STRATEGIC COMMITMENT TO THE ENVIRONMENT BY MUNICIPAL CORPORATIONS

A BEST PRACTICE BY THE NATIONAL GUIDE TO SUSTAINABLE MUNICIPAL INFRASTRUCTURE

National Guide to Sustainable Municipal Infrastructure

Guide national pour des infrastructures municipales durables

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Strategic Commitment to the Environment by Municipal Corporations
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FOREWORD

In spite of recent increases in public infrastructure investments, municipal infrastructure is decaying faster than it is being renewed. Factors such as low funding, population growth, tighter health and environmental requirements, poor quality control leading to inferior installation, inadequate inspection and maintenance, and lack of consistency and uniformity in design, construction and operation practices have impacted on municipal infrastructure. At the same time, an increased burden on infrastructure due to significant growth in some sectors tends to quicken the ageing process while increasing the social and monetary cost of service disruptions due to maintenance, repairs or replacement.

With the intention of facing these challenges and opportunities, the Federation of Canadian Municipalities (FCM) and the National Research Council (NRC) have joined forces to deliver the *National Guide to Sustainable Municipal Infrastructure: Innovations and Best Practices*. The Guide project, funded by the Infrastructure Canada program, NRC, and through in-kind contributions from public and private municipal infrastructure stakeholders, aims to provide a decision-making and investment planning tool as well as a compendium of technical best practices. It provides a road map to the best available knowledge and solutions for addressing infrastructure issues. It is also a focal point for the Canadian network of practitioners, researchers and municipal governments focused on infrastructure operations and maintenance.

The *National Guide to Sustainable Municipal Infrastructure* offers the opportunity to consolidate the vast body of existing knowledge and shape it into best practices that can be used by decision makers and technical personnel in the public and private sectors. It provides instruments to help municipalities identify needs, evaluate solutions, and plan long-term, sustainable strategies for improved infrastructure performance at the best available cost with the least environmental impact. The five initial target areas of the Guide are: potable water systems (production and distribution), storm and wastewater systems (collection, treatment, disposal), municipal roads and sidewalks, environmental protocols and decision making and investment planning.

Part A of the *National Guide to Sustainable Municipal Infrastructure* focuses on decision-making and investment planning issues related to municipal infrastructure. Part B is a compendium of technical best practices and is qualitatively distinct from Part A. Among the most significant of its distinctions is the group of practitioners for which it is intended. Part A, or the decision making and investment planning component of the Guide, is intended to support the practices and efforts of elected officials and senior administrative and management staff in municipalities throughout Canada.

It is expected that the Guide will expand and evolve over time. To focus on the most urgent knowledge needs of infrastructure planners and practitioners, the committees solicited and received recommendations, comments and suggestions from various stakeholder groups, which shaped the enclosed document. Although the best practices are adapted, wherever possible, to reflect varying municipal needs, they remain guidelines based on the collective judgements of peer experts. Discretion must be exercised in applying these guidelines to account for specific local conditions (e.g. geographic location, municipality size, climatic condition).

For additional information or to provide comments and feedback, please visit the GuideWeb site at www.infraguide.gc.ca or contact the Guide team at infraguide@nrc-cnrc.gc.ca.

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This and other best practices could not have been developed without the leadership and guidance of the Project Steering Committee and the Technical Steering Committee of *the National Guide to Sustainable Municipal Infrastructure*, whose memberships are as follows:

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EXECUTIVE SUMMARY

Municipalities adopt environmental protocols to protect the health of citizens, the environment, and the economy. Municipal environmental strategies can help reverse environmental degradation, protect the economic resource base, and enhance the health of employees and citizens. In addition, strong municipal leadership is needed to foster innovation within communities and increase the competitive edge of the municipality in the long term. This best practice provides guidance to municipalities wanting to protect quality of life by creating a strategic commitment to the environment within the municipal corporation.

For leading municipalities, consideration for the environment goes beyond compliance with regulations to include pollution prevention and a precautionary approach. These municipalities now recognize that the cost of protecting the environment is dwarfed by the long-term cost of not protecting it. In addition, thoughtful municipal leaders recognize that the environmental legacy left for future municipal citizens is the responsibility of current decision makers.

There is no single correct way to develop a strategic commitment to the environment in municipal corporations. The overall approach to sustainability is one of continuous improvement and learning. With leadership direction, environmental commitment can be manifested in all operations of municipal corporations. The following table provides examples of the types of environmental commitment that might be made.

Commitment	Potential Targets for Goals (sample)	Potential Indicators (variety of depth and scope)	Potential Needs (sample)	Potential Benefits
• Efficient resource use	• Water • Energy • Paper • Fuels • Chemicals • Land • Solid waste	• Annual corporate water use • Portion of process chemicals re-used in water or wastewater plants • Number of staff trained in energy efficiency	• Policy • Budget allocation • Use audits • Technological change • Staff training	• Return on investment • More efficient operations • Culture shift • Innovation • Community capacity building • Less depletion
• Green purchasing	• Supplies • Power and fuels • Fleet • Chemicals	• Percent of products purchased with enviro-labelling • Contracted service providers' environmental non-compliance rate • Portion of power purchased from alternate energy sources • Number of vehicles using alternate fuels	• Policy and procedures • Staff training • Revised purchasing contracts and specifications • Supplier discussions • Technological change	• Increased demand for green products in community resulting in price and choice improvements • Reduced ecological footprint • Less toxic and hazardous materials use in community • Culture shift • Less resource depletion

A key aspect of implementing the commitment is establishing clear goals with complementary environmental indicators and measures so the effects of the commitment can be monitored. With information from the indicators, adjustments can be made to achieve continuous improvements in environmental protection.

This best practice also provides information so municipalities can learn from the experience and expertise of the many municipalities in Canada and abroad, as well as other non-municipal organizations that have undertaken environmental action.

1. GENERAL

1.1 INTRODUCTION

A healthy environment is essential to support municipal operations and, more generally, the quality of life in a community. A strategic commitment to environmental sustainability is needed to incorporate environmental considerations effectively into decision making. Leading municipalities identify specific goals and objectives for the environment and link these to performance measures, budgets, and timelines. This best practice identifies guiding principles for establishing a commitment within municipal organizations to protect the environment and to provide leadership in the community for broader environmental and human health goals.

A scan of practices by Canadian municipalities was conducted to identify environmental protocols and practices by municipalities of various sizes, locations, and rural and urban characteristics. The scan was combined with a literature review and interviews with representatives of the municipalities with leading practices. Best practices were categorized according to whether they were corporate or community based, and according to their placement in the management cycle. Refer to Appendix A for a list of best practices identified in the scan. Section 2.1 provides more information on the categorization of the practices. Appendix B provides a sampling of municipalities practising environmental protocols that are in step with this best practice.

1.2 PURPOSE AND SCOPE

Environmental health is essential for viable communities. Environmental strategies by municipal corporations can help reverse environmental degradation, protect the economic resource base, and enhance the health of employees and citizens. In addition, strong municipal leadership can foster innovation within communities and increase the competitive edge of the municipality in the long term. This best practice provides guidance to municipalities looking to protect this quality of life in their communities. The principles outlined can guide municipalities in establishing environmental factors as part of corporate decision making and, more broadly, as part of the corporate culture.

