



Canadian Foundation for Climate
and Atmospheric Sciences (CFCAS)
Fondation canadienne pour les sciences
du climat et de l'atmosphère (FCSCA)

**SUBMISSION TO
THE HOUSE OF COMMONS STANDING COMMITTEE ON FINANCE
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EXECUTIVE SUMMARY

The value of weather-dependent industries and businesses in Canada exceeds \$1 billion annually. These businesses are confronted by escalating costs associated with increasingly variable and severe weather events—which are slowing our economic recovery. Federal leadership can accelerate access to new knowledge on weather and climate and strengthen weather services.

Targeted research provides businesses, governments and individuals with the tools they need to adapt to changing conditions, foster increased resilience and develop new business opportunities. It saves money by warning of new trends, reducing uncertainty and justifying new policies, including updated building codes. It encourages technological advances, training, and marketing of Canadian developments, all of which make us more competitive internationally. But effective action takes concerted efforts by all parties, innovative capacity, skilled people, coordination—and political will.

Currently climate research, funding and knowledge transfer is fragmented and there is no effective national mechanism to identify emerging issues or to track the uptake and impact of new information. We propose a policy forum dedicated to weather and climate issues, to meet this need.

Recommendations:

- 1) **Provide a sustained federal investment of \$50 million per year for 10 years for sustained weather-related research and development led by business–university–government consortia.**
- 2) **Establish a Canadian policy forum to engage business and government leaders in identifying weather and climate challenges and potential solutions.**

Introduction

Canada has an impressive array of science and technology expertise and resources, though as a result of changing conditions more attention is required for work on weather and climate.

According to the latest STIC¹ Report, Canada's strengths are its strong talent pool and a robust public research capacity. But the country continues to face two major challenges: the need to increase private sector investment in innovation and to improve Canada's capacity to transfer knowledge to the market. In the area of weather and climate there has been progress²; however, the federal investment has declined recently and with it, private sector contributions.

Federal climate policy is primarily focused on the mitigation of domestic greenhouse gas emissions (GHGs). Building climate resilience and adapting infrastructure and technical facilities to new conditions is, however, every bit as critical. Government funding for Canadian weather and climate research and development has declined significantly over the past few years, this is affecting the availability of new information, our ability to get it to the marketplace, and the capacity of the government to implement new policies such as Canada's Arctic policy.

Sustained Economic Development and Recovery

While insurance companies cover some of the costs of disaster management, federal and provincial relief is still needed for the uninsured, for 'acts of God' which can heavily impact communities, and for risks such as floods or forest fires for which insurance is very limited. There is also a need for proactive land use planning and facilities designed to lessen risk in areas that suffer flood damage. These costs are escalating: while governments are promoting economic development, they are also paying out huge amounts for disaster relief and clean-up. The impact on productivity is substantial: in 2010, major weather events in Canada³ caused over \$2 billion in disaster management and clean-up costs, to say nothing of the impact on people's lives and livelihoods:

- In July 2010, a fierce 30 minute hail storm in Calgary resulted in approx. \$400 million of damage and insurance claims;
- In July and August 2010, forest fires across parts of British Columbia resulted in over 1100 out-of-province firefighters being called to help fight them; at least two fatalities; and air quality and health advisories in Alberta and Saskatchewan due to smoke. Some hospitals described a 20% increase in emergency department visits related to respiratory complaints. According to the B.C. Wildfire Management Branch, the province spent more than \$230 million on fighting forest fires in 2010.
- In September 2010, Hurricane Igor ripped across eastern Newfoundland forcing 22 communities to declare states of emergency. An additional 150 communities were isolated by swollen rivers which washed away roads and bridges. The Insurance Bureau of Canada estimated that insurable claims due to Hurricane Igor amounted to over \$65 million – only a fraction of the total losses – while non-insured costs exceeded an additional \$120 million.

Canadians must also look beyond economic recovery to future development. Focusing on mitigation measures is not enough. Canada needs to increase the resilience of its national infrastructure while implementing plans to adapt institutions and communities to new and more extreme, weather conditions.

¹ Science, Technology and Innovation Council: *State of the Nation – Imagination to Innovation*, 2010

² Since 2000, CFCAS's investment of \$118 million in weather and climate research has been matched by \$156 million cash or in-kind resources from public and private sources.

