SUSTAINABLE RURALCOMMUNITIES
FINAL REPORT:

ENVIRONMENTAL PLANNING & INNOVATION:
BEST PRACTICES FOR RURAL COMMUNITIES

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ENVIRONMENTAL PLANNING & INNOVATION: BEST PRACTICES FOR RURAL COMMUNITIES

Table of Contents

ENVIRONMENTAL PLANNING & INNOVATION: BEST PRACTICES FOR RURAL COMMUNITIES

List of Tables and Diagrams

Tables

Diagrams

ENVIRONMENTAL PLANNING & INNOVATION: BEST PRACTICES FOR RURAL COMMUNITIES

> "*In sum, at the start of a new millennium, planners and their communities are well situated to help reform self-serving unsustainable behavior. Sustainable development has become a highly visible idea in public policy debates. The concept has been touted as the new large-scale vision to guide the planning agenda for the twenty-first century. If sustainability is to move beyond a vague idealism, the task ahead for planners and activists, especially at the local level where most authority to manage and control development is lodged, is to translate theory to practice*" (Berke, 2002, p. 34).

1. Introduction

Over the past two decades, sustainability has become a key concept in planning models. Popularized in the Brundtland report of 1987 (*Our Common Future*), the concept of sustainability and sustainable development were given the underlying frameworks upon which current practice in environmental planning bases assumptions and responses to community concerns. However, new issues are stretching the edges of these frameworks, necessitating a more current and up-to-date look at environmental planning and municipal best practices that deal with these issues. A modern framework based on innovation is necessary to develop new planning models and direct planning approaches towards resolution, especially within rural regions.

Many current programs and policy responses are based primarily on an urban problem-resolution model and are not directly transferable to rural communities. On the other hand, rural problems are themselves unique and contribute to environmental problems in their own way. For instance, both urban and rural regions contribute to air quality and pollution and source water pollution, either through increased automobile use and greenhouse gas emissions in cities or through biomass production and ammonia distribution (fertilizers and other applications) in rural areas. As there are different foundations for the problems, and as these problems impact rural communities and economies differently than urban ones, different approaches are required. In other words, the

various rural problems, addresses, and policies need to be fundamentally different than those developed for an urban landscape.

There is much diversity in rural communities today and many face significant growth pressures while others face declining populations as the economic and social demographics shift in their municipality. In both cases, rural municipalities cannot keep pace with the increase in problems of environmental importance that they often have to address. Further, as various environmental phenomena continue to pressure rural regions and their economies, the relationship between these environmental issues and public health also increases their relevance; and the economic ramifications and attendant problems associated with them exacerbate an already significant problem of lack of resources to respond.

Rural areas contribute largely to the GDP of a region, especially where primary production dominates (e.g., forestry, agriculture, mining, fishing, etc.). Much of the planning decision-making process, however, has tended to focus primarily on their urban counterparts. Yet the impact from resource-based industries and agricultural practices in rural regions affects the rural population just as much as importing urban-based problems (CO_2 emissions, urban sprawl, industry) and other environmental concerns do now. Unresolved environmental problems bring added stress and affect the health, economy and livelihoods of rural people. Environmental conflicts can also have severe economic repercussions on farmers and rural businesses (tourism and fishing, for instance) due to environmentally-related factors, and collaterally on the service and support industries in rural small towns, threatening the viability of a significant part of Ontario.

2. Background Perspectives and Relevant Literature

2.1 Mitigation and Adaptation

Rural communities are often faced with environmental issues that need to be addressed through environmental planning. The responses often take the form of mitigative or adaptive measures. An example of an environmental issue and how it relates to mitigation or adaptation is seen through the work of Wall and Marzall (2006) on rural community adaptation to climate change. They suggest that although there is growing acceptance and consensus to the fact that the climate is changing and that humans are continuing to influence this change, the directions that responses might take are still rooted in mystery. Wall and Marzall identify the two primary response processes as mitigation and adaptation.

Mitigation deals with reducing the impacts in the environment, while adaptation refers to changing the future direction or course of a community to adapt to the impacts resulting from continual change in the environment that can no longer be mitigated. For rural communities, environmental issues can result in impacts on agriculture and farming, and thus the local economies of rural areas, or they can directly impact rural communities. These impacts have the capacity to drive adaptation to various issues and result in innovation in environmental planning. Therefore, understanding the two fundamental choices communities can make with regards to climate change or environmental issues can uncover successful responses for implementation within a best practices framework.

Farmers may need to modify their agricultural practices; foresters may have to adapt and change logging techniques; service industries may need to readjust their forecasts and adapt to a possibly harsher economic climate; small industry may have to adapt to public and government pressures to be more environmentally responsible. These are some of the changes that will undoubtedly impact local economies and the rural communities which service and support farming and agricultural production and resource-based industries. As a result, risk

assessment and forecasting will become more important in responding or adapting to changing environmental conditions (Rothamsted, 2005), and will be useful in an environmental planning toolbox.

2.1.1 Role of Governments

Governments have a perceived and common responsibility to ensure the physical and economic health of municipalities. This is ensconced in various pieces of legislation, most notably the British North America (BNA) Act (federal) and the Planning Act (provincial). Other responsibilities relating to Ontario are referred to in various provincial legislation, such as the Greenbelt Act; the Places to Grow Act; the Municipal Act; Ontario Water Resources Act; the Provincial Policy Statements; and policies and legislation that direct how municipalities are to deal with environmental issues.

Governments also have an assumed mandate to form partnerships and to engage and activate community groups and residents of their communities (Morrison, 2006; Roseland, 1998; Wall and Marzall, 2006). Rabinovitch (1996) continues and states that “any city, rich or poor, can draw on the skills of its residents to tackle urban environmental problems” (cited in Roseland, p. 195, 1998). This is often left to local communities and regional municipalities, and seldom above a regional level (although many advocacy groups operate across political boundaries). Such fundamental activities can have far-reaching effects on responding to the various environmental issues that face rural communities, and is perhaps the surest way to reach community goals and objectives through a participating and active citizenry.

In fact, as Wall and Marzall (2006) point out, it is evident that those communities with strong social resources and cohesion have the best chance at facing and adapting to issues of the environment. This might then lead to the supposition that empowering community advocacy and approaching issues from a bottom-up direction will enable local governments to better respond to local and regional environmental concerns. This moves government from an establishing and

policing role to more of an engaging and empowering role as facilitator and co-creator. In the rural arena this would see government engaging people to resolve issues locally, issues often overlooked by urban-focused research and politics. In effect it becomes local self-government providing for the economic and environmental health of the rural community when dealing with environmental change, while still protecting the provincial interest.

2.2 The Rural Perspective

Many environmental issues originate from urban-based causes: automobiles and urban sprawl, traffic, emissions, air and water pollution, changing climatic patterns due to heat islands, centralized manufacturing and industrial centres surrounding urban areas. Yet rural methane production on farms, chemical agricultural practices, and rural industry and manufacturing also exacerbate local environmental concerns. In other words, the impact from the environment on rural municipalities can stem as much from rural causes as can from urban sources. Most of the literature dealing with this issue, however, is urban-centric, and focuses on urban dynamics. As a result, solutions and recommendations are formed within an urban framework and highlight an urban resolution to the problem. In order to address the source of the problem affecting rural municipalities, regardless of genesis, a rural approach to the problem becomes mandatory.

The *Ontario Rural Research and Services Committee 2005 Annual Report* (OMAFRA, February 10, 2006) identified “Environmental Sustainability” as a priority issue to research and municipal capacity in environmental sustainability and resource management as an additional area of interest. Municipal readiness for environmental planning, innovation and best practices towards sustainability, and sustainable living in rural areas, is a topical area to explore in research due to the disparity in programs and attention between urban and rural environments.

2.2.1 Rural Communities

Rural municipalities often face a dilemma. They must respond to both citizen and physical concerns about the environment, yet they are often restricted by urban-based policies and plans. They also face resource constraints, usually a lack of funding and especially a lack of staff resources. This tends to restrict them from developing innovative approaches to address environmental issues or to strategically plan for the same. As well, there is a disconnect in the implementation of processes and strategies which are necessary to deal with challenging environmental issues through policy or planning as a result of these restraints.

Environmental planning and sustainable community development mandates that one start from a perspective of a healthy community (Diagram 1) in order to prescribe an approach to achieving a sustainable community. This includes an environmentally sensitive response to those issues that can have severe ramifications on the health and economy of a municipality. Environmental issues such as climate change, air and water quality, and pollution, have the potential to significantly alter rural lives and can and do impact both the health and economic prosperity of rural communities. The concept of sustainability as it applies to adaptation to the environment provides a more articulated and workable approach to planning and development (see Hoggart and Paniagua, 2001; Jervell, 1999; Marsden, et al, 1995).

Diagram 1: The components of sustainability for healthy rural communities.

Many rural municipalities are attempting to respond to the issues of climate change, water quality, waste management, and other pressing environmental problems. Some focus on regulatory policy while others experiment with community-based processes or programs and the application of more innovative tools such as payment for ecological goods and services. Despite these initiatives there is often limited or no innovation and limited or no responsive action in addressing many of the environmental issues, often attributable to a lack of resources but also of understandable and accomplishable best practices, and which nevertheless result in a lack of shared successes (as best practices) between rural municipal governments dealing with the problem (Bruce, Egener, and Noble, 2006).

In fact, the vast majority of current environmental planning produces programs and policies that are based primarily on an urban problem-resolution model which are not always directly transferable to rural communities. Rural problems are unique and contribute to environmental issues in their own way. As there are different foundations for the problems, different approaches to each must be developed and are necessary to resolution.

A lack of adequate resources leads to a deficit in municipal readiness to address environmental issues and results in a lowered capacity to institute a best practices approach in rural areas. Therefore not only is there a need to index the level of readiness towards environmental planning and best practices implementation in rural municipalities, but also a need to identify what innovations are currently taking place. As well, it would be wise to identify any constraints to innovation that may exist in order to develop responses or strategies to deal with these issues in a uniquely rural method. These approaches can then be transferred to and used by other rural communities.

2.2.2 The Rural Problem

As mentioned, traditional and urban-based approaches and policies do not adequately address nor reflect rural issues and therefore tend not to be applicable in rural communities. They are designed as responses to urban, not rural, problems. Yet rural issues necessitate a decidedly unique and innovative rural strategy. The relationship between environmental issues and public health also increases the relevance of these issues (McMichael, 2000; Forget and Lebel, 2001; Jackson, 2003; Dannenberg, et al, 2003; for instance).

This is further compounded by the increasing importance being placed on environmental issues in rural Ontario. The environment has become a key component of rural development and the planning profession will need to be in the forefront directing or facilitating local and regional solutions. This predominance has come about as a result of three key reasons: first, there is an increased awareness of environmental issues and a call for action to address these concerns; second, clean air, pure water, environmental sustainability, and even economic prosperity are viewed as a right; and third, the magnitude of environmental issues such as climate change, air and water quality, and urban sprawl and the impact of growing bedroom communities, continues to demand appropriate planning and correct responses.

2.3 Environmental Planning in Rural Ontario

Sustainability and environmental stewardship is different in rural Ontario than it is in urban regions. Different issues, different industries and a different culture suggest a different approach is needed to develop appropriate responses and implement successful strategies in dealing with the various environmental issues in rural Ontario.

Many urban environmental programs (transportation, pesticide use, water management, climate change amelioration) are not directly transferable to rural communities. Given the dissimilarities between urban and rural settlements, environmental approaches will have different responses

and outcomes. Other issues and concerns such as backyard burning, septic system management and private land stewardship are unique to rural communities with no comparable problems in a highly regulated and planned urban Ontario. Rural communities tend to have a different approach to interacting with the environment than urban dwellers do because many of the environmental priorities in rural Ontario have traditionally focused on local and immediate environmental issues relating to the health and economic problems associated with living in a rural area.

While there has been much recent literature on urban environmental issues and the area of best practices in municipalities, there is a deficiency of adequate research through a rural lens. Therefore, rural areas end up relying on top-down, urban-based assumptions and policies which fail to address environmental planning issues from a rural perspective. This can lead to a disconnect between the needs of rural regions and the strategies pursued by local government to deal with specific environmental issues. This need is reiterated in the *Ontario Rural Research and Services Committee (ORRSC) 2006 Annual Report to Ontario Agricultural Services Coordinating Committee (OASCC)* (January 22, 2007), which identified environmental sustainability and rural innovation as key priorities to address in rural Ontario (ORRSC, 2006).

Planning does not always identify or catalogue relevant issues which may require new direction and innovation. For instance, climate change and water quality are currently key perspectives through which to address planning and sustainability issues in rural Ontario; yet without an adequate understanding of the relationship of warming climate and poorer water quality to the health and sustainability of a community, and no identification or development of best practices in addressing these issues, forward motion can be limited, curtailed, or impossible (Bruce et al, 2006). Therefore, identification of those practices currently in use that support innovation in planning towards environmental issues will give us a knowledge base from which to propose new planning policies, programs or practices.

A further problem is how can innovation and development of environmental initiatives and policies be fostered in rural municipalities? Is there a handbook or guide of best practices that have been found to be relevant within a rural paradigm? Preliminary research shows that there is a deficiency in material that addresses climate change in particular, and while there is some information available as best practice handbooks (“Adapting to Climate Change – An Introduction for Canadian Municipalities” (2006); “A Local Climate Impacts Profile For Your Community” (n.d.); Adapting to Climate Change – A Risk-based Guide for Ontario Municipalities” (2006)), most of these are written for an urban application.

Many rural municipalities are attempting to respond. Some focus on regulatory policy while others experiment with community based processes and the application of more innovative tools such as payment for ecological goods and services. Still others develop programs and processes internal to their municipality and specific to their region. Despite these initiatives there is limited innovation and sharing of success.

Environmental issues have the potential to significantly impact rural communities in economic and health areas, and can degrade quality of life. Pressures on the environment have noticeable effects that migrate across geographical and ecological borders as well as over time. And while some municipalities have pursued innovative responses to environmental concerns, little has been done on preparing for or adapting to specific topical issues such as climate change within an environmental construct as it applies to an Ontario rural framework (Mitchell, 1995; Larsson, 2003; Wall and Marzall, 2006). New information and direction is continually being researched, and the results will definitely encourage and assist rural municipalities to take positive action to address environmental issues and concerns in the 21st century.

These and other factors point to the necessity to establish a decidedly rural perspective on sustainability and environmental issues as well as the approaches that rural Ontario will use to

address these situations. This inadequacy needs to be addressed and solutions found that are based soundly within a rural framework, and which will benefit rural municipalities, communities and residents from across the province.

3. Research Goals and Objectives

The *Ontario Rural Research and Services Committee 2005 Annual Report* (February 10, 2006) identified "Environmental Sustainability" as a priority issue to research and municipal capacity in environmental sustainability and resource management as an additional area of interest. Municipal readiness for environmental planning, and innovation and best practices towards sustainability, especially as it affects sustainable living in rural areas, is a topical area to explore due to the disparity in programs and attention between urban and rural environments.

Sustainability is still sometimes considered a "buzz word", yet the advent of new environmental issues such as climate change requires a newly concerted effort to achieve a high level of environmental awareness and action. For example, Integrated Community Sustainability Plans [ICSPs] will be required by municipalities as a condition of the receipt of federal gas tax revenue. Within these ICSPs, policy and program approaches can be written. This approach to sustainability is an essential aspect of responding to rural environmental issues.

This paper sought to identify and highlight the various innovative strategies, programs and processes (or lack thereof) that rural municipalities use to respond to environmental issues, thereby creating an environmental planning paradigm. Within this framework, the concept of sustainable rural communities can be explored, as addressing environmental issues is a primary component in achieving sustainability.

Rural municipalities often face a dilemma. They must respond to both citizen and physical concerns about the environment, yet they are often restricted by urban-based policies and plans. They also

face resource constraints, usually a lack of funding and especially a lack of staff resources. This tends to restrict them from developing innovative approaches to address environmental issues or to strategically plan for the future. As well, there is a disconnection in the implementation of processes and strategies which are necessary to deal with challenging environmental issues through policy or planning as a result of these restraints.

Many rural municipalities are attempting to respond to these issues of climate change, water quality, waste management and other environmental pressures. Some focus on regulatory policy while others experiment with community-based processes and the application of more innovative tools such as payment for ecological goods and services. Despite these initiatives there is often limited innovation and limited responsive action in addressing environmental issues resulting in a lack of sharing of successes between municipal governments.

In fact, the vast majority of current environmental planning produces programs and policies that are based primarily on an urban problem-resolution model, which is not directly transferable to rural communities and which does not address rural environmental impacts. Rural problems are unique and rural areas contribute to environmental issues in their own way. As there are different foundations for the problems, different approaches to each are needed.

3.1 Goal

The goal of this research was to explore innovations in policies, processes, and other approaches and responses to environmental issues. One expected result was a definition of environmental planning within a rural community context. This would help to develop a set of best practices and policy suggestions to benefit rural communities in dealing with the issues and would include awareness of current concerns and rural responses through innovation within an environmental framework (see Diagram 2, which outlines this process).

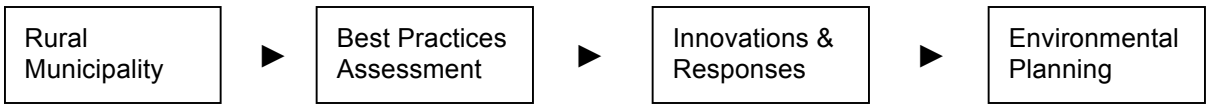

Diagram 2: The process of identification of municipality, best practices assessment, innovations and responses, resulting in environmental planning models.

This study also obliquely examined the problem of disconnected planning and development frameworks which do not adequately address current rural municipal issues and development impacts, specifically in regards environmental issues. There was a focus on best practices of rural municipalities which led to an understanding of how innovation translates into action responses and policy approaches in rural areas. For example, water quality and climate change are recognized as current environmental issues; yet, while there are numerous and appropriate programs and responses to water quality, there is an apparent deficiency of approaches to tackling climate change and its impacts on the health, agriculture and economy of rural areas.

3.2 Objectives

The following objectives were pursued within the research study:

1. Identify current rural municipal policy, program and process approaches, including best practices, to environmental issues;

2. Examine and identify innovative strategies and approaches that offer lessons for other rural municipalities in striving for sustainability and environmental innovation;

3. Review the capacity of rural municipalities to take appropriate action in response to environmental issues and identify related resource needs and deficiencies.

This resulted in three key deliverables:

1. An analysis of Ontario municipalities evaluated the level of preparedness of rural and small regional municipalities in responding to environmental issues and identified innovative approaches, programs, processes and policies.