Several decades ago, health and safety in the workplace emerged as an issue of increased importance, both to protect employees and to reduce costs and liabilities associated with workplace injury and property damage. In the same way, environmental protocols have emerged as a better way to do business in both the public and private sectors. Environmental factors have attained increased stature in municipal decision making, marking the beginning of a cultural shift to more holistic decision making. For leading municipalities and private corporations, consideration for the environment goes beyond compliance with regulations to pollution prevention and a precautionary approach. Leading municipalities now recognize that the cost of protecting the environment is

dwarfed by the cost of not protecting it, over the long term. In addition, thoughtful municipal leaders recognize that the environmental legacy left for future municipal citizens is the responsibility of current decision makers.

This best practice focuses on creating a strategic commitment to the environment within municipal corporations. This is key to ensuring the municipality conducts its business with the environment in mind. Acknowledging the importance of environmental factors, and setting clear environmental goals and objectives is the starting point for sustainability; environmental, social, and economic factors must be considered together. Municipal leadership, by example, is also a starting point for broader community influence and sustainability.

This document does not provide a checklist or detailed procedures. Each community is unique, with its history, values, and vision of how to protect the environment. Also, some municipalities are well on the way to implementing and evaluating various specific initiatives, while others are just beginning to understand the importance and complexity of incorporating environmental considerations into decision making. It is clear that no municipality, even those considered world leaders, feels it has fully or adequately addressed all the sustainability issues facing it. These leaders approach corporate and community issues with a long-term goal of continuous improvement and in the spirit of learning from the past and from each other.

1.3 HOW TO USE THIS DOCUMENT

Section 2 provides an overview of why it is important for municipalities to establish environmental protocols in a strategic way and in their operations, and outlines the benefits and risks. Municipal representatives can draw on this section to develop an understanding of their own municipality's past practices and evaluate the current state of sustainable management practices in their municipality.

Section 3 describes the underlying principles of best practice. Municipal representatives can refer to this section for an overview of common elements of municipal approaches.

Section 4 describes the elements of a strategic commitment to the environment. Municipal representatives can refer to this section for examples of strategic environmental commitments municipalities can undertake and questions to ask to identify what their municipality must do to develop a commitment.

Section 5 provides an overview for evaluating the process, and describes how it works. Municipal representatives can use this section as a reminder that evaluation is an essential part of the process to improve the environmental performance of any corporation.

The appendices and references provide more detailed information and sources for further research. Municipal representatives can use these to identify tools in implementing environmental protocols, find more detail on what other municipalities are doing, or initiate their own literature review. With the appendices and references, there is no need to reinvent processes, or to work in isolation of other communities and organizations with similar issues and interests.

1.4 GLOSSARY

Abiotic — Non-living components of an ecosystem, including soils, water, and climate (Kemp, 1998).

Biotic — The living components of an ecosystem, including plants and animals (Kemp, 1998).

Capacity building — Provision of information or means for greater undertakings in the future. Demonstration sites, training programs, and organizational change can be forms of capacity building.

Carbon cycle — A natural bio-geochemical cycle which regulates the flow of carbon in the earth and atmosphere; carbon moves through the cycle as carbon dioxide (and other gases) and is stored in the atmosphere, terrestrial sinks (such as forests), oceans, and in fossil fuels. The fossil fuel reservoir has not been active for millions of years, and there is concern that reactivation of this volume of carbon is destabilizing the natural carbon cycle, with excess carbon remaining in the atmosphere as greenhouse gases (Kemp, 1998).

Carrying capacity — The maximum number of organisms a particular environment can support. If that number is exceeded, some form of environmental disruption will follow. Resource availability is one factor influencing carrying capacity (Kemp, 1998).

Climate change — Climate includes temperature, atmospheric pressure, precipitation, wind, humidity, and sunshine (Kemp, 1998). Climate change is attributed directly or indirectly to human activity that alters the composition of the global atmosphere. This is in addition to the natural climate variability observed over comparable periods of time (UN FCCC, in Kemp, 1998). For more information, see the International Panel on Climate Change (IPCC) Web site <www.ipcc.ch>.

Cradle-to-cradle — An extension of the pollution prevention approach that recognizes that no product or by-product is permanently disposed of; all waste material eventually cycles back to the natural environment in some form and, therefore, plans should be made for renewal or reuse of spent products and waste

by-products. Organizations that ensure their products are disposed of properly or can be recycled or renewed practise product stewardship.

Ecological footprint — A tool developed by W. Rees to estimate the area (land and sea) required to support a given population. An Internet search on the term will provide numerous references.

Environmental bookkeeping — One of several terms used to mean incorporating environmental costs and benefits into accounting systems. It involves discovering the environmental costs of processes, and allocating them to products and services; attempts to include materials, energy use, and waste by-products and environmental degradation in the bottom line; and is a product of ecological economic theory

Environmental management system — These systematic management systems are used for establishing an environmental policy, determining environmental aspects and impacts of products/activities/services, planning environmental objectives and measurable targets, implementation and operation of programs to meet objectives and targets, checking and corrective action, and management review. ISO14001 is a common system adopted by many North American corporations. (See <http://www.iso1400.com/> and other Internet sources.)

Infrastructure — For the purposes of the National Guide to Sustainable Municipal Infrastructure, infrastructure refers to the municipal systems comprising roads, potable water, storm and wastewater.

Learning organization — This is a term coined by Peter Senge (1990). It refers to organizations in which learning is considered an asset, and learning processes are integrated into organizational and measurement systems.

Local Agenda 21 — Developed at the United Nations Conference on Environment and Development in Rio de Janeiro in 1992, Agenda 21 presents a range of actions all people on Earth can undertake as part of an effort to regain balance between human civilization and nature (Sitarz, 1994). Canada is a signatory.

Nutrient cycle — Nutrients are raw materials needed by plants and animals for growth and development. Nitrogen, phosphorus, and potassium are needed in relatively large quantities, while copper, zinc, and other nutrients are required in small doses only (Kemp, 1998). These nutrients cycle from soil or water to growing plants and animals, and influence growth patterns. For example, nutrient increases from stormwater run-off can remove the limiting factor of phosphorus, resulting in algae blooms in surface waters.

Pollution prevention — Pollution prevention requires methodical review of process inputs, by-products, and final products to eliminate waste production

from all steps of the process. An inherent feature of pollution prevention is the elimination or reduction of toxic material.

Precautionary principle — There are numerous variations on the precise wording for this principle but, in essence, it means that care should be taken to prevent actions that have the potential to cause severe damage to essential Earth systems (e.g., climate), even if there is no scientific certainty that harm will arise from the actions. In other words, when it comes to sustaining life support systems of the planet, scientific proof of harm and causal links to actions should not be required to take precautions against inflicting the potential harm.

Stewardship — Supervising or managing something entrusted to one's care is called stewardship. In the case of environmental stewardship, this means taking responsibility to care for the natural environment, especially recognizing that it is not owned, but is passed on to future generations.

Sustainability — In general terms, sustainability refers to conditions that meet current needs without compromising the needs of future generations, taking into consideration the environmental, social, and economic factors together (WCED, 1987). The terms "sustainability" and "sustainable development" have varying interpretations, depending on the perceptions, values, priorities, and perspective of individuals and organizations.

