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TomorrowNow— Manitoba's Green Plan: Toward a New Provincial Climate Change and Green Economy Plan

Consultations Background Paper

Agriculture and Water:
Reducing emissions and enhancing
our resilience to climate change

July 2014

TomorrowNow— Manitoba's Green Plan

Preface

In 2012 the Government of Manitoba released *TomorrowNow—Manitoba's Green Plan*, which includes commitments to update its climate change plan and create the first green economy action plan for Manitoba. As an initial step in this process, the province has asked the International Institute for Sustainable Development (IISD) to host a series of consultation sessions with key stakeholders on climate change and the green economy. Each meeting will focus on a specific sector and will seek an open dialogue on Manitoba's new climate change and green economy action plan.

Where Do We Stand?

Climate change threatens our social, economic and environmental systems on a global scale. Governments at every level are seeking to increase climate resilience, lower vulnerability to the impacts of climate change, reduce greenhouse gas emissions, implement adaptive actions and participate in the newly emerging green economy. Manitoba is no exception to these efforts.

In 2008 the Government of Manitoba released its *Beyond Kyoto* climate change action plan (Government of Manitoba, 2008), which listed over 60 actions to effectively reduce greenhouse gas (GHG) emissions across Manitoba's economy and put in place initial actions to adapt to climate change. Although most of these actions were successfully implemented, Manitoba was unable to achieve the desired target level of GHG reductions. Figure 1 illustrates Manitoba's emissions from 1990 to 2012.

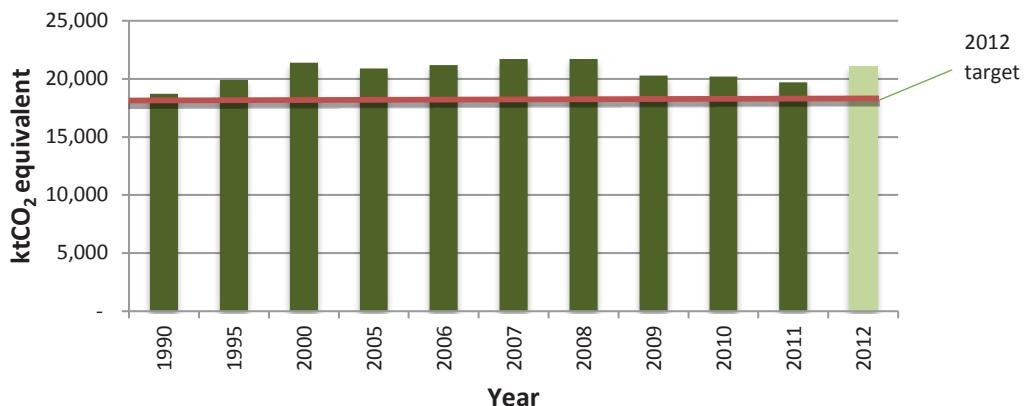


FIGURE 1: TOTAL PROVINCIAL EMISSION (IN KILOTONNES OF CO₂E) FROM 1990 TO 2012

Environment Canada (2014); Manitoba Conservation and Water Stewardship (2014).

The provincial government released *Manitoba's Report on Climate Change for 2012* (Manitoba Conservation and Water Stewardship, 2014) as the final report on performance under the Climate Change and Emissions Reductions Act (CCERA). This report noted that emissions at the end of 2012 were 500 kilotonnes (kt) lower than emissions levels in the year 2000, but failed to meet the 2012 target goal of 6 per cent below 1990 levels. The majority of GHG reductions were attributed to the energy sector through the ethanol mandate (410 kt), implementation of regulations limiting the use of Manitoba Hydro's single remaining coal-fired facility (343 kt) and Manitoba Hydro's Power Smart programs (140 kt). The report also noted that in 2012 Manitoba Hydro, through electricity exports, had contributed to 6,300 kt of GHG emissions reductions in jurisdictions outside Manitoba.

Manitoba is continuing its efforts to reduce GHG emissions, pursue green economic development and adapt to climate change. Public participation is integral to the policy development process, ensuring future policies and programs will motivate action to reduce emissions and compel us to take proactive steps to adapt. Moreover, it allows for the policy development process to be built from the bottom up¹ for an inclusive policy development process and a climate change and green economy framework that all Manitobans have a hand in creating.

Manitoba's Emissions by Sector

Manitoba has unique characteristics that drive emissions, adaptation needs and green economic opportunities. These characteristics shape the way that Manitobans respond to climate change and pursue resilient, low-carbon economic development.

