

Manitoba Adaptation Day:

Understanding Manitoba-focused adaptation activities, research and capacity

Workshop Report

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March 2009



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Introduction

On March 26, 2009, the International Institute for Sustainable Development (IISD) hosted the workshop “Manitoba Adaptation Day: Understanding Manitoba-focused adaptation activities, research and capacity.” The workshop brought together key Manitoba-based academics, researchers, policy-makers and project coordinators¹ to discuss current adaptation-related research and activities, consider relevant initiatives being promoted federally that support provincial adaptation work and support identification of priority areas for a proposed Manitoba Climate Research Table. This report summarizes the outcomes of this workshop.

¹ A list of workshop participants is provided in Appendix A.

1.0 Context-setting Presentations

Dennis Cunningham, IISD, opened the workshop by providing a welcome address that set out the background and objectives of the workshop. The workshop facilitator, Sheldon McLeod, IISD, then lead a round table of introductions by the workshop's participants. Presentations that set the context for the day's discussions were subsequently delivered by Dr. Danny Blair, University of Winnipeg, and Randall Shymko, Manitoba Climate Branch.

1.1 Projected Changes and Impacts in Manitoba and the Prairies: Dr. Danny Blair, Department of Geography, University of Winnipeg

Danny's presentation provided scientific context to the need for adaptation research, strategies and education in Manitoba. The initial portion of his presentation drew from local climate studies and research appearing in the Intergovernmental Panel on Climate Change 4th Assessment report. He highlighted that the global climate has experienced a very rapid warming trend over the last century and that the pace of this warming has accelerated in the last 50 years. In the Prairie region, according to Adjusted Historical Canadian Climate Data, the mean annual temperature from 1895 to 2005 has seen an average increase of 1.6°C. Several examples of observed warming impacts in the Prairies and Northern Hemisphere were provided, including freeze-up and break-up dates for lakes and rivers, glacier mass balance, historical closed-basin water levels, sea ice extent, snow-covered area, snow departure dates and annual precipitation trends.

The presentation moved from observed trends to a consideration of the consequences of increased concentrations of CO₂ in the atmosphere and the various socio-economic and geophysical models used to make projections of CO₂. These projected CO₂ concentrations are used to predict ranges of surface warming. A doubling of pre-industrial levels of CO₂ in the atmosphere (that is, to 560 ppm) is expected to lead to a 3°C increase in global surface temperature. Danny indicated that a 3°C increase has not been seen on Earth in the last fifty million years, and that the warming in Canada would be much higher than this global average.

The final portion of the presentation focused on the Prairie region findings of the Natural Resources Canada report *From Impacts to Adaption: Canada in a Changing Climate 2007*. The report used a range of global climate models and emissions scenarios to produce projected temperature and precipitation scatter plots. While there is much variability within the scatter plots (between models and emission scenarios), there is also a clear indication that climate change will impact the Prairie provinces in many ways. Key findings in the report included:

- Increases in water scarcity represented the most serious climate risk in the region;
- Ecosystems will be impacted by shifts in bioclimate, changed disturbance regimes (e.g, insects, fire) and the introduction of non-native plants and animals;
- The Prairies are losing some advantages of colder winters;

- Resources and communities are sensitive to climate variability; and
- Adaptation processes are not well understood.

Danny concluded his presentation by observing that there is much that needs to be done in order to build provincial capacity to anticipate and respond to climate change in Manitoba and that this meeting was an opportunity to advance the adaptation agenda.

1.2 Adaptation Issues and Resources in Manitoba and other Canadian Provinces:

Randall Shymko, Climate Branch, Manitoba Science, Technology, Energy and Mines

Randall provided an overview of Manitoba's climate change action plan, *Beyond Kyoto*, released in April 2008. He noted that the plan includes a commitment to increase the capacity of Manitobans to prepare for the projected impacts of climate change. He outlined some expected impacts of climate change for Manitoba, including forest disturbance, the shifting of wildlife habitats and changes in water availability, as well as preparations already initiated or planned by Manitoba. These preparations include enhancing the province's winter roads system, water conservation efforts, sustainable farming initiatives, greater wildlife monitoring and improved preparedness for extreme weather events. Randall also highlighted the province's commitment to incorporate climate change impacts and adaptation into future budgetary, land use planning and environmental assessment processes, and to establish a Manitoba Climate Research Table.

In reviewing the actions underway across Canada, Randall noted the key initiatives of other provinces, such as the establishment of the Pacific Climate Impacts Consortium (PCIC) by British Columbia, the Ouranos Research Consortium by Quebec and the Prairie Adaptation Research Collaborative by Saskatchewan; the development of adaptation strategies or action plans by British Columbia, Alberta, Saskatchewan and Quebec; Ontario's appointment of the Ontario Expert Panel on Climate Change Adaptation; infrastructure enhancements by the Yukon and Northwest Territories; and research, outreach and education initiatives across the country.

