

Climate Change in Saskatchewan

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.

Most climate change projections for the Prairies show an increase in temperature under global warming. Recent models suggest that summer temperatures in Saskatchewan could warm by 3 to 5°C by 2080. Such changes would be the largest and most rapid of the last 10,000 years and would have profound effects on our lives and on ecosystems.

Life in the country

Nearly half of the population of Saskatchewan lives in rural areas, and agriculture is an important industry in the province. Climate change may threaten farms by increasing the risk of drought, dust storms, and insect infestations.

Farmers may need to irrigate their crops more, while changes in the growing season would affect the types of crops grown.

On the positive side, warmer temperatures may increase productivity and allow farmers to grow crops farther north.

Rivers

The impacts of climate change on Saskatchewan rivers will depend on each river's location and water source. Rivers that originate in the prairies will likely

experience lower and more variable flows. This means that although there will generally be less water available for use, the risk of larger extreme flows will increase. Riverside flooding in low-lying areas already affects many communities. In the Northern Plains, thawing permafrost would greatly increase the risk of damaging floods.

Water resources

The supply of water from Prairie streams is strongly affected by climate and varies from year to year. Longer and hotter summers will increase evaporation and reduce water levels in lakes and rivers. As a result, demands on groundwater could increase, making it even more important for Saskatchewan residents to use water resources wisely.

Forests and grasslands

In a warmer climate, boreal forest, aspen parkland and open grassland zones may shift northward. This means that much of the boreal forest may be replaced by aspen parkland, while large regions of aspen parkland may become grasslands. In the northern regions, forest growth may benefit from warmer temperatures and longer growing seasons but may be limited by unsuitable soil. Forest fires and insect outbreaks are expected to increase throughout the province. Damages to our forests from such events have been substantial in the past.

Weather patterns

Extreme events, such as severe thunderstorms, tornadoes, hailstorms, and heat waves, may become more common on the Prairies due to climate change. Warmer winters may mean more intense winter storms, and increase the likelihood of rain. In the summer, flooding may increase due to heavier rainfalls. Extreme weather conditions, such as droughts, may become more frequent.

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, Saskatchewan's provincial gross domestic product in the year 2010 would grow to a level that would be about 0.39 percent less than in a business as usual scenario. Growth in new jobs would slow by approximately 0.3 percent, or a delay in job creation over the next eight years of about 1,500 new jobs. To put this into context, Saskatchewan's economy created approximately 5,520 jobs in the past year.

The impact on personal disposable income by 2010 would be approximately 0.05 percent less than business as usual. Electricity prices could drop by approximately 0.02 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:

- **conventional oil** would rise by 3 cents per barrel, or by 0.09 percent
- **natural gas** would rise by 0.5 cents/million cubic feet, or 0.14 percent
- **electricity** – coal would rise by 0.14 cents per KWH, or by 1.94 percent
- **electricity** – gas would rise by 0.04 cents per KWH or 0.60 percent
- **steel** – conventional would rise by 0.29 percent, about \$2.10 per tonne
- **steel** – electric arc would rise by 0.08 percent, or 60 cents per tonne

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.

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 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.

Saskatchewan-based companies are already showing leadership in meeting the challenges of climate change¹:

- IMC Potash Colonsay recently created a project team to look at energy consumption in its fluosolids drying process. The team found that better control of the airflow into the dryer offered major opportunities for reducing energy use. The results speak for themselves—by improving energy efficiency by 11 percent, natural gas and electricity use were substantially cut. The company estimates that this \$10,000 project will save it \$490,000 per year.
- The IEA Weyburn Carbon Dioxide Monitoring Project is examining the viability of using

carbon dioxide enhanced oil recovery techniques to permanently store carbon dioxide underground and simultaneously increase oil production. The injection of carbon dioxide into oil reservoirs located near large coal-fired power stations has significant potential to dispose of large quantities of carbon dioxide at relatively low cost.

- Saskatchewan participated in and managed the Greenhouse Gas Emission Reduction Trading Pilot (GERT), where organizations were able to buy and sell emission reductions on a trial basis gaining valuable practical experience with emission trading.

¹ Examples are taken from the public record.

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and what you can do,**

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