Manitoba's **energy mix** presents opportunities as well as some challenges. Manitoba is blessed with abundant, stable, clean energy resources. The province has achieved a standard of approximately 98 per cent of locally generated electricity from clean, renewable sources with significant export capacity. This abundance allows Manitoba to adopt a flexible approach to the integration of new sources of energy to provide a backstop, such as geothermal, wind and biomass.

Manitoba provides a significant service to GHG mitigation in North America through clean energy exports that allow customers to switch from GHG-intensive fuels (such as coal) to hydroelectricity. While hydroelectricity exports cannot be counted against provincial GHG targets, they are a significant contribution to emissions reductions in other jurisdictions, as they displace coal and natural gas-fired electricity.

The province's single largest source of GHGs is the transportation sector, generating 38 per cent of total emissions in 2012. The **agriculture sector** is the second-largest contributing sector to provincial GHG emissions (see Figure 2), due to its importance to the provincial economy as well as the relatively low carbon intensity of both the energy and

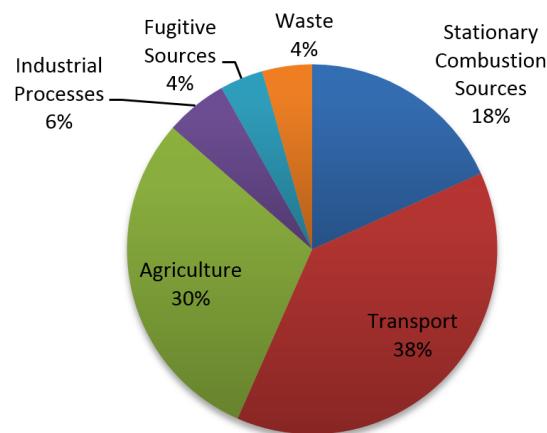


FIGURE 2: MANITOBA 2012 GHG EMISSIONS BY SECTOR

Source: Environment Canada (2014).

¹ Through a "bottom up" approach, stakeholders' views and policy suggestions feed into the decision-making process for the Government of Manitoba, including priorities to be pursued under each plan.

industry sectors in Manitoba. The size of the agriculture sector relative to the provincial GHG portfolio is unique: in only two other provinces does agriculture represent over 10 per cent of provincial emissions, and even there it does not approach 20 per cent. As a breakdown, the agriculture sector emission's include agriculture soils, enteric fermentation and manure management, each of which contributed 63 per cent, 25 per cent and 10 per cent respectively to the overall emissions in the sector in 2012 (Environment Canada, 2014).

Manitoba's built environment, energy infrastructure and agriculture sectors are not only emissions sources—they are also vulnerable to the impacts of climate change. Extreme climate events threaten residential and commercial buildings, affecting the well-being of individuals and communities. These concerns also apply to the energy infrastructure, where extreme events such as ice storms and floods affect not only the ability to mitigate emissions, but also energy transmission to local residents and business. Agriculture is highly influenced by climatic events and the sector has been adversely affected by a number of extreme events in recent years, including the flood of 2011 that cost the province an estimated \$1.2 billion (Manitoba Infrastructure and Transportation, 2013). The financial cost of extreme events is growing across Canada, with insured losses caused primarily by extreme weather events amounting to CAD\$1.6 billion in 2011 and CAD\$3.2 billion in 2013 (Insurance Bureau of Canada, 2012; Calamai, 2014).

Developing the Next Climate Change Plan: What have other jurisdictions done?

The development of Manitoba's next climate change strategy will take into account how other jurisdictions are proceeding on climate change policy development, and what influences external policies will have on Manitoba. The table below illustrates some of these policies.

TABLE 1. CLIMATE CHANGE POLICIES IMPLEMENTED IN OTHER JURISDICTIONS

JURISDICTION	ACTIONS	YEAR IMPLEMENTED
Federal government	Regulations for both heavy-duty and light-duty vehicle tailpipe emissions	2012
	Coal-fired electricity sector regulations	2012
	Negotiations with oil and gas and other industrial sectors	Ongoing
Quebec	New climate change action plan and adaptation strategy	2012-2020
	Launched emissions trading to be linked with California	2014
	First auction of its cap and trade system	2013
British Columbia	Review of Revenue-Neutral Carbon Tax completed; tax retained at \$30 per tonne	2013
Nova Scotia	Finalized federal equivalency agreement for electricity sector GHG regulations	2012
Ontario	Released a climate change progress report and a report from the environmental commissioner	2013
	Emissions mitigation discussion paper	2013
	Phase out of coal-fired power	Completed in 2014
Newfoundland & Labrador and Nova Scotia	Finalized hydroelectric link	2012
Alberta	Policy review of the Specified Gas Emitter Regulation	Expected completion 2014

In past years, provinces had taken it upon themselves to act unilaterally or in partnership with other provinces and U.S. states to address GHG emissions, while federal policy remained either in development or stalled. The advent of federal GHG regulations raises the potential for conflict over jurisdictional control of emissions policy, which can have major influence over provincial economies. As a result, **equivalency agreements** are an option that would allow provincial approaches to GHG mitigation to take precedence over federal sector regulations. The most prominent early example of this was the equivalency agreement reached between the federal government and Nova Scotia that installed provincial regulations in place of proposed federal regulations for electricity (Nova Scotia Department of Energy, 2012).