In his conclusions, Randall reminded participants of the Canadian Impacts and Adaptation Assessment's findings that adaptive capacity on the Prairies is high but uneven and that there is a need to give greater attention to planned adaptation efforts. He also noted the proposed elements of a national adaptation framework.

1.3 Questions and Answers

The following issues were raised following these presentations:

- *Water efficiency, buildings and climate change adaptation.* It was observed that Manitoba's building code, currently being reviewed, should include a commitment to increasing water efficiency due to the prospects for greater water scarcity in the future. There is currently no discussion taking place within the province's building sector regarding the need to adapt to climate change

(due to a lack of awareness), and limited desire to address matters beyond traditional health and safety issues.

- *Adaptive capacity in Manitoba.* The degree to which Manitoba has the capacity to adapt to the impacts of climate change is determined by multiple factors, and the province's population has good experience with adapting to different conditions over time. There is uncertainty, however, regarding the extent to which this capacity will be turned into action.
- *Progress towards meeting Manitoba's emission reduction target.* Manitoba has committed itself to reducing its greenhouse gas emissions to six per cent below 1990 levels by 2012. It was stated that while there has been a rise in the province's emissions since 1990, confidence remains that Manitoba will be able to reduce its emissions across a range of sectors and, in doing so, also meet its commitments under the Western Climate Initiative.

2.0 Discussion Session 1: Current Adaptation Activities Underway in Manitoba

In five small groups, workshop participants provided an overview of how their work contributes to enhancing the capacity of Manitobans to adapt to the projected impacts of climate change (CC). The types of activities underway in the province are summarized in Table 1.

Table 1: Adaptation-related activities in Manitoba identified by workshop participants

Project	Sector/Area of Activity	Lead Organization
Education for Sustainable Development - Incorporates a range of climate change topics	K to 12 and post-secondary curriculum	Manitoba Department of Education
Scenarios planning for Manitoba Hydro	Power production planning scenarios modelling to understand implications of a range of CC impacts on energy supply and demand and to develop adaptive responses	Manitoba Hydro
Research Adaptation Collaborative	Secondary research to assist with development of adaptive responses across Prairie region; initially will deal with water-related issues	Manitoba Department of Science, Technology, Energy and Mines
Adaptation Public Education and Outreach	General public education information provided through Web site	Climate Change Connection
Manitoba Water Soft Paths	Sustainable water resource management	IISD and Manitoba Water Stewardship
Prairie Water Directive	Education/Networking/Policy	Manitoba Eco-Network Caucus
Manitoba Sustainable Agriculture Program	Supports transition to organic agriculture; drought and flood preparedness; policy analysis	Manitoba Agriculture, Food and Rural Initiatives
Climate Risks and Adaptive Capacity in Aboriginal Communities South of 60	Knowledge-building on impacts and risks; assessing adaptive capacity in communities	Centre for Indigenous Environmental Resources
Winter Road project	Redesign of winter road system	Manitoba Department of Infrastructure and Transportation
Wetland Restoration Incentive	Agriculture/payment for ecological goods and services	Manitoba Department of Water Stewardship

During the table conversations, participants also noted some **common themes** regarding the type of activities they are undertaking, including:

- *Application of a climate lens to decision-making.* Several ongoing projects are developing decision-making tools and models to help put a climate adaptation lens on planning processes.
- *Water.* Activities being undertaken in both rural and urban contexts are addressing adaptation challenges related to water supply and quality.
- *Simultaneously addressing mitigation and adaptation.* It was recognized that a number of initiatives aimed primarily at reducing greenhouse gas emissions (such as those promoting agricultural best management practices, active transportation and energy diversification) also provide adaptation benefits.
- *Education and outreach.* In different contexts, organizations are working to increase the availability of information about climate change, its possible implications for Manitoba, and how individuals and the province could prepare for these impacts.

As well, one group noted the need to start thinking more about the connections between adaptation and our broader development choices.