2. Best practice models and approaches from various rural municipalities were examined and catalogued, resulting in a focus on environmental planning possibilities.

3. Recommendations on policy, program and process approaches to rural environmental issues that can assist rural municipalities, community groups and ratepayers in addressing environmental concerns, and that will help in organizing both community and municipal forces in pursuing these issues.

4. Methodology

Methodology is the science of finding out (Babbie, 2004) and includes the various methods that are taken to uncover data relevant to a study (e.g., case studies and key informant interviews). Methodology is the way in which methods are arranged for a purpose. Methods are the tools we use. The methodology helps us formulate what tools will be employed for a desired outcome. For instance, using Boulding's general systems theory (1956) as a methodology helps lay a foundation for research. Using this methodology and employing various methods can lead to a *consilience* of data derived from different sources (Wilson, 1998; Gowdy and Carbonell, 1999).

General systems theory describes a research methodology that is premised upon an underlying general principle explaining why and how systems and processes operate as a whole. As the mechanisms that will be studied are rooted in systems and structures – for instance, environmental planning; hierarchal political structures; adaptive capabilities; response measures and actions; community groups, partnerships and governance; and systems and process linkages – general systems theory used as a theoretical framework to derive the methods and methodology is quite appropriate. It attempts to balance the breakdown of linkages between scientific disciplines as a result of too much specificity, with a more generalized and holistic approach (Boulding). It also suggests that "the assumptions of one branch of knowledge should conform to the accepted facts of other branches" (Gowdy and Carbonell); in other words, there should be congruence.

4.1 Research Objectives

The goal of this research study was to examine the policies, processes, and other approaches and responses to environmental issues that take place in rural municipalities. Further, the study looked for various best practices and approaches in these municipalities, whether there existed any processes to address the issue, and if so, could they be exported as a best practices model to other rural municipalities. Further insight into environmental issues in rural communities was investigated,

as well as any innovations in, and constraints to, environmental planning to address these rurally-unique problems.

The research also helped to define the future of environmental planning within a rural context and identify current issues and rural responses through innovation within an environmental framework. The outcome of the study suggested possible policy developments and led to the identification of best practices that would benefit rural communities in dealing with environmental issues, although it also found that there was a deficiency in responses and lack of best practices in addressing climate change.

4.2 Methods Used

This research included an initial general survey of rural Ontario municipalities, geared towards identification of innovative practices that work within a rural framework, and having potentially broad applicability in other rural communities across Ontario and Canada. This entailed primary and secondary surveys, interviews with municipal officers, and case studies of select rural municipalities. Interviews were conducted with municipal officials active in the areas of policy development, program formation, and other innovations and approaches in environmental planning within rural communities (See Diagram 3).

Planning departments in rural communities from across northern and southern Ontario were surveyed (see Appendix A, Survey Recipient Municipalities, for full list of surveyed municipalities) to identify those regions and municipalities that consider themselves innovative in their response to environmental issues, whether these were adaptation to climate change or some other local concern. Both upper- and lower-tier municipalities were approached to help identify local and regional issues and innovative approaches. A combination of questionnaire surveys and phone calls were used. The criteria for what was innovative, and the environmental issue that the innovation sought to address, were left for the municipality to identify and respond to, thus

indicating where attention and planning was occurring (and conversely, highlighting those areas where there was a disconnect due to constraints or other priorities, and which would be of benefit to address within a planning paradigm).

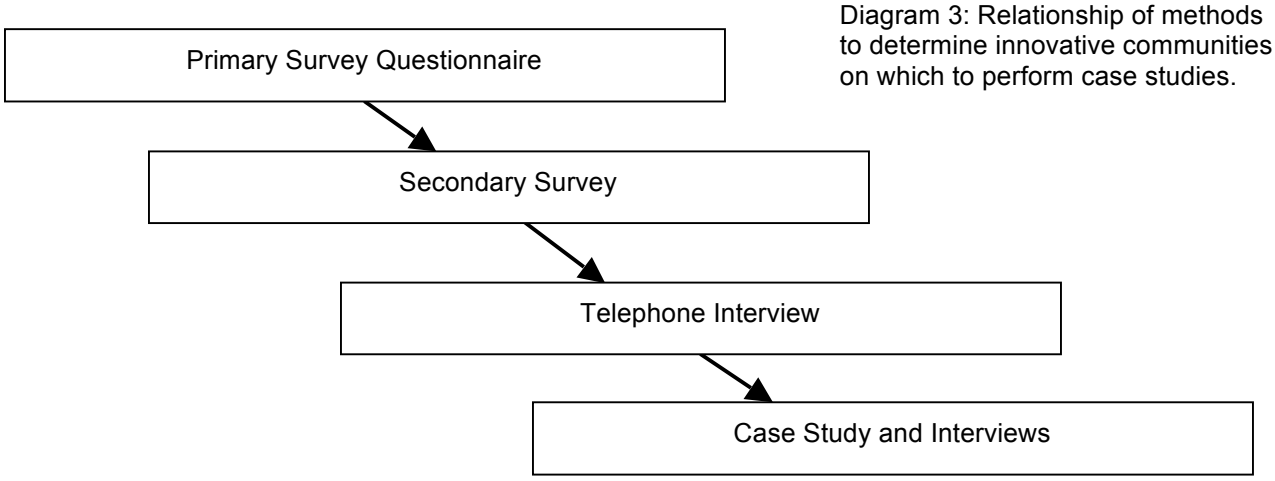

Diagram 3: Relationship of methods to determine innovative communities on which to perform case studies.

Environmental issues and other related rural concerns were identified from the surveys. Indicators of innovation were developed and municipalities with innovative strategies and approaches were documented. The survey also explored constraints that rural municipalities sometimes face in their attempt to implement environmental planning from different approaches, such as policy formation, best practices, and legislation.

The methodology included a survey questionnaire, secondary survey interviewing of innovative communities, and case study interviews. From the primary survey questionnaire (Appendix B), a secondary interview (Appendix C) was conducted in those communities where environmental planning was considered innovative or cutting edge. The purpose of this stage two interview was to gain further information of their unique perspective on adaptation to climate change and topical environmental issues. From this list of innovative communities, six municipalities were identified to conduct further in-depth case studies. These communities represent a best practices approach to environmental planning and adaptative response.

5. Review and Analysis of Survey Results

Preliminary research was conducted through interviews and surveys. The project began with a broad initial survey (Appendix B) of municipalities around Ontario, concentrating on upper-tier municipalities in southern Ontario and specific districts (those with permanent or consulting planning personnel) in northern Ontario. As well, specific lower-tier municipalities in southern Ontario received the survey questionnaire. The initial survey was transmitted via fax (primary) or email (secondary) as the most efficient methods of delivery.

The questionnaire explored how prepared rural municipalities were in planning for the various environmental issues that impacted their communities. Key innovations in achieving sustainable environmental planning and adaptative responses were identified. The questionnaire also called for corporate self-assessment regarding environmental innovation and whether initiatives of the municipality were considered highly innovative, ordinary or just getting by. The purpose of this question was to identify those communities that were driven by innovative approaches in order to identify what best practices towards environmental issues had been developed which could then be exported to other rural municipalities.

The survey was also designed to investigate specific planning efforts of rural municipalities and identify current best practices in policy, program and process approaches in addressing these various issues. Further, survey respondents were asked to outline any constraints to achieving innovative strategies that were encountered in the development or adoption of best practices in their municipality, as these constraints and barriers would be noted for future planning models.

5.1 Results

Initially, seventy-seven municipalities in Ontario were surveyed: thirty-eight upper and lower-tier municipalities in Southern Ontario and thirty-nine district municipalities in northern Ontario (see Appendix A for the complete list of municipalities surveyed and responses). There were twenty-

eight total responses (36.4%); twenty-two (28.6%) from county municipalities and six (7.8%) from the northern districts (Table 1). This breaks down further to a regional representation of twenty-two out of thirty-eight municipalities (57.9%) responding from southern Ontario, and six out of thirty-nine districts (15.4%) responding from northern Ontario. This is a lower figure than was anticipated, given the current topical nature of environmental issues today.

Table 1. Number and Percentage of Responding Municipalities.

Region	Communities Surveyed	Responses	Percentage of Total	Percentage of Region
Southern Ontario	38	22	28.9%	57.9%
Northern Ontario	39	6	7.8%	15.4%
Total	77	28	36.7%	73.3%

Source: Municipal survey responses

The lower response ratio from northern municipalities can be partially explained by the different governance process in respect to planning that occurs in districts in the north and by the lack of discrete planning personnel in many of the districts. For example, two districts employed a single planning consultant who resided several hundred miles away in the Niagara region of southern Ontario, while other municipalities and districts would often share a common planning consultant between them.

Embedding environmental values and strategies within municipal policy, such as official plans or other policy initiatives, helps to facilitate creative development and foster innovative approaches to dealing with the various environmental issues that rural communities often face. These can then lead to active programs which are successful and continuing, and which can be viewed as best practices. In order to identify where the municipalities considered themselves in regards to environmental planning, a self-assessment provided through the survey questionnaire resulted in the responses given for each category of innovation seen in Table 2.

Table 2. Position with Respect to Environmental Planning (Appendix B, Question 2).

Category of Response	Southern Ontario	Northern Ontario	Total
On the cutting edge	2	2	4
Innovative	11	2	13
Doing the usual	4	2	6
Getting by	5	0	5
Struggling	0	0	0
Total	22	6	28

Source: Municipal survey responses

From the responses to this initial survey, municipalities considering themselves cutting edge or innovative (Table 3) were identified and asked secondary survey questions (see Appendix C). These were conducted by phone and led to further understanding of rural municipal responses to climate change and the constraints encountered during strategic environmental planning.

Table 3. Municipalities Considering Themselves Cutting Edge or Innovative in Environmental Planning.

Category	Southern Ontario	Northern Ontario	Total Percentage
Cutting edge	2	2	14.3%
Innovative	11	2	46.4%

Source: Municipal survey responses

Of the responding municipalities (twenty-eight), only four (14.3%) thought of themselves or their programs as cutting edge while thirteen (46.4%) felt their municipality was innovative. Combined, this adds up to more than half (60.7%) of all responding municipalities that consider themselves innovative in their approach to environmental issues. It should be noted that this figure accounts for less than a quarter (22.1%) of all municipalities surveyed, due in part to the low response rate of northern Ontario compared to the more robust response rate in southern Ontario.

5.2 Content Analysis

A content analysis was done on questions #1 and #3 of the initial survey to identify the common themes in environmental planning within the surveyed municipalities. This would help isolate best

practices currently in place within rural communities in policy and process responses as well as local program and project approaches. The results are demonstrated in Tables 4 and 5 which show the various themes in environmental planning in rural communities, indicating those approaches or policy initiatives which were more common, as well as identifying those programs or policies which were experiencing a disconnect from environmental planning initiatives. Constraints which the rural municipalities faced when attempting to implement environmental policies or programs were also identified (Table 6).

Table 4. Primary themes identified by municipalities in environmental planning.

Policy/Process	**Count**
Official Plan Policies	13
Water Protection Policies	11
Environmental Policies	11
Partnerships - MOE, MNR, NGOs, etc.	9
Agricultural Policies	7
Planning Processes – Provincial Policy Statement, Bylaws	6
Other	2

Source: Municipal survey responses

Table 5. Programs and Approaches Identified by Municipalities in Innovative Environmental Planning.

Program/Approach	**Count**
Water projects (incl. CAs, source water protection, buffers)	13
Environmental / Ecological programs (incl. recycling)	11
Community Development programs (incl. partnerships, NGOs, community groups)	10
Sustainable Development programs (including growth management)	7
Heritage programs (including stewardship)	7
Resource Management programs (including waste & nutrient management)	6
Assessments / Studies (including feasibility studies, EIAs and risk assessments)	6

Source: Municipal survey responses

Table 6. Constraints faced by municipalities in developing and/or implementing innovative environmental policy, programs or processes.

Constraints	Count
Staff resources (internal or external)	8
Inter-governmental/political coordination	5
Lack of support or awareness (public or political)	5
Funding	4
Lack of data/information	2
Other	2

Source: Municipal survey responses

(Definitions:

Policy/Process: What are the main drivers of environmental awareness in planning? What directs programs or approaches towards environmental action?

Program/Approach: What methodology or activity is used to address environmental issues? What is being addressed by rural municipalities?

Constraints: What barriers are encountered that restrict or interfere with program development or an approach towards an environmental issue or in achieving results from existing programs and approaches?)

The specific policies and processes, programs and approaches, and the constraints that were encountered can be analyzed within a few categories. It was found that most responding municipalities stressed existing legislation (for example, the Clean Water Act, The Planning Act, Environmental Protection Act) and policy (the Provincial Planning Statement, Official Plans, municipal bylaws) in their approach to environmental issues. Partnerships, community action groups and local agricultural policies were also utilized in coordinating responses or in developing programs. Local initiatives and partnerships were a common tool to achieving a working program and approach, although lack of public awareness, funding and staff resources often curtailed their development or efficacy.

The interview results helped to identify some of the policies and processes in place to address environmental issues at a rural level, whether or not adaptation to climate change was a priority

target, as well as programs and other approaches to these issues (including civic programs, community-led initiatives, collaborations and partnerships between municipal, corporate and non-governmental bodies). Upon preliminary examination, collaborations between the municipality and citizen groups are highly valued and integral to municipal approaches.

The programs and approaches to environmental issues are varied, but it is immediately apparent that some adaptative environmental issues are not at the forefront of concerns being addressed by rural municipalities. The main areas being addressed when dealing with the rural environment surround water and ecological issues, community and sustainable development, and heritage stewardship and resource management programs (see Table 5).

While rural communities with innovative approaches towards environmental issues are fewer than anticipated, it serves to identify deficiencies in strategic planning (policy, processes, or programs) when it comes to rural municipal responses to the various issues rural communities face. This also provides fertile ground from which to explore the role of planning in developing policy and processes in addressing environmental problems, and the constraints can be explored to resolve the apparent lack of innovation in developing best practices in environmental planning in rural communities. Case studies will be used to clarify these issues and to identify where planning is focused when it comes to dealing with climate change and the environment in rural communities.

6. Case Studies

Case studies are research designs that allow one to look at how or why a phenomenon occurs or to focus on contemporary issues (McCorcle and Bell, 1986). Case studies help form research strategies and guide exploration. A case study allows for a significant amount of variables to be included into the data matrix, including qualitative responses which may be missed in other data collection methods. This strategy allows for a deeper vertical investigation while maintaining a broader perspective in which to analyze the results.

Case studies contrast theory with real-world practice and help to isolate those variables which can be maximized to provide better analysis of an existing situation. Use of a case study also adds direct observation and systematic interviewing (Reid, 2006) to the data collection process, allowing for a directed focus approach. Case studies can be operationalized in six categories:

Table 7. The Various Approaches to Case Studies.

Types of case studies	Exploratory	Descriptive	Explanatory
Single case study	Defines questions or hypotheses or determines research procedure	Describes a phenomenon within a single case study	Cause-effect → explains how events occurred in a single case study
Multiple case study	Defines questions or hypotheses or determines research procedure	Describes a phenomenon within a multiple case study	Cause-effect → explains how events occurred in a multiple case study

Source: (After Yin, 2002)

A case study is preferable when the context is not readily distinguishable (Yin, 2002) or there are multiple and complex variables that can confuse the study. Further, when studying an ongoing process or phenomenon such as adaptation to climate change or a specific rural response to the environment, it may be necessary to isolate a certain segment or area in order to identify the processes involved in the phenomenon. In this case, an exploratory case study may be useful

as it allows for direct observation, thus providing an unbiased look at the structure and dynamics occurring within the boundaries of the case study.

What then, are the parameters and criteria of the proposed case studies? They must focus on a rural community perspective; they must investigate current best practices and involve an environmental planning perspective; there must be innovation in the policies, processes, or approaches towards addressing environmental issues; there should be a precise geographical area within which the study resides – in this case, based on responses to the survey, south-western Ontario; and the subjects should be accessible, both for research and for key informant interviews.

Following are six case studies that contributed to the research study and that allowed for a focus on rural municipal approaches to environmental issues. The basis for these case studies was derived from interviews with key planning staff and secondary sources. In the case of Huron County, attendance at several meetings of the Huron County Water Protection Steering Committee (HCWPSC) also helped direct the research.

6.1 Case Study 1, Huron County

6.1.1 Introduction

Huron County is predominantly a rural municipality situated on the shores of Lake Huron. With a population of just under 60,000 (Statistics Canada, 2006) the county is comprised of a number of villages, towns and small urban centres (Clinton, Exeter, Goderich, Seaforth, Wingham), with Goderich being the county seat.

Physically rural and economically agricultural (one-third of the population is in farming or support services and industries for agriculture - Statistics Canada, 2006), Huron County also supports a number of manufacturing regions within its borders. For instance, the extensive highway network provides more than adequate transportation routes and nearby labour pools support secondary

industry in and around the towns and small urban centres, as well as in isolated locations along the Highway 4 corridor (Statistics Canada, 2005; Tyrchniewicz, 2006).

The Huron County landscape is composed of beautiful rolling hills and vales, meandering streams, and a strong forest, giving rise to a long history of environmental planning in the county and laying the foundation for the development of new environmental initiatives. According to the planners interviewed, Huron County was the first county to zone woodlots as natural features of the environment, thus protecting them from development. As a result of this history of environmental awareness, community engagement was a natural outcome and has become a priority process in developing best practices towards environmental sustainability: for example, the formation and development of the Huron County Water Protection Steering Committee.

6.1.2 Programs and Approaches

A fundamental principle followed in the approaches to environmental planning and adaptation in Huron County was that innovation need not be unique so much as it should be inclusive. That is, it should involve all aspects of planning (community, economy, environment, agriculture, tourism, transportation), as well as including all the interested groups and affected stakeholders in the decision-making/development strategy process.

In Huron County, the predominant vehicle for innovation is the Huron County Water Protection Steering Committee (HCWPSC). This is a large group composed of various governmental and non-governmental (NGO) organizations as well as academic and community action groups. The HCWPSC reports every quarter to the Huron County Planning Department and to the various groups and representatives of other political bodies in Huron County, including the Warden and County Council.

The HCWPSC began in early 2004 as a result of a groundwater quality study undertaken by the county between 2000 and 2003. This study complemented earlier aquifer mapping performed by

the Ontario Ministry of the Environment in 2002. In the groundwater study, all impacts on water quality were looked at, including nutrient infiltration, wellhead protection and various residential and industrial pollutants. Although the Walkerton water crisis (and source water protection) had some influence on initiating this study, there was no legislative directive that it be undertaken. Rather, Huron County undertook the study on a voluntary basis as a result of a long history of environmental awareness throughout the county.

