

## ***Climate Change in British Columbia***

There is broad scientific consensus on the reality of climate change. It is happening, and it has serious implications – for our health, our economy, and our future.

Human activities, including the heavy use of fossil fuels for heating, transportation and electricity, release greenhouse gases that are accumulating and causing global warming. Average global temperatures are rising – the 20th century was the warmest the world has seen in 1,000 years, and the 1980s and 1990s were the warmest decades on record. As a northern country, Canada will feel the impacts of climate change more than most countries.

In British Columbia, average annual temperatures warmed during the 20th century by 0.6°C on the coast, 1.1°C in the interior, and 1.7°C in the north. Average spring and nighttime temperatures are now warmer than they were 100 years ago. Precipitation increased by 2 to 4 percent per decade in southern British Columbia. Climate models project that the greenhouse gases already in the atmosphere will continue to drive climate change for centuries to come. By the end of the 21st century, average temperatures in British Columbia will likely be 1°C to 4°C warmer, depending on the region, than they are now.

Changes of this magnitude can have significant impacts on ecosystems and quality of life.

### **Bodies of Water**

Glaciers in southern British Columbia retreated during the 20th century. Lakes and rivers now become free of ice earlier in the spring, and the Fraser River is discharging more water earlier in the year. These trends point to lower summer flows in some streams and rivers, and less water for agriculture, hydroelectric power generation, industry and communities. This may pose significant problems in drier regions such as the Okanagan, where water is already in short supply.

### **Fisheries**

The average summer temperature of the Fraser River increased by 1.1°C over the past 50 years. A warmer climate may pose

problems for salmon as they migrate upriver to spawn. Salmon are sensitive to temperature; warmer water can deplete their energy reserves, and make them more vulnerable to stress, infection, and disease.

If summer river temperatures continue to rise, fewer fish may make it successfully upriver to their spawning grounds, and some salmon populations may be at risk.

### **The air we breathe**

A number of B.C. cities, including Nelson, Penticton, Prince George, Vancouver, and Williams Lake, lie within valleys that trap polluted air. Airborne pollutants worsen asthma, impair lung function and can even cause death. In the Lower Mainland, if summers become warmer, "bad air days"

and their related health costs will likely increase. In the interior, if winters become warmer, and residents use less wood fuel for heating, air quality may improve.

## Seas

Sea levels rose along most of the BC coast during the 20th century. Higher sea levels increase the risk of flooding in low-lying coastal areas. They may inundate wetlands, beaches, dunes, and other sensitive coastal ecosystems, and threaten Aboriginal heritage sites. They may also create drainage problems and overwhelm municipal sewage systems. Low lying agricultural lands may become too saline

for cultivation. Waterfront homes, wharves, roads and port facilities may be at risk during severe storms.

## Forests

In summer, warmer temperatures may promote increased evaporation, and loss of soil moisture. Grasslands may replace forest in areas that become too dry for trees. Higher temperatures and drier summer conditions may increase the frequency of forest fires. Forest disease and pest infestations may also increase as warmer summers place additional stress on trees, and warmer winters increase pest survival.

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## Taking Action

Given the potentially serious and long-term nature of the risks associated with these impacts, the only prudent course is to take action now to reduce the emissions that contribute to climate change. Analysis shows that the impact on Canadian jobs and economic growth associated with reducing greenhouse gas reductions can be kept modest and manageable relative to the strong growth expected over the next decade.

To give a sense of the possible order of magnitude of the impacts on industry, the estimated economic impact of implementing steps one and two in the Climate Change Plan for Canada to meet Canada's Kyoto commitments ranges from -0.4 percent to -1.6 percent of Canada's gross domestic product, dependent on various assumptions.

This is a modest impact relative to the strong economic growth expected over this period. Analysis shows job growth of 1.08 to almost 1.26 million jobs by 2010, compared to just over 1.32 million in a business as usual scenario. That means a delay in job creation of about 62,000 jobs across Canada in the year 2010. By comparison, the Canadian economy is currently creating new jobs at a rate of about 46,000 per month.

