards, meaningful collaboration between municipal departments and other jurisdictions is an essential element of creating a robust climate resilience strategy. It should be prioritized during strategy or plan

development. Gaps in collaboration are unlikely to be intentional, but rather there may be a lack of opportunity for staff to meet and discuss likely due to multiple ongoing demands. However, it is essential for a topic that involves multiple departments and areas of expertise. Early collaboration can help ensure that proposed actions align with available capacity, operational realities, and implementation responsibilities. If not, it could lead to the creation of a policy action that may be different but still addresses the issue and can actually be seen through implementation. This has the additional benefit of not providing the public with an unrealistic expectation.

Additionally, creating more opportunities for collaboration would provide more time for personal relationships to develop between departments. Strong interpersonal relationships can facilitate collaboration and resource sharing between departments.

5.3 Effective Responsibility and Accountability

While it is easy to suggest that responsibilities should simply be assigned to actions to ensure completion, this does not fully reflect how capacity and implementation function in practice. A more meaningful understanding is needed of what it actually means to be responsible for an action and what is required to see it through implementation.

Additionally, assigning responsibility alone does not necessarily guarantee progress. For example, New Westminster has been able to provide routine progress updates despite not consistently assigning responsibility to specific actions. What appears most important is accountability to the commitments that have been made. In some cases, this may require scaling back commitments to a level that can realistically be achieved within available resources and capacity.

5.4 Future Research

This project identified several themes related to implementation capacity, including funding, political will, collaboration, accountability, and social capital. However, additional research is needed to better understand how municipalities can effectively address these challenges. Ideally, future research would involve a more robust interview-based approach, as interviews can provide the depth and nuance that may be missed through surveys or document analysis alone. This would also allow for a deeper exploration of the interconnected themes identified through the preliminary practitioner discussions.

It is important to note that the implementation gap should not be viewed as the fault of individual municipalities or municipal staff. As identified through the practitioner discussions, implementation is influenced by a range of interconnected factors, including funding availability, organizational capacity, political priorities, governance structures, and collaboration across departments and jurisdictions. It is very likely that municipal staff are aware and experience similar challenges and try to address them using the previous recommendations. However, they need more support from council, other levels of government, and the wider community.

6.0 Conclusion

As climate-related hazards continue to increase in frequency and severity, municipalities play an increasingly important role in strengthening climate resilience. This study examined how Metro Vancouver municipalities are translating climate resilience commitments into implementation and the factors that influence that process.

The comparative analysis demonstrated that municipalities are generally aligning their climate resilience strategies with established best practices and are addressing a broad range of climate-related issues. However, implementation support mechanisms, such as clear reporting processes, progress updates, and accountability structures, are less consistently incorporated across strategies. While municipalities commonly establish timelines for implementation, fewer communicate progress in a way that is readily accessible to the public, making it difficult to assess implementation outcomes.

The findings also suggest that implementation is shaped by factors extending beyond the content of municipal plans. The supplementary practitioner discussions highlighted that funding, political will, organizational capacity, collaboration, and accountability all influence the ability of municipalities to implement climate resilience actions. Rather than reflecting a lack of commitment, the implementation gap appears to result from the complex and interconnected realities of municipal governance. The analysis also identified variation in how municipalities structure climate resilience strategies, suggesting there may be value in balancing accountability with the flexibility needed to respond to evolving climate risks, changing priorities, and organizational capacity.

Ultimately, effective climate resilience planning extends beyond developing comprehensive strategies; it requires creating the organizational conditions necessary to support long-term implementation. As climate change continues to reshape the risks facing communities, municipalities will need implementation approaches that are both accountable and adaptable. Strengthening collaboration, improving transparency, and ensuring that climate resilience strategies reflect local capacity will help municipalities move beyond planning and toward meaningful, lasting climate resilience.

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9.0 Appendix

Appendix 1: Purposive sampling factors

Municipality	Geographic Size (km2)	Population Density (people/ km2)	Unique environmental factors
Bowen Island Municipality	50.1	85	Island isolation
Delta	180.2	602	Low-lying floodplain
District of North Vancouver	160.7	549	Steep slopes, urban-wild land interface
New Westminster	15.6	5,053	Highly urbanized
Richmond	129.3	1,624	Low elevation
Township of Langley	308.0	430	Large geographic area, urban-rural interface
Vancouver	115.2	5,750	Extensive shoreline, dense urban environment

Appendix 2a: Detailed description of policy type categories using in policy action coding process.

Main Policy Type Categories	
Policy Type	Description
Transportation & Mobility	Intended to change resident behaviour or update transportation-related infrastructure to allow for more sustainable transportation options, such as electric vehicles.
Buildings	Related to updating outdated infrastructure and improving building energy efficiency.
Critical Infrastructure	Protecting, updating, or implementing infrastructure related to critical systems, such as flood mitigation measures like dykes.
Green Infrastructure	Promoting the use of green infrastructure, such as green roofs in new developments, or improving the urban tree canopy.
Natural Environment	Protection, conservation, or enhancement of natural environments such as forests, rivers, and ponds.
Health & Preparedness	Protecting residents by promoting measures to improve health outcomes during climate-related hazards and preparing for climate-related disasters.
Agriculture	Considers the protection of agricultural lands and resources needed for agricultural practices, including food security. .
Waste Systems	Protecting or enhancing waste management systems to improve sustainability and resilience.
Leadership & Implementation	Internal leadership within local governments, including governance structures, funding mechanisms, policies, and organizational processes.
Risk Analysis	Risk assessments of land or infrastructure and the probability and potential impacts of hazards.
Resource Management	Conservation of resources or efforts to reduce demand for resources such as water or electricity.

Appendix 2b: Detailed description of implementation categories using in policy action coding process.

Main Implementation Tool Categories	
Tool	Description
Policy and regulation	Implemented through specific policies, regulations, or bylaws.
Incentives	Provides incentives for residents or organizations to change behaviours, such as rebates for green roof installations.
Collaboration and partnerships	Working with external stakeholders, such as provincial governments, TransLink, businesses, and community groups.
Advocacy	Involves advocating to provincial governments or other higher-level regulators for policy or legislative changes.
Outreach and capacity building	Engaging with the community through public engagement, education, or capacity-building initiatives.
Municipal assets	Actions where municipalities update their own assets, such as transitioning vehicle fleets to electric vehicles or improving municipally owned infrastructure.
Additional plan/strategy	Involves the creation of another related plan, strategy, or framework.
Programs	Creation of a program or pilot project to test or implement climate actions.

Appendix 2c: Description of timeline categories using in policy action coding process.

Timeline Categories	
Timeline	Description
Short	2 to 3 years
Medium	4 to 10 years
Long	10+ years

Appendix 2d: Description of progress categories using in policy action coding process.

Progress Categories	
Progress	Description
Not Provided	A progress update was not provided for this strategy or plan.
Not started	Work on the policy action has not begun.
In progress	Work on the policy action is in progress.
Completed	The policy action has been implemented.