Climate Change Adaptation and Sustainable Forest Management in Canada

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Presentation Outline

1. Canadian Context
   - Forests
   - Forest Fires

2. The Case for Climate Change Adaptation in Canada’s forest sector

3. “Guiding” adaptation of Sustainable Forest Management

4. FireSmart: A no-regret adaptation option

5. Key Messages and Learnings
Canadian Context
Canada is a Forest Nation

**Forest Ownership**
- Provinces/Territories 90%
- Federal 2%
- Aboriginal 2%
- Private 6%

**Forest Attributes**
- 9% of world’s forest cover
- 347 M ha of forest (mainly boreal)
- 168 M ha certified managed forest
- 20% of world’s fresh water
- Forestry account for 7% of Canada’s trade
- Employs 211,000 people, including 9700 Indigenous people
- 140,000 plant, animal and micro-organisms
Canada is a Forest Fire Nation
Wildfires are natural part of Canada’s forest ecosystems
Canada is a Forest Fire Nation

- 7000 of fires per year
- 55% fires are caused by people; 45% by lightning
- Annual area burned = 2.7 M ha (range 0.3-7.5 M ha)
- 3% of fires escape initial attack
- Average suppression costs - $800 M/yr
The Case for Climate Change Adaptation in Canada’s Forest Sector
Case for Adaptation in Canada’s forest sector
Impacts on forests are already evident (Price et al 2013)
Case for Adaptation in Canada’s forest sector
Consequences are emerging

Affecting industry competitiveness
eg increased operating costs due to shorter winter harvesting; loss of winter roads; regeneration failure; safety of operations (woodlands/mills); more difficult to access to new capital

Affecting quality and quantity of ecological goods and services
(positively or negatively based on location)

Affecting forest-based communities
eg from wildfires and other natural disturbances
Climate change exacerbates wildfire frequency and intensity

1961 - 1990

2041 – 2070

RCP 8.5

Boulanger et al. 2014
Case for Adaptation in Canada’s forest sector
Disturbances may trigger or accelerate ecosystem transition

Wildfires in short succession destroy seed source in pine

Spruce converted to aspen parkland
Adapting to Climate Change
It’s a whole new ball game

“The future ain’t what it used to be!”
Yogi Berra

“Many important economic and social decisions are being made today on long-term projects...based on the assumption that past climate data...are a reliable guide to the future. This is no longer a good assumption...”

UNEP/WMO/ICSU Conference, Villach, Austria 1985
“Guiding” Adaptation in Sustainable Forest Management
2008 – Premiers ask their Forest Ministers to collaborate with the federal government on adaptation.

2009-2014 – CCFM Climate Change Task Force (Technical Experts)
CCFM Climate Change Task Force
Providing a foundation, framework, and guidance for adaptation

10 reports
(available at www.ccfm.org)
CCFM – Forest Adaptation Guidebook
Assessing Vulnerability and Mainstreaming Adaptation into Decision Making (Jason Edwards et al 2015)

- Comprehensive
- Structured
- Practitioner-friendly
- Management objectives based
- Uses scenarios
- Considers biophysical as well as human factors
A simplified version of the adaptation policy assessment approach (after Fussel and Klein 2006)
CCFM – Forest Adaptation Guidebook
Involves Four Stages and Six Steps
Case Studies – Early Adopters
Incorporating CC into Forest Management Planning

Contact: Paul Nikiema

http://norsask.ca/responsibility/norsask-and-mistik/

Contact: Sheri Andrews
Knowledge Exchange
An Essential Ingredient of adaptation

Workshops

Field Tours

On-line Community of Practice
FireSmart: A No-Regret Adaptation Option

"FireSmart is living with and managing for wildfire on our landscape"

www.firesmartcanada.ca
Seven Disciplines of FireSmart

- Legislation & Planning
- Development Considerations
- Emergency Management
- Education
- Vegetation Management
- Interagency Cooperation
- Cross Training
Canada has a lot of Wildland-Urban Interface (WUI)

3.2 M ha of WUI (Johnson & Flannigan 2017)

Average of 20 communities and 70,000 people affected annually

Billions of dollars in operations and losses
Fire Suppression has its limits

“It is neither economically possible nor ecologically desirable to eliminate all fire from the landscape”

*Stocks and Simard 1993*
Wildfire Threat

is not a question of IF but WHEN

Communities with substantial wildfire threat
FireSmart
Does it Work?
It’s a matter of probabilities

Hazard Factors

• Fire Intensity
• Attendance
• Roof material/pitch
• Wall material
• Flammable objects & Plants near home

Wilson and Ferguson 1986
Ft. McMurray:
Homes with Lower Hazard Scores Survived (more often)
Mesa Verde National Park, Colorado

Hazard Reduction + Effective Suppression = Value Protection
Key Messages and Learnings

- Adaptation occurs locally but is enabled by all levels
- Implementing adaptation requires changing human perspectives, systems, and approaches
- Informal adaptation is constantly occurring
- Operational forestry staff already know many of the options/solutions
- Successful adaptation requires leadership, commitment, perseverance and it must be practical and operationally relevant
Obrigado