Climate Change and Clearwater

Project team members

Cindy Pearce

Dr. Stewart Cohen

Cam Brown, RPF

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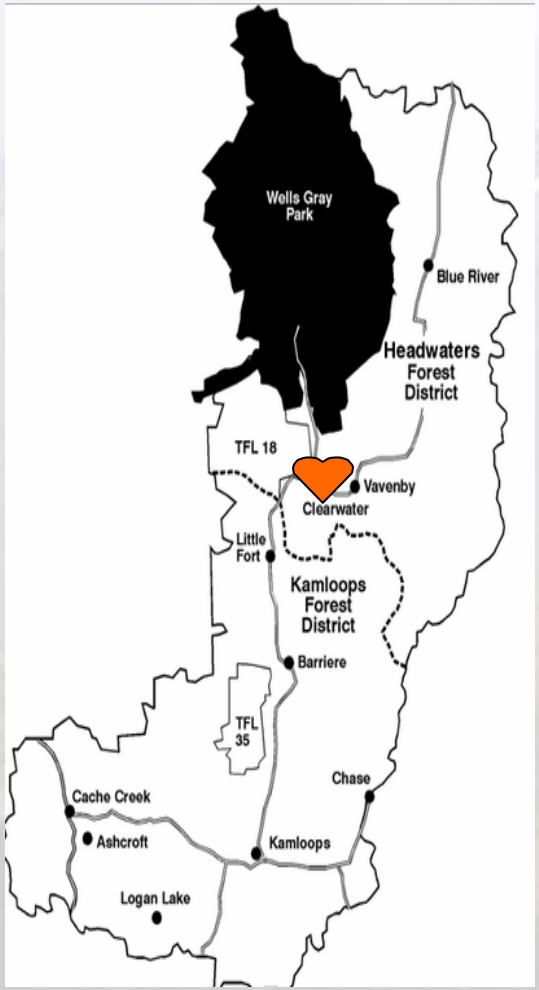
K2 – Kamloops Timber Supply Area Future Forest Strategy



- Provincial pilot
- Started in 2008
- Explored climate change ‘weak spots’ and recommended actions
- Continuing into 2011

Why we've Come to Clearwater

'*It is imperative that our community understands and carefully examines the implications of climate change.'*

