Adapting to Climate Change : – Preparing for the Future

Climate Change Impacts and Adaption

The process of climate change has begun. The average temperature of the Earth has increased over the past 50 years and ecosystems have begun to change. In turn, they are affecting the economies and societies they sustain. Early impacts of climate change are already being witnessed in Manitoba.

Earlier, wetter springs, warmer, drier summers and shorter, milder winters are projected by climate models to be Manitoba's future. This will have implications for our economy, natural environment, health and well-being. Adapting to climate change will bring opportunities as well as challenges.

Assessing the Impacts of Climate Change in Manitoba

WATER AND ECOSYSTEMS

The Prairies face an increased probability of extreme conditions, including flooding and severe droughts. The most serious climate change risk is increases in water scarcity.[18] Even if rainfall increases in some areas, this may be offset by higher temperatures, which will result in increased evaporation and transpiration from plants.

The boreal forest is projected to shrink as climate conditions on its southern fringe favour the growth of temperate forests and grasslands. Expansion to the north is hampered by the absence of suitable soil conditions.[19] At the same time, the availability of harvested timber will decline as forest fires and pest and disease outbreaks become more frequent.[20]

The diversity and abundance of the province's plant and animal species will also change. While some species might thrive, others, such as white spruce,[21] polar bears and woodland caribou,[22] could become endangered or extinct.

ACTIONS TO DATE:

[18] Natural Resources Canada. 2007. From Impacts to Adaptation: Canada in a Changing Climate 2007, http://adaptation.nrcan.gc.ca/assess/2007/index_e.php

[19] Government of Canada, Provincial and Territorial Impacts–Manitoba, Accessed on February 23, 2006, Available at: http://www.climatechange.gc.ca/english/affect/prov_territory/manitoba.asp

[20] Government of Canada, Provincial and Territorial Impacts–Manitoba, Accessed on February 23, 2006, Available at: http://www.climatechange.gc.ca/english/affect/prov_territory/manitoba.asp

[21] Government of Canada. 2004. Forestry. Climate Change Impacts and Adaptation: A Canadian Perspective, http://adaptation.nrcan.gc.ca/app/filerepository/F80B56D-9915F465784EBC57907478C14.pdf

[22] Government of Canada, Provincial and Territorial Impacts: Regional Impacts –Manitoba, http://www.climatechange.gc.ca/english/affect/prov_territory/manitoba.asp

A man from Poplar River First Nation was fishing on Lake Winnipeg with his son. In the distance he saw a storm emerging on the horizon. He was taught by his father how to estimate the amount of time he had to pull the nets into the boat and get off the water before the storm arrived. But the storm came up on them much faster than he had estimated. It was unlike any other storm he had experienced with his father and the boat capsized. Luckily, the man and his son were wearing life jackets and were able to swim to shore.

- Integrated watershed management plans are being developed to address water budgeting and water conservation.
- Flood protection is being improved throughout the province, including upgrading the Red River Floodway from protection against a 1-in-90 year spring flood to a 1-in-700 year spring flood.
- Manitoba's hydrometric network is being expanded.
- Incentives such as the Riparian Tax Credit and a Nutrient Management Regulation to protect lakes and rivers are being introduced.
- A land planning initiative will combine traditional and western scientific knowledge to inform future decision-making.
- Support is being provided for the nomination of a combined 12,000 square kilometres of boreal forest land for a UNESCO World Heritage Site in Manitoba and Ontario.
- Capacity to protect forests and northern communities from fires is being enhanced.
- The polar bear has been listed as a threatened species and is being monitored. Manitoba will be the location for the world headquarters of Polar Bears International.

PUBLIC HEALTH AND EMERGENCY MANAGEMENT

The health of Manitobans and the well-being of rural, urban and First Nation communities will also be affected. Manitobans may experience heat stress, more air pollutants associated with fires and drought conditions, and exposure to water-borne diseases and disease-carrying insects.

These and other consequences of a changing climate have implications for the economic and social well-being of communities. Resource-dependent communities could face new economic challenges and communities will need to improve emergency response systems and infrastructure to withstand severe weather events.

ACTIONS TO DATE:

- Working with municipalities to establish local emergency management plans to prepare for extreme weather events and increasing the speed and effectiveness of local and regional emergency response measures.

THE NORTH

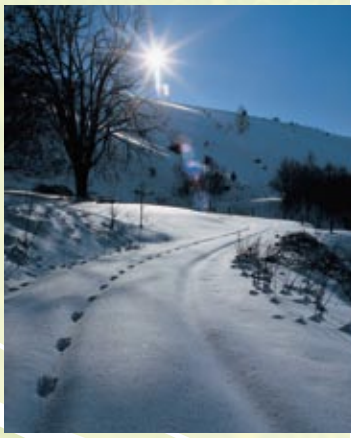
For Aboriginal and northern communities, climate change has profound implications for traditional ways of life and culture. Tourism operations and traditional activities may be altered by changes in ecosystems and in the abundance and distribution of wildlife.[23] One of the most significant negative impacts of climate change on transportation infrastructure in Manitoba is the safety, sustainability and seasonal duration of winter roads.

