Cumulative Effects Assessment
Exploring a Framework for British Columbia

Building a
Cumulative Effects Assessment Framework in BC
Examples from the Northwest & Okanagan Demo Pilot Projects

Ben Heemskerk, FLNRO
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Cumulative Effects Assessment
*Exploring a Framework for British Columbia*

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Outline

• Defining Cumulative Effects
• Project Drivers
• Key Elements of a CEA Framework
  – Values
  – Assessment: Values Screen
    Project Level CEA
    Broad Scale CEA
• Examples from NW & Okanagan Pilots
• Expected benefits
• Regional CE Mechanism/Governance Model
Defining Cumulative Effects

Changes to **environmental**, **social**, and **economic values** caused by the **combined effect** of **present**, **past**, and reasonably foreseeable **future actions** or events on the land base.
The Problem

- **Increasing** number and type of activities

- **Inconsistent approaches** to assessing and managing values across sectors;

- CE Assessment for *some* decisions

  ➡️ *unintended cumulative effects*
Project Drivers

- **Improve** our ability to assess and manage for **desired outcomes for values**
- Support assessment of cumulative impacts to First Nations rights and interests
- **Provide increased certainty and stability** for industry investment
Phased Project Approach

Phase 1: Define the Approach (2011/12)

Phase 2: Demonstrate the Approach & Assess Implications (2012/13)

Government Approval

Phase 3: Operational Trials and Implementation

Engagement with
- Government
- First Nations
- Stakeholders
Demonstration Projects
Key Elements of a CEA Framework

1. A consistent set of **values** for all sectors

2. Spatial and temporal **monitoring** of values

3. **Assessment** of all proposed resource activities, with rigour scaled to potential risk

4. Periodic, **broad-scale, forward-looking assessments**
# Initial Values (Demonstration Phase)

<table>
<thead>
<tr>
<th>Value</th>
<th>Components</th>
</tr>
</thead>
<tbody>
<tr>
<td>Forest Ecosystem Biodiversity</td>
<td>Old Growth Forest</td>
</tr>
<tr>
<td>Water</td>
<td>Water Quality</td>
</tr>
<tr>
<td></td>
<td>Water Quantity</td>
</tr>
<tr>
<td></td>
<td>Riparian Condition</td>
</tr>
<tr>
<td>Wildlife: Mule Deer, Moose, Grizzly Bear, Marten, Caribou</td>
<td>Habitat</td>
</tr>
<tr>
<td></td>
<td>Population Mortality Risk</td>
</tr>
<tr>
<td>Resource Capability: Timber</td>
<td>Timber Harvesting Land Base</td>
</tr>
<tr>
<td>Economic Development</td>
<td>Investment Capital</td>
</tr>
<tr>
<td></td>
<td>Labour Supply/Demand</td>
</tr>
<tr>
<td>Community Wellbeing</td>
<td>Employment</td>
</tr>
<tr>
<td></td>
<td>Population</td>
</tr>
<tr>
<td>Visual Quality</td>
<td>Visual Quality</td>
</tr>
<tr>
<td>Wilderness</td>
<td></td>
</tr>
</tbody>
</table>
Values: Knowledge Summaries

- **Moose**
  - **Mortality**
    - Human/Moose interaction
      - Nearby communities
      - Traffic
    - Hunting
  - **Habitat**
    - Landscape disturbance
      - Harvesting
      - Fire, MPB
    - Vegetation
      - Climate changes
    - Industrial sites
      - Roads

- **Value**
- **Components**
- **Processes**
- **Indicators**
## Risk to Value

<table>
<thead>
<tr>
<th>Indicator</th>
<th>Scientific Interpretation</th>
<th>Risk to not meeting objective</th>
<th>Management/Mitigation Action</th>
</tr>
</thead>
</table>
| Traffic              | ![Traffic graph](image1)  | ![Traffic risk](image2)       | • Bridge removal  
                         |                           |                               | • Traffic monitoring       |
| Hunting              | ![Hunting graph](image3)  | ![Hunting risk](image4)       | • Hunting restrictions  
                         |                           |                               | • Population survey        |
| Fire                 | ![Fire graph](image5)     | ![Fire risk](image6)          | • Fire fighting  
                         |                           |                               | • Fire proofing             |
| Forest Harvesting    | ![Forest Harvesting graph](image7) | ![Forest Harvesting risk](image8) | • Maintaining Winter Range |
Example: Risk Map