The Natural Step — Dr. Karl-Henrik Robèrt founded the Natural Step in 1989 in Sweden. It is an international non-profit organization that uses a science-based, systems framework to help organizations, individuals, and communities take steps toward sustainability. The mission of the Natural Step is to catalyze systemic change, make fundamental principles of sustainability easier to understand, and meaningful sustainability initiatives easier to implement (from <http://www.naturalstep.ca/>).

Total quality management — Developed by Demming, total quality management recognizes contributions from all employees and ensures that people are aligned toward the same ultimate goal of meeting customer satisfaction (Zairi, 1996).

Tragedy of the commons — Property that is accessible to all (e.g., oceans and fisheries) are prone to exploitation and depletion since the effects of actions by individuals are difficult to quantify, and individuals acting to maximize their own benefit have little incentive to curtail their actions until depletion is tragic in scale. The tragedy of the commons becomes more prevalent as populations increase. Originally identified by Garrett Hardin in 1968 (Kemp, 1998).

Water (hydrologic) cycle — A group of processes by which water is circulated through the earth and atmosphere. It is similar to the carbon cycle in that water is stored in atmospheric, terrestrial, and oceanic sinks. It is also stored in glaciers.

The water cycle is a closed system: no water is added or destroyed, but it can be relocated (e.g., through potable well systems) and it can be polluted. Evaporation and precipitation are important natural steps in cleansing water.

2. RATIONALE

2.1 BACKGROUND

2.1.1 THE ENVIRONMENT AND EMERGING ISSUES

The *National Guide to Sustainable Municipal Infrastructure* defines environment as: "[b]iotic and abiotic elements and systems and their interactions, including their effects on human quality of life. These elements and systems include land (including flora), water, air (including noise and light), and soil."

By design, municipal infrastructure changes the natural environment. Roads are designed to smooth the way for people and goods to move short and long distances; drinking water systems purify and distribute surface or groundwater to people and businesses; wastewater and drainage systems remove water and waste products after use and, ultimately, discharge water to rivers or creeks in or near the community. Roads and water systems provide critical support for the health and safety of citizens, and the economic vitality of communities. In turn, the natural environment underpins all municipal infrastructure. In addition, the environment provides air and food supplies, raw materials for building and manufacturing, recreational venues, and aesthetic enjoyment for people, along with the support system for all plant and animal life forms.

Historically, the impact of infrastructure was not considered in the design of roads or water systems. It was assumed the environment could support and absorb the changes made to it. Only social and economic factors featured in decision making for infrastructure expenditures, not environmental carrying capacity (see Table 2–1).

Table 2–1: Historic Inputs for Infrastructure Decisions

Input	Input Category
Human health	Social
Human safety	Social
Public efficiency/convenience	Social, economic
Affordability	Economic
Economic growth potential	Economic
Legislation	Social

As an example of the way in which the natural system may be changed by development, consider changes to natural cycles, such as water, carbon, and nutrients. Typical urban features, such as roads and roofs, change the water cycle. The serious implications of these changes are prompting municipalities to

reconsider many planning and engineering approaches to infrastructure. The perception that stormwater is a waste stream is being transformed to understanding stormwater as a resource.

The historic narrow focus for infrastructure decision making was successful in many ways, but also had a series of unintended outcomes of an environmental, social, and economic nature (see Table 2–2).

Now, municipal leaders recognize that human activities are changing the environment in unforeseen ways on both local and global scales. In turn, these leaders are changing the way their organizations make decisions by including specific environmental considerations in plans and budgets. Changing the way municipalities do business starts with a strategic decision to commit to environmental protection.

Table 2–2: Outcomes of Historic Inputs for Infrastructure Decisions

Outcomes	Outcome Category
Intended	
Improved health and safety	Social
Reduced mortality; increased longevity	Social
Economic growth	Economic
Public convenience	Social
Consumer choice	Social
Unintended	
Global climate change	Environmental
Ozone depletion	Environmental
Water quality and habitat degradation	Environmental
Air pollution	Environmental
Road congestion	Social, economic
Excess resource use	Environmental, economic
Public unaware of infrastructure function	Social, economic, environmental
Public accustomed to choice and convenience at low cost	Social
Perception of separation from the environment	Social, environmental

2.1.2 ENVIRONMENTAL PROTOCOLS

Municipal adoption of environmental protocols is essential and indicates the development of more sophisticated decision making. Consideration of the environment, along with social and economic factors, is a more holistic approach leading to longer-term solutions. In addition to making economic sense, long-term solutions are more equitable in terms of meeting future generations' needs.

Current societal interest in more balanced approaches to infrastructure decision making reflects many of the same desired outcomes for municipal infrastructure as those identified historically. However, current objectives reflect new outcomes that may have always been implicitly desired, but not linked to explicit goals for measuring and achieving them (see Table 2–3). For municipalities to achieve these objectives, environmental protocols for defining and addressing local environmental conditions, challenges, and opportunities are needed at all phases of development, implementation, and management. They must also enter into decisions made by municipalities for their own operations, such as purchasing, energy and water use, and hazardous materials use.

Table 2–3: Current Generic Objectives for Municipal Infrastructure

New Outcomes (Desired)	Objective Category
Reliable, safe infrastructure that protects human health and safety.	Social
Affordable, accessible infrastructure.	Economic, social
Reduced global and local environmental stresses.	Environmental
Community that attracts jobs and investments.	Social, economic
Public educated in infrastructure needs and use impacts	Social
Public participation (in usage pattern changes, stewardship programs, decisions, etc.)	Social, environmental
Efficient resource use (reduced demand for some products and services, management practices, optimized infrastructure use).	Environmental, social, economic
Community capacity to respond to emerging health issues, growth (especially in urban centres), ageing infrastructure.	Social
Consideration for future generations and the range of choices afforded to them.	Social, environmental

The societal desire for more balance in decision making is also increasingly reflected in laws and other requirements of senior levels of government. For example, the federal *Canadian Environmental Protection Act* requires reporting

and management of toxics, with direct implications for municipalities. This, and other legislative requirements, increase municipal liabilities and require systematic approaches to meet the challenges while containing costs.

A municipality's approach to managing environmental legislative requirements is usually indicative of its overall approach to sustainability. The management approach of municipalities and private enterprises fits within one of four tiers (see Table 2–4). The legislative floor is gradually being raised, so organizations aiming for compliance run the risk over time of only fixing problems in an ad hoc (and more expensive) manner. Comprehensive management is the minimum tier for cost-effective and efficient management of environmental protocols. Few, if any, organizations have achieved the fourth tier, but many have established a strategic commitment to approach it. These leading organizations recognize that good management requires long-term commitments and that making a commitment to environmental sustainability is essential for organizational viability, human health, and choices for future generations.

Box 2.4: Management Approach Tiers

Tier	Description
1. Fixing problems	Short-term focus on financial performance; ad hoc approach to social concerns and to resolve environmental non-compliance (e.g., as a result of spills or complaints).
2. Compliance	Due diligence with respect to risks and liabilities; environmental and social responsibilities are seen as imposed costs.
3. Comprehensive management	Long-term approach that includes pollution prevention; sophisticated management systems in place (e.g., an environmental management system); some integration of environmental factors into traditional performance measures.
4. Sustainable development	Long-term planning taking full account of internal and societal interests in an integrated decision-making framework, including economic, social, and environmental factors for current and future generations.