The Huron County Planning Department is key to the HCWPSC. Much of the initial impetus and engagement, as well as other support and direction, was provided by the department. Currently, the Planning Department facilitates the process and brings the groups together, following up on reports and targets, and moderates the meetings. Maintaining an arm's length position in regards to agenda items, the Planning Department works from a list of criteria in order to make the large committee work.

There were three primary purposes and targets when the HCWPSC was created:

1) To share information and resources;
2) To steer water protection at a higher level; and,
3) To bring together and involve all stakeholders.

The development of the HCWPSC also identified water as being everyone's responsibility – the municipality, the individual (homeowner, cottager, or farmer), agriculture, the County and industry. Various stakeholder groups from government to industry to citizen groups were invited to be part of the process and to help guide the discussion of water protection. This became an avenue for interested parties to have a voice and convey their concerns. These included community groups, environmental coalitions, Conservation Authorities, the Ministry of Natural Resources, cottager associations, and the United Way. The HCWPSC, from inception, was founded in a community process that supported environmental sustainability innovations, thus making it a functional and unique response to environmental issues.

6.1.3 Innovations and Best Practices

Innovations have been relatively recent, mostly within the last five years, and like Caledon (see Case Study 2), are based on partnerships and inclusiveness. The innovation of the Huron County Water Protection Steering Committee, from an environmental perspective, is in ensuring that all aspects and proponents of sustainable planning are at the table. Planning in Huron County is viewed through an environmental/sustainability lens as well as through a land development or an economic lens.

Having an involved and dedicated staff is also important. While not really an innovative process, the continual focus on the importance of staff involvement illustrates how planning departments can foster such dedication. This commitment, dedication and personal conviction often carries the staff (or NGO or community group) through times when otherwise it would seem better to just drop the issue. It was found that staff who are consulted and otherwise engaged become dedicated and make time to constructively respond to environmental issues. They feel it is not just something they have to do.

The interview also revealed the following key characteristics and criteria that are relevant for best practices and exportation to other rural municipalities:

1) *Ensuring the right people are at the table.* It is essential to not only invite the groups with diverse interests, but also the groups who are active or who will participate in the process, to the table. (Note: This is similar to how Caledon went about it as well.)

2) *Multi-sectoral representation.* All programs, projects and advocacy groups fitting within prescribed criteria and under the mandate of the HCWPSC were represented in the decision-making process, ensuring full transparency in the process, engagement of the community, and protection of local interests.

3) *Involvement of the Planning Department.* It is necessary for the planning department to maintain an active role throughout the year, organizing and facilitating meetings. These meetings are held quarterly, and serve as updates on the yearly targets and objectives.

This keeps all participants active, interested and focused on their objectives for the year. However, the planning department does not take a lead role, usurping power, but works behind the scenes with the various groups and committees, facilitating and helping their progress, empowering them to achieve their lower goals which in turn, dovetail into the higher goals and objectives of the group. It should also be noted that the role of the Planning Department is instrumental in forwarding progress through leadership, without which there would be limited progress towards environmental innovation.

4) *Funding needs to be multi-layered.* Funding should be targeted and derived from multiple sources where possible, including municipal councils, provincial and federal governments through transfers and partnerships, funding from non-profit organizations such as the United Way (through the Trillium Foundation in Ontario), environmental defence funds and volunteer groups and other donations.

Two county projects developed by the Huron County Planning Department and which directly link to innovative environmental planning are 1) a feasibility study for a county-owned wind generator system (i.e., wind turbines); and 2) anaerobic digesters. The wind turbine feasibility study was primarily funded through the "Green Municipal Fund" of the Federation of Canadian Municipalities (FCM).

Wind power generation along the shores of Lake Huron will help in mitigating air pollution and will provide emission-free power generation. It serves as a good example of adaptive strategies in environmental planning and directing efforts for future results. The anaerobic digester project is funded through the Clean Water Project in Huron County. The impetus for this came about through a coalescence of community groups concerned with diminishing water quality and the conflict between the need for clean water and nutrient management.

Common environmental issues often galvanize local support. In this instance, if not for the local water quality issue, the HCWPSC may not have come about. This demonstrates how linkages and partnerships with other organizations and with the community can lead to the development of "green" (environmentally innovative) programs and projects.

6.1.4 Strategies and Adaptive Capacity

The HCWPSC is a community-based committee that engages diverse groups and the citizens through various avenues. Huron County has a long history of community-based planning, and even though it sometimes leans towards an agency-led process, the approach continually invites community involvement. In so doing, Huron County has become an empowering and transparent community-based municipality, helping to direct what programs to initiate or develop.

There are various ways of identifying project direction against local action indicators, primarily funding, local concerns and existing programs. This serves as the general focus of the HCWPSC for the year. The strategy for addressing environmental issues is based simply on what concerns the community brings to the table of the HCWPSC.

Another key strategy (also a strategy of the Environmental Protection Office in Caledon) is to gather agreement on matters which serve the interest and address the concerns of all involved. There is definitely a need to acknowledge the part politics plays in the overall planning process. Therefore, it is necessary to make time for politics and foster alliances in council and upper-tier government departments. By facilitating alliances and partnerships, it makes it easier for other groups to be part of the process and thus contribute to the decision-making.

6.1.5 Constraints

One constraint that was brought up in the interviews was a lack of staff with the drive, dedication and ability to create and pull off the necessary programs or projects to achieve environmental sustainability. What was pointed out as being necessary were staff with strong regional planning, facilitation, organization, and strategic planning skills. As the process is also about partnerships and building consensus, it is vital to have people with the personality and ability to form alliances. It was also noted that staff support is crucial to maintaining the framework once it is put in place.

In a municipal planning department, time and other responsibilities in dealing with development and land use issues often push aside any focus on pursuing initiatives to address rural environmental problems. It is easy to allow daily routine or acute situations to overshadow and diminish the project or program or prevent innovation in process and policy development from occurring. Making time for the innovative process was identified as being critically important.

Lastly, having an initial structure in which to create the framework is not only beneficial, it is also necessary to successfully pulling off the development of a program or project with a long life. In Huron County's case, the initial structure was spread between the Health Unit and the Planning Department as a joint effort, creating organizational and structural challenges which required addressing. Therefore, placing the program or project within one strategic department responsible for implementation, direction and completion (as in the Environmental Progress Office in Caledon's case) is highly recommended.

6.1.6 Conclusions

Water quality is the primary program or project focus, creating a county-wide awareness of the issue through multiple partnerships and stakeholder involvement. The result is found, contained within a sustainability planning approach that includes population demographics, economics and environment while not diminishing the role of other influences on the environmental planning process. The constraints highlight some of the barriers that are being encountered in developing adaptive strategies to environmental change.

Huron County does not have any risk assessment procedures to identify and catalogue the effects of changing climatic patterns in the future. There has been no study to determine the economic and social impacts of longer growing seasons coupled with lowered water tables. Vulnerabilities in agriculture, manufacturing and industry will need to be assessed and strategies developed to mitigate environmental impacts.

The agricultural community is highly innovative and supportive of innovation in Huron County. They have a long history of being able to adapt to the various stresses of severe weather, both in extremes and in variability, as well as to continually fluctuating commodity prices and policies affecting trade and sales. However, dealing with the risks associated with many environmental solutions means improving the capacity to identify and assess risk and to adapt to changing environmental issues and shifting public concerns associated with these issues.

Technology is often viewed as a solution to the problems of environmental implications, usually attributed to anthropomorphic causes. While this may be the case, decisive action is needed to develop strategies that deal with the issues of environment. This necessarily would involve the dissemination of information (increasing public and corporate awareness) and upgrading of skills (enhancing the ability to address environmental impacts) at both a local level as well as a regional approach.

6.2 Case Study 2, Caledon

6.2.1 Introduction

The Town of Caledon is a rural municipality with a population of 57,050 as of the 2006 Census (Statistics Canada). Part of the Regional Municipality of Peel, Caledon is situated on the far northern edge of the Greater Toronto Area and is sandwiched between Wellington County and York Regional Municipality. Caledon is predominantly rural and agricultural and covers an area of about 700 square kilometres. It is home to many hamlets, villages, rural service centres, as well as industrial and commercial service areas.

Caledon geographically incorporates a part of two of Ontario's most significant environmental features, the Oak Ridges Moraine and the Niagara Escarpment. Both of these geographical and ecological zones are protected by legislation: the Oak Ridges Moraine Conservation Act, and the Niagara Escarpment Planning and Development Act, respectively. This has given rise to a

strong sense of environment in this municipality which is seen in the civic pride and community awareness of the many citizen advocacy groups and in the corporate municipal structure itself.

There are many different landforms throughout Caledon, including major river systems, hills and valleys, drumlins, and other features shaped by geological processes. The open spaces, small villages and towns with cultural streetscapes and varied and integrated land uses, attracts not only visitors, but commuters who wish to live in smaller, quieter rural settings while working in Toronto or in the large industrial and commercial suburbs on the north edge of the city.

This applies pressure on the small villages, towns and centres, and contributes to environmental impacts such as water quality and use, air quality (due to commuter transit as well as industrial smog), waste management and climate change. Development pressures continually add to the mix, altering the socio-economic and environmental landscape of the region. However, Caledon has taken dramatic steps to address environmental issues, including climate change.

Caledon is a progressive municipality in environmental stewardship. Some of the environmental and stewardship achievements of the municipality within the last decade are:

1) Growth Management (Official Plan Amendment)
2) Ecosystem Planning and Management (Official Plan Amendment)
3) Wellhead Protection (Official Plan Amendment)
4) Aggregate Resource Management (Official Plan Amendment)
5) Woodlands Conservation By-law
6) Pesticides By-law
7) Partners for Climate Protection
8) Energy Retrofits
9) Environmental Progress Office created
10) Environmental Progress Action Plan
11) Greenest town in Ontario award (2003).

(from the Town of Caledon Environmental Progress Action Plan, 2005)

As is readily apparent, a focus on environmental change through policy and planning is having an enormous impact on the direction Caledon is taking regarding municipal responses towards environmental issues. The Environmental Progress Action Plan is one program approach that sets policy and direction for the municipality.

6.2.2 Programs and Approaches

There are two fundamental, or major, approaches that help set policy and create direction for the environmental initiatives found in Caledon. The first is the Environmental Progress Office (EPO), headed by an Environmental Progress Officer who oversees and helps develop programs and policy to address environmental issues in Caledon. The second approach is the Environmental Progress Action Plan (EPAP), one of the first achievements of the EPO.

Most large regional and urban centres have some form of an Environmental Progress Office. An EPO (Environmental Progress Officer) is a growing position, especially where growth pressures (population, transportation, water and air pollution, climate change) impact or impinge upon the environment. What prompted the creation of the EPO in Caledon was receiving the “Greenest Town In Ontario” award in 2003. Then in 2004, Caledon won another competition as a result of having an EPO position. Caledon has a long history of being a “green” community and the creation of the EPO was a natural evolution.

The EPO reports directly to the Director of Planning, enhancing the functions of planning in the municipality. There are no political restraints as a result of direct management and it is strategic in helping to ensure that EPO reports and actions do not get buried within other departments. It also allows for direct access to other directors and departments, facilitates quicker responses to issues or concerns, fosters consensus building garnering support for program proposals, and allows for the future evolution of the position, lending credibility to both the office and the officer.

How does the Environmental Progress Office and Environmental Progress Action Plan fit into the strategy of the municipality? City council wanted a “Corporate Environmental Plan” which would give direction in addressing environmental issues. The initial task of the EPO was to create an environmental action plan to fulfill this mandate and determine which issues to approach initially. These were prioritized from scanning the best practices and Official Plans of municipalities from across Canada. Consultations with citizen action groups helped determine local concerns.

The Environmental Progress Action Plan then went to council and was endorsed in 2005, giving it clout and credibility. Council directed staff to proceed with implementation of the Environmental Progress Action Plan (EPAP), one of the first in Ontario. The Plan reflects consultations with councilors, local environmental groups and municipal staff, and identifies and prioritizes those initiatives considered to preserve and enhance Caledon’s environment or respond to issues which are, or will, impact the community.

The EPAP builds on the Town’s environmental commitment, leveraging existing corporate and community capacity to assist Caledon in achieving a more sustainable future. City Council also has a community work plan that includes environmental goals and objectives for four year periods. The EPAP fits within this framework and identifies and prioritizes a range of new environmental initiatives the municipality wishes to pursue. It identifies new programs and processes, including implementation models, methods of measuring progress and potential funding sources.

Much research was carried out. Official plans and other reports were reviewed from different cities across Canada. Both rural and urban municipalities were examined for best practices. Local action groups contributed to the Environmental Progress Action Committee (EPAC) and this work led to the development of seven environmental priority areas for the municipality:

1) Air Quality
2) Climate Change
3) Energy

4) A Green Economy
5) Environmental Awareness
6) Sustainable Planning
7) Community Capacity

Subsequent meetings with the Mayor and Council, as well as the CAO, further defined specific targets within these seven zones of responsibility. Meetings with management staff (for instance, directors of departments of public works, recreation, planning, transportation) and with the major community environmental groups active in advocacy and who could contribute to this agenda, were also conducted. This created an interconnected process of development of priority areas with input from different sectors as to which areas were to be focused on in developing environmental strategies for the municipality.

Other approaches to dealing with environmental issues in Caledon included the Community Green Fund (CGF), partnerships with community groups and corporations, and engagement, including community buy-in, municipal support and funding. The CGF lets citizen groups apply for funding and encourages them to get involved by removing the constraints normally encountered when accessing funding. These are small grants, but they have a dramatic impact on the community, not only involving the citizens of Caledon but actually resulting in improved conditions.

The CGF started with a budget of $15,000 but now has $20,000 to use to fund various initiatives. As a result of these applications to the CGF, the EPO created a Staff Environmental Committee (composed of existing interdepartmental staff, thus engaging the municipality) to review funding application eligibility and to help implement proposed actions. All actions are actually in the EPA Plan, thus contributing to its success as well.

External funding is also available for many of the environmental projects from various sources. The Federation of Canadian Municipalities (FCM) provided funding for a wind energy feasibility study; the province of Ontario provided $750,000 for a community energy project. In actuality,

having external funding avenues (especially from upper-tier government) supports the feasibility of developing regional and municipal EPOs. This relieves pressure on municipal budgets and allows Council to support local proposals.

6.2.3 Innovations and Best Practices

Caledon has been trying to address environmental issues since the early 1990s through policy approaches and other management strategies (although not made policy through the Official Plan until 2003). This has resulted in proactive environmental policies, community engagement and capacity, and the establishment of the Office of Environmental Progress in 2004.

Implementation of these strategies has usually been through secondary plans and urban growth planning, while broad Official Plan municipal policies have been applied to specific ecosystem and environmental programs. This has resulted in innovative and cutting edge ecosystem planning approaches used to address each issue through use of adaptive planning measures, giving strong importance to programs and policy.

Currently, Caledon is planning an urban community with 15-20,000 population from scratch using adaptive environmental management planning applications as a fundamental approach to the urban plan. This major transition in its planning approach is part of a new method of planning in this community where all facets of community well-being are ensconced in the planning process from the beginning.

Long-term management and monitoring programs are also vital to best practices and to ensuring that they continue to function as intended. An Official Plan Amendment (OPA) adopted for the new community embeds monitoring programs and public sector programs into the planning and development process. New innovative practices that come along that are in sync with current practices are usually easy to integrate into programs; but if the approach is too innovative or untried as yet, and does not coordinate with current practices, then it becomes harder to integrate

it into a program. The practicality of the innovative approach is part of whether the policy or program can be easily implemented.

6.2.4 Strategies and Adaptive Capacity

Wall and Marzall note that the ability of a community to adapt to catastrophes or systemic impacts (adaptive capacity) depends to a great degree on the human and institutional resources available to the community (2006). Institutional capacity is determined through political action, availability of health services, emergency preparedness, utilities infrastructure and level of communication services. Community capacity is demonstrated in the economic and social cohesion and health of a community (ibid.).

Community capacity can also be determined through the combined influence of a community's commitment, resources, and skills that can be deployed to build on community strengths and to address challenges. Often this commitment is seen in citizen action, advocacy or environmental groups and Caledon has a solid base of community capacity through many such environmental groups: the Caledon Countryside Alliance (CCA), Windy Hills Caledon (WHC), the Citizens for a Clean Caledon (CCC), the Caledon Environmental Advisory Committee (CEAC), and the COOL Caledon Taskforce on Climate Change.

The CEAC was instrumental in promoting innovative approaches to environmental issues and took a progressive approach in environmental matters. A community green plan fund was created in order to give back to the community and to fund projects of various citizen action groups (CAGs). This was a concerted community effort, but would not have occurred without corporate backing from the municipality.

Functionally, the important criteria in developing a "green agenda" in Caledon were a strong will to create an environmental planning office, an active community with active, participating citizen environmental groups, and a demand both from inside the municipality (council and the planning

/ development office) and outside from engaged citizens and interested responsible businesses. These worked in concert and all were necessary for innovation to occur.

These were the building blocks. The impetus was someone within the municipality to champion the idea, facilitate objectives and build consensus within the community and within council. Once this was done, activities were coordinated resulting in a Environmental Action Plan. In Caledon's case, this was accomplished through the Planning Department in coordination with the other civic departments that would be participating in an EPAC. A coordinated team effort provided the fertile ground in which to foster innovation and adaptive strategies.

6.2.5 Constraints

The constraints that were identified in talks with planning staff in Caledon were staff resources, time, and funding. The municipal budget for the Environmental Progress Office (EPO) is between $150,000 and $200,000, including current projects being supported and a salary for a summer student or intern. This does not leave many resources for EPAP programs to obtain results. It also leaves one person to function as staff for most of the year in the EPO.

There is sometimes difficulty in demonstrating a business case as returns in terms of perceived results is not immediate. Environmental remediation and mitigation of climate change are long-term goals and projects, and results can take years or decades to become manifest. Corporate and community buy-in is therefore sometimes hard to achieve. This is further compounded by inadequate budget dollars to allocate to awareness campaigns.

Provincial legislation was identified as having some impact on personnel and resources within the municipal planning offices, although this was thought to be a secondary effect. Primary effects were felt to be a result of provincial legislation acting as a top-down policy approach in guiding land use policy within the Greenbelt area, having broad impacts on landowners and others in the region, and thus impacting the planning department.

