

Climate Change Impacts and Adaptation Funded Projects

Adaptation Options in Agriculture (Across Canada)

Researchers will inventory and classify adaptation options in the Canadian agri-food sector, and assess the efficacy of these options according to internationally accepted models. In the course of the study, they will develop an evaluation model applicable to the Canadian agri-food sector and design guidelines for the use of these measures.

Total Budget: \$157,350
CCAF contribution: \$72,600
Partners: University of Guelph, Simon Fraser University, Université de Montréal, Environment Canada
Contact: Barry Smit, University of Guelph (519) 824-4120 ext. 3279

An Evaluation of Impact Assessment Procedures (Ontario)

This project assesses whether variability in agricultural impacts research results relates to the climate inputs or variability in the agricultural models.

Total Budget: \$33,450
CCAF contribution: \$16,175
Partner: Carleton University
Contact: Michael Brklacich, Carleton University (613) 520-2600 ext. 7553

FORESTRY

Natural Disturbances in Boreal Forests and Climate Change (Ontario)

This project will study the interaction of fire and the spruce budworm, and the degree to which climate change is likely to affect this interaction. Researchers will examine historical records and produce a statistical analysis of the interaction at the landscape-level.

Total Budget: \$101,000
CCAF contribution: \$42,000
Partners: Natural Resources Canada, Ontario Ministry of Natural Resources
Contact: Rich Fleming, Natural Resources Canada (705) 759-5700

FISHERIES

Freshwater Fisheries in Ontario (Ontario)

The study will assess the potential impacts and adaptation options for freshwater fisheries in Ontario, especially walleye and brook trout fisheries in Ontario. Researchers will provide guidance on ways for fisheries managers to minimize the negative impacts and maximize potential benefits.

Total Budget: \$89,000
CCAF contribution: \$40,000
Partners: Fisheries and Oceans Canada, Ontario Ministry of Natural Resources, Recreational Fisheries Institute of Canada
Contact: Charles K. Minns, Fisheries and Oceans Canada (905) 336-4874

Extreme Climate Events in the Boreal Shield Lakes (Ontario)

This project will study the effects of extreme climate events on Boreal Shield lake ecosystems and how they have responded. This information will be used to help create sound recreational, fishing and water use policies to help future adaptation.

Total Budget: \$229,907
CCAF contribution: \$ 64,121
Partners: York University, Ontario Ministry of Natural Resources, Ontario Ministry of the Environment, Canadian Shield Lake Network
Contact: Shelley Arnott, York University (705) 766-2418

Groundwater and Climate Change Interaction in Southern Ontario (Ontario)

This study will quantify the interaction of groundwater and climate in southern Ontario and examine a range of factors to determine the sensitivity of groundwater resources to climate variability. Researchers will focus on interaction during the period 1970 to 1995. By defining the physical characteristics regulating the response of groundwater resources to climatic factors, researchers can make predictions about the impact of climate change.

Total Budget: \$122,000
CCAF contribution: \$45,000
Partners: Environment Canada
Contact: Andrew Piggott, Environment Canada (905) 336-6245

Water Resources and the Capacity of Rural Communities to Adapt (Ontario)

This study will assess the capacity of rural communities in the upper Credit River watershed to adapt to climate-induced water shortages. Researchers will identify the impacts of climate-induced variability on the upper Credit River watershed, assess factors that facilitate and constrain the ability of rural communities to balance human uses of water and ecosystem protection, and recommend strategies to help rural communities adapt.

Total Budget: \$135,675
CCAF contribution: \$63,800
Partners: University of Guelph, Credit Valley Conservation Authority, Isaak Walton Fly Fishers' Club
Contact: John Smithers, University of Guelph (519) 824-4120 ext. 8950

Impacts & Adaptation of Drainage Systems, Design Methods & Policies (Ontario)

This study will quantify the impacts of climate change on the water resource systems, specifically the urban and rural drainage systems, evaluate the validity of current infrastructure design methods, policies and regulations and seek viable adaptive solutions.