- NW Pilot Broad Scale Reports on:
  - Moose
  - Grizzly Bear
  - Water
  - Bull Trout
  - Wilderness
Three Types of Assessment

Values Screening
Provincial screening tool for all NRS decisions

Project Level CEA
Major project assessment

Broad Scale CEA
Sub-regional, strategic assessment
Values Screen

<table>
<thead>
<tr>
<th>Value</th>
<th>Component</th>
<th>Risk</th>
<th>Trend</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mule Deer</td>
<td>Habitat</td>
<td>Moderate</td>
<td></td>
</tr>
<tr>
<td>Visual Quality</td>
<td>Visual Quality</td>
<td>Low</td>
<td></td>
</tr>
<tr>
<td>Grizzly Bear</td>
<td>Mortality</td>
<td>High</td>
<td></td>
</tr>
<tr>
<td>Timber Capability</td>
<td>THLB</td>
<td>Moderate</td>
<td></td>
</tr>
</tbody>
</table>

Open Access to Values Data:
- Key Values for each Region
- Current Condition / Risk
- Trend in Condition
- Assessment information

Supports Initial Assessment
- Pre-application (proponents) Application Review (govt)
- Identify potential project impacts
- Identify expected level of assessment & mitigation
Values Screen

Grizzly Bear Population

Visual Quality

Mule Deer Habitat

Princeton
Values Screen: Mule Deer Example

Current Condition (2012)

- Objectives Not Met
- Objectives Met

Trend (2002 – 2012)

Objectives Met

2012

2012
Decision Making: Risk Management Approach

- Risk to Value / Meeting Objectives
  - High
  - Low

- Management Approach
  - Stringent
    - Strategic Decision
  - Flexible
    - CEA & Mitigation
    - Project Assessment & Mitigation
    - Follow Guidance / BMP’s

- Who Leads?
  - Government & Industry
  - Industry
Project Level CEA

Values Screening
Provincial screening tool for all NRS decisions

Project Level CEA
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Broad Scale CEA
Sub-regional, strategic assessment
Project Level Cumulative Effects Assessment

What is the cumulative effect of all foreseeable activities in the area on key values?

- Tulameen Wind Project Investigative License
- Tulameen Wind Project Footprint
- Other Wind Project Footprint
- Future Logging & Natural Disturbance
## Project Level Cumulative Effects Assessment

<table>
<thead>
<tr>
<th>Value</th>
<th>Component</th>
<th>Project Impacts 2012</th>
<th>CEA Pre-Mitigation Risk 2022</th>
<th>CEA Post-Mitigation Risk 2022</th>
</tr>
</thead>
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<tr>
<td>Mule Deer</td>
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### Mitigation Strategies:
1. Reduced footprint (removed 2 towers)
2. Access management (added 10 gates)
Broad Scale CEA

Values Screening
Provincial screening tool for all NRS decisions

Project Level CEA
Major project assessment

Broad Scale CEA
Sub-regional, strategic assessment
Broad Scale Cumulative Effects Assessment

*Strategic, forward-looking assessment over broad areas*

- Project trends, anticipate issues
- Support strategic decisions to manage values over time
- Streamline project level CEA
- Every 5-10 years or issue driven
NW Development Scenarios

Coordinated Development

Uncoordinated Development

Scenario impact on Grizzly Bear
Expected Benefits:

**Streamlined Decisions**
- Consistent, known expectations for clients
- Better information, available up front
- Reduced timeframes for low risk decisions

**Durable Decisions**
- Improved quality & consistency of assessment, including impacts to Aboriginal / Treaty rights
- Open information; transparent decisions

**Improved Outcomes for Values**
- Consistent values & assessment for all sectors
- Baseline condition / risk to values known & considered
Phased Project Approach

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Engagement with
- Government
- First Nations
- Stakeholders
A potential step forward in the mid-term

Current Challenge:
EA Process completed on a project by project basis

Possible Solution:
What if we could create a “Values” focused regional mechanism in the NW
Example of Regional CEA Mechanism / Governance Model
Your Feedback and Comments are Welcome!

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Risk to Value

- Risk Curves captures:
  - **Hazard** – level of hazard related to pressure or state indicator
  - **Risk** – Risk of not meeting an objective
  - **Uncertainty** – bands associated with confidence in relationship between indicator and risk
  - **Management** – link to management action related to level of risk and/or uncertainty