



FEDERATION
OF CANADIAN
MUNICIPALITIES

FÉDÉRATION
CANADIENNE DES
MUNICIPALITÉS

Building Sustainable and Resilient Communities with Asset Management:

An introduction for municipal leaders

**Green
Municipal
Fund**

About this introductory guide

This introductory guide outlines how asset management enables municipalities of all sizes to overcome economic, social and environmental challenges and sustainably deliver services to residents today and in the future. It is based on best practices developed by 12 municipalities from across Canada involved in FCM's Leadership in Asset Management Program (LAMP), including:

- City of Nanaimo, BC
- City of Vancouver, BC
- Township of Langley, BC
- City of Revelstoke, BC
- City of Airdrie, AB
- City of Edmonton, AB
- City of Melville, SK
- Municipality of North Grenville, ON
- City of Ottawa, ON
- City of Windsor, ON
- City of Fredericton, NB
- County of Kings, NS

As a peer-learning initiative, LAMP allows participants to collaborate on the development of asset management practices that municipalities can adopt to build a sustainable and resilient future for Canadians.

Table of contents

Introduction	1
Sustainability and resilience defined	2
What is a sustainable community?	2
What is a resilient community?	2
Why should a municipal sustainability champion care about asset management?	2
Our current infrastructure challenges.	3
Asset management: An important part of the solution	3
Becoming more sustainable and resilient through asset management ...	4
Sustainable Planning Integration for Municipalities.	4
When can sustainable practices be built into asset management planning?	5
1. At the planning stage	5
2. At the operational stage	6
3. At the maintenance stage	6
4. At the decommissioning stage	6



Introduction

Local governments provide a whole range of services that are essential to our communities' quality of life, like clean drinking water, transportation systems, waste management, drainage and flood protection, public art, parks and recreation services. The services they deliver depend on physical infrastructure assets like water treatment plants, wastewater retention ponds, roads, buses, buildings and emergency vehicles. Natural assets also support municipal service delivery and in some cases are essential. For example, wetlands can support flood control and filtration, while aquifers can provide safe drinking water to some communities, with minimal treatment requirements.

In Canada, local governments are the stewards of about 60 per cent of all public infrastructure assets. These assets are the foundation that enables our communities to thrive. However, our local governments face some significant social, economic and environmental challenges that will affect their ability to manage their assets and deliver services sustainably over the long term.

The way local governments invest in infrastructure assets, including natural assets, will have a significant impact on whether our communities move toward becoming sustainable and resilient.

Sustainability and resilience defined

What is a sustainable community?

A sustainable community is one that meets the needs of the present without compromising the needs of future generations (source: Environment and Climate Change Canada). This means making sure we are making the right decisions today to have a positive effect in the long term. Local governments need to ensure that the services they provide support a good social foundation for all citizens, while ensuring that collectively we don't put too much pressure on the Earth's life-supporting systems — such as clean water and air, a stable climate, fertile soils and a protective ozone layer. For example, if local governments need to supply more water, they'll have to find a way to do it without depleting the groundwater supply to dangerously low levels or using treatment methods that produce more air pollution.

What is a resilient community?

Community resilience is the capacity to survive and adapt to chronic stresses and acute shocks, like population growth or decline, aging populations, influxes of new immigrants, economic swings, or climate change impacts like severe storms, flooding or melting permafrost. It requires a holistic understanding of the systems within a community and their interdependencies and risks. Local governments can use asset management to become resilient by moving from a reactive approach that deals with stresses as they arise, to a more proactive one that anticipates and considers these stresses during planning.

Asset management enables local governments to:

- ✓ Be more organized and coordinated to implement actions
- ✓ Be better prepared to deal with future challenges, both foreseen and unexpected
- ✓ Be better able to engage with and serve their citizens in both good times and bad

Why should a municipal sustainability champion care about asset management?

Asset management enables local governments to strategically plan for community sustainability and resilience by:

- ✓ Proactively managing assets throughout their life cycle to deliver services sustainably to the community now and into the future
- ✓ Meeting sustainability targets
- ✓ Prioritizing infrastructure decisions that balance costs, risks and services
- ✓ Effectively working toward meeting targets for greenhouse gas emissions reduction
- ✓ Delivering services more efficiently and effectively
- ✓ Integrating natural and built environments
- ✓ Ensuring long-term affordability of services
- ✓ Reducing deficits and debt
- ✓ Attracting business and investment

Our current infrastructure challenges

While about one-third of our local assets are aging or are in poor condition and require significant reinvestment decisions (source: Canadian Infrastructure Report Card, 2016), local governments in Canada are facing many other pressures, including:

- Managing rapid growth in cities or declining populations in some rural communities, which places additional demands on existing assets or local government resources.
- Navigating rapidly changing service needs resulting from demographic changes like an aging population or increased immigration.
- Deciding whether to adopt a vast array of new technologies being offered to support service delivery.