Legislation and provincial policy can sometimes create an adversarial position within landowner groups when a perceived injustice as a result of environmental legislation and policies exists, and this can make it hard to implement environmental or sustainability planning at a local level. This directly impacts and creates resistance to environmental programs and innovations and any broad avenue of change towards sustainability measures. For instance, in the last year and a half, there have been a number of landowner rights groups formed which are quite vocal, gaining support, and are opposed to government interference in perceived land rights. As a solution, the town has had to adjust its approach to handling environmental issues and is implementing bottom-up approaches and responses reflect citizens' concerns. It is also funding various citizen-developed projects and programs.

6.2.6 Conclusions

Caledon is well on the way to embedding formulary policies to address climate change within its Official Plan and in various approaches to dealing with environmental issues. Local community involvement and support is crucial to adaptive capabilities and responsiveness of communities (Wall & Marzell, 2006). A key point is getting the community involved, engaged and supportive. In Caledon's case, the municipality is supportive of environmental initiatives and community projects and there is a positive outlook for the future.

Over the next two years, the focus will continue to be on community involvement and ensuring they are included and on board, and that the Official Plan produces the vision of the community. Caledon has an enormous resource of community involvement including active and participating environmental groups advocating for change in the municipality's planning approach for the future. Through cooperative partnerships between municipality and community, local innovative solutions will continue to be identified and implemented.

There is a need to be able to recognize innovative methods other than just policy approaches as well. For example, there are innovative programs from various sectors including government as well as NGO, citizen action plans, community proposals, and municipal staff. In other words, to look beyond policy and legislative approaches such as Official Plans, zoning by-laws or legislation, is an important aspect of sustainability measures. The Environmental Progress Action Plan is a good starting point, but it needs to be brought to the next level. With the Official Plan currently under review, it is an opportune time to realize this objective.

In order to export this innovation to other municipalities, a few key considerations should be met. The first is the requirement to create a staff position where one person is responsible for any environmental projects with in the municipality. This person will also be responsible for creating an EPO. Community groups are then able to go to this person, rather than to five or six different people in different departments, in order to voice concerns, suggest approaches, or implement innovative responses. This new position is now the community resource nexus for environmental initiatives. This was found to appeal to citizen groups.

Community buy-in is also needed. Identifying community environmental groups and citizen action groups at the outset is essential. These groups are able to apply appropriate political pressure at correct political levels, more so than through an internal approach. Community buy-in requires both corporate (municipal) and citizen participation and approval to succeed. Both need to know that there is support from the other. Therefore it is important to ensure that all departments and governing bodies (mayor, council, committees) are apprised, included and on-stream.

A Terms of Reference (TOR) is required for a staff Environmental Committee, who will assist the Environmental Progress Officer and advise on strategy and direction. Most importantly, though, is the need for a will for action and a vision. Without these, there is no impetus to create any

environmental response or innovation to address environmental issues or internal pressure to adapt. Therefore, community integration and consultation is the cornerstone of success.

6.3 Case Study 3 – Prince Edward County

6.3.1 Introduction

Prince Edward County (PEC) is a rural municipality of approximately 1,048.3 km^2 with a population of 25,496 (Prince Edward County, 2008). Located in eastern Ontario, PEC or 'The County', as it is often referred to, is unique in that it is a peninsula, surrounded by the Bay of Quinte and Lake Ontario, and linked to the mainland by a bridge and ferries. A single tier municipality, PEC is made up of ten wards - Ameliasburgh, Athol, Hallowell, Bloomfield, Picton, Hillier, Wellington, North Marysburgh, Sophiasburg, and South Marysburgh – with several hamlets, villages, and towns. The town of Picton is the hub of the county, with Wellington a secondary urban centre.

The County is characterized by rolling pastoral landscapes, limestone bluffs, sand dunes, harbours, and 800 km of natural shoreline which, apart from a few beaches, is largely undeveloped (County of Prince Edward, 1998). It boasts of numerous archeological sites and heritage buildings that speak of and keep alive its rich cultural history as "one of the oldest established areas of settlement in the Province" (County of Prince Edward, 1998) – first of Aboriginal settlements and then of European settlements by the French and the Empire Loyalists. Agriculture, tourism, and business fuel the county's economy. The agricultural landscape of apple orchards, vineyards, and dairy and crop farms are a central attraction to residents and visitors alike in this rural area. This rich rural culture and historic setting of PEC draws over 100,000 visitors each year, making tourism a major industry to The County (Prince Edward County, 2008). As well there is a growing arts community that acts as a draw and stimulates the local economy. There is a distinct recognition in The County of the

interconnections between the ecosystem and the local economy and culture (Prince Edward County, 2008).

PEC, recognized for its unique natural beauty, its heritage, and rural charm, is said to be one of Canada's eight Great Escapes (Deacon et al., 2003) and one of Canada's 10 places that offer the best in rural living (Harrowsmith Country Life, 2003). With such a reputation, The County has become highly attractive to various urbanites desirous of a lifestyle change, of living and working or retiring in rural Ontario. The PEC Official Plan (1998) projects an increase in population to approximately 32,000 by 2021. Such a trend is in contrast to certain other rural areas that anticipate a decline in population due to rural-urban migration. Such growth also results in demographic changes that impact local culture and issues of concern. Older established families are now being complemented by urban 'transplants' as well as younger generations with increased social and environmental knowledge. With this has come a certain aggitation for and engagement in County involvement in environmental issues. This is the context in which the first County Environmental Advisory Committee has been organized.

6.3.2 Programs and Approaches

The most significant approach to environmental planning in the County of Prince Edward is the Environmental Advisory Committee (EAC) which was initiated in 2006 and formalized as a sub-committee of council in 2007. The EAC grew out of the previous Environment and Economy Roundtable which served as an informal working group and discussion forum on related issues. It was with the election of the current mayor, a recognized champion of environmental issues, that the EAC became a reality.

The EAC Terms of Reference (TOR) specify that there be 10 members of the public on the committee as well as three members of council, and one to two staff members from the Planning Department. As well, participation by a member of the Quinte Conservation Authority is encouraged. The committee meets monthly unless otherwise needed or requested. The stated purpose of the committee is "to provide information and recommendatins to the appropriate Standing Committee and/or Council regarding environmental planning matters as required by Council" (County of Prince Edward Planning Services Dept., 2007). The EAC is to be involved in identifying and implementing community outreach activities related to increasing environmental awareness, providing input to Planning staff regarding environmental planning policies and mapping, and eventually preparing an Environmental Action Plan in consultation with the various affected municipal departments.

Being relatively new in its formation, the EAC has been involved in identifying issues of local environmental concern that need to be researched further and that need to be brought to the attention of council. As directed by council, it is the responsibility of this committee to draft the terms of reference for such research and to request a consultant to study such issues further. The EAC as well is envisioned as providing a forum for people to come and present their concerns on specific environmental issues or to provide information on new research, technology, or innovation in relation to environmental planning. In this way, the EAC is intended to become a knowledge reference both for council as well as for the public. While it does not comment on planning applications, the EAC is intended to be involved in an advisory capacity in policy development, specifically in Official Plan and Comprehensive Zoning updates regarding environmental issues or guidelines.

Environmental issues of local concern that the EAC has been involved in relate to the spreading of biosolids, the comestic use of pesticides, and the use of windpower as a renewable source of energy. The changing demographics in The County are reflected in the types of issues of local concern being raised; these reflect a more knowledgeable and informed public, many of whom are younger and more environmentally aware, others who have financial resources and/or time in terms of being retired to put toward investigating and lobbying for government attention and policy changes, and many who are influenced by more urban backgrounds, values, and connections in terms of identifying issues as well as accessing information and resources. Changes in local demographics create change in the issues of local concern, particularly as relates to planning for and with the environment. As such, the formation of the EAC is a natural evolution of processes reflective of an increased local environmental awareness and demand for government action in addressing these issues. The EAC holds much potential in its role of enhancing public education on environmental issues and ultimately in spurring local action through the creation of an Environmental Action Plan through which municipal departments would be engaged in addressing issues of the environment, thus taking awareness and action in planning to another level within the whole municipality.

6.3.3 Innovations and Best Practices

While EACs exist in several municipalities across the province (such as in Waterloo Region, Halton Region, Niagara Region, Kingston, Norfolk County, Durham Region, and others), they are not widely acknowledged in the pulic arena and their experience and expertise are therefore not readily accessible. The establishment of an Environmental Action Committee in Prince Edward County is a local innovation in this context. Gradually connections are being made with others on similar committees in other municipalities and this holds the potential for increased learning and innovation through the sharing of experiences and ideas.

The central role of the mayor in pushing for the establishment of the EAC in The County highlights the importance of a champion for such initiatives. Without such a person, innovative ideas often do not materialize into effective action. In addition, the staff of the Planning Department have played a central role both in the establishment but also in the ongoing functioning of the committee, in particular drawing on their professional expertise in seeing the big picture and coordinating a cross-section of stakeholders as well as in bringing guidance in terms of committee process and in sourcing information.

The establishment and continued existence of the EAC is driven by public concern over local environmental issues. What this points to is the fact that increasing public knowledge and awareness of environmental issues can lead to the creation of processes (such as the EAC) for more focused and more collaborative action. As well, the EAC, with its broad public membership and encouragement of deputations by the public, has the potential to provide a shared platform for diverse local environmental interest and activist groups. It has the potential for creating space for dialogue among people and groups with different interests and varying perspectives and approaches to environmental issues and planning. As such, the EAC can play a particularly unique and innovative role within a municipality in terms of bringing many voices to any particular issue.

6.3.4 Constraints

One of the obvious constraints of the EAC in The County is that it is still a young committee and so is experiencing the inevitable growing pains of getting organized, clarifying its mandate, and initiating its members into their roles and responsibilities. One frustration for members has been in having to temper their eagerness to affect change with the realization that political processes do not move as quickly as they might like and that the committee's mandate is limited to

poviding information not setting actual policy. This speaks to clarifying and managing roles and expectations of the committee from the beginning and as it evolves so that unnecessary conflict is avoided and members' energies are not wasted.

Committee membership can be an issue on several fronts. First, the number of members is important. In the interview it was expressed that the current committee in The County is perhaps too big and would be more effective if it was smaller. A committee that is too large increases the potential for conflict among members and, while conflict is not necessarily negative, it does require energy to manage and so is best kept to a minimum. At the same time, it is recognized that there is need of adequate representation from various interests in the community to create a good mix of people around the table discussing the issues. While the EAC does not currently have representation from all the local environmental groups, this is recognized as being important so as to avoid creating adversaries and opposition to the committee and its actions or recommendations due to a feeling of having been left out. In other words, this is key to creating broad community buy-in.

6.3.5 Conclusions

Prince Edward County understands the interconnectedness of its ecosystem to its economy, its culture, and livelihoods, and therefore recognizes the necessity of protecting and preserving it. Growing concern for and attention to issues of environmental planning have led to the creation of the Environmental Advisory Committee as a means for discussing and developing actions toward addressing such issues. The role of this committee in The County is evolving but already has led to an engagement by the community both in being on the committee as well as participating in public education and awareness building events organized by the EAC. As well there is recognized capacity being developed in committee members as they grow into their roles and, within the parametres of their mandate, explore opportunities to influence the

development of environmentally related policy and effective environmental action that will have influence across the county. It will be important for the committee to access and learn from the insights and experiences of other EACs across the province in order to inform and enhance their own involvement and activities.

6.4 Case Study 4 – City of Kenora

6.4.1 Introduction

The City of Kenora is a single tier municipality in Northeastern Ontario with a population of approximately 15,177 (Statistics Canada, 2006) that almost doubles in the summer months. The City of Kenora came into being in 2000 with the amalgamation of the towns of Kenora, Keewatin, and Jaffray-Melick. Although a city, Kenora is, for the purposes of this study, considered rural given its relatively remote northerly location within the province and its distance from other areas of settlement. Kenora is situated on the Trans Canada Highway, 200km from Winnipeg, Manitoba, on the Lake of the Woods. Topographically, Kenora is set amidst northern forests and within networks of small lakes and river systems. Within the city boundary is Lower Black Sturgeon Lake in almost its entirety and a small portion of the southerly tip of Upper Black Sturgeon Lake. The City of Kenora covers an area of about 24,456 hectares (60,432 acres).

Given its geography, Kenora's industries include tourism, forestry or lumber, mining, milling, and commercial fishing (City of Kenora, 2008). The natural environment obviously plays a central role in the lives and economy of the local population and area. In particular, both for livelihoods as well as recreation and quality of life, there is an awareness of the importance of waters that feed into the Black Sturgeon Lakes. Over the course of the last 30+ years, the City of Kenora has seen incremental but increasing growth in its local population, particularly during the summer months when cottagers and tourists swell the demographic. From only 54 cottages present in 1970 to 165 cottages and 42 residences in 1987, there were 215 cottages and

residences recorded in 2007 (Gartner Lee Limited, & Kelli Saunders Environmental Management, 2007, p. 10). In the face of recent proposals for "substantial (~20 lot) shoreline developments" (Gartner Lee Limited, & Kelli Saunders Environmental Management, 2007, p. 6), increasing concern was expressed by existing residents and particularly cottage associations over the potential threats of such development to lake water quality. As the final report states, "Although there is no immediate threats to water quality in the lake, the pace of development and proximity of the lake to the City of Kenora…raised concerns as to the sustainability of the lake experience" (Gartner Lee Limited, & Kelli Saunders Environmental Management, 2007, p. 6). Essentially, people were reacting to their own fears around social crowding but water quality became the flash point.

6.4.2 Programs and Approaches

In seeking to respond to the concerns of the larger population, The City of Kenora, through its Planning Department, recognized that it did not have adequate policies in place to make determinations of land use and development based on effects to lake water quality. As well, upon further research, there was a recognition of the fact that there was a gap in the available science upon which to base the development of such policies. It was the Planning Department and local residents that took these issues to council in 2006 and a budget allocation was made for a study. This thus became a collaborative initiative with both the City and the department bringing resources to it. The process was fast-tracked and the City then hired a consultant, through a consulting firm known for its expertise in aquatic science and lake capacity, to conduct a "Lake Capacity Study for Black Sturgeon Lake". This was completed in 2007.

The purpose of the study was essentially to establish best practices for sustainable development within the watershed. The consultants undertook research "…on the water quality, natural resource values and aesthetic properties of Black Sturgeon Lake and…this information

[was] linked with an analysis of historical development patterns, current land use, projected growth in the watershed and the effectiveness of existing planning tools to produce a management strategy for the long term sustainability of development on the lake" (Gartner Lee Limited, & Kelli Saunders Environmental Management, 2007, p. 6).

The resulting report represents the most comprehensive compilation of available scientific data on the watershed and more specifically on the quality of water in Black Sturgeon Lake. However, it not only reviews the current conditions of the lake system as made up of water quality, biological, and socioeconomic characteristics, but it reviews the current regulatory environment related to the lake, specifically the relevant sections of the City of Kenora Official Plan. Out of this in-depth review, the report highlights gaps in information and makes recommendations related to planning policies (incorporating Environmental Impact Studies (EIS), a Development Permit System, Site Plan Control, Water Quality EIS), to septic system maintenance, and to education and stewardship. This report is considered an enormous success by all parties involved – the City's politicians, planners, and the local population. What began as a flashpoint over water quality has now been clarified as being more an issue of social crowding and protecting the aesthetic associated with the Lake. The report made clear that current population growth rates do not pose a threat to the lake. That being said, policy guidelines on development are proposed in the report which keep the quality of the lakes' water in focus as a priority. This is to everyone's satisfaction.

6.4.3 Innovations and Best Practices

Of most significance to the success of the study was the intentional and well thought through process of public engagement. To begin with, a Steering Committee of about 8-10 members was formed on which there were representatives from the main property owners groups, as well as developers, and both permanent and seasonal residents; membership on the committee

encompassed the entire spectrum of opinion. This was done intentionally and was possible because the planners knew, from past experiences with these issues, who were the key players. The planners played an important role in going personally to these groups and individuals to invite them to put forth their representative for the committee. This was strategic not only in having all perspectives on the issue present to help guide the process but in creating ownership and buy-in that would ultimately carry through to the implementation of the recommendations. As was noted in the interview, this process essentially created 8-10 disciples of the study who, because they had had input to its design, had learned as they went along and therefore understood every aspect it, could explain it to their fellow community members and thus became its champions. This was particularly useful during the Official Plan Amendment (OPA) process to implement requisite policy changes.

Through the Steering Committee and the series of broader public meetings held, invaluable opportunities were created for dialogue and for community learning; the community as a whole got engaged in contributing their knowledge and learning from the consultant's research. This process also gave the larger community a sense of ownership that would reap dividends when the final report came out and there was virtually no opposition to it. People felt they were part of the process, they had understood it, and therefore were ready for the next stage of implementing it. Again it was noted in the interview that, while the science was excellent, it would have been nothing without the residents. The residents were put front and centre in this study.

An unanticipated outcome of this study was the relationship building that took place between community members who did not previously realize their shared interests. The one large and two small property owners associations that exist on the lake began, over the course of this

research process, to look at issues that they have in common. They are now working together to form one cottage owners association.

Further collaboration was evident in the relationship between the City and the Planning Department, with both committing to and contributing resources - financial and staff - to the study. Throughout, the Planning Department took the lead in driving the process forward – initially taking it before council with community representatives, getting it moved quickly through bureaucracy, and then in working with the consultants to engage the public from beginning to end. Planners' skills in relationship building, on-the-ground networking, and communication were essential to the success of this process. The Planning Department had a vested interest in the success of this study as it sought guidance in dealing with the increasing complaints and public protests over lakeshore development. Now, with a well-informed public, a widely accepted scientific study, and revised Official Plan policies, the Planning Department can anticipate somewhat less conflict over water quality issues related to development.

Other important partnerships that proved essential to the process were with the Federation of Ontario Cottage owners Association (FOCA), as well as with the government agencies involved such as the Ministry of Natural Resources (MNR), Department of Fisheries, and the Ministry of the Environment (MOE). Over the course of the study and in the proposed policy changes, lessons were also drawn from similar jurisdictions such as the District Municipality of Muskoka, the City of North Bay, and the Township of the Lake of Bays (a Lake System Health Program in the OP, a Development Permit System, and Site Plan Control recommendations from each respectively).

6.4.4 Constraints

The primary challenge that planners with the City of Kenora faced, which also became impetus for this study, was in determining how to address the public concerns over water quality in the lake. Planners recognized that many of the protests were motivated primarily by a desire to limit residential development along the lakeshore. They however lacked adequate data to know for certain whether water quality might actually be threatened by such development. It was important to them to not be perceived as discounting the concerns of residents and inadvertently approving of negative impacts on the lake. At the same time, they were cautious about engaging in a process that, without adequate public involvement, might result in a backlash of reaction from community members that did not understand nor therefore support the evidence found by a study. This became central to their efforts toward proactive public engagement.

