

Climate Change Adaptation Research For Forest and Rangeland Ecosystems: Resiliency Implications at the Landscape Level

Project Abstract
May 15, 2012

1. TOPIC

We conducted landscape level, forest management research in the South Selkirk region of BC with an eye to identifying recommendations about operational practices that will foster resiliency in adapting to climate change. We examined resiliency across three dimensions: the *Human Resiliency Dimension*, the *Ecological Resiliency Dimension*, and the *Economic Resiliency Dimension*. The focus of this research was the resiliency of social and ecological systems to potential climate change outcomes and implications in the South Selkirks region.

1. *Ecological Resiliency Dimension*. This dimension examined projected climate change scenarios and recommended adaptation practices that encourage resiliency while maintaining ecosystems.
2. *Human Resiliency Dimension*. This dimension explored which adaptation practices maintained or enhanced existing social and cultural values from both Aboriginal and non-Aboriginal perspectives.
3. *Economic Resiliency Dimension*. This dimension investigated the economic resiliency of lumber firms in the Kootenays Region.

Our approach involved assessing potential climate change impacts on the relationships between people, forests, water, land, air, plants and animals – thereby, honouring the strengths of sharing, acknowledging and utilizing indigenous science and Western science approaches in understanding the changing climate. We utilized a mixed methodology approach. Quantitative methods included predictive modeling techniques and public opinion surveys, while the use of qualitative methods (*i.e.*, observation, in-depth interviews) assisted the team in understanding the human behaviour and cultural context to climate change adaptation in the study area – particularly as it related to understanding Aboriginal perspectives about potential climate change outcomes.

2. TEAM

John Innes (PI), Faculty of Forestry, UBC
Bill Bourgeois, New Direction Resource Management Ltd.
Carmen Cadrin, BC Ministry of Environment
Natasha Caverley, Turtle Island Consulting Services Inc.
Howie Harshaw, Faculty of Forestry, UBC
Walt Klenner, BC Ministry of Forests, Lands and Natural Resource Operations
Ajit Krishnaswamy, FORREX
Gerald Legare, Métis Nation BC – Kootenays Region
Dominique Sigg, BC Ministry of Environment
Curtis Wullum, St. Mary's Indian Band/Ktunaxa Nation

Partners

Kalesnikoff Lumber Co. Ltd.
Columbia Basin Trust
Nature Conservancy of Canada – BC Region
BC Hydro

3. PROJECT OBJECTIVES

1. Increase understanding of how forests and range, and the people and communities associated with them may be affected by climate change over time.

2. Application of climate change projections in southern British Columbia.
3. Identify adaptive methods for climate change.
4. Research of socio-economic consequences of climate change.
5. Identify links to policy and practice.

4. KEY MESSAGES FROM PROJECT OUTCOMES

1. We are not doing enough monitoring and, as a result, we do not have a clear picture of the state of our resources.
2. Even if we did have a clear picture of the state of our resources, the trust placed in different information sources is variable: 84% of people trust scientists, whereas 76% distrust politicians as a source of information.
3. The future nature of climate change and about the effects that it will have is uncertain. However, this should not be cause for inaction. There are a number of strategies that could be taken.
4. We will not be able to maintain the *status quo*. It will be necessary for many residents to find a new balance: Some things will have to be given up, and new initiatives will need to be identified.
5. The people of BC are resilient and adaptable; these characteristics need to be supported and maintained.

5. KEY RECOMMENDATIONS TO KNOWLEDGE USERS

In keeping with the holistic approach that framed this research, recommendations are presented based on investigations of the *Ecological, Human, and Economic Resiliency Dimensions*.

5.1. Ecological Dimension Recommendations

In general, the uncertainty and unpredictability of weather trends in the South Selkirks region and their ecosystem effects continue to hamper attempts to make ironclad recommendations to ecosystem managers about adaptability. The following four recommendations address the imperative of adapting to uncertainty.

1. Use harvesting and stand techniques that help seedlings to survive.
2. Match species to optimal environments; reduce forest susceptibility to insects, disease and fire.
3. Plan landscapes in patterns that enable species to move.
4. Finally, forest management policies should be modified as much as possible to reflect climate change.

5.2. Human Resiliency Dimension Recommendations

Seven recommendations that are a result of the Aboriginal component of the *Human Resiliency Dimension* studies are identified below.

1. Develop a consistent set of human resiliency measures or indicators (*e.g.*, measures on language, laws, governance, lands, community health and well-being and economic diversification) for climate change adaptation to effectively monitor human systems and sustainability as the climate changes in the region.
2. Integrate cultural values into clearly defined climate change adaptation objectives – including resources (human and financial) for Elder and Youth engagement, language preservation and cultural revitalization.
3. Work with Aboriginal communities to engage Knowledge Keepers as local observers for climate change and related ecological monitoring initiatives and aid in prioritizing monitoring needs in the region.

4. Broaden the understanding and research on climate change to include localized knowledge (*i.e.*, traditional knowledge) and indigenous science alongside and equal to western science to expand the depth and breadth of adaptive capacity; and localized decision-making and adaptation strategies to maximize community engagement and access to traditional knowledge to ensure that cultural values and practices inform decision-making in the region.
5. Expand the climate change knowledge base and distribution of information through proactive and full engagement of Aboriginal people in climate change adaptation decision-making from research analysis to the design and implementation of adaptation strategies.
6. Utilize existing communication methods in Aboriginal communities in the South Selkirks region to grow capacity, knowledge and understanding about climate change, which includes framing information and customizing messages, concepts and diagrams based on Aboriginal communities in the region.
7. Develop equitable partnerships and collaborations within Aboriginal communities in the South Selkirks region and with strategic partners (*e.g.*, municipal/provincial/federal governments, industry and academia) as a lever to share resources (financial and human resources and infrastructure) in collectively addressing climate change effects in the region.
8. Provide opportunities and support the development and maintenance of skills, knowledge, and creativity for community members.
9. Continue to involve local citizens in community and landscape planning.
10. Support the building of relationships between community members to foster trust and productivity.
11. Diversify sources of local income.
12. Provide local access to natural resources.
13. Promote local control of natural resource-based businesses.

5.3. Economic Resiliency Dimension Recommendations

Based on the resiliency demonstrated by the forest industry in the South Selkirks region during the 1980s, three recommendations can be made.

1. Diversify product lines and support product specialization.
2. Continue to support local access to natural resources.
3. Promote local control of natural resource-based businesses. Smaller local firms may be more agile in responding to changing ecological conditions and constraints.