As part of their commitment to the environment, many organizations call for corporate environmental excellence and stewardship by employees, suppliers, and customers. Municipalities have a critical role in developing community capacity for sustainable lifestyles since their customers are the community at large. Municipalities must be leaders in environmental protection so individuals and businesses in the community can learn and contribute through their own actions in meaningful, coordinated ways.

2.1.3 STRATEGIC COMMITMENT BY THE CORPORATION

Municipalities operate at two levels: corporate operations and community programs and services. These levels are linked but distinct. Municipal

organizations play a dual role in terms of undertaking initiatives to use and protect environmental resources. On one level, municipalities undertake corporate operations and, therefore, must manage personnel, supplies, and other resources to achieve the organization's mandates. On another level, municipal corporations are directly connected to the communities they serve. *Municipalities influence the shape and form of communities through land use planning, budget allocations, infrastructure design and operation, and many community programs for economic development and social well-being.* This dual role makes management of municipal corporations unique and unusually complex. The complexity indicates challenges that are also a source of great opportunity for municipal leadership within the community. Commitments and actions by municipal corporations influence their own employees and operations as well as the public and business community.

Figure 2–1 represents the dual role of municipalities and the management cycle for each role: vision and priorities, (including strategic commitments), as well as planning, implementing, measuring, and adjusting. The inner circle is the internal or corporate management cycle (represented by boxes). The outer circle represents aspects of community management under the purview of municipal organizations (depicted by ellipses). The shaded box at the top of the internal management cycle indicates where corporate strategic commitment fits within the management model.

The essence of a strategic commitment is leadership in the area of the environment. The importance of the role of leaders and champions at all levels within the corporation cannot be overstated.

With so many complex issues, responsibilities, and other pressures (such as short-term fiscal constraints), how should municipalities begin to undertake environmental protocols, or to improve on those initiatives already under way? This best practice recommends making a strategic commitment to the environment for corporate operations as a first step, or to augment initiatives already under way within the corporation and community. Corporate operations are under the direct control of municipal management.

Commit to use water and energy as efficiently as possible, or, commit to developing a green purchasing policy for all municipal purchases, for example. With a leadership commitment to environmental protocols for internal operations, the corporate management cycle can be used to plan, implement, measure, and adjust actions to fulfill the commitment. Each municipality can best determine the details of the commitment to the environment, in the context of the community. To start, it is important to identify a priority area and to develop a plan to implement changes to address that priority (see Section 4, Implementation).

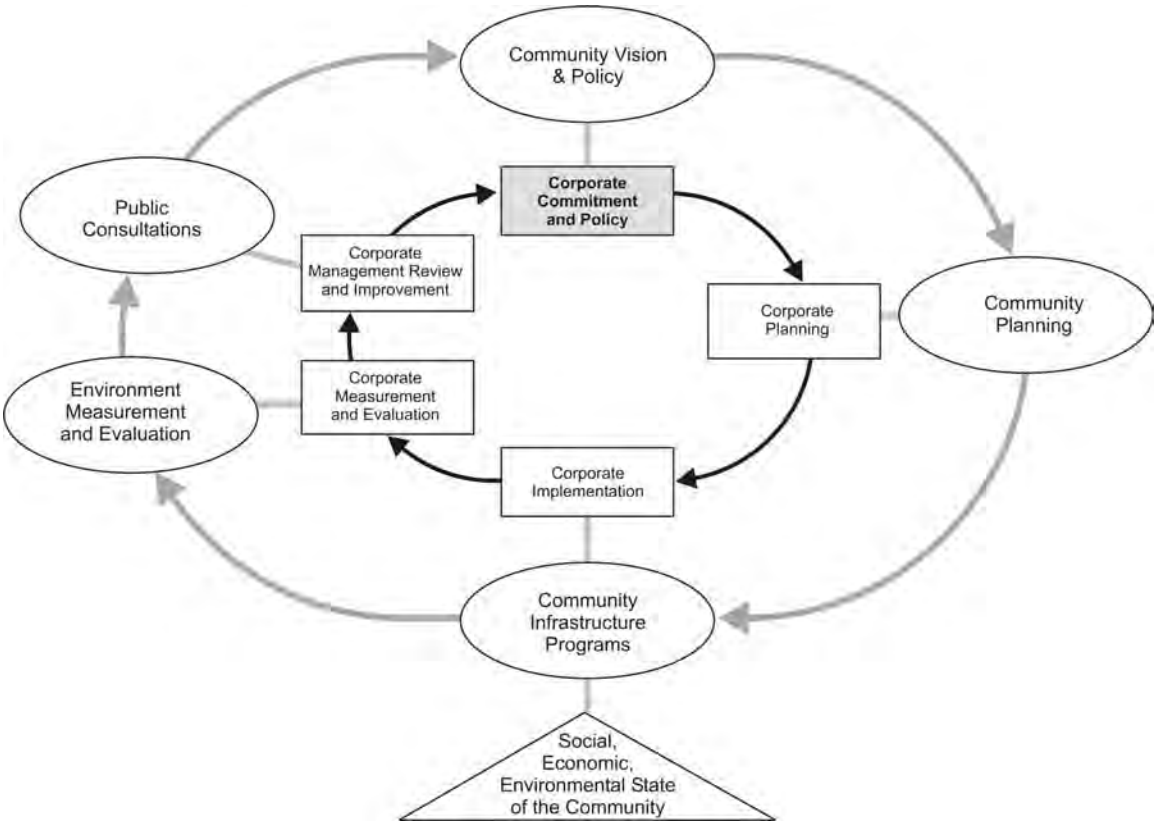

Figure 2–1: Municipal management model (focus on infrastructure)

2.2 BENEFITS

A strategic commitment links a leader's vision for the future with planning and implementing related actions. Developing or reinforcing a commitment to the environment for a municipal corporation's actions is essential in undertaking further action at both the corporate and community levels. Senior-level commitment enables more effective actions by all staff, because it sets a common direction for efforts, emphasis, and resource deployment.

The benefits of undertaking environmental protocols for infrastructure are broader than the benefits of a strategic commitment itself. As described in Section 2.1, there are potential social, economic, and environmental benefits from incorporating the environment into decision making for infrastructure. These three aspects are interrelated, and improvements in the environment have direct and indirect economic and social benefits. For example, many resource-use initiatives (e.g., energy use reduction and water efficiency) have a direct, short-term payback in terms of reduced operating costs. Preserved green space assists in improving human health by maintaining air quality and, in some communities, has been linked to an attractive job market. Comprehensive and systematic municipal management that includes environmental factors reduces

liability and increases credibility, both of which can affect insurance and borrowing rates.

The linkage between human health and environmental quality is direct. A healthy environment is essential for clean water, clean air, quality recreational space, and aesthetic enjoyment of home and work locations. Poor environmental quality has been linked to disease and mortality rates, crime rates, and to economic decline through job relocations or loss. The health of many industries, such as tourism for example, can be linked to environmental features and quality.

The time horizon for realizing the full benefits from environmental commitments is typically long, and the scope of resulting benefits is very broad. The breadth of benefits makes precise calculations of return on investment for singular decisions virtually impossible. In addition, many benefits are not properly valuated in conventional accounting systems (e.g., the value of clean air, biodiversity, or a stable climate), and the results are too vast to relate scientifically to singular decisions or actions by individuals or organizations. (This is an aspect of the problem referred to in public policy literature as the tragedy of the commons.)