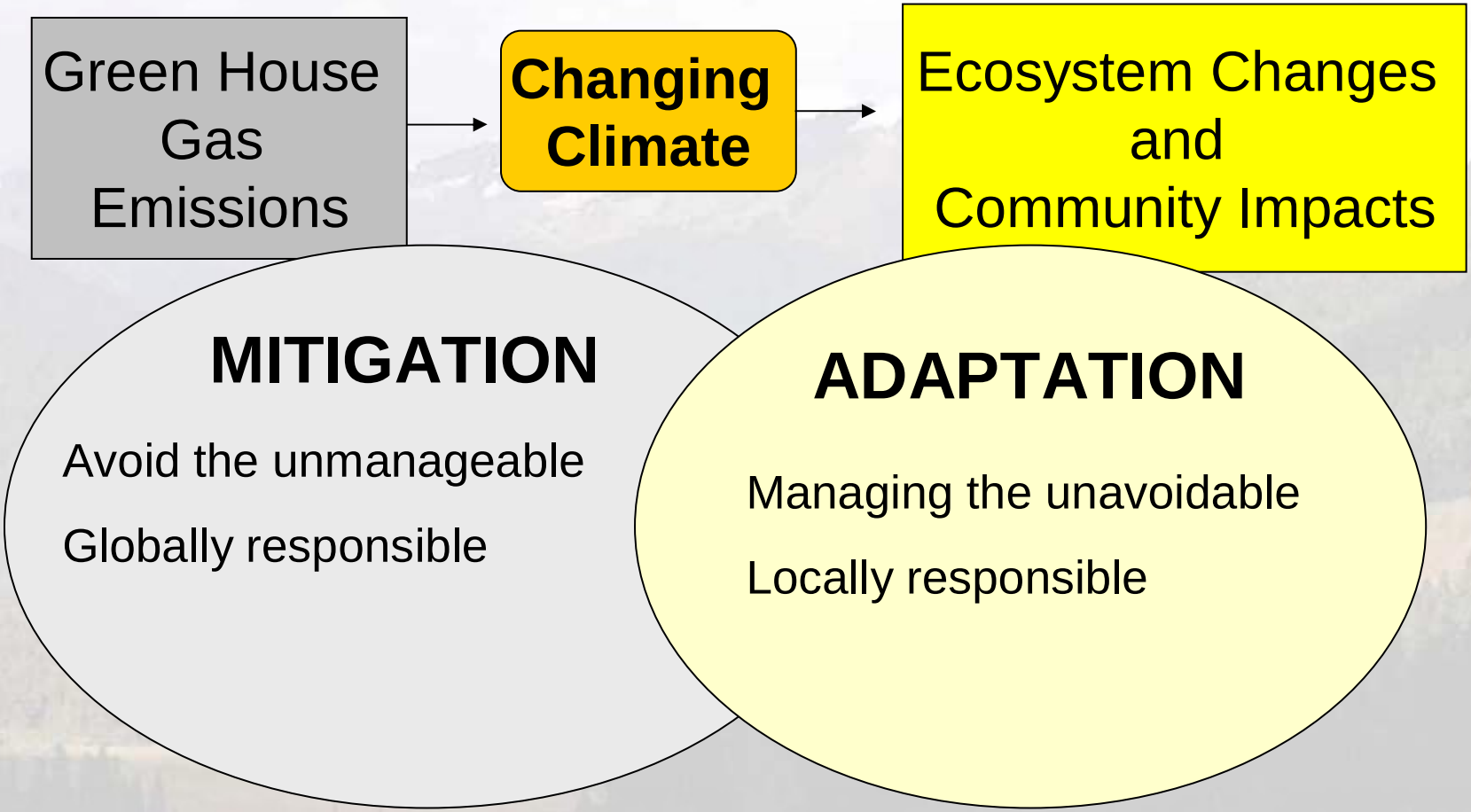
Mayor John Harwood

Tonight

- Introduce the community to the initial findings from the project
- Hear about the kinds of changes you are seeing – *Are they the same? Or different?*

Tomorrow – Discussions with community groups

2 Aspects of Climate Change



Agenda

Stewart Cohen – *Climate Change 101 with Q&A*

Break – Beverage, cookies and chat

Cam Brown – *The Influence of a Changing Climate on Forest Ecosystems with Q &A*

Stephanie – *Closing*

Time to continue the chat

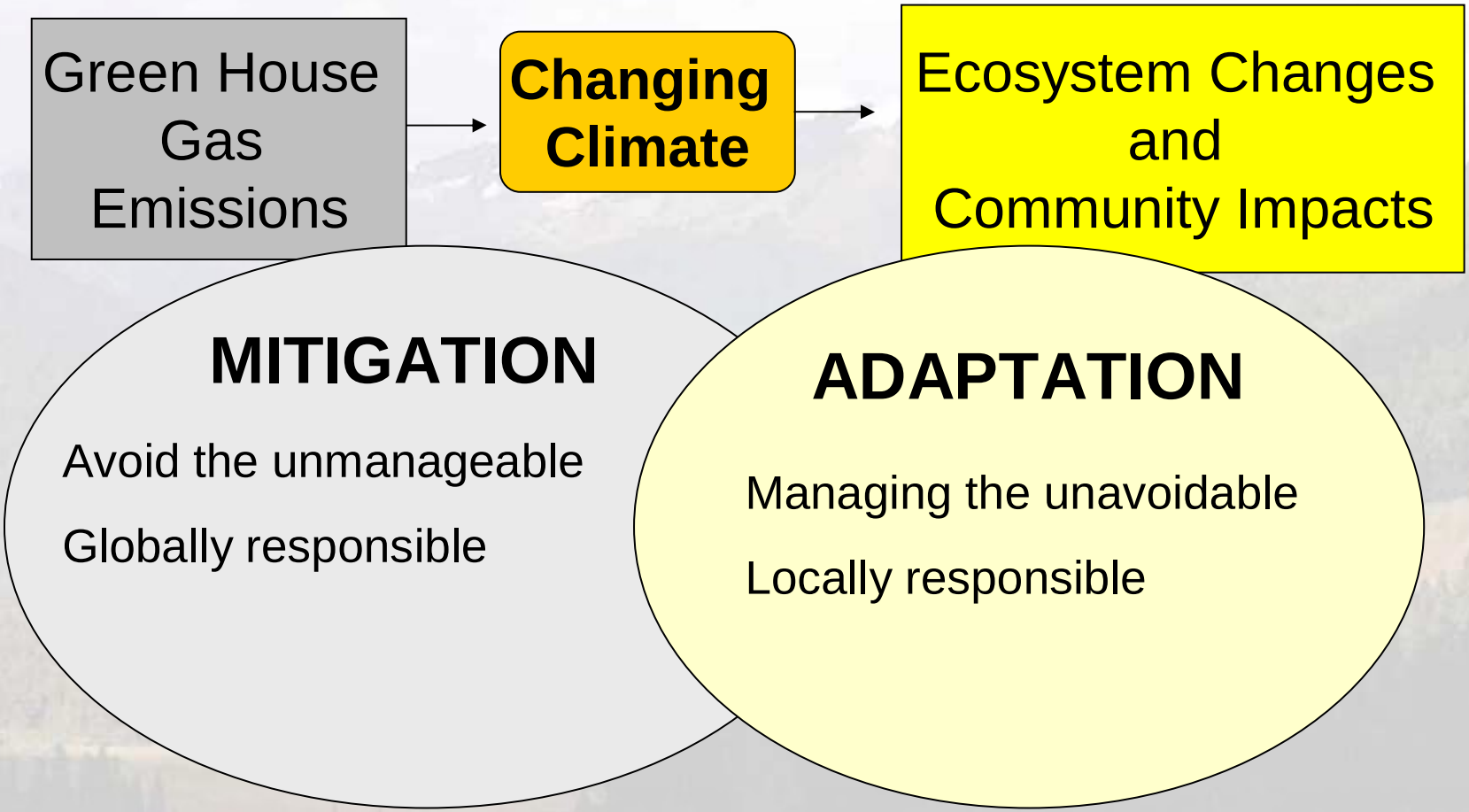
What's Happening Tomorrow?

