

Cariboo Regional District

About the Case Study

Natural Resources Canada provided funding through the Regional Adaptation Collaborative from 2009 to 2012 to encourage adaptation to climate change throughout Canada. In addition to other community-related adaptation projects in BC, this case study is one of three led by the Fraser Basin Council. This case study addressed adaptation on a regional district scale, while the other two looked at the municipal and First Nations scale, in Prince George, and Soda Creek.

The Cariboo Regional District intends to initiate a Regional Development Strategy (RDS) that will outline a plan for development looking forward over the next 20 years. The objective of the case study was to apply a climate change lens to current local government services, growth, and development issues in the region. The outcome of the case study was the Cariboo-Chilcotin Climate Change Adaptation Strategy (“the strategy”), which will help create an effective RDS that takes climate change appropriately into account.

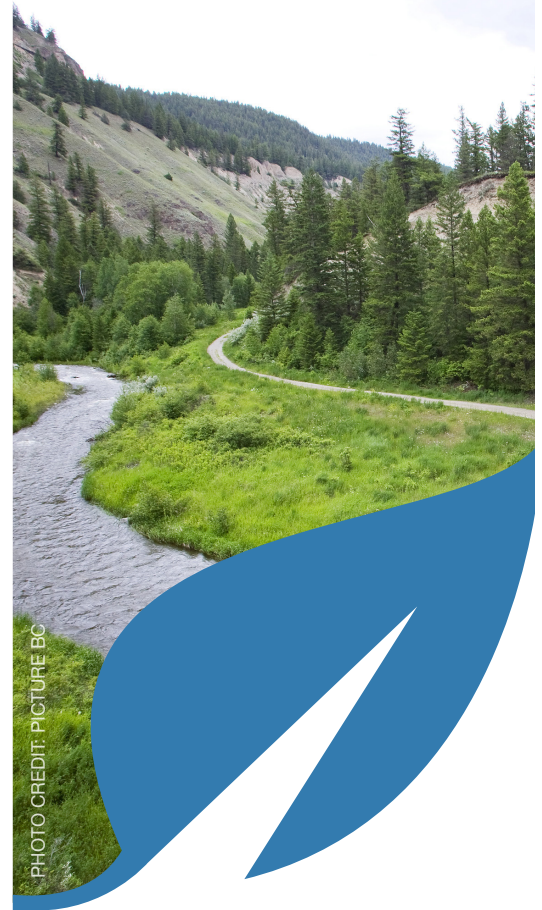
The strategy is limited in that it does not pertain to natural resource management issues. While many of the climate change adaptation issues in the Cariboo-Chilcotin region relate to the natural environment, the scope of this case study focuses on local government services and issues.

Community Context

The Cariboo Regional District (CRD) has a population of 65,471 (2006 Census) spread over an area of 80,262km² or 9% of BC’s landbase in the Central Interior of British Columbia. The three main population centres are the cities of Williams Lake and Quesnel, and the District of 100 Mile House, which are home to 35% of the regional population. The remainder of the population lives in unincorporated communities, rural areas, or in fifteen Secwepemc, Tsilhqot’in, and Carrier communities belonging to those language groups. The economy of the region is largely resource-dependent, with forestry, mining and agriculture as the main economic sectors.

Climate-related Changes

- **Increasing Air Temperature** - Pacific Climate Impacts Consortium (Dawson, Werner and Murdock, 2008) projections for the Cariboo-Chilcotin indicate an increase in the annual average temperature by an average of 1.8°C by the 2050s, and by an average of 2.6°C by the 2080s, compared to baseline data from 1961-1990. It is anticipated that winter temperatures will increase more than summer temperatures.
- **Changes in Precipitation** - Pacific Climate Impacts Consortium (Dawson, Werner and Murdock, 2008) projections for the Cariboo-Chilcotin indicate a decrease in precipitation as snow by 9% in winter and 55% in spring by the 2050s, and by 11% in winter and 75% in spring by the 2080s, compared to baseline data from 1961-1990. Overall precipitation patterns are mixed for the region, but less precipitation as snow and more as rain is the most significant change projected.



