

ALBERTA ADAPTS TO A CHANGING CLIMATE

REPORT SUMMARIZING OUTCOMES OF THE ADAPTATION LEADERS
ROUND TABLE FORUM HELD IN EDMONTON, JANUARY 20, 2016

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Executive Summary

This document was prepared for the **Climate Change and Emissions Management Corporation (CCEMC)** to report on the discussion of the **Adaptation Leaders Round Table Forum** ("Forum"). The Forum was held in Edmonton, January 20, 2016, to solicit stakeholder feedback on priority sectors for climate change adaptation and help inform the next steps stakeholders could take to address adaptation.

Stakeholder feedback was collected regarding strategic approaches for climate change adaptation in the province, including:

- Vision of success on climate change adaptation in Alberta
- Confirmation of the priority sectors that merit strong attention for adaptation in Alberta
- Examples of challenges and opportunities for climate change adaptation across the priority sectors from economic, environmental and social stand-points
- Identification of key stakeholders, who should be involved in climate change adaptation in Alberta, as well as their roles
- Suggestions of immediate climate change adaptation actions that should be taken in reference to the priority sectors

Approximately 100 Forum attendees confirmed that the following priority sectors are critical areas of focus for the advancement of climate change adaptation in Alberta:

- Extreme Weather Events (including Droughts, Floods, Heatwaves, Hail, Wind and Fire)
- Infrastructure, Transportation and Land-Use Planning
- Bio-Economy (Agriculture, Biodiversity and Health)
- Economics, Finance, Insurance
- Energy and Natural Resources Management
- Health and Social Protection
- Institutional Requirements and Capacity Building
- Aboriginal Issues

The stakeholders provided the following feedback on Alberta's strategic approaches to climate change adaptation:

- Success on climate change adaptation in the province is multi-faceted. Minimally, this requires embracing a longer term vision, a focus on preventative actions, community buy-in and improved climate-related education amongst all aspects of the citizenry, as critical components that would ensure holistic climate change adaptation.
- An information gap exists regarding: data critical to performing climate change impact assessments; baselines, trends, benchmarks and climate adaptation KPIs; and value for money analytics to prioritize adaptation actions.
- To address the information gap, the creation for a system of knowledge transfer was suggested. It was the view of stakeholders that the aim of knowledge transfer is to leverage existing tools, climate change models and best practices, as well as to foster collaboration and partnerships. To facilitate this multi-disciplinary and cross-jurisdictional knowledge transfer, the creation of a Climate Change and Traditional [Aboriginal] Knowledge Working Group was proposed.

- Engagement across federal, provincial and municipal levels of government with industry, Aboriginal communities, NGOs, academe, builders and land developers, as well as with the media and general public is critical for successful climate change adaptation.

In terms of the immediate next steps, the majority of stakeholders agreed on the following:

1. Alberta needs to develop a **Climate Change Adaptation Strategy**
2. Municipalities need to undertake **Risk Assessments** to identify climate change vulnerabilities and opportunities
3. Municipalities need to develop and implement **Adaptation Plans** to reduce negative impacts of extreme weather events and leverage opportunities that a changing climate presents.

The subsequent components of this report further elaborate on these core outcomes.

Alberta Adapts to a Changing Climate

In 2015, the CCEMC issued a discussion paper titled **Alberta Adapts to a Changing Climate**. The paper explored climate change impacts and vulnerabilities in Alberta, profiled examples of consequences and associated costs incurred due to extreme weather events, and called for stakeholder feedback on what the strategic approach should be in reference to adaptation to climate change throughout Alberta.

The document outlined seven priority sectors in reference to climate adaptation:

1. Extreme Weather Events
2. Infrastructure, Transportation and Land-Use Planning
3. Bio-Economy (Agriculture, Biodiversity and Health)
4. Economics, Finance, Insurance
5. Energy and Natural Resources Management
6. Health and Social Protection
7. Institutional Requirements and Capacity Building

Adaptation Leaders Round Table Forum

On January 20, 2016, the CCEMC organized an **Adaptation Leaders Round Table Forum** in Edmonton. During the forum, an **Inspired Conversations Session** was held to receive input on the seven priority sectors from a diverse group of stakeholders, as well as to gather feedback on the following:

- Vision of success on climate change adaptation in Alberta
- Confirmation of the priority sectors that merit strong attention for adaptation in Alberta
- Examples of challenges and opportunities for climate change adaptation across the priority sectors from economic, environmental and social stand-points
- Identification of key stakeholders who should be involved in climate change adaptation in Alberta, as well as their roles
- Suggestions of immediate climate change adaptation actions that should be taken in reference to the priority sectors

Over 100 stakeholders provided feedback on these topics. These stakeholders represented the following groups:

- Federal, provincial and municipal governments
- Academe
- Non-governmental organizations
- Aboriginal community members
- Capital markets representatives
- Industry representatives
- Securities commissions
- Legal community
- General citizenry

These stakeholders were self-divided into groups of 7-15 people to discuss general and priority sector-specific questions posed by the CCEMC. Membership in a group was on a “first come, first in” basis, with stakeholders signing up to their first and second choices until all groups, corresponding to the priority sectors, were fully constituted.

The stakeholders invited to the forum were asked to read the “Alberta Adapts to a Changing Climate” discussion paper prior to attending the Forum. Accordingly, the stakeholders were familiar with the seven priority sectors and with the strategy questions posed by the CCEMC. Based on the reading, stakeholders identified an additional priority sector, “Aboriginal Issues”, which was not explicitly stated as a priority sector in the discussion paper. Accordingly, eight groups were constituted:

- Group 1 - Priority Sector 1: Extreme Weather Events
- Group 2 - Priority Sector 2: Infrastructure, Transportation and Land-Use Planning
- Group 3 - Priority Sector 3: Bio-Economy
- Group 4 - Priority Sector 4: Economics, Finance, Insurance
- Group 5 - Priority Sector 5: Energy and Natural Resources Management
- Group 6 - Priority Sector 6: Health and Social Protection
- Group 7 - Priority Sector 7: Institutional Requirements and Capacity Building
- Group 8 – ***NEW*** Priority Sector 8: Aboriginal Issues

Table 1 outlines the agenda for the **Inspired Conversations Session** and the questions that the stakeholders were asked to discuss. The session was facilitated by Dr. Blair Feltmate, Head, Intact Center on Climate Adaptation, University of Waterloo.

Table 1: Agenda for the Adaptation Leaders Round Table Forum: Inspired Conversations Session

Time	Discussion Items
12:30-12:45 pm	Dr. Blair Feltmate introduces Inspired Conversations session
12:45-1:00 pm	Organize Roundtables (attendees move to discussion tables)
1:00-1:10 pm	Table Facilitators provide context for table discussions
1:10-2:00 pm	Table Discussion <ul style="list-style-type: none"> • What would success on adaptation look like for a typical Albertan community and priority sector? • What would success, from the perspective of adaptation, look like for Alberta?
2:00-2:08 pm	Break
2:08-3:00 pm	Table Discussion <ul style="list-style-type: none"> • Does the Priority Sector merit strong attention by Albertans from the perspective of adaptation (Strongly Disagree, Disagree, Neutral, Agree, Strongly Agree) • What are the main concerns for this Sector from an economic, environmental and social perspective? • What are the main areas of opportunity for this Sector from an economic,

	<p>environmental and social perspective?</p> <ul style="list-style-type: none"> Who should be involved in adaptation planning in reference to the Sector, and what role should they play? (examples include municipalities, Government of Alberta, federal government, Indigenous communities, businesses, industry, academia, etc.) Are there one or two key adaptation actions that should be taken in the immediate term in reference to the Sector?
3:00-3:08 pm	Break
3:08-4:15 pm	Reporting of Key Findings by each Round Table

Sections following provide a summary of key findings from the **Inspired Conversations Session**.

Key Findings

Vision of Success on Climate Change Adaptation in Alberta

In response to the first question posed to stakeholders, “What would success on adaptation look like for a typical Albertan community and priority sector?”, nine key success factors emerged, as summarized in Figure 1.

