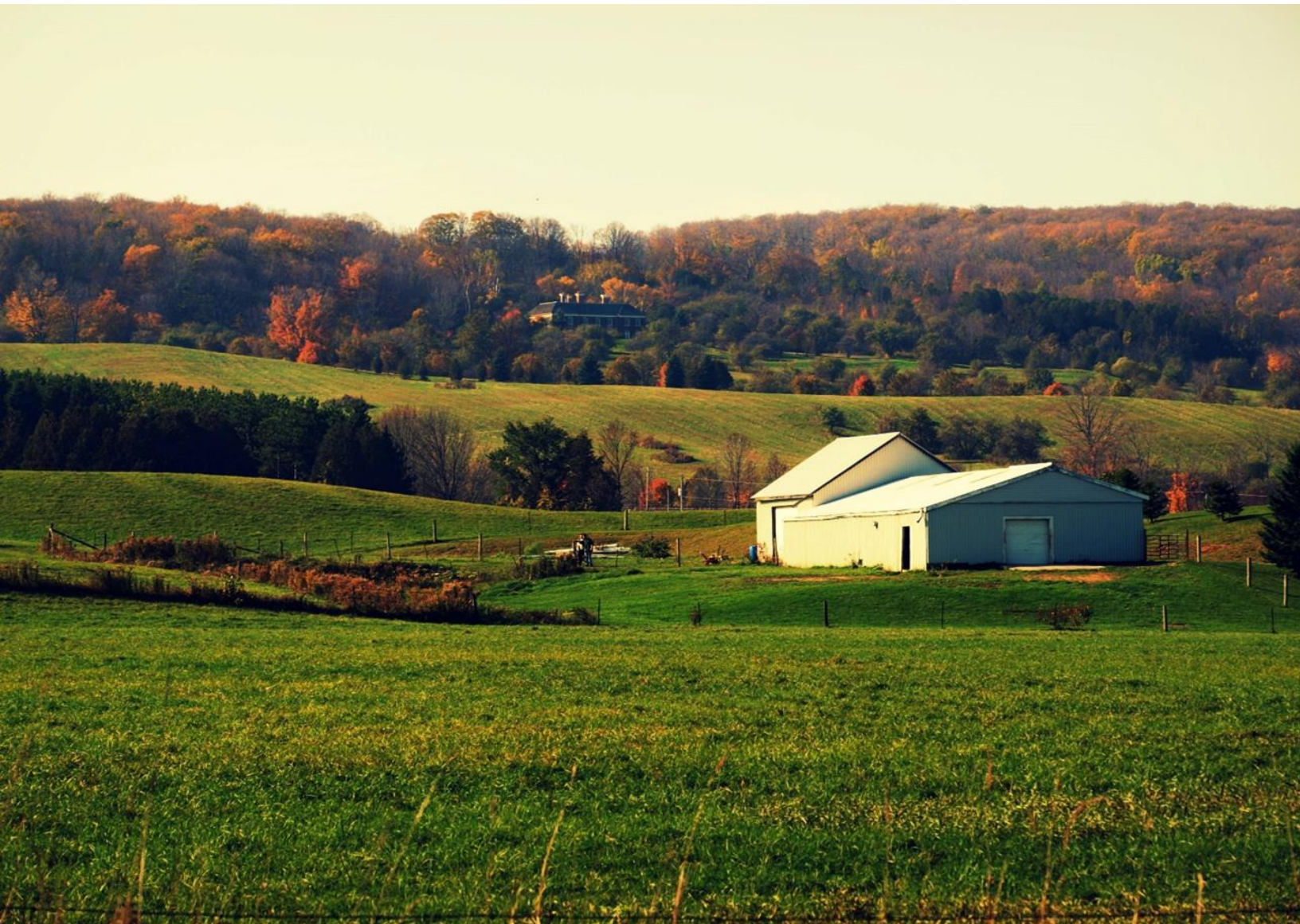


Enhancing Ontario's Rural Infrastructure Preparedness: Inter-Community Service Sharing in a Changing Climate

Rural Community Practitioners Workbook



Bryce Gunson, Ph.D.(c)
& Dr. Brenda Murphy,
Wilfrid Laurier University





Principal Investigator

Dr. Brenda Murphy,
Associate Professor
Wilfrid Laurier University,
73 George St. Brantford, ON N3T 2Y3
Phone: 519-756-8228 (x5718)
bmurphy@wlu.ca

