

## OCC PROJECT PROFILE: The Economic Impact of Climate Change on Vulnerable Communities (IBC)

### PROJECT DESCRIPTION

The physical impacts of climate change are increasingly associated with significant private and public sector costs which have wide-ranging effects across sectors. As part of its work the Insurance Bureau of Canada (IBC) sought to better understand how the impacts associated with a changing climate may affect various costs across sectors.

### OVERVIEW

Working with a multi-disciplinary team (economists, climatologists, etc.) of researchers from McMaster University the project began by first understanding the existing literature and current understanding of how variable climate and extreme weather are already impacting the economy in Canada and internationally. This multi-stage project is ultimately focused on understanding the impacts of climate change with respect to economic impact at the local level. In identifying research as well as associated analytic methodologies and relevant data, the project aims to feed into an informed policy debate focused on addressing the issues and the urgency required to mitigate the most severe impacts of climate change and their effect on people, property and the environment.

In proposing an outline for a Phase II of the study, the report identifies the key economic sectors and activities that are likely to be influenced by climate change. It also lists the climate variables that should be gauged to link the economy and climate either directly or indirectly and to estimate expected losses.

### FINDING RESULTS

Our research indicates that the magnitude of economic losses caused by climate change is not independent of the state of the local economy, its structure and sectoral composition, the size of its population and the sensitivity of these variables to the climate and climatic events. In general economic losses are also critically dependent on the frequency and severity of climatic and extreme weather events. There are three major risk factors (i.e. high economic growth rate, large population and high population growth rate) faced by a community that are typically embedded in the climate, economic and population forecasts. Risk relates to the probability of the occurrence of an event and the magnitude of the consequences of its occurrence. It can be quantified in formal ways using probability density functions of the variables and forecasts.



### WHO IS IBC?

Established in 1964, Insurance Bureau of Canada is the national industry association representing Canada's private home, car and business insurers. Its member companies represent 90% of the property and casualty (P&C) insurance market in Canada.

### PROJECT SUPPORTER:



## OBJECTIVE

This study is undertaken in order to help IBC to:

- Tell the story to public and private sector decision makers about the potential economic impacts of climate change at a local level in terms of property damage, annual loss to the regional/local economy and future economic growth; and
- Make the case to governments and property owners that investments in climate change mitigation and adaptation related measures will ultimately save costs over the long-term.

## RESEARCH APPLICATION

We suggest the use of a simpler approach based on constructing scenarios that can bracket the range of risks and quantify the likely consequences and costs a local community would experience given its economic situation, the size of its population and exposure to particular climatic and weather related events. We tender that the development of vulnerability curves and the estimation of expected losses of assets at risk as practical and useful methodologies for estimating the expected economic losses of inaction in the face of climate change and uncertainty.

Based on a comprehensive survey of economic modelling approaches, it is our considered recommendation that a general equilibrium approach embedded in a simple input-output model with a local impact module be utilized for the second phase of the project. It will capture the indirect and induced impacts in a straightforward manner without having to use extremely complex approaches, such as Computable General Equilibrium (CGE) modelling, that are likely to be difficult to implement in view of their modelling and data demands particularly at the community level.



## DETAILS/REFERENCES

For more information regarding this project, please visit the Ontario Climate Consortium website at:  
<http://climateontario.org>

or the Insurance Bureau of Canada (IBC) website at:  
<http://www.ibt.ca/en/index.asp>

## THE OCC IS SUPPORTED BY:

