

C&I-SFM in a Changing Climate: Challenges to Forest Management and Policy

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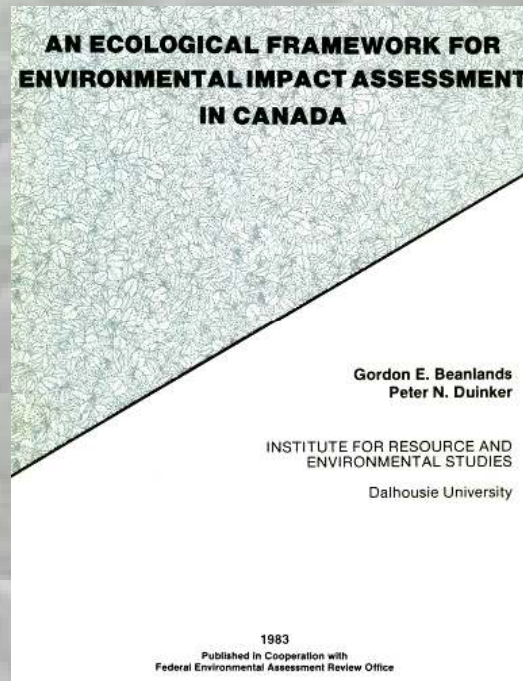


The point of this talk . . .

- **To provoke deeper thoughts, both hopeful and cautionary, about the enterprise of gauging progress in sustainable forest management in the 21st century**

Basis for my thoughts . . .

- 3.0 decades of indicator-related scholarship, starting with:



- 2.5 decades of scholarship on forests and CC

Basis for my thoughts . . .

- **Involvement in creation and revision of the CCFM's C&I-SFM (1995; 2003)**
- **Some recent projects:**
 - **Steenberg, J.W.N., P.N. Duinker, L. Van Damme and K. Zielke. 2011. Indicators of Sustainable Forest Management in a Changing Climate. Report for the Canadian Council of Forest Ministers. School for Resource and Environmental Studies, Dalhousie University, Halifax, NS. 51 pp.**
 - http://www.for.gov.bc.ca/ftp/hfp/external/!publish/web/ffesc/reports/CI-SFM-ClimateChange_FinalReport_111017.pdf
 - **Duinker, P.N. 2011. Advancing the cause? Contributions of criteria and indicators to sustainable forest management in Canada. Forestry Chronicle 87(4):488-493.**