Total Budget \$196,500
CCAF Contribution: \$99,500
Partners: Kije Sipi Ltd, Regional Municipality of Ottawa-Carleton, Mississippi Valley Conservation Authority
Contact: Daniel Jobin, Kije Sipi Ltd. (613) 830-1029

TERRESTRIAL ECOSYSTEMS

Impact of Climate Change on Birds in Eastern Canada (Ontario)

This study will examine the relationships between annual weather patterns and timing of migration for a range of species that breed in eastern Canada and winter further south. It will also examine in more detail the relationship between climate, insect prey availability, and breeding success of the Tree Swallow. From this data, researchers will develop models to predict the potential impact of future climate change on these various species and guidelines for data collection and long-term monitoring programs across Canada.

Total Budget: \$238,145
CCAF contribution: \$54,050
Partners: Bird Studies Canada, Ontario Ministry of Natural Resources
Contact: Charles Francis, Bird Studies Canada (519) 586-3531

Municipal Infrastructure Risk Project (Across Canada)

This project involves working with selected communities across Canada to assess the risks specific to each community and help the communities develop strategies for adaptation. Of special interest is municipal infrastructure and the changes needed to existing codes, bylaws and regulations to adapt to a specific climate change impact.

Total Budget: \$550,000
CCAF contribution: \$360,000.
Partners: Federation of Canadian Municipalities, Natural Resources Canada, University of Ottawa, Global Change Strategies International Inc.
Contact: Louise Comeau, Federation of Canadian Municipalities (613) 241-7440 ext. 232

An Integrated Assessment of Climate Change and Tourism in the Georgian Lakeland Tourism District (Ontario)

This study will examine major tourism and recreation industries important to the economy of the Georgian Lake Tourism District, establishing a better understanding of the net economic impact of tourism to the region and link climate change impact and adaptation research to regional development planning. Researchers will analyze four major winter activities — alpine skiing, snowmobiling, ice fishing, and nordic skiing — in the study area.

Total Budget: \$80,000
CCAF contribution: \$40,000
Partners: University of Waterloo, Federation of Ontario Cottage Associations, Haliburton County Council, Haliburton County Development Corporation
Contact: Daniel Scott, Environment Canada (519) 888-4567 ext. 5497

Adaptation Strategies to Reduce Health Risks from Summer Heat in Toronto (Ontario)

This research will help develop short- and long-term climate adaptation strategies for Toronto. The three-year effort will include researching the potential impacts of summer heat on public health, developing an effective Heat-Health Watch/Warning System, developing municipal policies to enable Toronto to prepare for future heat waves and to lower the ambient temperature, and participating in a United Nations Showcase Project on state-of-the-art heat-health systems.

Total Budget: \$379,900
CCAF contribution: \$122,900
Partners: City of Toronto Public Health Department, Toronto Atmospheric Fund,
Contact: Eva Ligeti, Toronto Atmospheric Fund (416) 392-0271

CROSSCUTTING

The Costs of Adaptation (Across Canada)

This study will establish baseline information on the costs of adaptation to climate change for a specific sector. This will include a literature review, a methodology and a protocol for data collection.

Total Budget: \$249,000
CCAF contribution: \$99,000
Partners: Brock University, Environment Canada
Contact: Mohammed Dore, Brock University (905) 688-5550

COMMUNITIES

Evaluating Rooftop and Vertical Gardens as an Adaptation Strategy for Urban Areas

Description: Climate change may result in more frequent heat waves and more intense thunderstorms, problems that are greater in large cities because the lack of vegetation leads to higher temperatures. This could result in sewage, drainage and water quality problems. While more trees and vegetation can alleviate these problems, there is limited space available in urban areas and new adaptation strategies are required.

This project will evaluate the potential of rooftop and vertical gardens as an adaptation strategy for urban areas to reduce summer extreme temperatures. The study will be conducted on a rooftop garden that will be established on an existing test house at the National Research Council in Ottawa.

Total Budget: \$452,000
CCAF contribution: \$88,000
Partners: Industry Canada — National Research Council, University of Toronto — Institute for Environmental Studies, Environment Canada — Adaptation Impacts Research Group, Soprema Canada Inc., Garland Canada Inc., IKO Industries Ltd., University of Waterloo — Residential Energy Efficiency Program.
Contact: Dr. Bas. A. Baskaran, National Research Council, (613) 990-3616

Projecting Canadian Forest Fire Impacts in a Changing Climate: Laying the Foundation for the Development of Sound Adaptation Strategies

Description: This project will establish the relationships between fire activity and climate in Canada over the past 50 years and predict future forest fire danger scenarios using high-resolution regional climate models. Researchers will project future fire regimes (both nationally and regionally) and evaluate how an increase in the number and severity of fires will affect forest communities, timber supply, and national and global carbon budgets. Preliminary assessments of the effectiveness of various adaptation measures in mitigating these impacts will be made.

