Environmental policy development and decision-making: A scenarios and systems mapping approach to large-scale systems re-design

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Environmental Policy Development and Decision-Making: A Scenarios and Systems Mapping Approach to Large-Scale System Re-Design

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Purpose and Objectives of Project

**Purpose:** To understand and identify improvements in the environmental decision-making and policy development system in Alberta

**Specific Objectives:**
- Describe the current environmental policy and decision-making system
- Identify current and future challenges facing the system
- Develop design criteria to enhance the system's ability to meet future challenges
- Design system changes that could improve the system
- Build capacity for trust and collaboration
- Explore and evaluate the combined methodology of scenarios and systems mapping

**Key Perspectives:**
- Better decision-making processes lead to better policy decisions and ultimately better environmental outcomes
- Better decision-making and policy development requires anticipation of future challenges, translated into systems requirements as a basis for redesigning the current system.
Elements of Design Method

- **Scenario Generation** – Alternative descriptions of the future designed to 1) identify future system challenges and 2) establish context for describing the environmental decision-making and policy development system in Alberta.

- **Systems Mapping** – Cognitive description of the current system.

- **System Re-Design** – Integration of scenarios and systems mapping results to 1) identify system design criteria and 2) system changes to meet the criteria.
Taking Stock – Project Methods

1. Scenarios
Exploring the Future

- Full Speed Ahead
- Reduced Expectations
- Engaged Prosperity
- Collaboration Rising

2. Implications
Future Challenges

- Collaboration
- Power sharing
- Common good
- Leadership
- Innovation
- Aboriginal Input
- Informed Public
- Science
- Cumulative Effects

3. Systems Mapping
Current Understanding

Power and Process

4. System Re-Design
Changes to Improve the System

- Future System Requirements
- Design Criteria
- Leverage Points
- Strategies for Change

5. Engagement

- Reports
- Forums
- Briefings

Review & Feedback
Process of Scenario Development

1. Define Focal Issue / Question and Relevant Timeframe
2. Review Past Events & Alternative Interpretations

- Identify Driving Forces
- Identify Critical Uncertainties
- Develop Plausible Scenarios
- Paths & Implications
# Scenario Characteristics

<table>
<thead>
<tr>
<th>Scenario</th>
<th>Characteristics</th>
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<tbody>
<tr>
<td><strong>Full Speed Ahead</strong></td>
<td>- High growth&lt;br&gt;- Economic values &amp; markets&lt;br&gt;- Environment as externality: technical problem&lt;br&gt;- External pressures deflected&lt;br&gt;- Power concentrated&lt;br&gt;- Rising pressure on landscape</td>
</tr>
<tr>
<td><strong>Engaged Prosperity</strong></td>
<td>- Steady growth&lt;br&gt;- Understanding of “commons” creates shared ownership of assets and problems&lt;br&gt;- Government role = engagement&lt;br&gt;- Environment integral to society&lt;br&gt;- Social innovation, capital &amp; trust&lt;br&gt;- Integrated management</td>
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<tr>
<td><strong>Reduced Expectations</strong></td>
<td>- Weak economy limits government ability to manage conflict&lt;br&gt;- Government under siege = reactionary, conservative, risk averse &amp; intolerant&lt;br&gt;- Multi-stakeholder processes dysfunctional&lt;br&gt;- “Streamlined” approvals&lt;br&gt;- Piecemeal impacts</td>
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<tr>
<td><strong>Collaboration Rising</strong></td>
<td>- Low growth – reality leads to criticism, crisis &amp; new approaches&lt;br&gt;- Human – ecological interdependence recognized&lt;br&gt;- Collaborative models &amp; government committed to implement decisions&lt;br&gt;- New value on environment&lt;br&gt;- Virtuous cycle of learning&lt;br&gt;- Improved environmental outcomes</td>
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Future Challenges

- **Articulate a vision** including goals and expectations of roles for all stakeholders
- **Foster a mindset** & motivation to address issues from a systems perspective with collaboration & respect
- **Generational thinking** balancing short and long term effects
- **Support collaboration** at all levels
- Support public engagement
- Explicitly create mechanisms for **input from Aboriginal peoples**
- **Build flexibility** into the system to enhance ability to adapt
- Implement **cumulative effects**
- Build **government capacity** to enhance collaboration & consultation processes
- **Clarify the role of government**
## Critique of Scenarios Stage

<table>
<thead>
<tr>
<th>Pros</th>
<th>Cons</th>
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<tr>
<td>• Powerful method for engagement; strong participant support for dialogue</td>
<td>• Lengthy process consuming considerable participant energy</td>
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<tr>
<td>• Valuable in clarifying context: open ended dialogue to broadly define what is the “system”? What is the appropriate vocabulary and “boundaries”?</td>
<td>• Can be affected by participants not showing up for all sessions affecting quality and commitment (backpedalling)</td>
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<tr>
<td>• Unique in focusing on future of a “process” or “system” (instead of topic, e.g., environment or industry)</td>
<td>• Requires facilitation leadership to manage process while ensuring participant ownership</td>
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<td>• Valuable in emphasizing complexity, dynamics and emerging characteristics of a system</td>
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<td>• Requires and reinforces “systems thinking”</td>
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What is a Systems Map?

- A Systems Map is essentially a picture of how a group thinks about an issue, challenge, problem or situation – essentially a ‘Cognitive Graphic’ that represents the present thinking of a group of people.
Creating Systems Maps

Generating ELEMENTS

• Activities or Agents?