It was observed in the interview that legislated public processes are highly adversarial due their structured nature. They offer no opportunity for interaction among the various parties and therefore create no opportunities for learning. Such an approach would have sabotaged this study. Recognizing this, the consultants and planners designed a different approach to public engagement by being proactive, personally approaching community leaders and stakeholder groups to provide representation on the Steering Committee, and holding several public meetings which created space for two-way discussion between the consultants and the public. In these ways, unnecessary confrontations were avoided and the overall process proved to be a constructive success.

6.4.5 Conclusions

This example of the City of Kenora's *Lake Capacity Study for Black Sturgeon Lake* is of relevance to any municipality trying to deal with lakefront property development and related

water quality concerns and issues. Those involved with this study recognize the intentional, proactive, public engagement process as being key to the overall success of the study, both in terms of the final report but also, and almost more importantly, in its implementation through policy changes within the Official Plan. This is an example of where a scientific study provides the evidence needed to correct community misperceptions about water quality being so directly linked to increased lakeshore development. Residents of the City of Kenora learned more about the complexity of water quality issues, understood more about the various land use impacts on their watershed, and were ultimately faced with their real fears around social crowding. Once unmasked, these fears could no longer fuel accusations about increasing development exacerbating issues of water quality. And, the policy recommendations that emerged from the study provide the guidance the City and Planning Department need to be able to move forward with development but with the necessary regulations and required environmental impact studies to be more confident in protecting the quality of water in Black Sturgeon Lake.

6.5 Case Study 5 – York Region

6.5.1 Introduction

York Region is located in central Ontario, south of Lake Simcoe, and borders Simcoe County and Peel Region to the West, Durham Region to the East, and the City of Toronto to the south. It covers an area of 1,776 km^2 and has a population of approximately 1,011,360 (York Region, 2008). York Region is one of six regional governments in Ontario and is made up of nine lower tier municipalities – the City of Vaughan, Town of Markham, Town of Aurora, Town of Newmarket, Town of Richmond Hill, Town of Whitchurch Stouffville, Township of King, East Gwillimbury, and the Town of Georgina. Each of the first four of these municipalities are developing regional centres and therefore are highly urbanized. In spite of the predominance of urban issues in the region, York also has distinct rural areas and significant areas of

environmental significance, evidenced by both the Oak Ridges Moraine (31% of the region) and the Greenbelt (38%). Approximately 69% of the Region is designated within the Greenbelt Plan and the Oak Ridges Moraine Plan. Outside of the urban areas, the landscape is of farmlands, wetlands, kettle lakes, the moraine, and over 2,070 hectares of regional forest (York Region, 2008).

York Region's most pressing issue, its greatest challenge as well as opportunity, is its dramatic rate of growth. As part of the Greater Toronto Area (GTA), the region is part of the third fastest growing area in the US and Canada[1], after Los Angeles and New York/New Jersey (York Region, 2008). The population of York Region has grown by approximately 35,000 people per year over five years. In 2008 alone, the population grew by 28,300 people in 9,021 newly completed homes (York Region, 2008). Provincial forecasts predict the current population to grow to 1.5 million by 2031. This means 577,000 new residents in York, 336,000 new jobs, and 234,000 additional housing units (York Region, 2008). Under current provincial policies (Places to Grow – the Growth Plan for the Greater Golden Horseshoe), 40% of this growth will need to be through intensification within the current built boundary (90,700 units) while 60% will be in new developments (143,000 units) (York Region, 2008). Given such prospects, it is no wonder that the region would have a preoccupation with urban issues.

That being said, as the Region anticipates such rapid high levels of growth, it has been forced to grapple with issues of sustainability - how to accommodate and service such a large population while still providing safe, healthy, and caring communities in which people want to live and work – reflective of its strategic plan, Vision 2026 and, more recently, The York Region Sustainability Strategy: Towards a Sustainable Region (2007). The environment, as the source of resources

[1] The Greater Toronto Area and Hamilton (GTAH) population is predicted to grow by 2.8 million people to 8.6 million by 2031 (York Region, 2006).

and the supportive context of human activity, must of necessity be part of any such equation. Vision 2026, Sustainability Strategy and the Regional Official Plan (ROP), the Region's guiding policy documents, both make specific and direct commitments to environmental protection and enhancement. (York Region emphasizes the equal integration of the environment, economy and community – not an "environment first" approach.)

Other influences on the Region's sustainability initiative are the various pieces of provincial legislation that have, since 2001, forced the region and its municipalities to change they way they plan for and develop communities. These include the Oak Ridges Moraine Conservation Act (2001) and Plan, the Greenbelt Act (2005) and Plan, the Growth Forecasts for the Greater Golden Horseshoe (2005) followed by the Final Growth Plan for the Greater Golden Horseshoe (2006), the Lake Simcoe Protection Act (2008) and Plan. The Places to Grow Plan speaks specifically to "40% intensification by 2015" and "compact, transit supportive communities" (York Region, 2006, p. 2). Balancing its need for healthy communities, economic vitality, and a sustainable natural environment has become the vision and priority for York Region as it moves forward with its services, programs, and infrastructure.

6.5.2 Programs and Approaches

York Region has taken a proactive approach to the above mentioned issues by undertaking the corporate Sustainability Strategy as an umbrella to guide municipal decision-making and responsibilities in 2006- 2007 and updating its growth management strategy, between 2006-2009 through the initiative called *Planning For Tomorrow*. This initiative has a number of components including:

- Population, Employment and Land Budget Forecast updates
- Infrastructure Master Plan Updates
    - Pedestrian and Cycling Master Plan (Smart Commute Initiative)
    - Transportation Master Plan

    - Water and Wastewater Master Plan
    - Longterm Water Master Plan
    - York Durham Sewage System
- Stakeholder Consultation
- Providing an updated Natural Heritage System
- Developing criteria for the development of New Communities and intensification in the Region
- Revising and Updating the Regional Official Plan (ROP) in 2009

Of these components, the *York Region Sustainability Strategy* is most significant for this research because it is the overarching framework within which all other municipal programs are planned and implemented. Such a strategy signals the potential for a fundamental shift in the way decisions are made and evaluated at all levels of regional and local governance. As the report states, it involves a "rethinking about how we design, service and support our communities. [It also recognizes that] there is a need to better understand the connections between stewardship of natural resources, job opportunities, human services provision, and public health issues" (York Region, 2007a, p. 2). Such a focus on sustainability brings the environment to the forefront to be equally considered as an integrated part of economic and community development. Some refer to this as the triple bottom line – environmental, economic, and social costs and benefits. This more holistic and integrated approach to planning must become the way of the future. York Region provides a valuable example of how to develop and implement such a sustainability strategy.

This initiative to develop a corporate and community focus on sustainability began in 2004 following several challenges to major infrastructure projects as the Region attempted to expand its services. At this time the Region made a public commitment, which was noted in a letter of then Minister of the Environment (Hon. Leona Dombrowsky), "to initiate a multi-stakeholder advisory mechanism to provide advice on an overall sustainable development strategy to

address growth management, infrastructure planning, and environmental protection, including water budgeting" (Towards Sustainability in York Region Advisory Group, 2006, p. 1). This led to the establishment of the *Toward Sustainability in York Region (TYSR) Advisory Group*, consisting of six members from environmental organizations, Conservation Authorities, and the development industry, chaired by the York Region CAO, with two planners as staff support. This group was mandated to provide advice to the Region on how to make the ROP a more "sustainable" plan, as well as on the development of a "Sustainable Infrastructure Strategy" (Towards Sustainability in York Region Advisory Group, 2006, p. 1). Following a series of meetings in 2005/2006, the Advisory group submitted a final report with seven key recommendations. (See the final report for details.)

At the same time, in 2005, various Master Plans were updated to include elements of sustainability. Then in March 2006, two years after the idea of sustainability was put forward, the "Towards a Sustainable Region" Symposium was held. The results of this symposium became the basis for five subsequent open houses for the public that were held in March and April of that year. Four more public consultation meetings were held with special interest groups. And then in 2007, seven different public meetings were held. All of these were aimed at both educating the public as well as getting their input on the issues facing the Region as it grows so quickly, as well as on what it means to develop sustainably in such a context. Extensive consultation has been necessary to cover such a large population over such widely diverse cultures and geographies.

All components of the Growth Management Strategy were tested through stakeholder consultation in 2006, 2007 and 2008, by examining issues relating to growth (2006), reviewing and discussing Growth Management Scenarios Principles and Questions (2007), and finally by examining the preferred growth scenario and Policy Directions (2008). In 2007, stakeholder

consultation reviewed four possible growth scenarios – intensification at 30%, 40%, 50%, or no growth beyond existing urban areas (60% intensification). The horizon of 2051 was used as the ultimate growth scenario and the question was whether the Region would have reached its limits in a way that could be sustained at that time. Reports on the comparative analysis of scenarios proposed the 40% growth scenario were endorsed by Council in early 2008 and a preferred growth scenario recommended during the stakeholder consultations in fall 2008. The implementation of this recommendation through a Regional Official Plan update is now the next stage of this long-term planning process.

In the meantime, the Region and its local municipalities have been developing a broad range of initiatives that directly relate to the environment and goals of sustainability. Examples of some the Regional sustainability initiatives include:

- Vision 2026 with eight integrated goals
- Human Services Planning Coalition
- The Greening Strategy and Land Securement Initiatives
- The state of the Environment Report 2005
- Energy and Environmental Management System (EEMS)
- Water for Tomorrow Program
- Energy Efficient Affordable Housing
- Public Transit and Rapid Transit Initiatives (YRT/VIVA) and 2 planned subway extensions
- Minimum LEED Silver Standard for Regional Facilities
- Corporate Clean Air Strategy
- York Region Housing Strategy
- Coordinated approach to the Regional Official plan and Infrastructure Master Plans Update
- A variety of purchasing and operation decisions (i.e. LED traffic lights, new carpet procurement etc.)

(York Region, 2007a)

As well, examples of some of the local municipalities' initiatives are:

- Town of Aurora: Water Conservation By-Law
- The Town of East Gwillimbury: Energy Star Program and LEED Silver Standard for all new Town facilities and all new industrial, commercial, institutional and high-rise residential buildings
- Town of Georgina: Municipal Waste Reduction Initiatives, Willow Beach Water and Sewer Project, Town operated vehicles converted to bio-diesel
- The Township of King: Outdoor Water Use Initiatives

- Town of Markham: Green Bin Collection Program, Pathways and Trails Master Plan
- The Town of Newmarket: Pesticide By-Law prohibiting the use of cosmetic pesticides on public and private property
- The Town of Richmond Hill: Wind Energy Project, Residential Intensification Study
- The City of Vaughan: Sustainable Community Project in Block 39
- The Town of Whitchurch-Stouffville: Redevelopment of 19 Civic Avenue – Nineteen on the Park for arts, culture, and entertainment.

(York Region, 2007a)

Water For Tomorrow Program

The Region's *Water For Tomorrow Program* highlights some of the significant progress being made toward the conservation and saving of water, in direct support of the *Sustainability Strategy*. The beginnings of this program were in 1997 when the Long Term Master Plan identified water efficiency as important, the scope of work was developed and consultants were hired. Unique to this region was the idea that saving water was the cheapest form of supply. In 2006, a specific Water Efficiency Master Plan (as a 10 year strategy) was developed and is being updated in 2008/2009 in order to better meet demands.

This program has four components: a residential program; an industrial, commercial and institutional program; a distribution leakage detection program; and an education program. Some of the activities involved in these programs include retrofits (of water saving technology) to toilets (245,000) and showerheads (106,000), testing water mains (1800 kms tested to date), and performing industrial/institutional water usage audits. Significant resources are spent on education through participation in fairs/home shows/environment days/other community events, bulleting in water bills twice a year, community newspapers and TV ads, water-wise gardening advice and demonstrations, the development of a grade 7 curriculum module, and the Annual York Children's Water Festival (York Region, 2007b).

So far the program is reported as saving approximately 20.3 million litres/day, enough water to supply a community of approximately 77,000 people (York Region, 2007b). It is also having

significant impact on reducing the Region's greenhouse gas emissions through the reduction of carbon particulates and carbon dioxide. In addition to these benefits, staff report a distinct change in public attitudes even in two years. They have noticed, in public consultations, more requests for water conservation.

Reflecting the leadership and innovation of this program, *Water For Tomorrow* has received awards and been recognized by the Ontario Water Works Association, Water Environmental Federation, Federation of Canadian Municipalities' Sustainable Community Awards, as well as World Water Forum in Kyoto, Japan. Many components of the program have been adapted by neighbouring municipalities, as well as in the UK and Eastern Europe (York Region, 2007b). As it moves forward into 2009, the program continues to evolve and has developed several new approaches based on its past experience. Fuller descriptions and details about this program are available at: http://www.water4tomorrow.com

6.5.3 Innovations and Best Practices

What has been identified as key to the overall growth management strategy of *Planning for Tomorrow*, the *Sustainability Strategy*, and even the *Water For Tomorrow Program* is "tireless communication and dialogue". This relates to working with senior management as well as with staff and also with the public. At all levels, it has been and continues to be an ongoing education process. As it is so critical to have both senior management and politicians on board, it is important to show them the type of leadership required. As such, it becomes critical to "make the business case for sustainability" for leaders and the public alike to grasp the economic sense and benefit of sustainability in the long-term. As part of the kick-off for the Sustainability Strategy, York Region hired a speaker for the Sustainability Symposium who could clearly communicate this concept. They have published numerous attractive, easy to read reports and brochures to help educate the public. They also held numerous public open houses and consultation meetings to encourage dialogue on the ideas and issues of

sustainability. At another level, the Region has provided training for its staff to learn how sustainability could be incorporated into the corporation and to learn the tools and skills necessary to make sustainable decisions. In this, it is essential for staff to be empowered and licensed to use such decision-making skills. The Region also held workshops with senior management with guest speakers specialized in the field of sustainability – coined them "Leader Sessions". The strategy was presented at a number of internal and external forums to staff and stakeholders, and the draft strategy was reviewed by The Natural Step and the University of Waterloo.

Staff from the Region speak of the critical importance of championing an innovation or new initiative. It must be pushed constantly to be kept on the table, as part of discussions and decision-making. Champions are needed at senior management levels but also within the system as ideas get worked out, critiqued, strengthened and reformulated by reviews of various drafts and even through internal focus groups. Planning departments are known to often take the lead on such initiatives, perhaps because of their more holistic professional perspective. This is considered an essential role to environmental innovations. It was expressed that individuals, departments, and even corporate level governments must be prepared to lead by example, "to say we're making these changes for the good of us all".

Key to taking such leadership is also being prepared to allocate resources, both financial and staff resources, to the initiative. Toward its goal of building a corporate culture of sustainability, York Region pays the Schulich School of Business at York University to provide sustainability training for mid- and upper level management one to two times a year. The Region is currently investigating a Sustainability Coordinating Committee, involving every corporate department, to further implement and monitor Regional progress towards sustainability. Partners become

invaluable in accessing resources, institutions, and other agencies supportive of the initiative. In these ways, the Region's vision of sustainability continues to expand and evolve.

6.5.4 Constraints

One of the major challenges for York Region in its various sustainability initiatives is, as a two tier system, the frequent disconnect between the Region and its local municipalities. This can be seen in terms of communication and coordination of ideas and programs and inevitably affects uptake and implementation. One example given by staff, relating to the Water For Tomorrow Program is the challenge that occurred in developing an ad campaign on outdoor water use and having to provide a summary of the various relevant municipal by-laws because they are all different. Recognizing the confusion this poses to the public and the barrier it creates to public engagement, the Region is now working toward developing a single by-law consistent across all municipalities.

Staff admit that growth management and sustainability ideas or plans can look good on paper but they pose a challenge in implementation through the municipalities. Another example is of intensification and the resistance that happens at the neighbourhood level when there are applications for infill or higher density development (especially in older, established neighbourhoods). As one staff commented, "Ordinary citizens are not on board with intensification." There is the felt need for ongoing education of the public, not just about the idea or philosophy of sustainability but about its practical implications. In terms of housing, this means educating people to accept different housing forms than what they have become used to expecting – smaller, more dense homes and fewer large, single detached dwellings. This may require a multi-faceted public education process coming from the province, the region, and the

local municipality as all levels have vested interest in the intensification required under the Places to Grow Plan.

Education processes are often incremental and the public reaction to strategies of growth management mirror the initial reactions of politicians in York Region. One of the major challenges in initiating York's innovative ideas was the political opposition staff faced. There was real resistance to the very idea of growth. Many years of significant growth were effectively outstripping the ability to provide hard and soft services and thus led to such reactions. It took much persistence and a coordinated education process to get both the politicians and upper level management on board. Patience and perseverance are invaluable attributes in this process.

There are also fiscal challenges the Region faces. Some of its sustainability initiatives, such as VIVA Rapid Transit, are very expensive. The question then becomes, how to be fiscally sustainable? Financial assessments are required for any investment. However, another challenge is that the Region is having to plan financially for 20-40 years out. Sustainability now and sustainability then or what we know of how to be sustainable now versus then will likely vary substantially. Planning for sustainability is not easy. The Region is also investigating the use of lifecycle costing and full-cost accounting in determining the true cost of major projects.

Finally, this leads to a recognition of the need to develop indicators in order to be able to monitor and evaluate the various initiatives to determine their actual impact and effectiveness in working toward goals of sustainability and growth management. Ideas of using Report Cards and of documenting Next Steps are being critiqued and refined while staff continue to explore the best ways forward.

6.5.5 Conclusion

York Region faces some of the greatest challenges of municipalities in Ontario that have a rural constituency Due to its unprecedented rates of growth, the Region might be perceived to be focused predominantly on urban issues of residential development, infrastructure and servicing. It has, however, also been forced to address the equally pertinent issues relating to the Oak Ridges Moraine, the Greenbelt, and now the clean up of Lake Simcoe. These environmental resources and their linkages with the health of communities and the vitality of local economies become even more of a priority when seen as part of the overall sustainability of the Region. Developing this framework as a guide for all corporate decisions and actions has begun a process of fundamentally changing the way the Region understands and goes about its development. This more holistic approach holds the potential for understanding more concretely the interconnectedness between urban and rural communities and their different relationships with the environment. Environmental stewardship and sustainability programs at the local municipal level will be enhanced and strengthened by the overall context and appreciation of sustainability that is being so intentionally cultivated and promoted at the regional level. While the Region may not create specifically rural environmental programs, it has created an enabling environment for these to be developed.