Figure 1: Success Factors for Climate Change Adaptation in Alberta, by Priority Sector

	Climate Change Adaptation Success Factors by Priority Sector	Extreme Weather Events	Infra., Transp. & Land-Use Planning	Bio-Economy	Econ., Finance & Insurance	Energy and Nat. Resource Mngmt	Health & Social Protection	Instit. Req's & Capacity Building	Aboriginal Issues
1	Long-term approach	✓	✓	✓	✓	✓	✓		✓
2	Prevention focus	✓	✓	✓	✓	✓	✓		✓
3	Community-centric	✓	✓	✓	✓	✓	✓		✓
4	Education, awareness and engagement	✓	✓	✓	✓		✓	✓	✓
5	Systems integration	✓	✓	✓	✓			✓	✓
6	Risk assessment and mitigation	✓			✓		✓	✓	✓
7	Standardization	✓		✓			✓	✓	
8	Biological integrity		✓	✓		✓			✓
9	Positive economic impact	✓	✓	✓	✓				

The nine climate change adaptation success factors outlined above were characterized as follows:

1. Long-term approach

- Ensure a long-term vision on climate change / design for the future
- Embrace long-term investments that take adaptation into account
- Examine lifecycle planning based on the inclusion of climate change/extreme weather and the need to embrace adaptation

2. Prevention focus

- Ensure planned resilience based on adaptation
- Focus on the need to embrace mitigation of GHGs alongside adaptation best practices
- Establish processes to focus on on-going adaptation applied to infrastructure development

3. Community-centric

- Ensure communities embrace adaptation best practices
- Ensure adaptation resources are equitably distributed between urban vs. rural communities

4. Education, awareness and engagement

- Promote community education on adaptation
- Ensure the public has access to user-friendly information regarding climate change/adaptation

5. Systems integration

- Ensure integrated infrastructure planning embraces adaptation
- Encourage regional and inter-jurisdictional approaches to create synergies regarding adaptation
- Consider natural impacts of climate change on ecosystems and watersheds, and facilitate adaptation measures where appropriate
- Try to break down organizational barriers where/when possible

6. Risk assessment and mitigation

- Conduct risk assessments to identify vulnerabilities to climate change
- Engage risk mitigation through adaptation actions

7. Positive economic impact

- Facilitate adaptation practices to reduce the cost of climate change to government(s)
- Facilitate adaptation practices to reduce insurance claims
- Facilitate adaptation practices to increase (and not diminish) GDP
- Facilitate protection of current infrastructure/businesses that may be vulnerable to climate change

8. Biological integrity

- Engage efforts to limit the impact of climate change on biodiversity
- Engage activities to maintain sustainable forests vs. the impacts of climate change
- Ensure adaptation factors into agricultural production
- Identify best adaptation efforts to maintain biological diversity across aquatic and terrestrial ecosystems, and to maintain soil quality

9. Standardization

- Standardize the sharing of adaptation information across industry sectors
- Share best adaptation practices amongst emergency providers

A second question was also presented to stakeholders: “What would success on adaptation look like for Alberta currently, and 20, 30 and 50 years forward, from economic, environmental and social perspectives?”

While a rich dialogue ensued, stakeholders focused their responses on general themes that would influence success on climate change adaptation best practices going forward. The following were key areas of focus that emerged from that discussion:

1. Dialogue

- Need for clear communication
- Need for consistent messaging
- Need for two-way information flow between all stakeholders

2. Strategic Approach

- Need to establish process for climate adaptation policy development
- Must develop a stakeholder map in reference to adaptation needs
- Must monitor and evaluate adaptation performance
- Establish key performance indicators (KPIs) to quantify best adaptation practices

3. Design and Construction

- Ensure sustainability and climate change adaptation factors into new build and scheduled retrofit construction considerations

4. Economic Transformation

- Identify sustainable ways of doing business across sectors that incorporates adaptation (e.g., agriculture, farming, forestry and etc.)
- Establish means to economically value natural ecosystems from the perspective of operationalizing adaptation
- Identify vulnerability of supply chains as they may be impacted by extreme weather/climate change

5. Educated Communities

- Educate the general public in reference to climate change impacts
- Facilitate the public’s preparedness to take action / embrace adaptation

6. Land-use Planning

- Ensure adaptation factors into integrated planning
- Consider adaptation across short- and long-term time horizons

Priority Sectors that Merit Strong Attention for Adaptation in Alberta

As noted above, the CCEMC identified seven priority sectors for climate change adaptation in Alberta. Accordingly, the CCEMC asked “Does the Priority Sector merit strong attention by Albertans from the perspective of adaptation?” While responses from both the Bio-Economy and the Health and Social Protection groups were not formally recorded (no explanation was provided from either group), based

on the ensuing discussion, it could be concluded that all stakeholders strongly agreed that the priority sectors identified by the CCEMC merit attention (see Figure 2).