By taking a leadership position and making a commitment, municipalities can leverage their close proximity to communities to foster understanding and capacity building within the community. This can develop a positive feedback loop, whereby a better informed and energized community provides better support for political and board decisions, leading ultimately to stronger support for environmental protocols. The importance of the role of local governments and local communities is recognized in Local Agenda 21.

2.3 RISKS

The risks of developing a strategic commitment to the environment for municipal operations are similar to those posed by other management decisions in that corporate operations may diverge from the broader community vision or values. Divergence can alienate segments of the community that perceive the municipality to be over or under responding to issues and constraints. Divergence may result from actions taken to implement the commitment, or from inaction resulting from the lack of implementation. Public education and consultation are important components of establishing strategic commitment by municipal corporations. Public involvement in developing the commitment can mitigate this risk.

The risks of not developing a strategic commitment to the environment are numerous, but include:

- the loss of natural capital;

- the loss of competitive advantage due to a declining quality of life in the community;
- a lost opportunity for a leadership role within the community;
- the need for reactive rather than proactive initiatives to meet challenges posed by environmental issues;
- increased liabilities;
- short-term decision making;
- the loss of credibility within the community when promoting or enforcing environmental initiatives; and
- by-laws or planning requirements.

Without a strategic commitment, environmental programming can be piecemeal and ineffective. A piecemeal approach does not enable an understanding of the scope of the issues; unrealistic budget expectations and a lack of depth in decision making can result. Risks can be mitigated by taking ownership of environmental issues within the span of control of the municipality, and by accessing the large and growing body of research and action in this area globally.

3. METHODOLOGY

3.1 GENERAL APPROACH

There is no single correct way to develop a strategic commitment to the environment in municipal corporations. Each municipality has its own history and may have a variety of initiatives under way internally and in the community. In addition, each community is unique with respect to its vision, environmental features, past decisions, constraints, priorities, and economic and social factors. Each community must review these factors when developing plans, but not be constrained in its vision of what can be achieved.

Appendix B provides examples of municipalities of various sizes, facing a variety of constraints, which have developed and implemented environmental practices. The key common feature is a clear municipal commitment to undertake action to improve or protect the environment.

The overall approach to sustainability by leading municipalities is one of continuous improvement and learning. These come through working groups with real business goals that reinforce growth processes (Senge et al., 1999). Leaders must understand limitations to change in their organizations and create systems and opportunities to alter attitudes, beliefs, skills, and the level of commitment (Senge et al., 1999). Key aspects of continuous learning are the establishment of clear goals and the use of effective communication techniques by leaders at all levels, both to communicate direction and to provide feedback on successes, opportunities, and areas for improvement. As part of communicating the commitment, terminology should be defined, because terms such as "sustainable," "ecologically friendly," and "green" mean different things to various audiences. The development and implementation of the environmental commitment is best achieved through a participatory approach that includes employees and the public. Participation is an important aspect of developing an understanding of the issues and a sense of ownership for the solutions.

A strategic commitment to the environment can have different forms and features, yet still be successful. There are common features of all leading municipal corporations' commitment to the environment:

- leadership and commitment at senior levels in the organization;
- recognition of the benefits of including the environment in decision making;
- clear goals that pertain to the business of the corporation;
- long-term thinking;

- holistic thinking, for both local and global environmental issues; and
- the ability to link short-term costs to long-term benefits.

3.1.1 LEVERAGING THE MANAGEMENT CYCLE

For leading municipalities, commitment to the environment is clear and filters through the whole organization. It is especially important that the commitment be understood and embraced by political leaders and senior management. Strong leadership and good management are needed to make changes effectively and efficiently. While it is possible to change an organization's commitment to the environment from levels other than those at the top within the organization, it takes longer, is prone to a piecemeal approach, and can negatively affect staff morale.

The role of strategic commitment to the environment by the organization can be seen in looking more closely at the components of Figure 2–1.

For Municipalities as Corporations

Corporate Commitment

Strategic commitment to the environment by municipal corporations can be described through corporate goals, and developed through high-level corporate policies. Areas of focus may be identified at this level. For example, efficient resource use, mitigation of climate change effects, or reduction of toxins may be specifically identified as high-level priorities. Alternatively, some departments may develop a focus as part of more detailed planning and implementation.

Corporate Planning

Environmental goals and policies are incorporated into such things as departmental objectives, budgets, legal requirements, and training plans. An accountability framework is established. Planning for suitable indicators and measures for the indicators is a crucial element of this management phase (see Section 4).

Corporate Implementation

Implementation may encompass many management elements, including organizational structure, communication techniques, and training programs. It may also include program elements, such as emergency preparedness, pilot projects, demonstration sites, and technological changes to enable further development of the commitment.

Corporate Measurement and Evaluation

The indicators identified at the planning stage must be monitored and methods developed for meaningful reporting to multiple levels of management and interest. This stage may include external audits where environmental management systems are in place.

Corporate Management Review
Adjustments are made, based on the measured indicators.

The nature and scale of adjustment will depend on information derived from the indicator. Adjustment may be significant (e.g., altering objectives at the highest level) or simple (e.g., reinforcement of the direction of an existing program). It is up to the organization to assess the information provided by the indicators and decide on any adjustments needed to meet the goals.

For Municipalities as Organizations Responsible for Communities
The same components of management (vision, planning, implementation, evaluation, review) apply when municipalities develop the communities they serve. Municipalities develop long-range visions that shape communities. They develop plans for land use, infrastructure, and recreational facilities and services, such as police and firefighting. These community plans are implemented through a range of products, services, and policies, such as infrastructure and by-laws. Numerous potential environmental indicators for performance assessment exist and are in use by leading municipalities. Examples include water and air quality, landfill area, and number of transit riders. Public consultation is an important aspect of course review and adjustment.

3.1.2 MAKING THE COMMITMENT TO THE ENVIRONMENT

One of the most important principles in making a strategic commitment to the environment is that it must have the potential to be implemented through measurable aspects of the business of the corporation. In other words, the commitment must be tied to expectations and measurements, so effects of the commitment can be determined over time. Successful municipalities ensure the commitment is entrenched through goals and objectives that identify specific actions and are communicated on an ongoing basis. Short-term goals support long-term goals and are set within a framework of budget allocations, schedules for completion, and clear lines of responsibility. In addition, a set of performance measures is identified, which are tied to relevant indicators for progress toward meeting the goals. The performance measures may be a combination of quantitative and qualitative factors, and are reviewed regularly to assess the success of actions. Actions may need adjustment and, in some cases, goals may need adjustment, as a result of reviews.

The communication and participatory efforts in developing and implementing environmental commitment build a foundation for further work in this area. Corporate commitment to the environment by municipalities has the potential to build capacity within the organization and the broader community. For example, innovative approaches to environmental issues can be demonstrated at municipal properties (e.g., green roofs, solar walls, and energy-efficient lighting and heating). These have broader potential for community-wide application. Pilot projects can build capacity and contribute to cultural shifts needed to develop innovative approaches to environmental issues. Appendix A provides examples.