Table 2 provides brief examples of climate change actions being taken in jurisdictions within and outside of Canada in the agriculture and water sectors.

TABLE 2. POLICIES REGARDING THE AGRICULTURE AND WATER SECTORS IN OTHER JURISDICTIONS

JURISDICTION	ACTIONS
British Columbia	Exploits Pelletizing will produce about 50,000-18 kg bags of pellets each year. This equates to about 1,000 tonnes of premium hardwood pellets annually. If this heat is used to displace oil heat, then over 1,000 tonnes of GHG will be averted. If wood pellet heat is used to displace electric heat, then over 3,000 tonnes per year of GHG will be averted from entering the atmosphere. Blanchard's Woodworking Ltd., the parent company of Exploits Pelletizing Inc., will provide the raw materials for these pellets using the waste dust that is produced from the manufacturing of cabinet doors and moldings. One tonne of waste sawdust makes about half a tonne, or 25 bags, of wood pellets. The manufacturing of the wood pellets at this facility will result in approximately 18 tonnes of waste being diverted from local landfills every month.
Ontario	The Ontario government has developed a <i>Best Management Practices Series</i> developed by a team of farmers, researchers, extension staff and agribusiness professionals designed to highlight affordable solutions for protecting soil and water resources, supporting planning and decision making, and harmonizing economic and environmental goals. As of 2014, 27 publications covering a multitude of topics have been released as part of the series, which are available for download from ServiceOntario.
Costa Rica	Payment for Ecosystem Services is a key, internationally recognized program for Costa Rica's sustainable development. Administered through the National Forestry Financing Fund (FONAFIFO), the Government of Costa Rica pays landowners for the amount of land and forest they conserve, rehabilitate and/or regenerate, and the environmental services that these conserved lands provide.
Sweden	Swedish bioenergy use has grown from 40 terawatt hours (TWh)/year in the 1970s to around 140 TWh in 2012, according to the Swedish Bioenergy Association (Svebio). Bioenergy steamed past oil in 2009 to become the leading energy source for the nation. Since 2009 bioenergy has made up more of Sweden's energy mix than hydropower and nuclear power combined. Bioenergy was the leading factor in Sweden's 9 per cent decrease in GHGs between 1990 and 2010, while gross national product increased by 50 percent. According to Svebio, the main reasons for the Swedish bioenergy sector's phenomenal growth are broad political support and strong incentives, such as the carbon tax introduced in 1991, the green electricity certificates introduced in 2003 and tax exemptions for transport biofuels.

Building Blocks for Manitoba's Climate Change and Green Economy Plan

The government of Manitoba recognizes that a concerted effort is required to meet Manitoba's responsibility to adapt to climate change and mitigate GHG emissions. Manitoba has committed to actions on climate change in a number of strategy documents, including *Tomorrow Now: Manitoba's Green Plan* and *Focused on What Matters Most: Manitoba's Clean Energy Strategy* (Manitoba Innovation, Energy and Mines, 2012), as well as following up on the recommendations in the Auditor General's 2010 *Performance Audit on Managing Climate Change* (Manitoba Office of the Auditor General, 2010).

Manitoba's next plan will also require a consideration of the types of principles that are important for addressing climate change policy in Manitoba. These principles are expected to evolve and could include elements such as:

- Achieve GHG emissions targets in a cost-effective way that considers competitiveness
- Simplicity, policy coherence, transparency and administrative efficiency
- Treat sectors and facilities equitably
- Account for early action by industry leaders
- Use accurate and verified emissions data to support policy development
- Promote development and deployment of clean technologies
- Align with emissions reduction programs in other jurisdictions (linking)
- Integrate with other provincial environmental policies where possible

These principles are open to input, and their discussion will be part of the consultation process for the new climate change plan and green economy plan. Manitobans are encouraged to share their views regarding which principles should be embedded in climate change action in the province.

Integrating Adaptation and Mitigation

The next climate change plan will integrate both adaptation and mitigation strategies, with an increased focus on adaptation. It will be important for the coming plan to consider the adaptation impacts of mitigation actions (and vice versa), as well as identify areas where co-benefits can be achieved and negative side effects avoided regarding mitigation or adaptation actions. The consultation process with stakeholders will seek input on how best to integrate a more balanced approach for adaptation and mitigation.