6.6 Case Study 6 – Waterloo Region

6.6.1 Introduction

Waterloo Region came into existence in 1973 from the reorganisation of the former Waterloo County. It is a two-tier municipal system with the Region of Waterloo being the upper tier and seven local municipalities forming the lower tier. Of these municipalities, three are urban – Cambridge, Kitchener, and Waterloo, and four are rural townships – North Dumfries, Wellesley, Wilmot, and Woolwich. The Region covers approximately 1,382 km^2. Its population is estimated at approximately 525,000, however, which is expected to reach 729,000 by 2031

(Region of Waterloo, 2008a). This rate of growth, being one of the highest in the province, poses both opportunities and challenges for the Region, particularly in its efforts toward environmental sustainability.

Waterloo Region is strategically situated in Southern Ontario, being located in the centre of the triangle formed by Lake Ontario, Lake Erie, and Lake Huron (Region of Waterloo, 2008a). As well, it straddles the major transportation artery, Highway 401, and so is within close proximity to Toronto and to major cities in the United States. It is home to three prominent post secondary institutions – the University of Waterloo, Wilfred Laurier University, and Conestoga College Institute of Technology and Advanced Learning – as well as prominent think-tanks such as the Centre for International Governance and Innovation (CAGE) and the Perimeter Institute. The Region is increasingly marketed for its attraction to business and the information technology industry. That being said, its rural municipalities have a history and culture of farming since it also sits upon some of the most fertile agricultural land in the province, not to mention the country. It is a multi-cultural region, home to Old Order Mennonite communities as well as diverse peoples from across the globe.Waterloo Region came into existence in 1973. It is a two-tier system of governance with the Region of Waterloo being the upper tier and seven local municipalities forming the lower tier. Of these municipalities, three are urban – Cambridge, Kitchener, and Waterloo, and four are rural townships – North Dumfries, Wellesley, Wilmot, and Woolwich. The population of Waterloo Region is estimated at 450,000, however, it is expected to reach 729,000 by 2031 (Region of Waterloo, 2008a). This rate of growth, being one of the highest in the province, poses both opportunities and challenges for the Region, particularly in its efforts toward environmental sustainability.

6.6.2 Programs and Approaches

The Region of Waterloo has a long history of leadership and commitment in addressing environmental issues at all levels. In a report entitled *Region of Waterloo Past and Present Environmental Initiatives (May 2008)*, over 70 different environmentally related initiatives are reported in six different categories of: Transportation, Water Conservation, Efficiency and Protection, Energy Management and Facility Operations, Facility Construction and Materials Management, and Community Development and Environmental Preservation. Many of these lead the way as '"firsts" as shown below in the table:

Table 8: Summary of "Firsts" for Region of Waterloo

Year	Area	Activity
1973	Planning	Ecological and Environmental Advisory Committee (E.E.A.C.) established, the first environmental advisory committee in Canada
1976	Planning	Regional Official Policies Plan (ROPP), the first of its kind in Ontario 69 Environmentally Sensitive Policy Areas (E.S.P.A.'s) designated, the first municipally-designated publicly and privately-owned natural heritage areas in Canada
1981 1984	Waste Management	1st Blue Box Pilot project in North America 1st Blue Box program in North America – official launch in Kitchener 1st household hazardous waste pilot in Canada 1st industrial waste reduction pilot program in Canada 1st Regional waste exchange pilot in Canada
1987	Waste Management	1st municipal composting facility in Ontario (Cambridge site)
1989	Planning	One of first municipalities to employ full time environmental planner.
1993	Water	1st Region to implement a Water Resource Protection Strategy in Ontario
1998	Waste Management	1st municipally run landfill operation (Erb Street) in North America to be certified to ISO 14001 standards
1999	Transportation	One of the 1st municipalities in Ontario to employ a full-time Transportation Demand Management (TDM) Planner
2003	Planning	Adoption of Regional Growth Management Strategy to guide future growth in Region.
2005	Transportation	1st municipal transit system (Grand River Transit) in Ontario to install bike racks on all buses
2005	Facilities	1st certified Gold LEED® municipal building in Ontario awarded by the Canadian Green Building Council for the EMS headquarters and Fleet Centre
2005	Facilities	1st municipality in Ontario to adopt the LEED Canada Silver level as a sustainable construction standard for new Regional buildings over 500m^2 of occupied space

(Region of Waterloo, 2008b, p. 5)

Building on this strong foundation of environmentalism, the Region recognized the need for a more integrated strategy and so set out in the Region's Strategic Focus 2007-2010 the need for an *Integrated Environmental Sustainability Strategy*. This builds on the commitment of the region, as stated in the same document, to "…develop and embrace environmental considerations in all of its decisions and to foster community stewardship of the natural environment." Such a strategy provides "a comprehensive approach to pursue Regional Environmental Excellence corporate-wide" (Region of Waterloo, 2008b, p. 5). Thus the Region leads the way in the province by having an *Integrated Environmental Sustainability Strategy 2007-2009* to guide its various initiatives.

A recent initiative by the Region that has been precedent setting is its designation of Environmentally Sensitive Lands (ESLs). The history of this dates back to 1976 when the Region was the first to designate Environmentally Sensitive Policy Areas (ESPAs), of which there are now 77, with another dozen or so awaiting formal designation. This should also be set in context of the Region having the first Ecological and Environmental Advisory Committee (EEAC), formed when it was incorporated in 1973, because the EEAC, a committee of 15 citizens and two regional councillors, plays a significant role in advising on development applications and Environmental Assessments (EAs) affecting the Region's most significant natural features as well as having input on the development of Regional Official Plan environmental policy. The advice of the EEAC influenced Council when it decided to incorporate ESLs into the *Regional Growth Management Strategy* (RGMS) in 2003.

Prior to this, in 1992, the Ontario Municipal Board (OMB), through an Official Plan Amendment (OPA), designated an "environmentally sensitive landscape" in a new Regional Official Policies Plan policy, but without detailed mapping. . Finally, between 2001-2003, the EEAC

recommended that ESLs be included in the *Growth Management Strategy*. This led to consultation in 2003-04 with local municipalities, the Ministry of Natural Resources (MNR), the Grand River Conservation Authorities (GRCA), and various stakeholder groups to further explore the concept of landscape level designations, and then to seek input on preliminary draft designation criteria and policy principles. In 2004-05, the Region retained an environmental consulting firm to conduct a peer review of the designation criteria and preliminary mapping of the first two ESLs in light of current scientific literature.

The initiative of designating ESLs reflects a growing awareness both within the scientific community as well as among regional planners that "…simply protecting the largest and most significant natural features within an environmental landscape is not a truly effective way to ensure ecological integrity or sustainability of either the individual features, or the landscape as a whole. To establish a truly functional natural habitat system that can continue to sustain and renew itself indefinitely, a new planning approach is required which recognizes the importance of protecting the ecological functions that sustain the natural areas and improve the linkages among them" (Region of Waterloo, 2005, p. 1).

The *Regional Growth Management Strategy* identified six potential ESLs. The first two to be designated were the Laurel Creek Headwaters ESL and the Blair-Bechtel-Cruickston ESL. The latter comprised two of the potential ESLs identified in the RGMS. Three amendments to the ROPP were proposed to implement the ESLs:

22 Scientific designation criteria, planning policies, and designation of the Laurel Creek Headwaters and Blair-Bechtel-Cruickston ESLs

23 Roll-back of City Urban Area designation on northwest corner of the City of Waterloo to accommodate the eastern portion of the Laurel Creek Headwaters ESL

24 Deletion of Proposed Regional Road corridors around the western boundary of the City of Cambridge to accommodate the Blair-Bechtel-Cruickston ESL

A discussion paper and the first draft of the OPA was circulated in March, 2005. Shortly thereafter, vociferous opposition arose from a group of landowners in the Laurel Creek Headwaters ESL that in time came to be incorporated as the Environmentally Sensitive Property Owners (ESPO) group. ESPO members expressed concern about diminished property values, more government control on their lands, and apprehensions that the designation would lead to increased trespass, dumping, and littering. A two-session public meeting was held on the first draft of the amendment on May 17 and June 15, 2005. Reflecting public feedback, a further four informal stakeholder meetings were held in early August, 2005. A further Public Meeting was held on the second draft on November 15, 2005. Finally on May 10, 2006, , Council voted unanimously in support of the third draft of Amendment 22 as well as the Amendments 23 and 24. Within 20 days, six appeals had been received, five to Regional Official Policies Plan Amendment 22 and one to Amendment 23. During the summer of 2007, three appellants of Amendment 22 withdrew, and ESPO agreed to a settlement. The OMB hearing was restricted to a group of property owners in the western portion of the Blair-Bechtel-Cruickston ESL After a brief hearing September 4-6, 2007, the Board decision, issued September 17, fully supported Amendment 22 as adopted. A hearing on the outstanding appeal of Amendment 23 is anticipated in 2009.

To implement the settlement reached by ESPO and the Region prior to the OMB Hearing, the Laurel Creek Headwaters Environmentally Sensitive Landscape Public Liaison Committee was established early in 2008. The committee consists of 12 members – 9 landowners (four nominated by ESPO and five others), 1 EEAC member, 1 Waterloo Regional Stewardship Coordinator, and 1 member of the Waterloo Federation of Agriculture (WFA). The committee

started meeting monthly in March, 2008, and held a stewardship workshop for landowners in November 2008. A subcommittee has been struck to make recommendations to the Region about informative roadside signage to indicate when one is entering an ESL area. All of these initiatives continue to put the Region of Waterloo in the forefront of environmental stewardship and sustainability within the province, as well as community-building dispute resolution. The Region truly serves as a forerunner for other municipalities just beginning to think of the environment, their potential impact on it, and their ability to take action to support it.

Another two ESLs in North Dumfries Township, both larger than the initial two, have been proposed in the draft new Regional Official Plan circulated September 30, 2008. The proposed Dumfries Carolinian E.S.L. contains the northern fringe of the Carolinian life zone in this part of Ontario. It is anticipated that this new ROP will be adopted in May or June, 2009.

6.6.3 Innovations and Best Practices

Key to the success of this initiative were certain individuals who championed the issue, kept it on the table, and kept the process moving however incrementally. The Manager of Environmental Planning has a long history with the Region and has a strong natural interest in landscape ecology which motivates him to keep current with the theory and scientific research in this area. His own value and ethic of stewardship undergirds all of the work he does for the Region and it would be accurate to say that ESLs would not have happened at this time if it weren't for his efforts. The Director of Community Planning played a pivotal role in working with opponents to the implementing amendments. As well, Waterloo is known to historically have a very 'green' council whose members are well informed and keep themselves abreast of evolving environmental issues and research. Such strong political will and commitment toward the environment creates an enabling context from the start.

As already noted, the designation of ESLs sets a precedent in the province, with only the Isles de la Madelaine in Quebec having broad landscape level planning policies at this time. As good as the idea of ESLs is, it was only put forward after much research and was justified on the basis of science. The rationale and proposed criteria were then peer reviewed by external consultants. In these ways the initiative had a firm, defensible foundation which was able to stand up to both the political process as well as to the legal process of the OMB. Without such thorough and concise background work, this idea would likely have been sidelined by uninformed and ulterior interests.

Inherent to the success of getting the ESL designation approved was the extensive public consultation process that the Region engaged in – both the legislated public meetings under the *Planning Act*, as well as numerous other community meetings and informal interactions with landowners and stakeholders. Feedback from the public informed both the subsequent consultations as well as the actual wording of the policies and explanations provided to the public to make the amendments more understandable. The extent of initial opposition was unexpected and caused planners to rethink their communication strategy; they realized the need to explain more clearly the bigger picture rationale behind the idea of ESLs as well as speak and write the policies in plain language in order to avoid misunderstandings that they realized were fuelling the opposition. To this end, they met personally with many landowners to discuss the implications for their property and they even published a plain language "annotated" version of the ESL amendment to make it more accessible and understandable by the larger public. All of these efforts delayed the overall process by about a year but ultimately built a larger and more extensive constituency of support across the region among the general public and local media that otherwise would not have been there. This intensive, upfront work paves the way for future efforts toward designating other ESLs.

Engagement and education of the public regarding ESLs has not ended with the approval of the OPAs. Rather, it continues in the form of the ESL Public Liaison Committee in the Laurel Creek Headwaters ESL, in the stewardship workshop for landowners and the stewardship projects anticipated to result from it, and also in the proposal to create and post signage identifying areas designated as ESLs. There is ongoing effort being made to engage both those who supported the idea of ESLs as well as those who were initially in opposition. As well, awareness building and education of the broader society continues.

6.6.4 Constraints

In taking on an unprecedented issue such as the establishment of ESLs and creating a related policy framework that was, until then, unheard of, the Region of Waterloo faced challenges and constraints that are part of leading the way and breaking new ground. These relate primarily to the strong public opposition and challenge to the idea that both threatened the whole concept of ESLs and significantly delayed the overall process of designating specific lands.

Staff, who had spent significant time and effort in researching and understanding the rationale of ESLs, were taken by surprise when, what they thought would be a quick and easy public consultation process turned out to be much longer and more demanding in terms of explaining the whole concept and its implications on landowners. Due to all of the public protest, the final decision on the OPAs had to be delayed by over a year to both allow the strong negative reactions to die down as well as to give staff time to put more effort into better understanding the public's concerns and to develop better communication strategies. Some of the protest was motivated by those concerned about the perception that they were losing opportunities to make money from development of the lands in question while other concerns stemmed from misunderstandings about implications of the policies and possible restrictions on land uses in

the area. The extent of the public opposition slowed the process down but also provided opportunity for more thorough and extensive public education about a concept that was new within the larger society. In the end, these efforts at developing more political and public buy-in paid off, as evidenced by the number of people who eventually came out in support of the OPAs.

Another constraint to this process, and a source of much of the public opposition, was the technical language of the OPAs which was not easily understood by the public and thus led to several misperceptions how the policies would affect individual's properties. Although technical and legal jargon is necessary for the formal documentation of a legal policy document such as an OPA, it can be a hindrance to communicating such policies to the average citizen and landowner. Recognition of this barrier led planners to annotate the policies in plain language for public circulation and discussion. This, together with the intentional efforts made to meet with individuals and stakeholder groups on several occasions, resolved many of the issues and concerns. Out of this experience, the Region has realized the importance of having a communication strategy when it comes to proposing new ideas to both politicians and to the public. There is real value in knowing how to frame an idea, how to communicate messages clearly, and what means to use to most effectively get it to the right audience. The Region has now invested in two such staff positions.

6.6.5 Conclusions

As a leader in environmental stewardship and sustainability, the Region of Waterloo offers numerous examples of innovative initiatives and strategies as well a rich resource of experience for other Regions and municipalities to draw upon. The Region of Waterloo encompasses both urban and rural municipalities and, as such, is forced to grapple with the ecological interlinkages

between these different communities and environments. Each has a vested interest in the other.

With a history and ongoing culture of valuing the environment, the Region continues to push the edges of what has been the norm in society. As a forerunner in this regard, the Region inevitably faces opposition and therefore must continue to hone its processes, communication strategies, and the skills of its staff in order to be as effective as possible in the ongoing responsibility and sometimes daunting task of educating the broader public. As one experienced staff advised, "Be prepared for surprise; people often react differently than expected." Such is the role of those who break new ground.

In terms of ESLs, the Region of Waterloo serves as an example now of what is possible. There is need for other municipalities, and especially those immediately surrounding the Region (such as Hamilton, Halton, Wellington, and Brant), to hear of this and to follow suit in their own areas. We are fortunate in Ontario to have such forward thinking and acting municipalities; municipalities that lead the way and show what is possible in terms of working toward a sustainable and environmentally conscious future.

7. Rural Planning

7.1 Policy

Rural communities apply legislation that is formulated at a provincial and federal level and which is often centered on urban-specific issues. This is not innately incorrect; however, it can misdirect best efforts to resolving situations that have a different genesis and require a different approach. Planning policy needs to address both rural and urban, but in different ways. The responses to environmental issues similarly need to be approached from a specific methodology.

Much of the Canadian population live in urban centres. This is also quite apparent in Ontario. Yet agriculture, farming, forestry and similar activities comprise the greater percentage of land use in rural Ontario. Further, due to smaller communities, a less-diverse economic landscape, and a widely-spread support systems in rural areas, changes and impacts due to environmental issues will have a greater impact and ramification on the economy, lifestyles, and community of rural regions and small towns.

Dykeman suggests that "[a]ll levels of government influence the future of rural areas and small towns. Numerous government departments, crown corporations, local municipalities, community organizations and the private sector make decisions that have a significant impact on [local] communities" (Dykeman, 1986. pg. 1). Planning and related policies (environment, aggregate, water, conservation, natural resources) serve to guide growth and development, mitigate conflict and direct responses when necessary. Conflict can arise as a result of this multi-level approach, yet sometimes local perspectives and initiatives are necessary to drive innovative responses to environmental issues.

Policy can be developed and delivered from two zones: external (usually a top-down approach, such as laws and legislation or policy statements), or internal (a bottom-up approach to planning, using official plans, by-laws or local ordinances). Each performs a particular function, although it

is ultimately provincial legislation and policy that provides the guidelines for rural municipalities. Many rural municipalities have taken this a step further, forming committees to advise councils and relying on public opinion obtained through consultation and town hall meetings for direction.

7.1.1 External

Some of the provincial legislation dealing with or prescribing responses to environmental issues and adaptation measures, are:

The Ontario Municipal Act (2001) guides municipalities and gives them a mandate to ensure that the health, utilities infrastructure, economic development, and other internal structural and framework components are maintained and accounted for;

The Provincial Policy Statement (2005) correlates air quality, sewage and water services, air and water quality, with development and land use, and directs municipalities to have regard for environmental impacts;

The Conservation Authorities Act directs and mandates Conservation Authorities to deal with water quality issues, flooding and erosion, source water protection, and other water issues that can result from or be related to climatic change;

The Greenbelt Act, Oak Ridges Moraine Conservation Act, and Places To Grow Act all deal with curbing urban sprawl which contributes to locally specific environmental pressures, and protecting land from overdevelopment which can exacerbate environmental issues in rural municipalities.

The Nutrient Management Act deals with handling rural farm biomass waste, especially from livestock farming, which has been linked to climate change through methane production, a contributive greenhouse gas emission.

However, while these Acts deal with various environmental issues as part of their mandate, only by inference and association can these be viewed as having to do with rural municipalities and regions. With the exception of the Conservation Authorities Act and Nutrient Management Act, the Acts deal mainly with (urban) growth areas and their impact on rural lands.