Participants also noted some **gaps and challenges** facing Manitoba as it prepares for climate change, including:

- *Addressing uncertainty.* Within the energy and buildings sector, it was noted that the current uncertainty regarding changes in precipitation patterns in Manitoba makes it difficult to develop adaptation strategies. One group observed the need for risk management to be part of adaptation planning. The need for more information about climate projections and the development of indicators to identify thresholds (e.g., entry into drought) was also raised.
- *Financial incentives.* One group suggested that there is a need to ensure the provision of an economic incentive to encourage actions that provide environmental benefits (e.g., in the agriculture and forestry sectors). A second observed that, until recently, there were gaps in the agricultural safety net; while the federal government provides automatic payments for drought losses, it does not automatically cover losses due to excessive moisture. This policy was recently reviewed and removed by Agriculture Canada and the Canada Revenue Agency. Similarly, a third group noted that some current incentives (subsidies and policies) encourage practices that increase vulnerability to climate impacts and/or do not encourage consumers to use leading-edge technologies that could increase resilience (e.g., provision of incentives for dual flush toilets but not for composting toilets). As well, it was suggested that there is a need to accurately cost the benefits provided by ecological services.
- *Absence of an overarching adaptation strategy for Manitoba.* It was noted that such a strategy will need to recognize and respond to the uncertainties associated with climate change, and the regional differences within the province (one size does not fit all). Given these differences, it was questioned whether something more than a broad, high-level provincial strategy could be developed.

- *Current culture and attitudes.* Within Manitoba, it was felt that there is a lack of awareness regarding the potential negative consequences of climate change, and that this situation is impeding efforts to integrate the consequences of climate change into decision-making. Adaptation discussions need to take place in all sectors and regions of Manitoba.
- *A lack of leadership.* There is a need to work together at the local and global level to create a movement for change.
- *Persistence of silos.* There remains a lack of coordination and cooperation between different disciplines and government departments.
- *Absence of appropriate tools and models.* The need for tools and models that support adaptation decision-making in the construction, building and education sectors was noted.
- *Absence of capacity at the community level.* It was observed that responding to climate change at the community level is quite complex and that communities lack the capacity and the tools needed to respond to this challenge.
- *Access to data.* There is a lot of data currently available to better understand and adapt to climate change impacts but the avenues and opportunities for sharing this data need to be broadened.
- *Coping with greater immigration.* As the climate increasingly changes, there will likely be an increase in the number of people seeking to immigrate to Manitoba from the U.S. and other parts of Canada. Is Manitoba prepared for the arrival of these newcomers?

3.0 Discussion Session 2: Adaptation Priorities, Opportunities and Barriers

In the afternoon, participants shared their thoughts regarding adaptation priorities, opportunities and barriers for Manitoba, as summarized below.

3.1 Priorities

3.1.1 *Information, education and knowledge development*

- Scientific information and databases to establish a starting point from which to identify possible adaptation priorities in different regions of Manitoba, such as has been developed by British Columbia
- Increase access to and collaboration with resources outside of Manitoba such as Ouranos and PCIC
- Increase education and outreach related to adaptation to climate change, undertaken through formal education, informal education (e.g. outreach by NGOs) and non-formal education (i.e., passive learning, such as from reading billboards)
- Engagement of the media in outreach activities, such as through a series of “climate change adaptation 101” articles in Winnipeg newspapers

3.1.2 *Community-level adaptation*

- Adaptation actions at the community level
- Decentralization of decision-making and of energy and water supplies to support community-level solutions that increase resiliency to local impacts and in times of crisis
- Establishment of instruments that enable communities to share their concerns and local solutions

3.1.3 *Financial information*

- Demonstration of the costs of inaction in order to stimulate adaptation efforts
- Increased use of life cycle analysis to illustrate the full costs of different actions and support adaptation decision-making, and communicating this information to the general public and in schools

3.1.4 Other

- Greater coordination within government and between it and outside organizations
- Increasing resiliency within the agriculture sector, in conjunction with mitigation efforts

3.2 Opportunities

- Through an existing agreement with the state of South Australia, Manitoba is able to learn about how Australia has made significant policy changes in response to its persistent drought. Similar actions might be required by Manitoba in the future.

3.3 Barriers

3.3.1 Policy-related barriers

- Short-term thinking in policy processes as the focus for meeting immediate needs, current electoral mandates and financial concerns
- Need to have a balance between carrots (incentives) and sticks (regulations). It was recognized that it is more difficult for governments to introduce the sticks due to an expectation of a negative public response.
- Existing building codes, which are updated every 10 years, are not keeping up with changes underway.

3.3.2 Finance-related barriers

- Need to overcome the myth that acting in an environmentally friendly manner will cost more than business-as-usual actions; there are often cost savings from acting sustainably
- Need more information to determine the cost of adaptation, the cost of inaction and the costing of the benefits provided by ecosystem services, and to apply this knowledge in decision-making
- There is an expectation that adaptation will be quite expensive, and it is unclear how Manitoba will pay for these additional costs.
- Tendency individually and collectively to discount the future

3.3.3 Barriers related to the absence of tools, knowledge and information

- We lack appropriate models, such as a building-energy model.