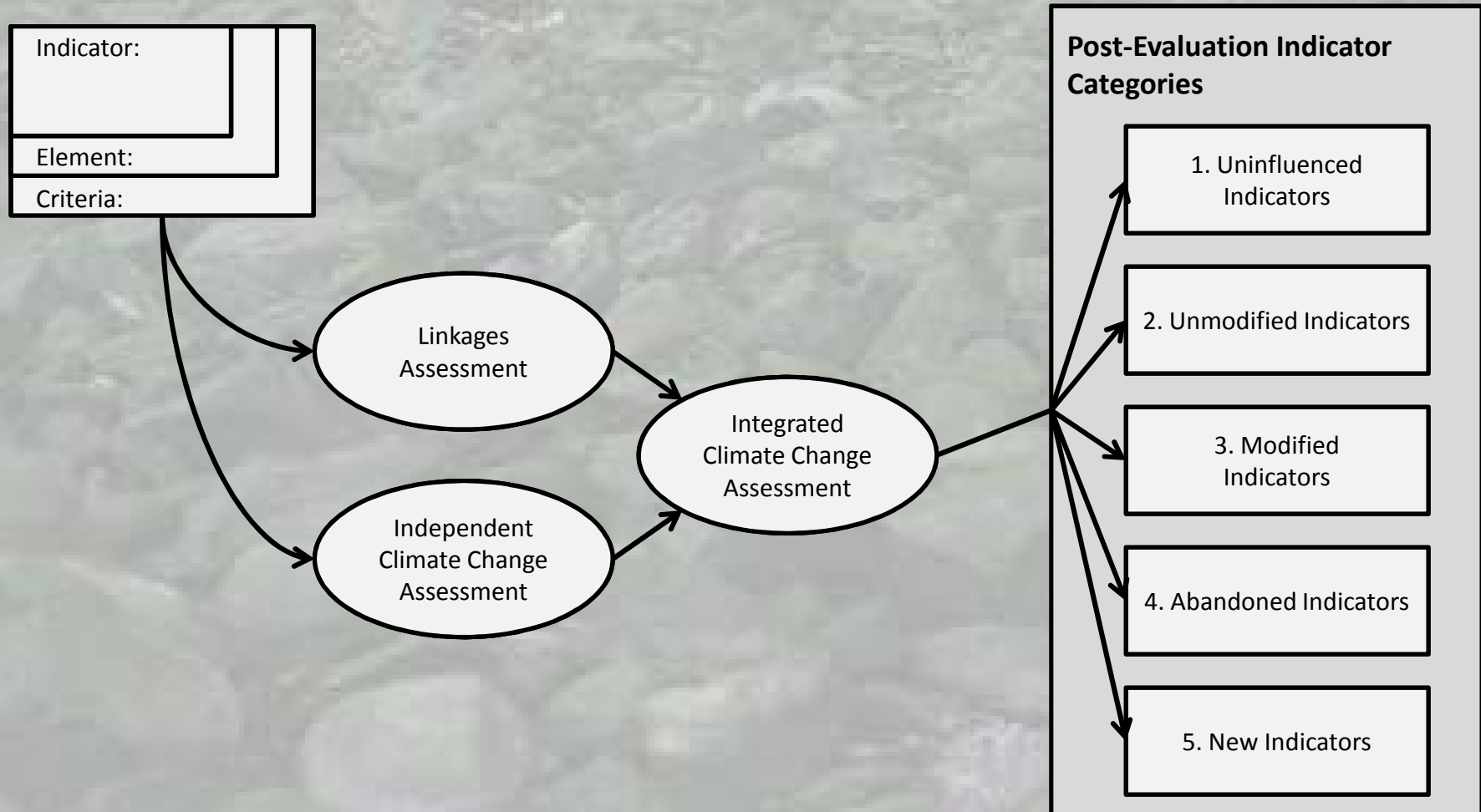
First big question . . .

- **How might ongoing climate change (CC) influence the future utility of the C&I-SFM?**
- **CCFM (2008) dictate:**
 - **“Climate change considerations are included in all aspects of the sustainable management of Canada’s forests”**

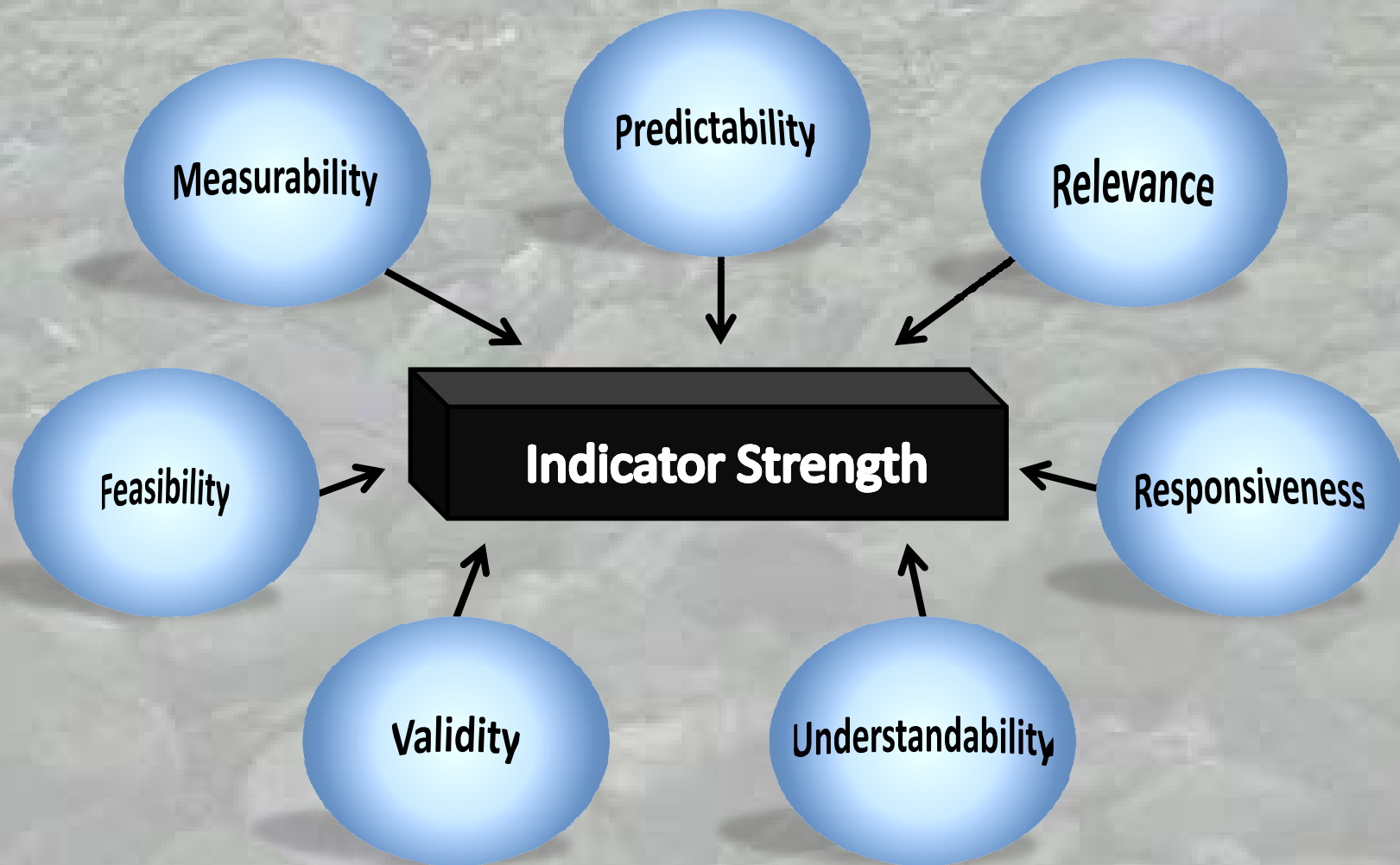
How to tackle this one . . .

- **Linkages Assessment**
 - **Systems thinking approach to C&I-SFM**
- **Independent Climate Change Assessment**
 - **Direct effects of climate change on indicators**
- **Integrated Climate Change Assessment**
 - **Direct and indirect effects via other indicators**