4. IMPLEMENTATION

To implement a corporate commitment to the environment, each municipality must determine where they want to go, assess where they are, develop an action plan to close gaps, and establish performance measures to assess progress. As action items are undertaken, results must be evaluated against the performance measures, and adjustments made. Municipalities should apply the same principles of good management they would use for any other challenge.

Some examples of areas of strategic commitment to the environment, and potential outcomes and benefits are provided in Table 4–1. (These are brief examples only, and are not meant to oversimplify the issues around translating the commitment to corporate actions.) Other corporate commitments may be formulated and developed by municipalities, including environmental stewardship and toxic materials elimination. Many of these commitments result in the same indicators being measured and have similar desired outcomes. The choice of commitment statement depends on the priorities and emphasis of the municipality.

Table 4–1: Examples of Environmental Commitment for Municipal Corporations

Commitment	**Potential Targets for Goals)**	**Potential Indicators (depth and scope)**	**Potential Needs**	**Potential Benefits**
Efficient resource use	• Water • Energy • Paper • Fuels • Chemicals • Land • Solid waste • Transit use by staff	• Annual corporate water use • Portion of process chemicals re-used in water or wastewater plants • Number of staff trained in energy efficiency	• Policy • Budget allocation • Use audits • Technological change • Staff training	• Return on investment • More efficient operations • Culture shift • Innovation • Community capacity building • Less depletion
Green purchasing	• Supplies • Power and fuels • Fleet • Chemicals • Contractors	• Percent of products purchased with enviro-labelling • Contracted service providers' environmental non-compliance rate • Portion of power purchased from alternate energy sources • Number of vehicles using alternate fuels	• Policy and procedures • Staff training • Revised purchasing contracts specifications maintenance and construction • Supplier discussions • Technological change	• Increased demand for green products in community resulting in price and choice improvements • Reduced ecological footprint • Less toxic and hazardous materials used in community • Culture shift • Less resource depletion

Commitment	Potential Targets for Goals	Potential Indicators (depth and scope)	Potential Needs	Potential Benefits
Greenhouse Gas Emission Reduction	See Efficient Resource Use	• Corporate greenhouse gas emission rate • Number of green roofs on municipal facilities • Percent of staff taking the bus • Co-generation facility production at wastewater treatment facilities or landfill operations	• Policy • Budget allocation • Emission audits • Change in decision-making process • Staff training • Technological change	• See Efficient Resource Use • Assist in meeting international targets • Assist in mitigating global climate change
Pollution Prevention	• Processes (water purification, wastewater treatment, etc.) • Standards (source controls, materials purchased) • Materials (toxicity, recyclability, reuse) • Waste streams	• Volume of waste (air, water, solids) resulting from processes and procedures • Percent of materials reduced, reused, recycled • Toxicity levels of inputs and outputs from processes	• Policy • Budget allocation • Technological change • Staff training • Audits	• Cost savings through reduced materials use, reduced disposal costs • Less toxic and hazardous materials use in community • Culture shift • Less resource depletion
Watershed Management	• Municipal properties • Municipal effluents and run-off • Information for decision making • Pesticide use • Fertilizer use	• Biological indicators downstream of municipal effluents • Water usage rates • Number of staff aware of watersheds in the municipality • Stormwater quantity and quality from municipal properties	• Linkage to policies for community planning and development • Staff training • Scientific/engineering expertise or studies • Technological change	• Leadership by example for healthy watershed practices • Demonstration sites for desired watershed protection practices • Cost savings from improved infrastructure approaches

Table 4–2 suggests questions that might be asked by a leader or, preferably, a team of leaders, about the municipal corporation's strategic commitment to the environment. These questions can help develop an understanding of where the municipality is and what has to be done to undertake environmental action plans to implement a commitment.

Table 4–2: Questions for Leaders

Does the corporation have a *vision* with respect to the environment? What type of *commitment* is needed to achieve the vision?
What *approvals* process is needed to develop and secure ongoing support for the commitment by the organization?
Who should be involved in the development of the commitment (political leaders, senior management, public advisers, academic advisers)? What is the *process* and *forum* for involvement?
Are there areas of *focus* of particular importance to the corporation or community, such as efficient resource use, greenhouse gas reduction, toxic reduction, others? *Why*?
Is *terminology* in use clearly defined? What does *sustainability* mean to the organization?
What are the *goals* resulting from the commitment as they relate to the business of the corporation?
What *current initiatives* are under way that support the commitment? Who are the corporation's *champions* for environmental commitment? How is *staff* participating in these initiatives?
What *indicators* should be measured, and how would these apply to various parts of the corporation? What is being measured now and what do the measurements indicate?
How should *accountability* for developing plans and initiating actions be structured (e.g., by department or through special teams)? What *authority* is needed to match the accountability?
What processes are in place to ensure *communication, measurement,* and *reporting* occur as part of ongoing normal business practices?

4.1 WHERE THE MUNICIPALITY WANTS TO GO

Municipalities use a variety of ways to convey where they want to go in terms of the environment. For example, some develop a vision statement with well-defined terms that provide a basis for goals and objectives. Others describe the commitment in terms of a series of statements that underpin goals and objectives. A few have literally painted a picture of their community of the future.

The vision, direction, or picture is the basis for identifying specific environmental goals and objectives for the organization. The goals and objectives established as a result of the commitment must have variety in terms of depth and scope. They must also be relevant for all levels of the organization. For example, a commitment to use resources efficiently will result in specific targets at a number of levels, including corporate, departmental, process, and equipment. Functions, such as purchasing and engineering design, will likely also be targeted. The goals and objectives established will be based on the assessment of current conditions, and priorities identified to fulfill the vision. Short-term goals must support long-term goals.

4.2 ASSESSMENT OF CURRENT ENVIRONMENTAL ACTIONS

Municipal leaders should evaluate where they are in terms of environmental management (see Table 2–4). Does the municipality just meet regulatory requirements for environmental compliance? If so, this is not a leadership

position. In addition, there is a risk the municipality will not meet environmental compliance as requirements become more stringent. There is also a risk the municipality is not performing sufficiently to meet the expectations of its citizens with respect to environmental protection.

Municipalities should identify areas where there is compliance risk. Municipalities should also undertake an "inventory" of current initiatives that go beyond compliance or due diligence to demonstrate a fuller commitment to environmental protection. Each municipality can build on its own strengths. Each municipality is also likely undertaking some programs that, with definition or slight redirection, can become innovative examples of how to address specific environmental challenges. Municipalities that have a number of initiatives under way in various parts of the organization can build on these to link them under a single strategic approach and to identify champions within the organization.

4.3 ASSESSING PERFORMANCE

Planning and developing indicators for performance measures is a key step in implementing the commitment, and should be undertaken in a systematic manner based on corporate priorities. Indicators and their measures need to be selected for both the initial assessment and ongoing performance evaluations. Because the indicators will be used for decision making and reporting at all levels of the organization, they too must have variety in terms of depth and scope. For example, if one aspect of the commitment is to use resources efficiently, senior managers will be interested in corporate energy and water use, middle managers and engineers will want to know about resource use in specific processes or facilities, and operators will be interested in equipment-specific performance such as pumps or traffic lights. Resource indicators may move from specific to corporate and allow for integrated assessment of performance. Indicators and associated performance measures should be applicable to both day-to-day operations and long-range decision making. Further guidance can be found in the best practice "Developing Indicators and Benchmarks."