Project Manager

Mr. Bryce Gunson,
Resilient Communities Research Collaborative,
Wilfrid Laurier University,
73 George St. Brantford, ON N3T 2Y3
Phone: 519-756-8228 (x5405)
bgunson@wlu.ca

Funders - Ontario Ministry of Agriculture, Food, and Rural Affairs (OMAFRA)
Wilfrid Laurier University

Resilient Communities Research Collaborative
www.resilientresearch.ca

July 2019

Table of Contents

1.0	Introduction	1
2.0	Key Terms.....	1
2.1	Ontario Rural Municipality.....	1
2.2	Intercommunity Service Cooperation (ICSC)	1
2.3	Infrastructure.....	1
2.4	Asset Management Planning (AMP)	2
2.5	Climate Change (CC)	2
2.6	Climate Change Preparedness	2
3.0	Rural Community Practitioners Recommendations	2

1.0 Introduction

This practitioner workbook draws together the insights from a three-year (2016-19) Ontario Ministry of Agriculture, Food and Rural Affairs (OMAFRA) funded research study. The purpose of the research project was to 1) assess the potential of inter-community service cooperation (ICSC) as a possible tool to address the impacts of climate change (CC) in small (500-7500 pop.) Ontario rural communities south of the Sudbury region and 2) understand the extent to which such collaboration and the impacts of CC are, or could be, embedded within the community's infrastructure (asset) management processes (AMP). While the conclusions of this workbook are generalized to represent an overall picture of Ontario rural municipalities, each jurisdiction is distinctive with its own history and geography. Thus, any practitioner recommendations must take into consideration local circumstances, needs and preferences.

This report is part of a larger suite of documents on rural Ontario inter-community service cooperation. To access the complete rural ICSC toolkit please visit <http://www.resilientresearch.ca/research-publications/>

2.0 Key Terms

2.1 Ontario Rural Municipality

Three hundred and thirty-five (75%) of all municipalities in Ontario are either rural or partially rural, as defined through the Rural Ontario Municipal Association. This project undertook key informant interviews, a province-wide survey and targeted case studies to understand rural infrastructure-related service cooperation, asset management planning and the potential to increase CC preparedness.

2.2 Intercommunity Service Cooperation (ICSC)

ICSC is defined as the sharing, procuring or providing of needed infrastructure services with one or more municipalities or other organizations. Research suggests that the careful use of service cooperation can contribute to cost savings and improved local service provision. Types of ICSC agreements include verbal agreements (handshake, informal); memorandums of understanding; bylaw approval; and formal contracts. ICSC can include many different characteristics (e.g. duration, flexibility, costs, breadth) and may be undertaken through a variety of mechanisms (e.g. mutual aid, joint hiring/training, service board/agency).

2.3 Infrastructure

Infrastructure includes the physical structures and human systems, resources and processes that support those structures, including AMP. Municipal controlled infrastructure most likely impacted by CC includes bridges, roads, sanitary and storm water systems, potable water systems (including dams and reservoirs), fire and emergency services (including emergency response, medical services, social services, police and search and rescue). Compared to urban areas, the larger geographic land base and

lower average incomes in rural communities leads to additional challenges in delivering services and supporting infrastructure.

2.4 Asset Management Planning (AMP)

AMP is a municipal-level evaluation process undertaken to make evidence-based decisions regarding the building, operating, maintaining, renewing, replacing and disposing of infrastructure assets. Effective AMP can maximize the life cycle of infrastructure assets and provide cost efficient service delivery through the tracking of current costs, service levels and assets, the early identification of risks (including CC), and deterioration and the projection of future infrastructure needs and costs.

2.5 Climate Change (CC)

In Ontario, CC is already underway and by 2050 an increase in annual average temperature between 2.5-3.7° C is projected. Projections suggest that more frequent and more intense extreme events are likely and that the risk of disruptions to infrastructure is likely to increase. The impacts of CC are already requiring the adaptation of infrastructure designs and plans, such as the retrofit of stormwater infrastructure, and wastewater treatment plants are expected to need significant updates.

2.6 Climate Change Preparedness

Preparedness involves undertaking the necessary measures to reduce risk, avoid damage and adjust to CC variability and extremes; developing a state of readiness to minimize loss of life, injury and property damage; the ability to sustain essential functions during a crisis; and the capacity to take advantage of new opportunities. Municipal preparedness for CC is a function of the range of available options and resources including support from higher levels of government, the organization and characteristics of local infrastructure and the nature of local hazards and vulnerability levels.

