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 systems 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

2. Implications
   Future Challenges

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

3. Systems Mapping
   Current Understanding

4. System Re-Design
   Changes to Improve the System

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

5. Engagement

   Reports
   Forums
   Briefings

Power and Process
Process of Scenario Development

Define Focal Issue / Question and Relevant Timeframe

Review Past Events & Alternative Interpretations

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

**Full Speed Ahead**
- High growth
- Economic values & markets
- Environment as externality: technical problem
- External pressures deflected
- Power concentrated
- Rising pressure on landscape

**Engaged Prosperity**
- Steady growth
- Understanding of “commons” creates shared ownership of assets and problems
- Government role = engagement
- Environment integral to society
- Social innovation, capital & trust
- Integrated management

**Reduced Expectations**
- Weak economy limits government ability to manage conflict
- Government under siege = reactionary, conservative, risk averse & intolerant
- Multi-stakeholder processes dysfunctional
- “Streamlined” approvals
- Piecemeal impacts

**Collaboration Rising**
- Low growth – reality leads to criticism, crisis & new approaches
- Human – ecological interdependence recognized
- Collaborative models & government committed to implement decisions
- New value on environment
- Virtuous cycle of learning
- Improved environmental outcomes
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

**Pros**

- Powerful method for engagement; strong participant support for dialogue
- Valuable in clarifying context: open ended dialogue to broadly define what is the “system”? What is the appropriate vocabulary and “boundaries”? 
- Unique in focusing on future of a “process” or “system” (instead of topic, e.g., environment or industry)
- Valuable in emphasizing complexity, dynamics and emerging characteristics of a system
- Requires and reinforces “systems thinking”

**Cons**

- Lengthy process consuming considerable participant energy
- Can be affected by participants not showing up for all sessions affecting quality and commitment (backpedalling)
- Requires facilitation leadership to manage process while ensuring participant ownership
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

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Systems Map – Formal Loop Structure

Taking Stock - Policy Setting - red loop structures

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

Policy Screening 1/2/1

Public Consulting 2/3/1

Researching & Analyzing 0/1/0

Final Decision-Making 1/4/0

Exercising Internal Power 6/0/0

Lobbying & Influencing 1/0/0

Framing & Communicating 3/6/3

Issue Prioritizing 2/2/1

drives

under-takes

informs

guides & supports

strongly influences

under-takes

strongly influences

determines

triggers

strongly influences

determines

determines

systems
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