7.1.2 Internal

Municipalities have few methods in which to approach and develop responses to environmental issues. Most responses and approaches would be conducted within the hierarchy of official plans, by-laws, local ordinances and strategic or community plans (including growth or development plans). The main avenue of approach would be through the official plan which outlines and directs the actions a community takes in the development and sustaining of the community.

Many rural communities, while having official plans (mandated by the provincial Planning Act), do not integrate specific local environmental issues within their local policies. This usually falls under the broader spectrum of the environment which institutionalizes the approaches a municipality will take to address or mitigate some environmental planning concern. Often these are guided in content by the overarching legislation of the province.

Given the impacts that various environmental issues can have on a rural municipality, public address to these issues should be incorporated within the municipal decision-making process to be successful, much as Caledon has done or is doing by incorporating environmental responses within its official plan. This puts innovation into practice, which has long been the purpose of planning.

Planning needs to be accomplished through the application of policies within multiple policy streams, provincial, regional, and local. In coordinating these streams, internal (local) planning can become more effective and can accept both a bottom-up approach as well as a top-down mandate. In a rural context, this is normally the case as many of the planning directions are made at a provincial or regional level while the decisions are more often than not made at a local input level. Rural environmental planning as a construct can thus be seen to be a political instrument

that is often used to pressure rural landscapes to adopt provincial norms and policies (based on urban-centric perspectives) despite differences in needs (Nelson, 2003).

7.2 Programs

Various programs can be developed at a local municipal level to address many of the issues that surround environmental impacts resulting from anthropomorphic causes. The problem, however, is in finding resources to develop the programs and to implement them within the community. These constraints typically boil down to lack of staff and funding resources. Many Ontario municipalities share these common problems that hinder the efforts of planners in effecting management strategies to combat environmental damage (Bruce, et al., 2006).

Rural communities especially face these issues as many do not have separate departments for planning within their municipality (in the north, as found in the survey results, many districts share a common planner and do not even have a planning department) and often rely on the regional or upper-tier municipality to provide the planning services. Many rural communities also face fiscal issues which preclude them from hiring dedicated staff to manage and direct any environmental planning initiatives. They are also under pressure to conform to changing provincial legislation, to adapt to increasing commuter communities in their municipality, and cannot always address the infrastructure and development costs associated with increasing population shifts. There are, however, some initiatives which can be taken.

7.2.1 Funding

There are innovations and opportunities to get funding from external sources. There are federal, provincial, and other grants to aid in the development and implementation of environmental initiatives. For instance, federal funding is available through the Federation of Canadian Municipalities Green Municipal Fund (GMF), a $550 million federally-endowed fund that is available to municipalities to develop communities that are environmentally sustainable;

provincial grants can be obtained through the Community Go Green Fund, a $6.6 million program that provides funding for local projects which help reduce greenhouse gas emissions in an effort to help combat climate change; and then there is a wide range of local or NGO-initiated funding such as The United Way's Trillium Fund and the Conservation Council of Ontario's Action 21 Green Ontario fund which provides funding to NGO groups to undertake local projects that will have a positive impact on the environment.

7.2.2 Staff Resources

Staffing may be limited by municipal budgets. However, as planning is as much about local facilitation and empowerment as it is about directing land use strategies and environmental planning, the development of local community action groups can be quite important. Fostering local initiatives through volunteer organizations can accomplish a fair degree of work and achievement in addressing environmental problems. Local initiatives that can be undertaken by civic groups can be categorized into three broad categories:

Prevention	– environmental awareness programs – local education programs, especially in schools – community awareness meetings
Mitigation	– stewardship projects – education/awareness projects – political lobbying and pressure groups
Response	– community cleanup programs – local spot-specific adaptive measures – lobbying for adaptive policies

These can be easily monitored, are usually eligible for funding from a wide variety of sources, and most often are composed of dedicated volunteers who have the vision, time and drive to achieve their objectives.

7.3 Planning

Planning deals with managing change and to a large extent designing responses to the various impacts and consequences surrounding human involvement with, and habitation of, the built environment. Managing planned change has long been the focus of development planners over the years, accomplished through land use and environmental legislation and policies. However, when it comes to anomalous or catastrophic events, quite often the response is left to emergency services or departments and only once the effect is reduced do planners involve themselves in mitigation processes and future planning.

Planning can achieve an impact in creating environmentally sound and sustainable communities through practice and changing futures. For example, futures can have probable outcomes and preferable outcomes (Diagram 4). Probable outcomes result from maintaining a given direction without change and with normal input. Preferable outcomes are managed through change and involve social processes (citizen groups, town hall meetings, referendums, public participation) which result in community impacts.

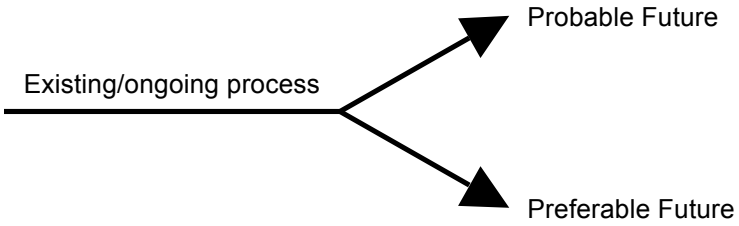

Diagram 4. Two possible outcomes of the future in planning.

Decision-making and environmental planning require co-generation of approach in a community in order to be successful in adapting to the changing conditions that municipalities often face these days. This leads to understanding how adaptation can best fit within a planning model to respond to rural environmental issues. For example, while climate change is itself a major factor governing the decision-making process within legislative frameworks today, it is just beginning to be included within an environmental planning framework at the community level. Increasingly,

however, these external pressures will force planners to deal with environmental issues in-house as part of their decision-making process.

Diagram 5 demonstrates a simple model where an issue or problem can enter into the decision-making process and through use of baseline data and analysis of the current situation, arrive at a proposal for action which can then be implemented and monitored for effectiveness. Having a best practices manual and an understanding of what works in other rural communities will give municipalities a “leg up” in responding to environmental issues in their communities. (Appendix E highlights some outcomes and benefits from this research which can be implemented within a rural planning framework.)

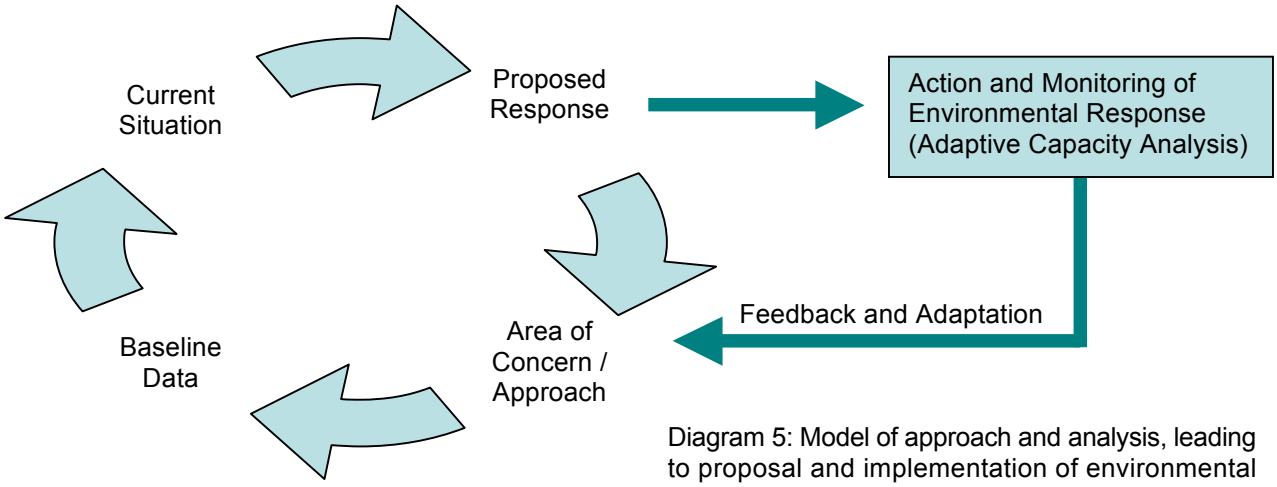

Diagram 5: Model of approach and analysis, leading to proposal and implementation of environmental innovation in rural communities.

As McDonald stated in 1996, “the whole philosophy of SD [sustainable development] is to integrate environmental, social, and economic perspectives into development - the purpose of planning. … Planning must have a central role to play in assisting communities to create their future and to control development” (p. 235).

8. Conclusion and Recommendations

8.1 Conclusion

A community's physical and economic environment is dynamic and constantly changing. The built environment today is not what it was twenty or fifty years ago. Major changes in function and structure have changed, from political frameworks to environmental challenges. Populations shift and resource bases change, driving development, growth, and environmental impacts. This puts continual pressure on services and infrastructure, planning departments, and the local community. This can then affect environmental sustainability.

Responses to these rural pressures are often seen in the formulation of local or regional policy, usually implemented through planning. Planning is typically driven by practical and theoretical applications to growth and development problems. Planning and practice go hand in hand to make theoretical perspectives a reality within environmental spatial constructs, a praxis which manifests planning perspectives through change. The actuality of planning practice is, then, the application of theory to policy and implementation through change to function. This serves as well for municipal addresses to environmental issues.

The survey results showed that many rural municipalities are actively responding to and improving environmental quality through actions which directly affect their local region. For instance, the use of hybrid vehicles and solar heating in Caledon; the introduction of new public transit infrastructure in York Regional Municipality; and the advent of alternative energy (wind power) in Huron County. In order to approach environmental issues strategically, municipalities will need a model of best practices that can be implemented within a planning framework.

Recognizing rural environmental impacts as both an environmental problem and economic issue is essential, particularly as we consider the development of planning strategies. While four of five Canadians live in urban areas, the rural arena is more fragile and more easily impacted

both economically and culturally by problems arising from such problems. Environment and economics go hand-in-hand in addressing environmental issues as both are severely impacted by them. They are also two corners of the triangle of sustainable communities.

There is also a need to understand how increasing environmental pressures are impacting and disrupting rural communities in order to understand what impact they will have on the health and lifestyle of these rural municipalities. Weaknesses and constraints need to be understood and analyzed in order to develop sound strategies for the future. Doing so will yield environmental benefits and protect economic futures.

8.2 Recommendations

Planning and sustainability are complementary and integrative (Jepson, 2001), interactive and predictive (Nelson, 2003), and substantive and participatory (McDonald, 1996). They work in conjunction within each process and when it comes to community development, are mutually inclusive and non-separable. Community-based environmental activities need to be supported through various means and approaches. Local groups should be coordinated and advised through a municipal facilitation process; there should be a community-wide planning strategy, typically drawn up in an official plan; partnerships need to be developed and supported, both through infrastructure and also funding; there should be access to support services, material, funding, and other needs of the community; there should be transparency and consultation with the public in dealing with environmental issues and with citizen action groups. These can all be addressed with little change in financial or staff resources, and as has been noted previously, are a vital part of success in achieving a municipal-wide response to any environmental issue.

Community awareness and support is an important aspect in formulating any strategy to combat or respond to local environmental issues. Community proaction needs to be firmly ensconced in official plans and planted in strong environmental advocacy groups or processes already in

place that have developed from a history of environmental awareness in the community. These help foster new environmental innovations and will pave the way for policies, processes and programs to work in planning approaches. There are other areas requiring attention as well.

Areas of research to study newly developing issues need to be identified, adaptive models for environmental issues must be developed, and the relationship between communities, academic institutions and government should be strengthened and further integrated through partnerships. Community programs and initiatives need to be encouraged through funding and support resources, including recognition through awards. Community outreach and consultation is essential to achieving community support, itself essential to successfully approaching environmental issues at a local level. This will also help galvanize local business support and apply local political pressure to direct resources towards mitigation and prevention of environmental problems.

Communication between interested parties and stakeholders is important to developing a working framework to deal with rural environmental issues and the socio-economic changes they bring. This includes communication of research and studies both federally and provincially to involved government bodies for distribution of educational/awareness campaigns, as well as to the public to raise local involvement and instil preventative awareness and proaction. This will allow both governments and citizens to assume leadership roles within their respective spheres of influence, fostering a wider coordination of responses to environmental and other local issues.

The decision-making process should be reviewed to ensure it incorporates citizen input and that planners and local politicians are coordinating their efforts in addressing environmental planning problems. This would include ensuring that official plans, local policies, guidelines and by-laws, funding initiatives and resources, and other areas that could impact rural communities, were aligned and coordinated. Response initiatives based on best practices should be incorporated

into local planning policy and submitted to the municipal council for approval and integration into the official plan. These responses need to be locally and rurally specific in their approach as urban-based responses will not always be transferable to a rural setting.

Perhaps above all other considerations, the people of rural communities should be kept abreast of new research results on the consequences that could affect them: drought, air and water quality deterioration, soil erosion and economic failures due to single-industry and sector shifts. In this way, they are allowed to voice their concerns and offer possible solutions. Benefits of change should be identified and communicated as well; for example, longer growing seasons, a more diverse crop catalogue, new markets for farm produce, and new manufacturing opportunities that may result from climate change. These objectives could be achieved through public workshops, forums, newsletters, town hall meetings, websites or other community education campaigns. As always, planners have a major role in facilitating this transference of knowledge to the community, stakeholders and to the municipal council. This is a fundamental step in achieving environmental sustainability.

Adopting sound principles of sustainability and environmental planning leads to strong structural components within the planning practice. Our responses define how we deal with the issues that can threaten our current way of life and thinking. Understanding approaches and best practices towards creating a sustainable environment and a liveable community will ultimately determine our success as planners. Doppelt (2003) states in *Leading Change Toward Sustainability* that successful programs, systems and organizations are comprised of five dominant characteristics:

1. Following a vision and inviolate set of principles focused on conserving the environment and enhancing socio-economic well-being;
2. Continually producing and widely distributing information necessary for expanding the knowledge-base and measuring progress toward the vision;
3. Engaging all those affected by the activities of the organization or program;

4. Skillfully distributing the resources and equitably sharing the physical or cultural wealth generated;

5. Providing people with the freedom and authority to act within an agreed-upon framework. (From Doppelt, p. 234)

Within this framework, rural planners can guide the growth, development and resolution of issues within rural communities, and take positive direction in the otherwise sometimes confusing field of environmental planning and innovative initatives within rural municipalities. The results and outcomes benefit not just rural Ontario, but provide new and innovative strategies to approach environmental issues within any setting that planning calls home.

Bibliography

A Local Climate Impacts Profile (CLIP) For Your Community. N.d. Retrieved March 19, 2008 from: http://www.ukcip.org.uk/images/stories/Pub_pdfs/lclip.pdf

Andresen, J., Alagarswamy, G., Stead, D., Cheng, H., Sea, B. 2000, 'Preparing for a changing climate: The potential consequences of climate variability and change in the Great Lakes region (Agriculture)', Great Lakes Regional Assessment. Electronic resource: http://www.geo.msu.edu/glra/assessment/assessment.html

Babbie, Earl. 2004. The Practice of Social Research. Belmont: Wadsworth/Thompson Learning.

Barton, A. H. 1968. Bringing society back in: Survey research and macro-methodology. *American Behavioral Scientist*, 12(2): 1-9

Berke, P. 2002. Does sustainable development offer a new direction for planning? Challenges for the twenty-first century. *Journal of Planning Literature* 17(1): 21–36.

Boulding, K. 1956. General Systems Theory – The skeleton of science. *Management Science*. 2(3): 197-208.

Bruce, J.P., Egener, I.D.M., Noble, D. 2006. Adapting to Climate Change; A Risk-based Guide for Ontario Municipalities. Ontario Ministry of Municipal Affairs and Housing; Natural Resources Canada.

Carter, T.R., Parry, M.L., Harasawa, H., and Nishioka, S. 1994, *IPCC Technical Guidelines for Assessing Climate Change Impacts and Adaptations.* London, University College and Center for Global Environmental Research.

City of Kenora. 2008. Retrieved August 18, 2008 from http://www.kenora.ca/portal/index.aspx

County of Prince Edward. 1998. PEC Official Plan. Picton, Ontario.

County of Prince Edward Planning Services Dept. 2007 (March 6). Environmental Advisory Committee Terms of Reference. Picton, Ontario.

Creswell, J. W. 1998. Qualitative Inquiry and Research Design: Choosing Among Five Traditions. Thousand Oaks: Sage Publications, Inc.

Deacon, James, Brian Bergman, John Dermont, Benoit Aubin et al. 2003 (May 12). Can-tastic Places. *Maclean's Magazine*. 116(19):23.

Doppelt, B. 2003. Leading Change Toward Sustainability. Greenleaf Publishing. Sheffield, UK.

Dykeman, Floyd W. 1980. Three Approaches to Rural Planning: A Regional Government Perspective. *Unpublished Paper Presented to The American Planning Association Annual Conference*.

Environment Canada. 2006. Environment Canada's Sustainable Development Strategy 1997-2000. http://www.ec.gc.ca/sd-dd_consult/final/SDG13_E.HTM

Füssel, H.M. and Klein, R.J.T. 2002. *Assessing vulnerability and adaptation to climate change: An evolution of vulnerability assessments.* Paper presented at the UNDP Expert Group Meeting on "Integrating Disaster Reduction and Adaptation to Climate Change" Havana, Cuba, 17-19 June 2002.

Gartner Lee Limited, & Kelli Saunders Environmental Management. 2007 (October). Lake Capacity and Management Study for Black Sturgeon Lake, City of Kenora. Retrieved August 18, 2008 from http://www.kenora.ca/portal/uploadedFiles/News/City/Final%20Report%20Oct%2019%202007.pdf#Page=90

Gibson, R. 2006. Sustainability assessment: basic components of a practical approach. *Impact Assessment and Project Appraisals*, 24(3): 170-188

Gowdy, J. M., and Carbonell, A. F. 1999. Toward consilience between biology and economics: the contribution of Ecological Economics. *Ecological Economics,* 29(3): 337-348

Harrowsmith Country Life Magazine. 2003 (April). My Kind of Country. p. 83.

Jackson, R. J. 2003. The Impact of the Built Environment on Health: An Emerging Field. *American Journal of Public Health*, 93(9): 1382-1384. Retrieved March 19, 2008 from: http://www.ajph.org/cgi/content/full/93/9/1382

Jepson, Edward J. 2001. Sustainability and planning: Diverse concepts and close associations. *Journal of Planning Literature* 15(4):499-510.

Kling, G., Hayhoe, L., Johnson, J., Magnuson, S. Polasky, S., Robinson, B., Shuter, M. Wander, D. Wuebbles, D., Zak, D., 2003. *Confronting Climate Change in the Great Lakes Region.* A report of the Union of Concerned Scientists and the Ecological Society of America.