Figure 2: Degree of Stakeholder Agreement on Priority Sectors that Merit Attention for Climate Change Adaptation in Alberta

	Degree of Agreement by Priority Sector	Extreme Weather Events	Infra., Transp. & Land-Use Planning	Bio-Economy	Econ., Finance & Insurance	Energy and Nat. Resource Mngmt	Health & Social Protection	Instit. Req's & Capacity Building	Aboriginal Issues
1	Strongly Disagree								
2	Disagree								
3	Neutral								
4	Agree								
5	Strongly Agree	✓	✓		✓	✓		✓	✓

As well, stakeholders identified an additional priority sector that merits strong attention by Albertans from the perspective of adaptation - “Aboriginal Issues”, which was not explicitly stated as a priority sector in the original discussion paper.

Main Areas of Concern for Priority Sectors

Responses to the CCEMC question “What are the main concerns for this Priority Sector from an economic, environmental and social perspective?”, as per each priority sector, are illustrated in Figure 3.

Figure 3: Main Areas of Concern for Climate Change Adaptation in Alberta, by Priority Sector

	Areas of Concern by Priory Sector	Extreme Weather Events	Infra., Transp. & Land-Use Planning	Bio-Economy	Econ., Finance & Insurance	Energy and Nat. Resource Mngmt	Health & Social Protection	Instit. Req's & Capacity Building	Aboriginal Issues
1	Information Gap	✓	✓	✓	✓	✓	✓	✓	✓
2	Access to capital / capacity to respond		✓		✓	✓	✓		✓
3	Public education and awareness		✓		✓		✓		✓
4	Water management	✓	✓	✓		✓			
5	Agriculture (crop changes) and forestry (deforestation)	✓		✓		✓			✓
6	Land use planning		✓	✓		✓			✓
7	Quality of life, health and safety		✓	✓		✓	✓		✓

As illustrated above, an information gap was noted as an area of concern by all stakeholders. Stakeholders suggested that there is lack of relevant data for decision-making to guide climate change adaptation efforts, which could impede the following:

- climate change impact assessments
- baselines, trends, benchmarks and KPIs
- value for money analytics to prioritize adaptation actions

Main Areas of Opportunity for Priority Sectors

Responses to the CCEMC question “What are the main areas of opportunity for this Priority Sector from economic, environmental and social perspectives?” are shown in Figure 4.

Figure 4: Main Areas of Opportunity for Climate Change Adaptation in Alberta, by Priority Sector

	Areas of Opportunity by Priory Sector	Extreme Weather Events	Infra., Transp. & Land-Use Planning	Bio-Economy	Econ., Finance & Insurance	Energy and Nat. Resource Mngmt	Health & Social Protection	Instit. Req's & Capacity Building	Aboriginal Issues
1	Knowledge Transfer	✓	✓	✓	✓	✓	✓	✓	✓
2	Improved land use (innovation in food production and forestry)	✓	✓	✓		✓	✓		✓
3	Energy efficiency and alternative energy	✓	✓	✓		✓			✓
4	Carbon market leadership and innovation	✓		✓		✓		✓	
5	Industry diversification				✓	✓	✓		
6	Improved infrastructure planning (risk-based; long-term decisions)		✓		✓		✓		

To address the information gap, which was identified as the main area of concern for climate change adaptation, stakeholders suggested that knowledge transfer is an area of opportunity. Stakeholders suggested that the aim of knowledge transfer is to:

- leverage existing tools and climate change models and best practices
- foster collaboration and partnerships
- facilitate this multi-disciplinary, multi-lateral and cross-jurisdictional information exchange

The creation of a Climate Change and Traditional [Aboriginal] Knowledge Working Group was proposed as a potential mechanism for knowledge transfer.

Key Stakeholders and Their Roles Regarding Climate Change Adaptation

Sector-specific responses on “Who should be involved in adaptation planning in reference to the Priority Sector, and what role should they play?” are shown in Figure 5.