There are three basic categories of environmental indicators (examples provided in parenthesis).

Performance indicators deal with operational considerations, such as resource inputs (energy, water, paper, chemicals), outputs (including finished drinking water and waste products, such as solids, waste heat, greenhouse gases). Performance indicators also deal with other operational considerations, such as contracted service providers (use of cleaning agents, energy efficient equipment, waste generated) and corporate facilities and equipment (fuel efficiency of vehicles, land use efficiency of facilities, freight deliveries by mode of transportation).

Management indicators deal with policies and programs (number of targets achieved, number of suggestions from employees, training scores), conformity (degree of compliance, response times, number of audit findings), financial performance (cost, savings achieved through resource efficiencies, return on investment for environmental improvements), and community relations (inquiries, press reports, favourability ratings in surveys).

Condition indicators deal with air and water quality in the vicinity of facilities (such as wastewater treatment, snow melt and stormwater ponds), land preservation (contaminant concentrations near landfills, nutrient concentrations near stormwater facilities, area rehabilitated), preservation of flora (rate of tree protection during infrastructure construction, assessment of greenways near road right-of-ways), preservation of fauna (concentration of contaminants in specific animals near facilities, such as fish or birds), human health (including employee health parameters), cultural preservation (noise or odour levels near facilities, condition of historic municipal facilities).

In developing the environmental indicators, consideration must be given to how the indicators will be measured. Measures may be *quantitative* (physical, numerical, financial, ratios) or *qualitative* (attitudes, knowledge).

4.4 PROCESSES AND TOOLS FOR ACTION PLANS AND ASSESSMENTS

Municipalities use various processes and tools during the development and implementation of the commitment to the environment, including management systems, training programs, and by-laws. Some leading municipalities develop custom systems, while others adopt external systems. For example, to manage the issues in a systematic way, some municipalities implement an environmental management system. It may be defined internally by the municipality, or it may be a formal system, such as the ISO 14000 series.

Training initiatives are often an important aspect of environmental commitments. Leading municipalities typically use a combination of external training packages, in-house training programs, and mentoring to achieve their goals. A number of private corporations and municipalities around the world have adopted the Natural Step as an externally defined philosophy that matches their vision and provides tools and support for implementation.

Many municipalities use common tools at their disposal in new ways to support and enhance the effects of their commitment. For example, by-laws apply to corporate operations as well as community businesses. Municipalities can use their operations to serve as examples of best practices in the community (e.g., through waste discharge management to sewers to meet sewer use by-laws). Policies, by-laws, and standards guide employees and the public, and may result in revised or additional policies, standards, and by-laws. Municipalities

must ensure their house is in order concerning environmental practices to provide leadership in the community.

4.5 PUTTING IT TOGETHER

The key to initiating a commitment to environmental action is to recognize there are numerous other municipalities and other organizations working on the same issues. (Appendix B provides some initial ideas.) There is a wealth of information available to assist in developing and justifying priorities, and in producing policy and other guidance documents. Also, it is important to identify key people within the municipality, and outside it, to assist in shaping the commitment, action plan, and performance measures.

If you are in a leadership position, assemble a team of key players suitable to develop the concepts and justifications for an environmental commitment. Develop ideas on what you see as priority areas and why (see Table 4–1 for ideas or examples). Present your ideas to the team for discussion and further development. Go through the questions in Table 4–2 to identify process and information needs. Consider the characteristics and history of your municipality to identify opportunities and challenges for the priority areas your team selects.

The International Institute for Sustainable Development (IISD, 1992) has identified steps for business enterprises looking to adopt sustainable practices in their organizations. The list is generic enough that it can be adapted to public as well as private corporations (see Table 4–3). Completing items on the list is not simple, but the list does provide guidance to identify the important elements of adopting a leadership approach to corporate sustainability. Discuss this list with your team and how it might be adapted for your municipal corporation.

Table 4–3: Managing Corporate Sustainability

- Perform stakeholder analysis.
- Set sustainable development policies and measurable objectives.
- Design and execute an implementation plan that includes ensuring senior management leadership, commitment, and communication with stakeholders, and business planning.
- Develop a supportive corporate culture.
- Develop measures and standards of performance.
- Prepare reports on progress and opportunities.
- Enhance internal monitoring processes.

5. EVALUATION

Progress can be evaluated using internal or external resources. In either case, the review should consider all phases of the management cycle (commitment, planning, implementation, measurement, review), as identified in Figure 2–1, to determine the degree to which commitment is reflected in corporate business and how effectively it has promoted cultural change and innovation. The indicators and associated performance measures will provide the backbone for the evaluation. While these measures will indicate progress or lack thereof, the evaluation will also need to identify why certain areas are progressing well and what can be done to improve those areas where progress is not meeting targets.

One potential form of external evaluation is to conduct public opinion polls or workshops to assess the effects of corporate change in the community. Similarly, employee surveys or workshops can stimulate discussion and provide senior management with information on the effectiveness and degree of integration of the commitment to the environment.

The most important consideration for the evaluation process is that it is a learning experience for the organization. As such, the evaluation works toward the goal of continuous improvement, and supports employees as they explore options for improving in areas that have not met targets, and further develop areas of success. The evaluation process should reinforce the corporate commitment to environmental protocols and environmental protection by engaging staff at all levels in results and solutions.

APPENDIX A: BEST PRACTICES AND CATEGORIES IDENTIFIED THROUGH THE SCAN

GROUP A INTERNAL:
CORPORATE OPERATIONS USING ENVIRONMENTAL PROTOCOLS

Category A-1 – Corporate Commitment and Policy

Strategic Commitment to Environmental Sustainability in the Corporation

Category A-2 – Corporate Planning

Environmental Action Plans
Greening Budgets

Category A-3 – Corporate Implementation

Environmental Management Systems
Corporate Capacity Building
Testing Environmental Protocols in Pilot Projects
Environmental Procurement

Category A-4 – Corporate Measurement and Evaluation

Internal Performance Measurement Using Targets and Indicators

GROUP B EXTERNAL:
COMMUNITY INITIATIVES USING ENVIRONMENTAL PROTOCOLS

Category B-1 – Community Vision and Policy

Environmental Goals in Community Strategic Plan
Planning for Carrying Capacity

Category B-2 – Community Planning

Use of Information Systems for Environmental Data Management
Community Environmental Plans and Protocols

Category B-3 – Community Infrastructure and Programs

By-Laws
Demand Management
Use of Environmental Standards
Community Capacity Building for Environmental Protocols
Environmental Funding Mechanisms

Category B-4 – Environment Measurement and Evaluation

Environmental Indicators, Targets, and Performance Measures

Category B-5 – Public Consultations

Public Participation in Decision Making
Public Opinion Forums

APPENDIX B: GETTING STARTED

Part 1 of this appendix provides a few examples of municipalities that have made a commitment to undertake environmental practices, both for their own operations and for their communities. It is important to remember that other municipalities are interested in addressing the same environmental issues, challenges, and priorities your municipality faces. These examples provide some ideas. Many other municipalities not on this list are also doing innovative things to demonstrate their commitment to environmental factors. Try a short Web search on environmental awards or practices, or on the priority of particular interest to you.