Larsson, Nils. 2003. Adapting to Climate Change in Canada. *Building Research & Information*. 31(3/4): 231-239.

McCorcle, M. D., & Bell, E. L. 1986. Case study research: Design and methods. Beverly Hills, CA: Sage Publications, 1984. [Book Review, By Robert K. Yin, in *Evaluation and Program Planning*. 9: 373-374]

McDonald, Geoffrey T. 1996. Planning as sustainable development. *Journal of Planning Education and Research* 15(3): 225-36.

Mehdi, B. (Ed.) 2006. Adapting To climate Change: An Introduction for Canadian Municipalities. Canadian Climate Impacts and Adaptation Research Network (C-CIARN). NRC: Ottawa

Mitchell, B. 1995. 'Beating' Conflict and Uncertainty in Resource and Environmental Management. In B. Mitchell (Ed.), Resource and Environmental Management in Canada (pp. 406-425). Don Mills, Ontario: Oxford University Press

Morrsion, T.H. 2006. Pursuing Rural Sustainability at the Regional Level: Key Lessons from the Literature on Institutions, Integration, and the Environment. Journal of Planning Literature, 21(2): 143

Nelson, J. G. 2003. Rural sustainability in Canada and elsewhere: a historic and civics perspective. *Environments* 31(2): 73-99.

ORRSC, 2006. 2006 Annual Report to Ontario Agricultural Services Coordinating Committee. Retrieved http://www.uoguelph.ca/research/omafra/forms/Word/ORRSCReport2006Jan29.doc

Prince Edward County. 2008. Retreived on August 20,2008 from http://www.pecounty.on.ca

Region of Waterloo. 2005 (October 14). Environementally Sensitive Landscapes: Information Package to Support the Second Draft of the Proposed Amendments to the Regional Official Policies Plan. Waterloo, Ontario.

Region of Waterloo. 2008a. Retrieved August 15, 2008 from http://www.region.waterloo.on.ca

Region of Waterloo. 2008b (May). Region of Waterloo Past and Present Environmental Initiatives. Waterloo, Ontario.

Roseland, M. 1998. Toward Sustainable Communities: Resources for Citizens and Their Governments. Gabriola Island, B.C.: New Society Publishers.

Rothamsted Research. 2005. Climate Change and Land Management. Retrieved April 4, 2008 from: http://www.rothamsted.bbsrc.ac.uk/corporate/ClimateChange.pdf

Shirlow, Peter, and Brendan Murtagh. 2004. Capacity-building, representation and intra-community conflict. *Urban Studies,* 41(1): 57-71.

Smit, B., Harvey, E. and Smithers, C. 2000. 'How is climate change relevant to farmers?', in D. Scott, et al. (Eds.), *Climate Change Communication* (pp. F3 18 - F3 25). Kitchener, Ontario: Alternatives Journal.

Statistics Canada. 2005. Canadian Environmental Sustainability Indicators. Retrieved March 25, 2008, from: http://www.statcan.ca/english/freepub/16-251-XIE/2005000/findings/greenhouse.htm

Towards Sustainability in York Region Advisory Group. 2006 (April 4). Final Report: Advice for a More Sustainable Regional Official Plan and a Sustainable Infrastructure Strategy. The Regional Municipality of York, Ontario. Accessed on August 17, 2008 at http://www.york.ca/NR/rdonlyres/2olla3h77gytkxumfm7kisacfykfhzgkpaxyemwf22ltmkwf2yaw4r45bvrwouzt5bexn6gm6a74xhck3bzwsjj6kf/TSAG+-+Attach1.pdf

Tyrchniewicz Consulting, 2006. The Science of Greenhouse Gas Emissions and Grazing Management Strategies: An Investigative/Awareness Report. Retrieved April 2, 2008 from: http://www.jpcs.on.ca/biodiversity/ghg/pdf/discussion_paper.pdf

Wall, E., & Marzall, K. 2006. Adaptive Capacity of Climate Change in Canadian Rural Communities. *Local Environment*, 11(4): 373-397.

Wilson, E. O., (1998). Consilience: The Unity of Knowledge. New York: Alfred A. Knopf, Inc.

Yin, R. K., Bateman, P. G., & Moore, G. B. 1985. Case studies and organizational innovation: Strengthening the connection. *Knowledge*, 6(3): 249-260.

Yin, R. K. 1992. The case study method as a tool for doing evaluation. *Current Sociology,* 40(1): 121-137.

Yin, Robert K. 2002. Applications of Case Study Research. [*Applied Social Research Methods Series*, Vol. 34.] Thousand Oaks: Sage Publications Inc.

York Region. 2006. Planning For Tomorrow: York Region Growth Management. Towards a Sustainable Region: Creating Strong, Caring, Safe Communities. The Regional Municipality of York, Ontario. Accessed on August 17, 2008 at http://www.york.ca/NR/rdonlyres/5xqoqhxbdkgpicvxpcbky7prjbvdxjkyodci4cxxaokpokxwloanlvf6xgk7xcyoaiojqwemyp46qvlzixuqrbr5gc/PlanningforTomorrowBrochure.pdf

York Region. 2007a. York Region Sustainability Strategy: Towards a Sustainable Region. The Regional Municipality of York, Ontario. Accessed on August 17, 2008 at http://www.york.ca/NR/rdonlyres/ddvav3nrw2657f4dljc4m3kbxa4v35qzqdtw62f3zce5cvwur4wbcymuvnoobehvgdkpzgsjrzeohstbduin2jlsmd/Final+Sustainability+document.pdf

York Region. 2007b (June 21). Water For Tomorrow: Water Efficiency Master Plan Update. Report No. 6 of the Transportation and Works Committee, Regional Council Meeting. The Regional Municipality of York, Ontario. Accessed on August 17, 2008 at http://www.york.ca/NR/rdonlyres/4ob54f54pyobjb27uxdfm6gxclqdkoi5mzn4wqik3k4qfzqiysk5qdhbrp7hsfwwakzclm3aesgwxfornr5i5zsbdf/PFT_brochure2007.pdf

York Region. 2008. Accessed on August 17, 2008 at http://www.york.ca/About+Us/York+Region+Facts/default+York+Region+Facts.htm

Appendix A: Survey Recipient Municipalities

ID	Tier	Region	Municipality/County	Contact
	-------	**Regions**	----------	
1	Upper	Durham	Regional Municipality of Durham	Commissioner of Planning
2	Upper	Halton	Regional Municipality of Halton	Commissioner of Planning & Public Works
3	Single	Hamilton	City of Hamilton	General Manager, Planning & Development
4	Upper	Niagara	Regional Municipality of Niagara	Commissioner of Planning & Development
5	Single	Ottawa	City of Ottawa	Manager, Planning & Growth Management
6	Single	Toronto	City of Toronto	Executive Director/Chief Planner
7	Upper	Waterloo	Regional Municipality of Waterloo	Commissioner of Planning, Housing & Community Services
8	Upper	York	Regional Municipality of York	Commissioner, Planning & Development
10	Upper	Brant	County of Brant	Chief Planning Official
11	Upper	Bruce	County of Bruce	Director of Planning
12	Single	Chatham-Kent	Municipality of Chatham-Kent	Manager, Planning Services
13	Upper	Dufferin	County of Dufferin	(within lower-tiers)
14	Upper	Elgin	County of Elgin	(within lower-tiers)
15	Upper	Essex	County of Essex	Manager of Planning
16	Upper	Frontenac	Frontenac County	(within lower-tiers)
17	Upper	Grey	Grey County	Director of Planning & Development
18	Single	Haldimand	County of Haldimand	General Manager, Planning & Economic Development
19	Upper	Haliburton	County of Haliburton	Dev. Service Coordinator & Planner
20	Upper	Hastings	County of Hastings	Director of Planning
21	Upper	Huron	County of Huron	Director of Planning & Development
22	Single	Kawartha Lakes	City of Kawartha Lakes	Director of Development Services
23	Upper	Lambton	County of Lambton	Manager, Planning & Development Services
24	Upper	Lanark	County of Lanark	Planning Approvals Administrator
25	Upper	Leeds & Grenville	United Counties of Leeds and Grenville	Planner
26	Upper	Lennox & Addington	County of Lennox & Addington	(some at lower-tiers)
27	Upper	Middlesex	County of Middlesex	Director of Planning & Economic Development
28	Single	Norfolk	Norfolk County	General Manager, Planning & Economic Dev. Services
29	Upper	Northumberland	County of Northumberland	(some at lower-tiers)
30	Upper	Oxford	Restructured County of Oxford	Director of Planning
31	Upper	Perth	County of Perth	Director of Planning
32	Upper	Peterborough	County of Peterborough	Director of Planning
33	Upper	Prescott & Russell	United Counties of Prescott & Russell	Director of Planning
34	Single	Prince Edward	County of Prince Edward	Commissioner of Planning
35	Upper	Renfrew	County of Renfrew	Director of Development & Property
36	Upper	Simcoe	County of Simcoe	Director of Planning
37	Upper	Stormont, Dundas & Glengarry	United Counties of Stormont, Dundas & Glengarry	County Planner
38	Upper	Wellington	County of Wellington	Director of Planning & Development

ID	Tier	Region	Municipality/County	Contact
	-------	**Districts**	----------	
39		Algoma	Township of Dubreuilville	CAO/Director of Planning
40		Algoma	Township of Michipicoten	CAO/Planner
41		Algoma	City of Sault Ste. Marie	Director of Planning
42		Algoma	Township of St. Joseph	CAO/Planning Administrator
43		Algoma	Town of Thessalon	Chairman of Planning
44		Algoma	Township of White River	Planner/CBO
45		Cochrane	Township of Black River - Matheson	Clerk/Planner
46		Cochrane	Town of Cochrane	CAO/Cochrane & Area Suburban Planning Board
47		Cochrane	Town of Hearst	Director of Planning
48		Cochrane	Town of Iroquois Falls	Clerk/Planner
49		Kenora	City of Dryden	Planning Administrator
50		Kenora	City of Kenora	Planner
51		Kenora	Municipality of Red Lake	Planning Administrator/CBO
52		Kenora	Municipality of Sioux Lookout	Planning Administrator
53		Muskoka	Town of Bracebridge	Development Services Director
54		Muskoka	Township of Georgian Bay	Manager of Planning & Community Development
55		Muskoka	Town of Gravenhurst	Coordinator of Development Services/Chief Planner
56		Muskoka	Town of Huntsville	Director of Development Services
57		Muskoka	District Municipality of Muskoka	Commissioner, Planning & Economic Development
58		Muskoka	Township of Muskoka Lakes	Director of Planning
59		Nipissing	Township of Bonfield	Director of Planning & Development/CBO
60		Nipissing	Township of East Ferris	Director of Planning
61		Nipissing	Town of Mattawa	Administrator/Director of Planning
62		Nipissing	City of North Bay	City Planner
63		Nipissing	Municipality of Temagami	Planning Clerk/CBO
64		Nipissing	Municipality of West Nipissing	Director of Planning
65		Parry Sound	Township of Armour	Planner
66		Parry Sound	Township of Carling	Administrator/Planning Administrator
67		Parry Sound	Municipality of Magnetawan	Planner
68		Parry Sound	Town of Parry Sound	Director of Community Development
69		Parry Sound	Township of Seguin	Planner
70		Parry Sound	Township of The Archipelago	Planner
71		Rainy River	Town of Fort Frances	Planner
72		Sudbury	Township of Chapleau	CAO/Director of Planning
73		Sudbury	Municipality of French River	Director of Planning
74		Thunder Bay	Township of Nipigon	CAO/Director of Planning
76		Timiskaming	Township of Harley	Planner
77		Timiskaming	City of Temiskaming Shores	Director of Planning & Protective Services

Planning and Environmental Issues: Best Practices for Rural Municipalities

Dir. Planning (or designate): _____

Region/County: _____

Phone/E-mail: _____

1. Considering policy, programs and process approaches, what do you consider your best practices towards environmental issues to be (please identify area of activity; e.g., water quality, working with community groups, integrating public/private concerns, etc.)?

_____

_____

_____

2. Considering your answer to the above question, how would you rate your approach towards environmental issues?

Struggling [ ] Getting by [ ] Doing the usual [ ] Innovative [ ] On the cutting edge [ ]

3. Considering all the above, is there one policy, program, or process that you think is so innovative that it should be shared across the province? Yes [ ] No [ ]

If yes, please identify: _____

_____

4. Can you identify any lower-tier municipalities (if applicable) that have approaches towards environmental issues you would rate as "innovative" or "on the cutting edge"? Yes [ ] No [ ]

4a. If yes, please list them below (if known, please provide a contact person):

Municipality: _____

_____

5. Does your region/county/lower tier municipality have an Agricultural Advisory Committee? County/Region: Yes [ ] No [ ] Lower tier municipality: Yes [ ] No [ ]

Please identify lower tier AACs: _____

_____

_____

Thank you for your time. If you have additional comments, please attach a separate sheet.

Municipal Readiness for Environmental Planning: Innovation and Best Practices Towards Sustainability for Rural Communities

Innovative Municipalities Interview Questions, Stage II

Question 1: You mentioned your municipality was innovative. Could you elaborate on this or provide more details?

Question 2: What circumstances have allowed you to be innovative/cutting edge?

Question 3: What constraints are there to being innovative in regards to environmental issues within your municipality?

Question 4: Is there anything else you feel is important regarding innovation/best practices in local environmental planning?

Thank you.

Appendix D: Responding Municipalities

Municipality	C	I	Policy/Process	Program/Approach	Constraints
City of Kenora	✓		Lake Capacity Study;	Sustainable development within the watershed	Need study to direct policy formation
District of Parry Sound	✓		Official Plan Policies	Innovative zoning & site plan control around rec. lakes	None given
Oxford County	✓		Source Water Protection; Guidance modules and technical assessments under CWA	Source Water Protection program; Risk Assessment pilot projects; Natural Heritage Study	None given
Region of Niagara	✓		Environmental policy integration into OP; Env. Adv. Comm. (EEAC); Niagara Water Strategy	Tree cutting bylaw; Recycling program; Smart Gardening Program; Growth management	None
Norfolk County		✓	Env. Advisory Committee; ALISE	Fed. Of Agriculture; Land stewardship	No constraints – a progressive council
Perth County		✓	Ag. Review Comm.	Clean Water Project; CA driven programs	Lack of funding; lack of staff resources
Brant County		✓	Official Plan review; Heritage Committee; Agricultural Consulting Group	Archeological Master Plan; heritage conservation	Data collection from ministries; poor comm.; funding & staffing
Huron County		✓	Huron County Water Protection Steering Committee; building political consensus	Feasibility studies; env. awareness; integration with OP; env. coordinator	None given
City of North Bay		✓	Sustainable Community Adv. Comm.; water quality OP policy	Natural Classroom (NBMCA); Corporate Green Strategy; LEEDS	None given
Township of Muskoka Lakes		✓	Env. Policy; shoreline buffer policies; here Mile Lake RAC	Golf course monitoring	None given
United Counties of S. D. & G.		✓	Eastern Ontario Water Resources Committee (EOWRC)	Water planning & mgmt committee	Coordination between county and committee
Region of York		✓	Sustainability strategy; natural heritage planning; growth management work	Water For Tomorrow; Vision 2026; VIVA (transit PPP)	None given
Wellington County		✓	OP policies; planning policies for environmental protection;	Green Legacy; Rural Water Quality Program; Programs to encourage comm. groups to be environmentally active;	None given
Middlesex County		✓	OP integration	Integration of policies / mapping from Natural Heritage Study	None given
Region of Waterloo		✓	Environmental policy; Env. Sensitive Landscapes	Rural Water Quality Program; Ecological & Env. Adv. Committee	None given

Municipality	C	I	Policy/Process	Program/Approach	Constraints
Region of Halton		✓	OP planning policies; Aquifer Management Plan; EEAC/HAAC; Good Forestry Practices Bylaw	Good Forestry Practices By-Law Program; ESA planning; waste management	None given
County of Prince Edward		✓	Env. Advisory Group; AAC; Stewardship council; ad hoc groups; partnering with CA; environmental rights	AAC promotes env. awareness / stewardship; ad hoc citizen groups; nutrient management; local support/initiatives; natural heritage protection / conservation	Poor soil depth, poor farmland; lack of political pressure; lack of resources (funding, staff); lack of public / political awareness of issues; development pressure
Renfrew County			Planning Act; PPS; MOE/MNR	Site specific planning; zoning bylaws; community groups; 30m setback/buffer from water	No CAs; environment not a big item due to a large area/low density; political constraints
Perth County			Middle Maitland Rejuvenation Comm.; Avon River Stewardship Comm.; Ag. Review Comm.	Clean Water project; wellhead protection; committees CA driven	Lack of sustainable funding; No coordination with province
Grey County			OP policies; MNR liaison	GIS mapping	None given
District of Temiskaming			Official Plan; Agricultural & Rural Affairs Committee	New Official Plan to include proactive env. policies	None given
Peterborough County			Official Plan; AAC	30m setback from all water bodies (based on a recommendation of MOE)	None given
District of Muskoka			Official Plan; bylaws	Working with public groups; OP review process; new bylaws	None given
Simcoe County			Official Plan; PPS	Greenlands designation in OP; Using PPS to identify areas	Lack of resource staff; Lack of council support; preserving heritage conservation w/ no staff
United Counties of Prescott-Russell			None given	Educating the general public regarding local resources; working with comm. groups	None given
Hastings County			None given	GIS program; ESA mapping	None given
County of Leeds & Grenville			1 ha minimum new lot size for private-serviced rural severances	None given	None given
Essex County			None given (Official Plan?)	None given	None given

(C = Cutting Edge; I = Innovative)

1. Rural municipalities will be able to evaluate their approaches to environmental planning relative to a rural-centered framework through a focus on environmental innovation and a sustainable, adaptive approach in response to environmental issues.

2. Community groups and organizations often collaborate and partner with municipalities to pursue an environmental agenda. The research will be of interest to these groups in achieving their goals. Work related to environmental planning will be of particular value to those communities where air and water quality, climate change and other issues are affecting local economics and social lifestyles.

3. The general public will benefit in two separate ways: one, the dissemination of results should lead to enhanced municipal programs, with improved outcomes and resulting environmental improvements; two, individual residents often lobby municipalities to take action but lack positive suggestions concerning how to best proceed.

4. The planning profession as a whole will benefit from updated information, perspectives, and constructs, and can evaluate current best practices of rural municipalities in relation to environmental issues affecting rural communities as they relate to policy, programs, or practices in environmental planning.