Total Budget: \$695,000
CCAF Contribution: \$ 140,000
Partners: Natural Resources Canada — Canadian Forest Service, Environment Canada, University of Toronto, provincial and territorial fire management agencies, Parks Canada, Millar Western Forest Products and Weldwood Forest Products.
Contact: Brian Stocks, Natural Resources Canada's Canadian Forest Service (705) 759-5740 ext.2181

HEALTH

Ascertain and Reduce Heat-Related Causes of Illness and Mortality Among Children and Seniors in Canada

Description: In southern Canada, climate change may lead to more frequent and more intense heat waves. Children and seniors living in metropolitan areas are most vulnerable to the impacts of extreme heat, such as dehydration, exhaustion, heat stroke and sometimes death. This study will examine the creation of an information system of the prevalence and causes of heat-related illness and deaths based on hospital admissions, physician billings and death certificates; explore the use of records from emergency rooms and outpatient clinics of children's hospitals and general hospitals to improve their usefulness; and determine the correlation between heat-related illnesses and environmental factors, such as humidity, cloud cover and air pollutants.

Total Budget: \$205,000

CCAF contribution: \$90,000

Partners: Health Canada — Laboratory Centre for Disease Control, Statistics Canada, Canadian Institute of Health Information, University of Ottawa, the University of Western Ontario.

Contact: Dr. Yang Mao, Laboratory Centre for Disease Control (613) 957-1756

Adapting Health Infrastructures to Cope with the Health Effects of Climate Change: A Case Study in the Toronto-Niagara Region

Description: Recent research suggests that climate change could have an adverse impact on the health of Canadians. The increased intensity, duration and frequency of heat waves, smog episodes, and the northward spread of infectious diseases may be particularly acute in major urban centres. This study will examine the health implications of climate change in the Toronto-Niagara region in relation to temperature and other climatic extremes, smog, infectious diseases, indoor air quality and indirect health effects. The project will culminate in a workshop, bringing together representatives from health care departments and agencies, such as the Ontario Medical Association, the City of Toronto Environmental Protection Office, the Ontario Lung Association, to review the research findings and develop effective adaptive strategies.

Total Budget: \$225,000 CCAF contribution: \$85,000

Partners: Pollution Probe Foundation, Environment Canada, Health Canada.

Contact: Ian Morton, Pollution Probe Foundation (416) 926-1907

Adapting to Climate Change in the Grand River Watershed

Description: The Grand River watershed is the largest tributary draining into the Canadian side of Lake Erie. Already home to 800,000 people, it is one of the fastest growing areas in Canada, with anticipated growth of more than 30 percent over the next 20 years, which will place a great demand on the region's water resources and uses. Potential impacts of climate change could significantly affect both the quality and availability of water and need to be considered when developing future watershed management strategies.

This project, led by the Grand River Conservation Authority, will develop a shared watershed management plan, identify choices for sustainable water management and use, and evaluate various options for ensuring adequate water supply and quality, as well as healthy aquatic habitats, in light of challenges presented by population growth, agricultural intensification and climate change.

Total Budget: \$676,000

CCAF Contribution: \$129,000

Partners: Grand River Conservation Authority, Environment Canada — Meteorological Service of Canada

Contact: Jim Reid, Grand River Conservation Authority (519) 621-2761

PROJECTS ANNOUNCED NOVEMBER 16, 1999

Science Projects

Improving Approximations of Land Surface Snow Processes for Canadian Climate Models

Project objective: Researchers will test approximations for snow cover against observational data from various Canadian sites. The project will also incorporate the phenomenon of blowing snow, which is not currently considered in models. As a result, the climate model will represent snow cover more accurately. It will also lead to more precise predictions of snow cover and other climate variables.

Proponent:	Environment Canada
Total budget:	\$312,000
CCAF contribution:	\$128,000
Partners:	Trent University, Peterborough, Ontario, the University of Waterloo, Waterloo, Ontario and York University, Toronto, Ontario

Impacts and Adaptation Projects