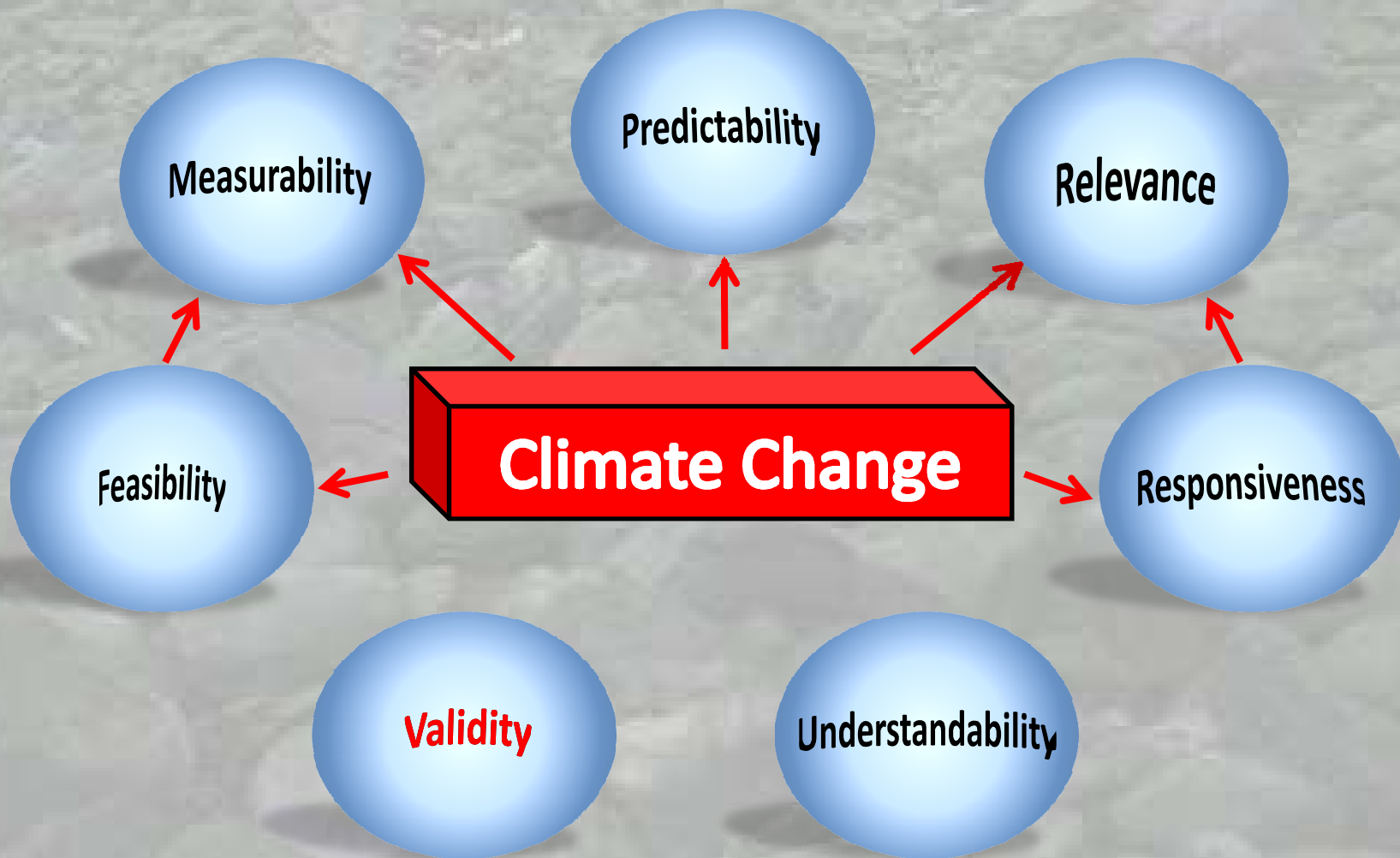
Evaluation Protocol



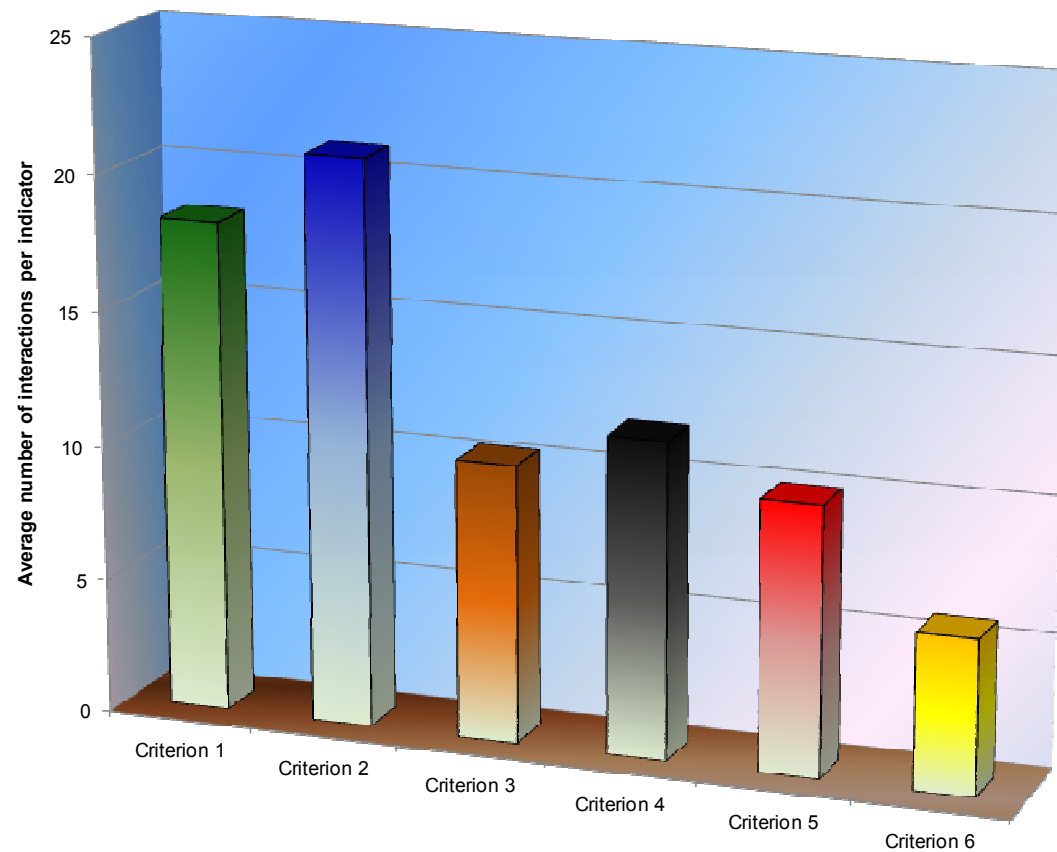
Indicator Traits



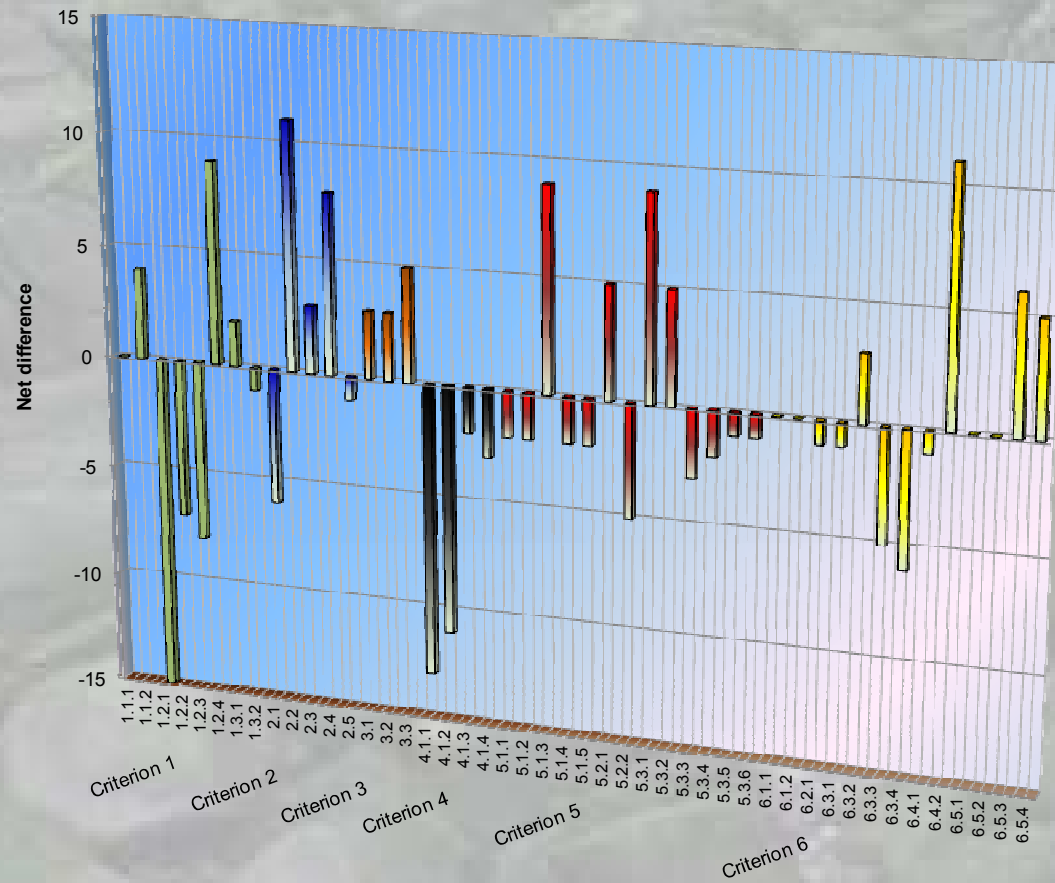
Indicator Traits



Outcomes . . .



Outcomes . . .



Outcomes . . .

Criterion	# Indicators	# Unchanged	# Changed	New?
1. Biodiversity	8	6	2	2
2. Ecosystem Cond & Prod	5	3	2	2
3. Soil & Water	3	3	0	1
4. Global Cycles	4	2	2	2
5. Benefits	13	10	3	0
6. Responsibility	13	11	2	0
TOTAL	46	35	11	7

Outcomes . . .

- **So . . . some fiddling with the indicator set seems warranted . . . or at least some serious conversations about that at the time of indicator revisitation and possible revision**
- **But what about other big questions??**

More big questions . . .

- **What difference might it make to progress in SFM under a changing climate if we ONLY improve the indicator set?**
- **What else is needed to secure forest and forest-sector sustainability as the climate changes?**

CC and Cdn forests & forest sector

- **CC is a major driver (perhaps even THE major driver in the 21st century) of forest condition.**
