

ACT

Adaptation
to Climate
Change Team



Presentation to AWRA, September 12, 2012

Climate Change Adaptation and Governance Responses in BC

Deborah Harford

Executive Director

ACT (Adaptation to Climate Change Team)

SFU

BC Climate Change Impacts: Examples



Biodiversity:

Mountain pine beetle

Fish: high temps/low water levels

Tree species shifting ranges

Health threats, e.g. *Cryptococcus gattii*

Extreme weather:

Flooding

Wildfires, heat extremes & drought

Storms and storm surge

Water quality, quantity and temperature

Food supply/crop impacts

Infrastructure damage/power outages

Industries affected:

Insurance (risk price signal distortion/flooding)

Mining/oil & gas

Real estate/development

Farming

Forestry

Utilities

Tourism

Complicating Factors and Known Needs

Complicating Factors:

- Loss of stationarity
- Tipping points?
- Connectedness of events/effects
- Absence of data, e.g. groundwater mapping and water monitoring
- Wholesale dismantling of environmental/science resources in Canada

Known Needs:

- Enhanced water storage to offset low summer flows/loss of cryogenic storage
- Flexible approaches that allow for uncertain futures and updating
- Conservation and demand-side management of all consumption
- No regrets responses
- BC Water Act Modernization



Aspects of Vulnerability

The extent of damage from climate change depends to a great extent on **vulnerability**:

Exposure

- E.g. geography/energy infrastructure

Sensitivity

- E.g. vulnerable population groups/continuity of systems

Adaptive capacity

- Information
- Expertise and networks
- Fiscal capacity
- Political support



Key Adaptation Principles

ACT identifies five key principles of adaptation policy:

- Intergovernmental collaboration
- Stakeholder engagement
- Assessment of current and future risk (exposure, sensitivity, adaptive capacity)
- Acting strategically
- Mainstreaming



Adaptation Approaches

Share loss	Spread losses among wider population	<ul style="list-style-type: none">· Insurance· Relief and rehabilitation programs
Modify events	Implement measures to control or contain hazards	<ul style="list-style-type: none">· Flood protection (dykes; levees)
Prevent effects	Protect people and systems from hazards	<ul style="list-style-type: none">· Land-use regulation· Warning systems
Reduce impacts	Build resilient infrastructure; reduce demands on infrastructure to free up capacity	<ul style="list-style-type: none">· Increase robustness· Plan for swift recovery· Water or energy conservation
Change location	Relocate people and property from hazard-prone areas	<ul style="list-style-type: none">· Incentives to relocate· Public acquisition of exposed properties
Research	Invest in research to identify new adaptation methods	<ul style="list-style-type: none">· Pilot projects· Engineering research for code development
Education	Information and public education campaigns to encourage behavioural change	<ul style="list-style-type: none">· Website; pamphlets· Seminars; workshops

First Nations Climate Change Adaptation



Challenges – examples:

- Problems finding traditional plants
- Changing ranges of country food
- Water quality – boil water advisories
- TK not respected by western science
- Not included as partners in decisions
- Lacking resources in face of impacts

Responses – examples:

- Hupacasath: fish management
- Changing practices
- Working to improve representation

First Nations Climate Change Adaptation



Ktunaxa Nation members 1914

Ktunaxa CRT statement released July 2012:

- *Salmon used to provide an important part of our diet. Efforts to restore salmon need to be linked to the renewal of the CRT.*
- Management of the Columbia River system needs to be improved to better protect cultural heritage resources.
- Libby Dam directly affects two Ktunaxa communities: the Tobacco Plains Indian Band and the Lower Kootenay Indian Band and should be brought within CRT co-management arrangements.
- *The Columbia River system needs to be managed to protect ecosystems as well as provide power and flood control benefits.*
- The Ktunaxa Nation seeks to share in the economic benefits, which currently flow to the government of BC (e.g. downstream power benefits).

Provincial Adaptation: BC Government

Building capacity:

- Pacific Institute for Climate Solutions (PICS)
- Pacific Climate Impacts Consortium (PCIC)

Mainstreaming adaptation into programs and policies:

- Adaptation Strategy (knowledge, mainstreaming, sectoral initiatives)
 - BC Agriculture Climate Action Initiative
- Living Water Smart
- Water Act Modernization?

Working with other governments:

- The thirteen provincial/territorial Premiers working through the Council of the Federation to prepare for climate change, with an emphasis on forests and water.

Federal funding:

- NRCan RAC funding and 2007 National Assessment
- INAC/AANDC Adaptation Fund

Municipal/Regional Adaptation Examples



Municipal:

- City of Vancouver: First to ratify adaptation strategy in BC
 - (power, flooding, sewer upgrades, coastal reinforcement, heat)
- City of Elkford (CBT CACCI \$): OCP recognized by UNFCCC
- Delta, Richmond, North/West Vancouver: Coastal and riverine reinforcement, emergency planning
- Prince George (RAC \$): Forests, flooding, transportation infrastructure

Regional:

- Okanagan Basin Water Board (municipal tax \$ - FN issues)
- Fraser Basin Council (BC RAC host, lower Fraser mun. group, FN)
- Columbia Basin Trust (CRT/BC Hydro \$, FN)

CCA Governance Challenges for BC



- New watershed-scale governance efforts
 - Effective (ground)water mapping/monitoring
- Communication and education (e.g. loss of stationarity)
- Overcome endemic lack of capacity
 - Finances for adaptation (e.g. carbon tax?)
 - Compensate for lack of federal leadership/resources
 - Coordination between all four levels of government
- Mobilize profession(al)s as change agents
- Acknowledge First Nations as partners in decision-making
- Understand “social vulnerability”

Key Policy Considerations for CRT



- Healthy ecosystems play a key role in adaptation
- “Salmon forest” (new annual Salmon Festival in Invermere)
 - Climate changes accelerating? Arctic?
 - Population increasing
 - Region shifting from mining to tourism
 - = Changes in flows plus energy demand
- Increased flooding/storage = loss of ag/cultural land?
- Supports aspects of proposed BC Water Act Modernization
- Must educate all of BC not just Columbia Basin
- Agreement must be “adaptable” – regular updates on CCA

ACT

Adaptation
to Climate
Change Team



For more information about ACT, our policy reports, and adaptation resources, please go to:

www.sfu.ca/act

ACT thanks past and present partners:

Wilburforce Foundation, Bullitt Foundation, Zurich Insurance, BC Ministry of Environment, AMEC Engineering, BC Hydro, Plutonic Power and the Real Estate Foundation of BC.