CURRENT SERVICE	IMPACT OR VULNERABILITY DUE TO A CHANGING CLIMATE
Planning	<ul style="list-style-type: none"> • Increased importance of planning to identify areas appropriate for development • Increased reliance to coordinate local government services
Airport	<ul style="list-style-type: none"> • Decreased number of commercial flights able to land • Decreased life span of runway infrastructure from increased freeze-thaw cycles • Increased use of salt and de-icers
Snow clearing	<ul style="list-style-type: none"> • Increased annual variability in snowfall will create budgeting difficulties • Warmer winters with less snow, and increased frequency of rain/freezing rain/mixed precipitation events will require more salt and de-icers
Roads/streets	<ul style="list-style-type: none"> • Decreased life span of roads and sidewalks from increased freeze-thaw cycles, and increased amount of salt and de-icers used • Increased need for dust control during drought or winter inversions
Invasive plant management	<ul style="list-style-type: none"> • Increased demands for invasive plant management services due to increased spread of invasive species

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Economic development	<ul style="list-style-type: none">• Increased need for economic development to capitalize on the positive aspects of a changing climate (e.g., agricultural opportunities due to longer growing seasons, agricultural composting business opportunities, recreation-related opportunities with shorter winters/ longer summers, bioenergy, etc.)
Water	<ul style="list-style-type: none">• Decreased water supply in late summer as a result of earlier spring freshet• Cumulative effects of upstream activities and changes in hydrology will be exacerbated, and continue to affect downstream municipal water supply• Local interaction between surface water and groundwater systems• Increase in treatment costs to supply water when quality has decreased
Sewer	<ul style="list-style-type: none">• Shallow sewer systems or those in proximity to natural features may cause concern
Storm water	<ul style="list-style-type: none">• Increased spring freshet volume will strain capacity of storm water systems causing local flooding, and may damage the infrastructure• Decreased life span of storm water systems from higher use of salt and de-icers on roads
Protective and emergency services (fire protection, search & rescue, 911)	<ul style="list-style-type: none">• Increased demand on emergency management services and related social services as a result of increased frequency and intensity of forest fires, spring floods, landslides in unstable areas and avalanches• Increased training demands to increase emergency response capacity in local government or volunteers
Police	<ul style="list-style-type: none">• Increased demand for police in rural areas during forest fires, spring floods and emergency events to enforce evacuations and provide communication and safety to residents
Parks	<ul style="list-style-type: none">• Increased management needed due to pressures from invasive plants, flooding, longer recreation season, and impacts on park infrastructure
Solid waste management	<ul style="list-style-type: none">• Increased demand for management of woody debris as a result of interface fire treatments, and invasive plant management
Communications	<ul style="list-style-type: none">• Increased demand on communication services as a result of increased frequency and intensity of forest fires, spring floods
Health services	<ul style="list-style-type: none">• Increased frequency and intensity of respiratory issues due to poor air quality during forest fires or prolonged drought/dusty conditions in summer or during winter inversions• Increased summer temperature will lead to increased incidence of heat stroke• Introduction of new diseases such as West Nile virus



AREA OF OPPORTUNITY	OPPORTUNITY TO ADDRESS A CHANGING CLIMATE
Settlement patterns	<ul style="list-style-type: none"> • Add density to downtown areas to reduce reliance on automobiles • Establish bike trails for commuting • Limit urban growth to areas where existing services are already in place to avoid urban sprawl • Ensure future settlement areas are located where the land is suitable (i.e., not ALR) and sufficient water resources exist • Address limits to development given natural resources
Transportation infrastructure	<ul style="list-style-type: none"> • Minimize road & other infrastructure development by utilizing existing transportation corridors
Environmentally sensitive areas	<ul style="list-style-type: none"> • Protect and restore degraded ecosystems, with emphasis on those with an impact on water • Control point-sources of contamination • Storm water management systems • Improvement districts and private water systems • Map aquifers and assess groundwater – surface water interactions
Agriculture and forest issues	<ul style="list-style-type: none"> • Maintain a secure and productive resource base using policies and bylaws, and direct involvement through management of community forests and other tenures
Economic development	<ul style="list-style-type: none"> • Support existing economic sectors such as forestry, ranching, mining and tourism in future climate scenarios • Identify new and emerging economic sectors that are appropriate with future climate scenarios • Diversify agricultural and processing opportunities • Develop cultural heritage and trail development
Reduction of pollution	<ul style="list-style-type: none"> • Airshed management planning, scrubbers on emissions • Small scale settlement and development planning
Natural hazards	<ul style="list-style-type: none"> • Assess new settlement areas for natural hazard risks (i.e., landslides, erosion, flooding, interface fire) to minimize risks • Develop long term plans to move existing settlements away from known natural hazard areas based on level of risk (i.e., Green Acres trailer park in Williams Lake, West Quesnel land instability, Cottonwood River erosion) • Restore, remediate and mitigate natural hazards
Energy supply	<ul style="list-style-type: none"> • Develop shared heating/cooling that recaptures lost energy or is based on renewable sources • Explore the possibilities of bioenergy and geothermal potential
Cultural heritage	<ul style="list-style-type: none"> • Learn how early pioneers adapted to a changing climate in the past • Explore potential economic development
Tax base and revenue sources	<ul style="list-style-type: none"> • Ensure stable tax bases and revenue sources that are required to replace the anticipated downturn in the forest industry. This strategy could provide the basis for a funding request from federal or provincial government
Intergovernmental service delivery	<ul style="list-style-type: none"> • Improve efficiency to address significantly reduced local government revenue sources as a result of a decreased tax base, and to avoid forced sharing of services, or a reduction in the kinds of services provided