- Meeting with community groups to discuss information in more detail
- Decide whether groups want to examine impacts further
- Groups are: forestry, tourism, Official Community Plan Steering Committee and Council and winter outdoor recreation

And we'll be back next year!!

OCP meeting slides

Mainstreaming CC in Your OCP



CC Adaptation for OCP

- Potential climate change impacts:
  - flooding/landslides
  - wildfire
  - extreme storms disrupting services
  - water shortages
  - economic

Integrating climate action in local government decisions/actions

- Land Use Planning: OCP & zoning
- Taxation (including incentives)
- Building Codes & Design Standards
- Utility Rates/Fees
- Public Safety Rules & Regulations
- Infrastructure Design & Upgrading
- Community Visioning
- Emergency Management
- Permitting & Bylaw Enforcement
- Management Practices
- Operational Plans
- Contracts, Tenders & Special Projects
- Outreach & Education
- Staff Training, Hiring, Development
- Monitoring & Reporting

Basis for Possible Future Liabilities

- Development approvals in flood prone or other at-risk areas
- Adequacy of building standards to withstand extreme weather events
- Responsibility for erosion, land slides etc, resulting from extreme weather events
- Adequacy of emergency procedures & preparedness
- Failure to undertake disease prevention programs
- Failure to preserve 'public' natural assets in the face of climate change

Source: **Climate Change: What Are Local Governments Liable for?** By Philippa England, Urban Research Program, Issues Paper 6, March 2006

What's next?

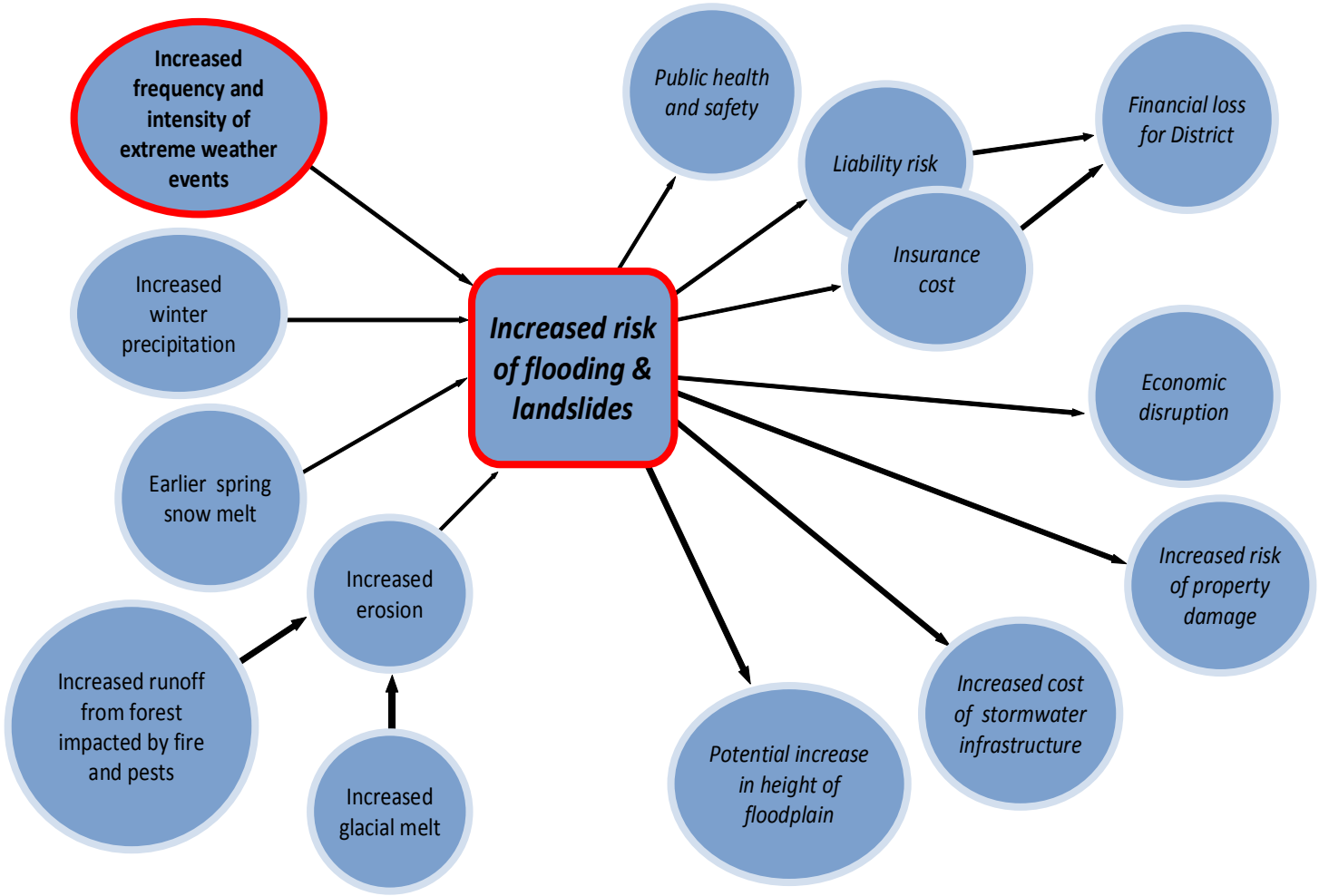
- K2 project is committed to returning to Clearwater next year to update you about our findings