³ Canada's Top Ten Weather Stories for 2010, Environment Canada

Canada's North is undergoing significant economic development at a time of record breaking temperatures and an unprecedented decrease in the amount of arctic sea ice. In 2010, Canada's Northwest Passage and Russia's Northeast Passage were ice-free at the same time. The combination of economic development coupled with warming temperatures and decreasing sea ice presents significant opportunities to accelerate both the amount and rate of development. However, the factors that generate the economic benefits also create a host of issues that must be resolved. Accelerated melting of permafrost affects community infrastructures and proposed pipeline routes; a reduction in the duration and availability of ice roads affects the transport of goods and materials to northern communities and industrial sites.

The bottom line is that whether developing resiliency plans for droughts in the Prairies or heat waves in Montreal, preparing disaster management plans for forest fires in Northern Ontario or for hurricanes in the Atlantic provinces, governments at all levels and private sector interests need sound, science-based information to inform their decisions

The Costs of Inaction

While fiscal restraint and prudence by governments is to be applauded, the cost of doing nothing is proving increasingly expensive. The 2011 floods in Manitoba are estimated to have caused over \$750 million of damage and the costs are still rising. Adding in the impact on agriculture, this figure is likely to exceed \$1 billion. Measures are needed to anticipate and adapt to such events.

The 2011 federal Budget included \$35 million over 5 years for university-based weather and climate research consortia – half the amount previously provided through the Canadian Foundation for Climate and Atmospheric Sciences⁴. The amount is disproportionately small given the need for information to underpin energy and other industrial development or to deal with extreme events such as those already cited. The announcement of a new Arctic research facility in Cambridge Bay (to be operational by 2017) is laudable; but major concerns exist over the future of a fully equipped, fully operational research station that already exists near the North Pole and that is in imminent danger of being mothballed for the second time in a decade because of a lack of funds (Polar Environment Atmospheric Research Laboratory, Eureka, Ellesmere Island).

This Brief proposes a reinvestment of \$50 million per year for the development of research consortia focused on building weather and climate resilience and adaptation within Canadian communities and infrastructures. The amount invested would be recouped through the cost savings achieved through reduced disaster relief payments and lost tax revenues. Alternatively, the Finance Committee may wish to consider selective reductions in the Scientific Research and Experimental Development tax credit program, with the savings used to establish a development fund for weather and climate related research.

Quality sustainable jobs

Skilled people are a key element in Canada's economic performance and recovery. They are the essential ingredient in knowledge-intensive industries and in our ability to innovate and adapt rapidly to change. Sustainable jobs require knowing how certain economic sectors will evolve and anticipating their need for skilled people. While Canada has seen an increase in the number of skilled knowledge workers over the past several years, many are seeking jobs abroad as job opportunities wane with budget cuts. We recommend mechanisms be developed to retain skilled

⁴ Funding for policy-relevant research by the Canadian Foundation for Climate and Atmospheric Sciences (CFCAS) was not renewed in Budget 2011. The new funds are channeled through the Natural Sciences and Engineering Research Council of Canada.

scientific personnel until such time as the private sector, universities and federal institutions can provide secure employment.

Conclusion and Recommendations

Weather varies dramatically across the country. Canadians and their governments are facing new challenges from changing weather patterns, water security needs and weather impacts. Canada's ability to innovate and adapt to new conditions is key to its economic survival. This requires a well focused, vigorous scientific and technological establishment, supported by skilled people, vision and political will.

The Canadian Foundation for Climate and Atmospheric Sciences proposes a sustained federal investment in research through business – university – government consortia. The goal of the research would be to reduce uncertainties, accelerate adaptation and greater resilience to high impact weather in our communities, develop new technologies and approaches, and ensure the availability of skilled knowledge workers. Among other benefits, this investment will help a) reduce the need for federal compensation payouts and b) reduce tax losses and diminished productivity c) increase public safety and security.

The Foundation also proposes the establishment of a policy forum to engage business and government decision makers with scientists and other stakeholders to facilitate discussion and knowledge transfer on emerging weather and environmental priorities. The Forum would facilitate the uptake of research to support new developments and demonstrate how Canadian actions compare with those of its market competitors. It could also help align federal policy with public needs and expectations (note for example the support of British Columbians for carbon taxes⁵). The forum could commission independent studies to help governments determine how best to use Canada's scientific knowledge and capacity to ensure optimum benefits and economic efficiency. CFCAS supports the development of this policy forum as a framework to encourage economic opportunities and to help the country prosper.

Recommendations:

- 1) Provide a sustained federal investment of \$50 million per year for 10 years for sustained weather-related research and development led by business–university–government consortia.**
- 2) Establish a Canadian policy forum to engage business and government leaders in identifying weather and climate challenges and potential solutions.**

⁵ *British Columbians support the carbon tax: poll.* The Pembina Institute, Press release, June 30, 2011