Figure 5: Key Stakeholders to Be Involved in Climate Change Adaptation Planning in Alberta, by Priority Sector

	Stakeholders by Priority Sector	Extreme Weather Events	Infra., Transp. & Land-Use Planning	Bio-Economy	Econ., Finance & Insurance	Energy and Nat. Resource Mngmt	Health & Social Protection	Instit. Req's & Capacity Building	Aboriginal Issues
1	Federal government	✓	✓	✓	✓				✓
2	Provincial government	✓	✓	✓	✓		✓		✓
3	Municipal government	✓	✓	✓	✓	✓	✓	✓	
4	Builders and developers		✓		✓		✓		
5	Industry			✓		✓	✓	✓	✓
6	Aboriginal communities				✓	✓		✓	✓
7	NGOs			✓		✓	✓		✓
8	Academe				✓		✓	✓	✓
9	Media						✓		
10	Public		✓		✓		✓	✓	

Stakeholders: Key Areas of Focus on Adaptation

Federal government

- Develop an adaptation policy in consultation with provinces
- Support regional collaboration on climate adaptation
- Provide regulatory support for Aboriginal communities' climate change programs

Provincial government

- Support flood plain mapping across municipalities and rural areas (recognizing that neighboring jurisdictions share some of the same flood risks)
- Alberta develop a provincial strategy and policy on climate adaptation
- Provide information on climate adaptation to municipalities
- Develop provincial climate adaptation programs and incentives
- Monitor extreme weather risk/develop warning system and information dissemination protocol

Municipal government

- Provide critical information to the public, including risk assessments and up-to-date flood plain maps
- Create adaptation plans, focusing on integrated land-use
- Provide critical services and emergency response

Builders and developers

- Work with regulators to establish climate-ready infrastructure, construction and maintenance

Industry

- Communicate industry needs to regulators regarding climate change impacts
- Facilitate corporate action on climate change adaptation (as a key part of corporate strategy)
- Assist utilities to embrace adaptation best practices

Aboriginal communities

- Educate Aboriginal community members on climate change impacts and adaptation measures
- Share traditional knowledge with the broader community

NGOs

- Develop measures to assess the social impacts of climate change

Academe

- Ensure emerging labour force appreciates/understands climate change
- Include climate change in education curriculum (sector-specific education)
- Translate science of climate change into common language

Media

- Communicate climate change impacts and adaptation measures to the public in user-friendly terms

Public / End-consumer

- Ensure public is engaged by government in climate adaptation talks/dialogue
- Engage home owners in residential adaptation practices

Immediate Climate Change Adaptation Actions Proposed for Alberta

When asked “What are the two key adaptation actions that should be taken in the immediate term in reference to the Priority Sector?”, the majority of stakeholders agreed on the following:

1. Alberta needs to develop a **Climate Change Adaptation Policy**
2. Municipalities need to undertake **Risk Assessments** to identify climate change vulnerabilities and opportunities
3. Municipalities need to then develop and implement **Adaptation Plans** in order to reduce negative impacts of extreme weather events and leverage opportunities that a changing climate may present.

Other responses varied by the priority sector (see Figure 6).

Figure 6: Immediate Climate Change Adaptation Actions Proposed for Alberta, by Priority Sector

	Adaptation Actions by Priority Sector	Extreme Weather Events	Infra., Transp. & Land-Use Planning	Bio-Economy	Econ., Finance & Insurance	Energy and Nat. Resource Mngmt	Health & Social Protection	Instit. Req's & Capacity Building	Aboriginal Issues
1	Risk assessments	✓	✓		✓	✓	✓	✓	✓
2	Adaptation plans		✓	✓	✓	✓	✓		✓
3	Strategy development	✓	✓		✓	✓	✓		✓
4	Addressing the information gap	✓	✓	✓	✓		✓		✓
5	Creation of adaptation fund and/or incentives			✓	✓		✓	✓	✓
6	Community education and awareness	✓	✓	✓					✓

Conclusion

Stakeholder feedback gathered during the “**Adaptation Leaders Round Table Forum**” indicated strong support for climate change adaptation across all priority sectors – Extreme Weather Events; Infrastructure, Transportation and Land-Use Planning; Bio-Economy; Economics, Finance, Insurance; Energy and Natural Resources Management; Health and Social Protection; Institutional Requirements and Capacity Building; and Aboriginal Issues.

The prevailing theme of the discussion throughout the day was the need for Alberta to adopt a **Climate Change Adaptation Policy**. The development of an overarching policy would require multi-disciplinary and cross-jurisdictional collaboration. Additionally, municipalities in the province must engage a program to **identify key risks posed by climate change**, and they must **develop adaptation plans to mitigate these risks** to ensure economic, environmental and social well-being in the short- and long-term.