3.0 Rural Community Practitioners Recommendations

Recommendations aimed at rural community practitioners are drawn from all phases of the research project including key-informant interviews, a provincial survey, and 10 case studies highlighting innovative ICSC best practises. The key informant interviews and survey results suggest that rural communities in Ontario are dealing with increasing impacts from CC and that they often don't have the resources to cope effectively. While current ICSC and AMP strategies have been somewhat effective, there is a need to identify and showcase innovative strategies that align with community goals/activities, address challenges and capitalize on existing strengths. The extent of experiences about cooperative agreements across the case studies demonstrated that there is a rich range and depth of opportunities and knowledge to use these types of arrangements to address the required and/or desired levels of infrastructure service provision across rural Ontario.

Explore the Possible Range of Cooperative Agreements: If cooperative agreements were more directly considered and incorporated into asset management planning processes and if planning for climate change mitigation, adaptation and preparation was more actively pursued across municipality functions, it is likely possible to leverage even more benefits from these agreements while offsetting some of the infrastructure challenges already facing rural Ontario communities.

Customize the Cooperative Agreement Development Process: No one size approach or solution exists to address the distinct infrastructure needs, climate change concerns or cooperative agreement opportunities of each rural municipality. Cooperative agreements emerging from previous relationships through to targeted actions can take the form of informal ‘handshake’ agreements or more formal contracts. Municipalities should choose the process and outcomes that best work for their community.

Reconsider the Role of Geographic Proximity: Proximity does not have to be a limiting factor for those services and activities that are not tied to physical infrastructure; planning, engineering services, bulk ordering, joint requests for tender, and so on could all be opportunities to increase the efficient and effective delivery of needed local services.

Obtain Detailed Information About Climate Change Impacts: Rural communities might consider obtaining relevant down-scaled climate projections through a cooperative agreement with other jurisdictions within their region or watershed to understand long-term, locally relevant climatic projections and facilitate evidence-based asset management planning.

Adapt Available Best Practices: Municipalities can benefit from reviewing the suite of existing cooperative agreement best practices and adopting the advice that suit their needs. This expertise may be available from municipal staff, neighbouring or higher-level jurisdictions, consultants and from published practitioner and academic sources.

Enhance Rural Municipal Staffing and Training: Additional training related to infrastructure planning, climate change and cooperative agreements can lead towards stronger, evidence-based decision-making for climate change preparedness.

Embed Climate Change Preparedness into Ongoing Municipal Departmental Activities: Climate change and extreme weather events are often being discussed across municipalities through a range of day-to-day processes and targeted initiatives. Reducing the silos between municipal departments could increase the knowledge about, and opportunities for, effective management of the infrastructure impacts from potential extreme weather threats.

Include Climate Change Preparation When Measuring Infrastructure Service Success: Where services are coordinated with neighboring municipalities or other institutions, ‘success’ is often measured in terms of cost savings, better efficiency and higher service levels. An additional goal to contemplate is the potential of the cooperative agreement to contribute to extreme weather risk reduction and/or longer-term climate change preparedness.

Increase Climate Change Preparedness Through Redundancy: Increasing infrastructure redundancy is another goal that can work towards reducing longer-term climate change risk and could be considered when undertaking asset management planning. By this is meant the expansion of the range of alternatives available to provide critical infrastructure services during extreme weather events.

Maximize Climate Change Preparedness in the Aftermath of Disasters: The wake of a disaster is a ‘window of opportunity’ to identify climate change risks through the asset management plan or other processes, embed preparedness thinking across municipal departments, garner staff, council and public support and consider the potential of cooperative agreements to fill any identified service gaps.

Mitigate Risk and Prepare for Infrastructure Damage Through Local Planning and Funding Initiatives:

Since municipalities are expected to self-fund repairs from the more routine impacts of some extreme weather events (i.e. frozen pipes) as well as a portion of the costs from other disasters, sufficient contingency funding should be in place. In addition, funding for needed risk mitigation and preparedness projects should also be considered. Cooperative agreements may be a way to undertake needed work cost effectively.

Enhance Climate Change Preparedness through Multi-Level Collaborative Partnerships:

To effectively deal with rural infrastructure risks, there is a need for collaborative multi-level, multi-institutional responses including municipal, provincial and federal governments, conservation authorities and key non-government organizations such as the Rural Ontario Municipal Association and the Ontario Good Roads Association.