- Planning for and financing infrastructure that needs to be built — or rebuilt differently, or located in new places to accommodate changing health, safety and environmental standards and be more resilient to climate impacts.
- Finding ways to manage, protect and value natural assets and the ecosystem services they provide, so they can support sustainable, resilient service delivery in conjunction with traditional, grey infrastructure.

These challenges require a coordinated, holistic approach that allows local governments to balance both short- and long-term service delivery priorities with public spending that manages costs and risks.

Asset management: An important part of the solution

Local governments have been making decisions about infrastructure investments for as long as we have had communities. What's new with the introduction of asset management is the approach used to make these decisions.

Asset management (AM) is an integrated approach, involving all municipal departments, to choosing and managing existing and new assets. The goal is to maximize benefits, reduce risks and provide satisfactory levels of service to the community in a sustainable manner.

At the most basic level, good asset management requires local governments to have accurate data and knowledge about the value of the assets they already own, the condition they are in, and the ongoing cost of operating, maintaining, rehabilitating and eventually decommissioning them. As local governments plan for the future, they also need to plan for the new assets that will be needed to support service delivery over the longer term. This type of analysis is called life cycle management. It allows local governments to understand

the full costs of owning and managing assets over their full life. With this understanding, local governments can begin to develop medium- or long-term financial plans to ensure that they can meet service delivery needs well into the future.

As a discipline, municipal asset management is a few decades old and until recently its practice has focused on achieving financially sustainable service delivery. However, some local governments are now beginning to recognize the potential of asset management to achieve more ambitious goals around sustainability and resilience. These innovators are starting to bring a more holistic analysis to asset management that considers long-term socio-cultural and environmental objectives as well as the financial lens.

Becoming more sustainable and resilient through asset management

Sustainability becomes an embedded value in a local government when it is integrated across all aspects of decision-making, and when there is a commitment to evaluate alternatives with a long-term perspective that aims to benefit both current and future citizens.

Asset management principles and practices are strongly aligned with sustainability concepts. Joining or aligning a municipality's asset management practices with its sustainability initiatives or program embeds sustainability values within local government and helps to improve the efficiency and effectiveness of service delivery.

Of course, local governments don't operate in a vacuum, and all decisions need to be made with due consideration of external factors that lie outside their jurisdiction. In other words, local governments need to consider how their decisions will more broadly influence and be influenced by conditions imposed by nature, the economy and society (Planet, Prosperity and People in the diagram) so that everyone can enjoy a high quality of life now and in the future.

To take a fully integrated approach, it is important to remember that service delivery requires some aspect of participation by almost all local government staff and the functional departments they work in. Good asset management practices enable horizontal collaboration across the organization so staff can collectively seek to achieve cost effectiveness by balancing cost, risk and service needs. This can help to embed sustainability concepts and goals in all departments and functions in a consistent way. Some local governments, like the City of Windsor, Ontario, have already found significant benefit from including their sustainability coordinator within their asset management steering committee.

Sustainable planning integration for municipalities



The diagram illustrates how vertical integration of decision-making can help ensure all activities associated with service delivery are aligned with municipal values and goals, where financial decisions about the tactical or operational level are connected to decisions about assets and growth management, and those are connected to strategic planning and sustainability policy. Decisions about infrastructure can support and reinforce long-term community visions and goals. This is especially true when the local government has a sustainability policy that brings holistic thinking to long-term investment planning. The Township of Langley, BC, is a leader in this area. It has linked its asset management policy with its sustainability framework.

“Asset Management provides an opportunity for sustainability targets to be embedded in corporate decision-making. This integration eliminates the common reality of sustainability staff having to lobby for specific actions on an ad hoc basis. For example, adopting a city wide requirement to include energy and carbon costs as part of operating costs enables climate considerations to be embedded in the decision-making process to support broader corporate climate goals.”

Karina Richters, Supervisor,
Environmental Sustainability and Climate
Change, City of Windsor, Ontario

When can sustainable practices be built into asset management planning?

Sustainable practices can be built into all stages of decision-making about services and infrastructure, from the planning stage right through to operating, maintaining, rehabilitating and decommissioning assets. Here are a few examples:

1 At the planning stage

Life cycle costing: When planning and budgeting, local governments should include the costs to operate, maintain, renew, and dispose of or repurpose infrastructure over the full life of the assets. Life cycle analysis should seek to minimize the overall cost of service delivery and may defer or eliminate the need for additional grey infrastructure by considering how service delivery can be supported with complementary solutions. For example, measures to support conservation, like demand management for water, will lower the cost of delivering those services while treading more lightly on natural resources. Another example is utilizing or leveraging natural assets to provide services like rainwater and stormwater management.