Part 2 of this appendix provides examples of organizations with information on environmental challenges, suggestions for actions, and assistance with community initiatives. This is a sample only. Many other organizations — local, national, and global — are concerned with environmental health and can assist municipalities in making a commitment and implementing their action plan. Business groups and industrial associations in the community are also important partners, and these community members normally recognize the importance of environmental health. There is no need for municipal representatives to work in isolation.

B.1 MUNICIPALITIES

B.1.1 INTERNATIONAL SITES

Cardiff, United Kingdom has a strategic community plan, which outlines 50 high-level strategic objectives for the municipality. Stemming from this plan is a sustainability strategy. Through this strategy, the municipality has established action plans, performance measures, internal performance evaluations, and pilot projects. This is an excellent site to start with to learn about issues and opportunities for municipalities <http://www.cardiff.gov.uk/SPNR/Images/new%201a21%20web.pdf>.

Portland, Oregon has a number of initiatives under way to develop and implement sustainable practices both for the municipal organization, and for the community. Initiatives include green roofs and other environmentally friendly pilots for municipal buildings. Visit the City of Portland Office of Sustainable Development Web site <http://www.sustainableportland.org/>.

Brisbane, Australia is planning for sustainability using a strategic plan, economic instruments, such as “environmental” levies and bushland levies, demand management measures, and green design principles in new homes. Brisbane produces a state of the environment report. Visit its Web site for more information <http://www.brisbane.qld.gov.au/council_at_work/environment/indes.shtml>.

B.1.2 CANADIAN EXAMPLES

Okotoks, Alberta has committed to sustainable development <http://www.town.okotoks.ab.ca/sustainable_okotoks.html>.

Whistler, British Columbia also provides solid examples of environmental leadership that is useful for both small and large municipalities. Whistler has adopted the Natural Step philosophy for municipal operations; it has also joined the LEED Green Building Rating System™ for new municipal buildings (see U.S. Green Building Council, 2000).

Richmond, British Columbia has developed an environmental purchasing policy, along with a tool to assist in the implementation of the policy, the *Environmental Purchasing Guide*. Richmond is also planning to establish design guidelines for municipal facilities, and hopes to develop construction and infrastructure guidelines. Richmond has also established a strategy for sustainability within its corporate plan that identifies a focus of enhancing the city's environmental performance through ensuring the successful co-existence of built and natural environments.

Toronto, Ontario has developed a guide for purchasing to reduce refuse (link from the Federation of Canadian Municipalities' Web site) <http://www.fcm.ca/scep/support/PCP/pcp_pdfs/GIPPER.pdf>.

Waterloo, Ontario has also established a procurement program whereby staff members consider the environmental aspects of materials they purchase.

Calgary, Alberta aims to become the first city in North America to achieve registration to the ISO 14001 Environmental Management standard. The goal is to achieve Corporate registration before December 31, 2003. This will include 10 operating Business Units and 20 non-operating Business Units. The Environmental Management Business Unit supports and coordinates the corporate wide registration process. The City of Calgary also has numerous environmental programs and initiatives such as Natural Areas Management, Climate Change, Green Procurement, Contaminated Sites Management, Water Conservation and numerous others. An Environmental Action Agenda is being planned and will involve feedback from citizens as part of the continuous improvement portion of the Environmental Management System. Other municipalities have similar plans.

The Regional Municipality of York, in Ontario, has a corporate clean air initiative that consists of interdepartmental programs such as a smog alert plan (Department of Health), an auto trip reduction initiative (Planning Department), a green fleets plan (Transportation and Works Department) and a green procurement plan (Supplies and Source Department). This initiative flows from the York Municipal Official Plan action areas relating to environmental preservation and development, and demonstrates a linkage between actions at the

corporate level (internal) with those also planned for the broader community (external). Plans for actions in this area are in response to low ratings in air quality control by a 1998 official plan report card that listed among its recommendations strategies to reduce air pollution.

Greater Sudbury, Ontario has a strong commitment from senior city officials to formalize the partnerships established in drafting the Local Action Plan for Earthcare Sudbury. The development of this plan was a two-year process involving city officials, as well as councillors (who were involved as interested members not representing council), along with 40 partners including private industry, industry associations, chambers of commerce, academic institutions, health institutions, individuals, and community groups. Sudbury is also implementing a number of innovative energy-saving measures, including alternative energy sources, at municipal sites.

Winnipeg, Manitoba has outlined a green agenda in which it envisions the municipality to be Canada's clean fuels and alternative transportation/technologies centre of excellence. The city is committed to becoming a model of sustainable public transit vehicles and systems on the continent. It also has a goal to be the first municipality in Canada to meet its Kyoto targets.

Many municipalities, such as Calgary, Winnipeg, Richmond, St. John's, and Whitehorse have environmental coordinator or officer positions to train municipal staff on environmental issues and goals. Whitehorse also has a climate change coordinator position. Alternatively, communities such as New Glasgow, Okotoks, York Region and Whistler, do not wish to focus environmental considerations in one particular position. Instead, environmental considerations become part of knowledge required of all positions in the organization, through varying degrees of training. These municipalities identified environmental considerations to be a fundamental way of doing business. New Glasgow noted that, as a small corporation, senior staff use individual approaches to train for environmental considerations. Whistler chose a more formal method; it used experts to train all staff in the Natural Step philosophy. The key to all these approaches is senior management commitment to environmental training and policy development.

B.2 OTHER ORGANIZATIONS

The Federation of Canadian Municipalities (FCM) and the Partners for Climate Protection (PCP) program encourages municipalities to commit to reducing local production of greenhouse gas (GHG) emissions and improve the quality of life. This is done by completing a GHG inventory and forecast for the next 10 or 20 years for both municipal operations and the community. Municipalities must then set a reduction target and develop a local action plan to reduce emissions and energy use in municipal operations and the community, usually incorporating

public awareness and education programs. Municipalities must also demonstrate implementation of the plan in two ways: by creating a strong collaboration between municipal government and community partners to carry through on commitments and maximize benefits from GHG reductions, and by measuring progress through monitoring, verifying, and reporting of GHG reductions. The FCM Web site <http://www.fcm.ca> has information and case studies on many relevant issues for municipalities, including the Green Municipal Funds, a program administered by the FCM to stimulate investment in innovative environmental projects by Canadian municipal governments and their public/private sector partners.

The International Council for Local Environmental Initiatives (ICLEI) is an international association of local governments implementing sustainable development. The Council's mission is to build and serve a worldwide movement of local governments to achieve tangible improvements in global environmental and sustainable development through cumulative local actions <http://ww.iclei.org/>.

Other organization sites for ideas and information on issues and opportunities include:

- Intergovernmental Panel on Climate Change <http://www.ipcc.ch/>
- International Institute for Sustainable Development <http://www.iisd.org/default.asp>
- World Resources Institute <http://www.wri.org/>
- Pembina Institute <http://www.pembina.org/>
- Canadian Chemical Producers Association, Responsible Care Program <http://www.ccpa.ca/english/who/rc/content.html>
- Go for Green <http://www.goforgreen.ca/>
- David Suzuki Foundation <http://www.davidsuzuki.org/>
- Pollution Probe <http://www.pollutionprobe.org/>
- Friends of the Earth <http://www.foei.org/>

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