For NOW?

- You have enough information?
- More info/discussion/impact mapping to understand local impacts?
- Vulnerability assessment to create adaptation goals/strategies (Elkford eg.)?

Flooding & Landslides

Elkford Impacts and Opportunities



Find ‘Weak spots’

Table 5- Determining Sensitivity- Sample Evacuation Risk Table

Determining Sensitivity			
Wildfire Risk Topic	**Current and expected Risk**	**Expected Climatic and Non-climatic changes**	**Degree of Sensitivity (L,M,H)**
	Evacuations limited by single access road into Elkford (Hwy.	Warmer climate, more precipitation in the winter and spring, less precipitation in the summer	

Table 6- Determining Adaptive Capacity- Sample Flooding Risk Table

Determining Adaptive Capacity			
Flood Risk	**Potential Adaptation Actions**	**Barriers**	**Adaptive Capacity (L, M, H)**
	• Maintain existing areas of marshland, forests and parks along the river. • Implement a flood warning protocol to alert residents of projected flood events • Identify ‘no-development’ zones in floodplain		

What to pay attention to first?

Table 11: Flooding Risk Assessment Summary

Vulnerability							
	Very high *(High sensitivity, low adaptive capacity AC)*	• Flooding of buildings and land • Damage to bridge		Damage to bridge	Flooding of buildings and land		
	High (High sensitivity, moderate AC or Moderate sensitivity low AC)	• Pumphouse floods and compromises water supply		Pumphouse flooding			
	Moderate *(Moderate sensitivity and adaptive capacity)*						
	Low *(low sensitivity moderate AC or moderate sensitivity high AC)*	•Stormwater management stress •Death/ injury to river users		Death/injury to river users	Stormwater management stress		
	Very Low *(Low sensitivity, high adaptive capacity)*						
			Unlikely to occur	**May occur once**	**Likely to occur at least once**	**Likely to occur several times**	**Occurs frequently**

Goals, objectives, strategies

Goal	Objective	Strategy Recommendation
Elkford is a Resilient FireSmart Community	Reduce the likelihood of wildfires penetrating the WUI	1. Implement Wildfire fuel reduction program 2. Park and trail development
	Reduce the vulnerability of new developments to wildfire	3. Fire hazard development permit area 4. Update subdivision and servicing bylaw 5. Update zoning bylaw
	Fire resilient homes and buildings	6. Update building bylaw 7. FireSmart education program 8. FireSmart rebate program
	Prepared for wildfire emergencies and evacuations	9. Community evacuation plan 10. Improve firefighting capacity
	Enhance regional forest management and wildfire planning	11. Strengthen partnerships outside the District 12. Community forest
Elkford prepares for and mitigates flood risk	Reduce the vulnerability of infrastructure to flooding	13. Protect key infrastructure located within or near the floodplain from flooding 14. Update the Elk River and Boivin Creek Development Permit Area bylaws 15. Re-designate floodplain 16. Update Road Design Standards: Require water retention or on-site stormwater management techniques
		17. Maximize buffer zones, and allocate flood areas along streams and rivers