- Limited number of people in Manitoba who have expertise related to climate change adaptation
- Getting technical information to industry (e.g., insurance, banking and building sectors) in a format and language that is understandable to them and promotes action

3.3.4 Other barriers

- Lack of experience in adapting to human-induced climate change; the impacts of this process have not really begun to be felt by Manitobans and therefore there is less of a perceived need to respond
- Entrenched economic interests; greater number of people advocating for things to remain the same in comparison to the number that are advocating for new approaches and ideas
- While we understand the problem, do we really know what the solutions are? Have we asked stakeholders the right questions? Do we need more research to identify questions and solutions?

4.0 Discussion Session 3: Education and Outreach: Needs and Opportunities

During the third session of the workshop, participants identified priority audiences to engage with climate change adaptation issues and the key messages that they would like to communicate to these groups. The audiences and messages identified by each group are presented in Table 2.

Table 2: Audiences and messages

Audiences	Messages
Finance officers and decision-makers in government	<ul style="list-style-type: none"> • Opportunities associated with action • Need to embrace change and uncertainty • Need to embrace a holistic and systems approach
Political and industry leaders	<ul style="list-style-type: none"> • Provide concrete examples of opportunities and the co-benefits • That by acting now, we will be leaders on a critical issue (don't be left behind) • Need to provide the decision-makers with messages that recognize existing risks and uncertainty • That there is good public buy-in at the grassroots level, so that they know they are not going out on a limb • Can point to the new markets, jobs and investment opportunities that are opened up by climate change
Elected decision-makers, primarily at the municipal level	<ul style="list-style-type: none"> • Cost of inaction • Provision of real-time examples, such as the 2009 flooding • Need to integrate adaptation into decision-making
Youth: K to 5. Start with the basics at a young age so that children will have a different perspective when they get older	<ul style="list-style-type: none"> • Sharing of success stories, youth to youth, to show that they can make a difference. • Could expand content in curriculum and use alternative media such as video games, Facebook and shows like Captain Planet • Children communicate their knowledge to parents, which can in turn influence their actions • Need to ensure that teachers are well-educated and trained properly. Make it easy to teach.
Youth: Middle years. Reach out to them when making decisions regarding their future lifestyles	

The following additional comments were shared during the plenary discussion:

- Focus on those with the least capacity to adapt, such rural, remote and Aboriginal communities
- There is a need for visionaries. Identify sources of this type of leadership

- Could strengthen message that we need to adapt now in order to meet the needs of future generations by having speakers bring their grandchildren to meetings
- Need to ensure that audiences understand what climate change means for them, their pocketbooks, their sectors and their livelihoods
- Need to foster the development of a society that is willing to embrace change
- In communicating climate change adaptation, need to highlight the benefits of taking action
- Outreach and communication is a two-way process; audiences hold a lot of information and knowledge, and we need to work with them in a manner that respects their experience.

At the conclusion of this session, the various organizations participating in the workshop identified their potential contribution(s) to promoting adaptation in Manitoba:

- Agriculture and Agri-Food Canada: partner; potential funder
- Centre for Indigenous Environmental Resources: First Nations perspective and engagement
- City of Winnipeg: partner; possible funder
- Climate Change Connection: presentations; Web site for partner networking; bringing the right people together
- Green Building Council: ability to bring people to the table; education and training; outreach
- Manitoba Agriculture, Food and Rural Initiatives: extension, communication and education; research and development of long-term solutions
- Manitoba Conservation: monitoring; policy development
- Manitoba Eco-Network: networking; grassroots capacity building (skill development, information sharing)
- Manitoba Department of Education: support for teachers; potential funder
- Manitoba Hydro: potential funder; working with consumers
- Manitoba Infrastructure and Transportation: policy development; leadership
- Manitoba Science, Technology, Energy and Mines: provincial coordination; networking and communications
- Manitoba Water Stewardship: policy oversight and watershed planning
- Resource Conservation Manitoba: public outreach and communication; dissemination of tools for adaptation; policy research
- University of Winnipeg: research; education; leadership

5.0 Discussion Session 4: Coordinating Activities: Future Actions by Manitoba

Participants discussed two emerging opportunities: Natural Resources Canada's Regional Adaptation Collaborative program and the proposed establishment of a Manitoba Climate Research Table.