For adaptation, capacity building in key areas can assist Manitobans to undertake meaningful, informed action with regards to adaptation to climate change. Some examples of areas where capacity may be lacking include those related to climate data and risk mitigation—both of which are important for the assessment of vulnerabilities and potential impacts.

Green Economy and Green Jobs

The development of a green economy action plan is one of the core pillars for the achievement of *TomorrowNow*'s goal of protecting the environment while ensuring a prosperous and environmentally conscious economy. The vision is of a resilient, low-carbon economy that respects environmental sustainability and supports social well-being. Sector-specific consultations are an important element in shaping Manitoba's green economy and green jobs by identifying opportunities and actions that feed into sector-specific comparative advantages within a sustainable development pathway.

The Role of the Agriculture and Water Sectors in the New Climate Change Plan and Green Economy Action Plan

The agriculture and water sectors play an essential role in climate change and the green economy, and therefore in the development of their associated plans under *TomorrowNow*. The agriculture sector is significant to Manitoba's economy as it creates jobs and provides food security and long-term social prosperity for Manitobans. At the same time, the sector is the second highest emitter in Manitoba and is highly vulnerable to extreme weather events and climate variability, which can negatively affect livelihoods and the provincial economy. Water is perhaps Manitoba's most precious resource, serving as the lifeline for ecosystems and society; it is also a major contributor to the province's economy, including through hydroelectricity generation. Similar to agriculture, the sector is highly vulnerable to extreme weather events as well as gradual climatic changes. Compared to other sectors, the agriculture and water sectors best exhibit the link between needing to respond to climate change impacts while protecting economic development.

The province has already taken steps to reduce GHGs and increase resilience to climate variability and change in the water and agriculture sectors. Recent actions and commitments under *TomorrowNow* include expansion of the floodway, the new Surface Water Management Strategy, international co-operation on Lake Winnipeg, and an upcoming wetland strategy and a peatlands stewardship strategy. For agriculture, the province has committed to increasing green leadership in the industry through incentive acquisition of new technologies to manage manure sustainably under the Nutrient Management Tax Credit, and has worked in the past to support programs that have impacts on agriculture such as Growing Forward and the Manitoba Sustainable Agriculture Practices Program.

Additionally, between 2010 and 2012, Manitoba was part of the Prairies Regional Adaptation Collaborative (in partnership with Alberta, Manitoba and Saskatchewan), an initiative co-financed by Natural Resources Canada that aimed to increase collaboration and knowledge sharing among provinces on climate change adaptation. In Manitoba, studies were conducted on water supply and water demand for the Assiniboine River for the years 2010, 2020, 2050 and 2080, which fed into provincial water management planning. Another study explored excess moisture management options in one of Manitoba's most vulnerable regions, the Interlake area, and identified adaptation strategies such as flood mitigation, water quality protection, riparian area fencing and restoration projects. Studies on potential climate change impacts, vulnerability and adaptation options for the province's forests and grasslands were also conducted, including exploring options for minimizing the potential impacts of climate change for the forage and beef sectors (Prairie Adaptation Research Collaborative, 2012; IISD, 2012).

Questionnaire

The questions below will feed into agriculture and water sector-specific needs and opportunities in the new climate change plan as well as Manitoba's first green economy action plan. Written or verbal responses are welcomed. Written responses may be sent to tomorrownow@iisd.ca.

Action Plan Goals and Strategy

1. What are the current sector approaches and good practices in Manitoba to address climate change that need to be built upon and enhanced over time?
2. What are the broad and specific barriers you see to the achievement of deeper emissions reductions in the agriculture and water sectors in Manitoba?
3. What are unfulfilled opportunities in Manitoba to achieve deeper emissions reductions and create capacities to deal with extreme weather events in the agriculture and water sectors?
4. In the water sector, how do Manitobans increase collaboration with other jurisdictions to advance on climate change goals?
5. What specific actions should be taken to effect a substantial reduction in GHG emissions in the agriculture sector and to significantly improve adaptive resilience in the short, medium and long terms?

Science, Information and Capacity Building

6. What types of information, capacity and tools are required by Manitobans to identify the actions they need to take in preparation for climate change? What mechanisms could be used to enable access to this knowledge?
7. How can we provide better access to Manitoba-specific climate data and climate projections, and the potential socioeconomic and ecological impacts of these projected changes?
8. What are the metrics to assess progress on actions taken?

Encouraging Action Amongst Manitobans

9. In terms of actions responding to climate change adaptation and GHG mitigation, what are the responsibilities of citizens, the government and private sector/industry when responding to climate change adaptation and mitigation?

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