Triple bottom line (TBL) assessment: This goes one step further than life cycle costing by integrating socio-cultural, economic and environmental considerations when evaluating service delivery options. It recognizes that a holistic and balanced assessment is required to achieve the best long-term outcome. With TBL assessment, considerations around goals like climate change, social equity and efficiency, may be brought formally into the analysis and support decisions. Sustainable solutions are a desired outcome of triple bottom line assessment.

In 2017, Kings County, Nova Scotia, adopted a prioritization framework for road re-surfacing based on a triple bottom line assessment. The framework has brought greater transparency to council decisions regarding roads eligible under a cost-sharing program with the province, and is expected to improve efficiency.

Engaging the community on service delivery:

Local governments can work with stakeholders in the community to support them in understanding the full cost of services and the implications of asset management options. Community feedback is essential when evaluating and making decisions about infrastructure investments to ensure they align with the community's goals, willingness to pay, risk tolerance and service needs. Embedding sustainability themes and values in engagement processes can also help community members understand and respond sustainably in their own actions.

Land use and development: Asset management brings infrastructure service delivery much closer together with land use planning and development policies.

Local governments can be proactive in shaping land use, development charges and zoning such that they support communities in their journey toward sustainability and resilience. **Here are two examples:**

Compact, mixed-use development is generally less costly to service over the long term and can bring multiple other social and economic benefits to the community, including housing affordability, improved public health (because it enables active transportation options and transit), reduced greenhouse gas emissions, and vibrant and prosperous downtowns or main streets.

Local governments can integrate flood protection, landslide protection and wildfire protection into land use decisions by requiring setbacks from water bodies, steep slopes and forest stands, and by providing guidance on vegetation management.

2 At the operational stage

Procurement: Local governments can find ways to favour the procurement and selection of assets and services that achieve multiple social, environmental and economic benefits. For example, green buildings and clean fleets can support local governments in meeting greenhouse gas emissions reduction goals while saving operational costs over the long run. Another example is the acquisition of natural areas such as wetlands or forests. Adding green infrastructure and natural assets to the mix has the potential to support more resilient service delivery.

Resource use: Local governments can seek out the most efficient operational processes — those that reduce costs as well as social and environmental impact. For example, processes that support recycling, minimize waste, or conserve energy and water are win-win solutions for the community that help achieve lower costs with a lighter environmental footprint. These efforts are a valuable way for local governments to connect with citizens on a common goal for which everyone has a role to play.

3 At the maintenance stage

Adhering to a maintenance schedule: When local governments adhere to a maintenance schedule for their assets, the assets tend to last longer and the overall cost of the assets tends to be lower over their full life. It is very tempting for councils to defer maintenance of an older asset and transfer those funds into a new capital project. However, short-term decisions can lead to bigger costs to the community in the long run and are likely not in the best interests of future generations of taxpayers.

Considering climate impacts: Climate change is increasing the frequency of severe weather events like heavy precipitation, intense windstorms, heat waves, forest fires, ice storms, multiple freeze/thaw cycles and,

in the case of the north, melting permafrost. These conditions may directly impact local government assets, including drinking water systems, wastewater systems, rainwater and stormwater systems, dykes and flood control, transportation systems, parks and recreation facilities. Within their asset management framework, local governments can directly consider the risks that climate change may bring to their assets. In doing so, they will be better placed to identify what investments are needed to avoid service disruptions or, worse, the failure of a critical asset. Of course, these considerations are not only important at the maintenance stage; climate risks need to be considered at all stages of the life cycle of assets as well as when decisions are made about building something new.

4 At the decommissioning stage

Recycling or repurposing assets: As assets come to the end of their useful life, local governments need to decide how to decommission them. They may seek opportunities to salvage or recycle materials, re-purpose them into something new that's better aligned with current and future service needs, or decide the asset

is no longer affordable or needed. With a lens on sustainability and resilience, local governments need to be tuned into their community's long-term needs and resources in order to make a well-informed decision.

TIP To ensure that asset management practices are well-aligned with sustainability and resilience goals, consider the following “themes of success”:

- Sustainability and resilience appear as core themes of the corporate strategy.
- Systems thinking and relationships are key to getting out of silos.
- Strategic direction leads to organizational action and change.
- Strong momentum for advancement is most often generated around one or a few themes/agendas.
- Collective action is critical for successful outcomes.



FCM offers funding and resources to support local governments in their asset management planning and initiatives.

Visit **fcm.ca/AssetManagementProgram** to learn more.



The Municipalities for Climate Innovation Program, the Municipal Asset Management Program and the Green municipal Fund are delivered by FCM and funded by the Government of Canada.