5.1 Regional Adaptation Collaborative

Randall Shymko, STEM, provided an overview of the Regional Adaptation Collaborative (RAC) program, noting that Natural Resources Canada (NRCan) plans to fund five RACs across Canada, one of which will involve Alberta, Saskatchewan and Manitoba. Each RAC will help support adaptation decision-making through capacity-building, outreach and knowledge extension; case study development; coordination and management; policy analysis and research; stakeholder dialogue; and targeted, applied research. A maximum of CDN\$4 million per year over three years will be received by each RAC from NRCan. This funding needs to be matched in cash or in-kind by the provinces. Manitoba is working with Alberta and Saskatchewan to develop a proposal for the end of April that outlines plans for the Prairie RAC. The main focus of the RAC will be water issues, with sub-themes looking at agriculture and drought, municipalities and demand management, and forest issues.

In the discussion that followed, support was expressed for the RAC's intended focus on water issues given its critical importance to life and the fact that we are currently mid-way through the UN Decade for Water. Participants also commented on the limited amount of time available to develop a strong proposal.

5.2 Role of a Research Table

In discussing the potential purpose and structure of a Manitoba Climate Research Table, participants were asked to not be distracted by the proposed name and to think more broadly about the establishment of a formal adaptation community of practice or action network. The following ideas regarding the objectives, structure and participants in the Table were shared.

5.2.1 Purpose

- Help overcome silos by putting in place a mechanism that brings together a cross-section of people
- Mobilization and activation: bring together the groups that are able to effect change
- Support proactive rather than reactive decision-making (such as drought preparedness)
- Discuss and make recommendations to avoid the potential adverse affects of specific policies. For example, undertake a holistic assessment of the economic

and ecological implications of ethanol development, or the use of greywater and rainwater harvesting.

- Identify research gaps and ways in which to increase the amount of research on adaptation taking place in Manitoba
- As adaptation is largely addressed through socio-economic issues, focus on the social interface more than science research
- Information sharing: increase understanding of what is going on in Manitoba related to adaptation to climate change
- Enable the creation an informed voice and communication of shared messages to Manitobans and to other jurisdictions; need to maximize potential for having messages heard, such as by translating research into layman's terms so that it can be effectively communicated to the public
- Works should be scientifically-based so that the recommendations from the table are unbiased

5.2.2 Structure

- Establishment of a broader round table supported by a designated research table
- Should be recognized as a neutral body so that it will have a credible voice on issues
- Should undertake and promote collaboration with and between universities

5.2.3 Participants

- Include the end-users (e.g., youth, farmers, politicians) to ensure that research is oriented towards meeting their needs
- Participants should be those at the implementation level to promote action
- The organizations at the workshop are logical candidates for active participation in this process
- Additional participants not attending the workshop that could become part of this process include:
 - o Federal government: Department of Fisheries and Oceans
 - o Provincial government: Intergovernmental Affairs; planners; Emergency Measures; Treasury Board
 - o Municipalities
 - o First Nations: Assembly of Manitoba Chiefs and/or organizations such as MKO and the Southern Chiefs Organization
 - o Industry/business: insurance sector, land developers, financial institutions

6.0 Next Steps and Conclusions

To conclude the workshop, Dennis Cunningham and Sheldon McLeod thanked participants for their active contributions to the workshop and for making the day a success. It was noted that the ideas and recommendations made during the workshop will be shared with the provincial government and are expected to contribute to defining its future efforts to address adaptation in the province.

Appendix A: List of Participants

Organization	First Name	Last Name
AAFC	Alex	Milton
CIER	Maria	M'Lot
City of Winnipeg	Kevin	Nixon
Climate Change Connection	Curt	Hull
Climate Change Connection	Dean	Medeiros
Green Building Council	Rodney	McDonald
Green Building Council	Christine	Paquette
IISD	Dennis	Cunningham
IISD	Philip	Gass
IISD	Matt	McCandless
IISD	Sheldon	McLeod
IISD	Jo-Ellen	Parry
IISD	Vivek	Voora
MAFRI	Jenelle	Hamblin
MAFRI	Tony	Szumigalski
MAFRI	Matthew	Wiens
MAFRI	Colleen	Wilson
Manitoba Hydro	Bill	Girling
Manitoba Water Stewardship	Elaine	Fox
Manitoba Water Stewardship	Rhonda	McDougal
MB Eco-Network	Sacha	Kopelow
MECY ESD	Christina	McDonald
MEIA	John	Fjeldstad
MIT	Ted	Nestor
Resource Conservation Manitoba	Josh	Brandon
Science, Technology, Energy and Mines	Neil	Cunningham
Science, Technology, Energy and Mines	Randall	Shymko
Sustainable Forestry Unit	Jocelyn	Baker
Sustainable Forestry Unit	Ryan	Klos
University of Winnipeg	Danny	Blair
University of Winnipeg	Jino	Distasio