Northern railways with lines passing through areas of permafrost, such as the one serving Churchill, will require frequent repair as permafrost degrades. The Port of Churchill may experience more frequent and severe erosion which would affect shipping infrastructure. However, a longer ice-free season in Hudson Bay and northern channels as a result of climate change will increase shipping opportunities for the Port of Churchill.[24]

ACTIONS TO DATE:

- Manitoba is investing in the realignment of winter roads and in improved river and stream crossings along with work on all-weather roads.
- Manitoba is investing in permafrost research through the Churchill Northern Development Initiative and strategic investments are being made in the Hudson Bay Rail Line and the Port of Churchill.
- Manitoba is supporting a polar airship test flight and assistance for northern communities to develop their capacity to produce food for local consumption. Locally produced and harvested food produces considerably fewer GHG emissions than flying food into communities and provides greater food security.

Winter road challenges due to a warm 1997/1998 season resulted in an air lift of fuel and essential supplies to northern, remote Manitoba communities at a cost of approximately $12 million.



[23] Natural Resources Canada. 2002. Climate Change Impacts and Adaptation: A Canadian Perspective, http://adaptation.nrcan.gc.ca/app/filerepository/53228D320F4147B6B8A6DF3EEF94CB93.pdf

[24] Natural Resources Canada. 2007. From Impacts to Adaptation: Canada in a Changing Climate 2007, http://adaptation.nrcan.gc.ca/assess/2007/index_e.php

AGRICULTURE

Earlier springs and a frost-free period in the autumn would lengthen the agricultural growing season by about three weeks[25] and could enable the expansion of crops such as corn and soybeans.[26] However, agricultural producers will also need to respond to greater variability in year-to-year weather conditions, the potential for declines in summer rains of 10 to 20 per cent, and potentially more frequent droughts and severe rains and hail storms.[27] Greater demand for irrigation water could also be expected to diminish water supply and water quality, and may have serious consequences for municipal water supplies.

ACTIONS TO DATE:

- Manitoba is encouraging the adoption of sustainable farm practices that diversify income, promote environmental health and minimize economic and ecological risk.
- The province is funding the National Water Supply Expansion Program, which enhances and protects vital water resources to help address water constraints in agricultural areas.
- Manitoba's agricultural meteorological network collects a variety of data throughout the growing season at strategic locations throughout Manitoba to use as a basis for weather projections.

Building on Manitoba's Capacity to Adapt to a Changing Climate

NEXT STEPS:

- Implementing new regulations and policies to protect our water quality, including restricting phosphorus from dishwasher detergent and overloading of nutrients into our waterways. Continued investments in flood protection and drinking water and waste water infrastructure and a new water conservation initiative to be introduced in 2008.
- Expand emergency preparedness initiatives to help Manitobans manage extreme weather events and public health issues.
- Expand the Northern Healthy Foods Program, all-weather transportation infrastructure and local renewable energy options for Northern communities. In addition, greater resources will be dedicated to polar bear and northern climate impacts research, including incorporating traditional knowledge to strengthen adaptive capacity for northern communities. Manitoba will also continue to promote new opportunities through the Port of Churchill which could become a shipping port of even greater significance for North America as the Northwest Passage opens up.
- Monitor the impacts of climate change on wildlife including monitoring programs for species at risk, including the Boreal Woodland Caribou.
- Assess the adaptive benefits of the new sustainable agriculture program practices to help build resiliency on the farm. A wetland restoration project will encourage agricultural landowners to permanently restore drained wetlands and riparian areas.
- Develop a Manitoba Climate Research Table to co-ordinate provincial research and assess needs based on climate change impacts and adaptation.

[25] Wall, Ellen, Smit, Barry, Wandel, Johanna, 2004, Canadian Agri-food Sector Adaptation to Risks and Opportunities from Climate Change, Position Paper on Climate Change, Impacts, and Adaptation in Canadian Agriculture, C-CIARN, 2004, http://www.c-ciarn.uoguelph.ca/documents/c-ciarn-ag-position-paper.pdf

[26] Natural Resources Canada. 2002. Climate Change Impacts and Adaptation: A Canadian Perspective, http://adaptation.nrcan.gc.ca/app/filerepository/53228D320F4147B6B8A6DF3EEF94CB93.pdf

[27] Manitoba Clean Environment Commission and the International Institute for Sustainable Development. Manitoba and Climate Change: A Primer. http://www.iisd.org/pdf/cc_2nd_ed_wcov.pdf