- **CC influences will be ubiquitous.**
- **CC influences will be hugely variable across Canada.**
- **CC influences have hugely variable paces.**
- **CC's influence pathways are numerous, complex, and cumulative.**
- **CC will act cumulatively also with other drivers of change acting on forests.**

Do we use the indicator set to its full potential?

- **What we do well with the C&I:**
 - **Common framework for organizing value sets**
 - **Broadened and balanced consideration of values**
 - **Look back on progress to date**
 - **Allow them to drive forest management**

Do we use the indicator set to its full potential?

- **What we don't do well with the C&I:**
 - Use them to drive data-collection improvements
 - Use them to evaluate policy effectiveness during implementation
 - Use them to evaluate policy alternatives during development
 - Use them in integrated systems analysis
 - Use them outside of timber-producing forests (e.g., protected areas, urban forests)

Back to the big questions . . .

- **What difference might it make to progress in SFM under a changing climate if we ONLY improve the indicator set?**
 - **This is a small necessity and thus hardly sufficient**

Back to the big questions . . .

- **What else is needed to secure forest and forest-sector sustainability as the climate changes?**
 - **Fix all the don't-do-wells from slide 17:**
 - **Improve data-collection systems**
 - **Put them to more rigorous in forest policy processes, particularly in prospective work**
 - **Undertake integrated systems analysis**
 - **Apply them to all forests**

Back to the big questions . . .

- **Is there more ???**
- **Of course . . .**
 - **Mainstream CC into all forest thinking**
 - **Make CC considerations a pervasive mindset, as pervasive as CC itself**
 - **Innovation in adaptation**

Conclusions . . .

- We have **SO** much work to do to make C&I work better for SFM, and even **SO MUCH MORE** to make them work well under CC!
- The sooner we start, the better.
- We want to start right, and that demands thorough and incisive deliberation first!