• Group generates all activities (processes) they see applicable to the issue

• Group does an ‘affinity grouping’ step to get to 8-12 groupings and names each grouping

• Group ensures each final grouping is distinct

Four Maps were created: Issue Identification, Policy Setting, Policy Implementation and Monitoring
Creating Systems Maps

Generating RELATIONSHIPS

- All elements compared to each other element
- Group discussion determines the relationship and names it
- Group discussion used to then weight each relationship
- Result is a spreadsheet and also a great deal of debate and discussion

<table>
<thead>
<tr>
<th>Activity</th>
<th>verb</th>
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<tbody>
<tr>
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<td>informs</td>
<td>Leading &amp; Coordinating</td>
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<td>Final Decision-Making</td>
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<tr>
<td>Policy Screening</td>
<td>underpins</td>
<td>Researching &amp; Analyzing</td>
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<tr>
<td>Policy Screening</td>
<td>provides content for</td>
<td>Lobbying &amp; Influencing</td>
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<tr>
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<td></td>
<td>Issue Prioritization</td>
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<td>Framing &amp; Commun.</td>
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<td>shapes</td>
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Systems Map – Red (Formal)

Taking Stock - Policy Setting - red relationships

- Leading/Co-ord. Processes 4/2/0
- Issue Prioritizing 2/2/1
- Policy Screening 1/2/1
- Lobbying & Influencing 1/0/0
- Framing & Communicating 3/6/3
- Public Consulting 2/3/1
- Exercising Internal Power 6/0/0
- Final Decision-Making 1/4/0
- Researching & Analyzing 0/1/0
Systems Map – Formal Loop Structure

Taking Stock - Policy Setting - red loop structures

Leading/Co-ord. Processes 4/2/0
- determines
- triggers

Issue Prioritizing 2/2/1
- strongly influences

Lobbying & Influencing 1/0/0
- strongly influences

Framing & Communicating 3/6/3
- drives

Policy Screening 1/2/1
- strongly influences

Public Consulting 2/3/1
- determines
- undertakes

Final Decision-Making 1/4/0
- strongly influences

Exercising Internal Power 6/0/0
- determines

Researching & Analyzing 0/1/0
- supports

Loop Structures Present
- undertakes
- influences
- drives
- triggers
Systems Map

Taking Stock - Policy Setting
- blue loop structures

- Leading/Co-ord. Processes 0/1/0

- Issue Prioritizing 2/2/1

- Lobbying & Influencing 6/4/3

- Framing & Communicating 2/1/1

- Policy Screening 5/2/2

- Public Consulting 0/2/0

- Exercising Internal Power 1/2/0

- Researching & Analyzing 1/4/1

- Final Decision-Making 2/1/0

Loop Structures Present

may strongly influence

can influence
influences provokes

influences provokes

can provoke

influences influences

influences

influences

influences

influences

reboots

influences

influences

stimulates

can direct

can shift

can shift

can constrain

can constrain

drives/ constrains

influences
Critique of Systems Mapping

Pros

• Provides a co-ordinated and shared representation of a current system of dynamic processes/activities

• Groups of experts use their knowledge and own language and share a great deal of tacit information

• Shared ‘narrative’ affirms what is generally known, explains current outcomes/patterns and identifies points of intervention

• Provides a shared basis for identifying and debating different ‘renovation’ possibilities

• Interpretive value – alternative interpretations as basis for debate and ultimately a palette of design ideas

Cons

• Lengthy process consuming considerable participant energy

• Can be affected by participants not showing up for all sessions

• Requires facilitation leadership to manage process while ensuring participant ownership

• Mapping process easy to grasp but ‘reading’ the maps takes time, energy and facilitation

• Maps have greatest meaning for group that develops them but less for meaning for those who did not
Re-Design Stage

- **Design Criteria** were generated by the challenge statements that came from the Scenarios Stage.
- **The System** (and Sub-Systems) to be Re-Designed were determined through the Systems Mapping Stage.
- The **Re-Design Stage** had two sites: *within* each sub-system and *between* the sub-systems.
- The result of this stage was a set of possible **Strategic Intentions**.
Re-Design: Within Sub-System

Re-Design #1
Strengthen influence of Researching & Analyzing

Re-Design #2
Connect Public Consultation To Internal Power

Re-Design #3
Eliminate Lobbying and Influence
Figure 1: Groundwater Contamination is Discovered (Actual Contamination)
Critique of Re-Design Stage

**Pros**
- Easy to envision intervention points
- Futures work provides broader design criteria
- Actual known or anticipated environmental ‘issues/problems’ can be used to guide specific renovation ideas
- Ability to ‘trace through’ and identify potential unanticipated consequences of any renovation idea or proposal
- Can see the different renovation approaches depending on background and interested of groups proposing renovation ideas
- Provides a way to compare and contrast renovation ideas
- Connected future challenges to system re-design

**Cons**
- Too short of a time given to process, required more time for participants to get acquainted with maps and challenges
- Requires facilitation leadership to manage process
- No ‘space’ for designing a completely ‘new’ system
- Some renovation ideas ‘not possible’ (e.g. changing processes that are legally bound)
- Some ‘powerful’ changes not seen as such initially
Critique of Entire Project

Pros
• Passionate, engaged and knowledgeable participants using their own language (participative design)
• Valuable in engaging range of participants (multi-stakeholders)
• Reinforced value of combined scenarios and systems mapping methodologies
• Successful in creating valuable insights into environmental decision-making and policy development system

Cons
• Multiple intense sessions demanded high levels of energy
• Demands made it difficult to get consistent participation across sessions
• More time required to fully undertake re-design phase
• Lack of project follow-up means that effects of the project on individuals or the system are unknown