Adaptation Actions

As the Cariboo Regional District undertakes a Regional Development Strategy (RDS), which is a non-legal plan but similar in scope to a regional growth strategy under the Local Government Act, an assessment was made of the 14 matters required for inclusion in a regional growth strategy, as per section 849 of the Act.

The strategy includes 108 recommendations on ways to address climate change in delivery of services, and opportunities to proactively address climate change in the regional development strategy. The strategy also includes examples of how adaptation is currently being addressed in other regional or community plans and processes, such as Official Community Plans, emergency plans and services, infrastructure operations and maintenance and others.

A Planners' Working Group, with planning staff from the cities of Quesnel, Williams Lake, the District of 100 Mile House and Cariboo Regional District, was formed as a result of the development of the project. This has led to increased communication and cooperation regarding all planning initiatives between the different local governments, even beyond climate change adaptation.

Lessons Learned and Recommendations

The steps followed in the development of the strategy were as follows:

Learn - what is each community doing around adaptation, how do they want to be involved, what services do they provide, what are the projected climate change scenarios for the region.

Share - through multi-jurisdictional workshops, share local knowledge about sub-regional variations to climate change, which services are vulnerable to a changing climate, how can a RDS help local governments adapt to a changing climate.

Plan - summarize what was heard and develop the strategy to feed into the RDS and current plans and operations.

This case study was the first regional district-wide approach to address adaptation. As such, the following lessons were learned and are offered to other regional districts as they address their own adaptation plans and approaches:

- Utilize credible, science-based projections for future climate scenarios, while bearing in mind that they are only projections, and cannot be relied on as fact.
- Engage at the lay-person level, and keep interaction accessible. Do not intimidate people with overly complicated and technical jargon, graphs and statistics.
- Utilize citizen science: recognize that people like to talk about the weather, and ask people to verify their projections by ground-truthing with their own observations and experience.
- Make it relevant: recognize that local governments have always been adapting, and continue to adapt to a changing climate in their operations and planning. Identify tangible issues that they can relate to.
- Clearly differentiate adaptation versus mitigation, while pointing out that they are not mutually exclusive.
- Recognize that there are different impacts and vulnerabilities in municipalities versus regional districts, based on different services provided and varying geographic scales.
- Collaborate with member municipalities of regional districts. Capitalize on the opportunity to work on a tangible project to address issues that cross-administrative boundaries (i.e., a Planners' Working Group consisting of the planners of all local governments was convened to act as a steering committee for the project).

Budget and Timeline Followed

The strategy was developed over a 2-year period, starting in August 2009 with scoping and defining deliverables with Cariboo Regional Development staff. Workshops were held in fall 2010 and spring 2011, and the Strategy was completed and adopted in September 2011. The budget for the Strategy was \$45,000; with cash contributions from Natural Resources Canada, and in kind donation of time from Cariboo Regional District staff and elected officials.

References

Dawson, R.J., A.T. Werner, T.Q. Murdock. 8 Sept 2008. Preliminary analysis of climate change in the Cariboo-Chilcotin area of British Columbia. Pacific Climate Impacts Consortium. Downloaded 9 September 2008 from <http://pacificclimate.org/sites/default/files/publications/Werner.ClimateChangeCaribooChilcotin.Sep2008.pdf>

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