Estimates indicate that with the implementation of actions to reduce greenhouse gas emissions, British Columbia's provincial gross domestic product in the year 2010 would grow to a level that would be about 0.53 percent less than in a business as usual scenario. Growth in new jobs would slow by approximately 0.6 percent, or a delay in job creation over the next eight years of about 12,700 new jobs. To put this into context, British Columbia's economy created approximately 81,200 jobs over the past year. In view

of its strength in industrial sectors such as fuel cell technologies, and its strong resource base in hydro-electricity and natural gas, BC stands to benefit from efforts to move to a less GHG-intensive economy.

These economic forecasts do not reflect the significant environmental and health benefits to be gained by addressing climate change. Taking action will provide broader benefits including cleaner air, reduced health costs and other environmental and social benefits for Canadians.

The impact on personal disposable income by 2010 would be approximately 0.22 percent less than business as usual. Relative to what they would otherwise be, electricity prices could drop by approximately 0.45 cents/KWh. Gasoline prices are expected to remain at their business as usual level in 2010.

An illustrative example of production increases for major industrial emitters in the province as a result of measures to reduce greenhouse gases (national averages) is as follows:

- **pulp and paper** would rise by 0.06 percent, about 59 cents per tonne
- **natural gas** would rise by 0.5 cents/million cubic feet, or 0.14 percent

- **electricity – gas** would rise by 0.04 cents per KWH or 0.60 percent
- **Aluminium** would rise by \$4.73 per tonne or by 0.23 percent

Canada's approach to reducing greenhouse gas emissions is designed to minimize costs and maximize opportunities for Canadian technology. It envisions an economy that is based on cleaner sources of energy, using leading edge technologies. The Plan proposes strategic investments in innovative climate change proposals and the creation of a

Partnership Fund that will cost-share emission reductions in collaboration with provincial and territorial governments as well as municipalities, Aboriginal communities and the private sector.

By drawing on Canadian innovation, and by ensuring that different sectors of the economy, regions and consumers play a role in taking action on climate change, the impact is more manageable for all. Working together, Canada can position itself as a strong competitor as the world moves to a new, less carbon-intensive economy.

British Columbia-based companies are already showing leadership in meeting the challenges of climate change<sup>1</sup> :

- Westcoast Energy introduced economic incentives and programs among business and industrial sectors to promote high-efficiency water heaters and boiler efficiency workshops. Through the use of a special compound coating inside pipelines, Westcoast Energy has helped reduce friction losses in the transportation of natural gas. In addition to reducing the amount of power required to move natural gas, the technique has already reduced greenhouse gas emissions by 9,600 tonnes. In 2000, total GHG emission reduction attributable to these programs was calculated at 246,000 tonnes per year.
- Canfor Corporation met its commitment to stabilize GHG emissions from fossil fuels to below 1990 levels by 2000, and predicts that it further reduce emissions to 6 percent of its 1990 levels before the 2008-2012 timeframe.
- Riverside Forest Products Limited, Canada's largest producer of softwood, plywood and

vener, participated in an energy performance contracting pilot project at its plywood plant in Armstrong. Co-funded by the Canadian Industry Program for Energy Conservation (CIPEC) and the BC Hydro "Power Smart Services Program", the pilot study found that some system motors were operating at only 27 to 50 percent efficiency, many fans were inefficient and air pressure was sometimes higher than necessary. Modifications to correct these flaws reduced annual electricity consumption and saved the company \$98,200.

- The development of Ballard Power Systems Inc.'s revolutionary hydrogen fuel cell, a breakthrough clean energy technology, is an excellent example of Canadian innovation to address climate change. Ballard Power Systems Inc. has received Government of Canada support since shortly after the company first began developing the hydrogen fuel cell. Now the Government of Canada is a part of a joint venture with Ballard, DaimlerChrysler and Ford Motor Company to develop fuel cells for passenger vehicles.

<sup>1</sup> Examples are taken from the public record.

**To find out more about what the Government of Canada is doing  
and what you can do,**

please call 1 800 O-Canada (1 800 622-6232), TTY 1 800 465-7735

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