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

RSD4 Symposium 2015
Emerging Contexts for Systems perspectives in Design, The Banff Centre Sep 1-3

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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

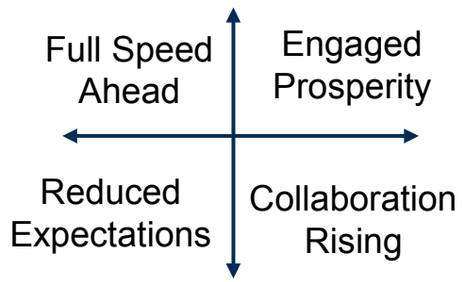
- **Scenario Generation** – Alternative descriptions of the future designed to 1) identify future system challenges and 2) establish context for describing the environmental decision-making and policy development system in Alberta

- **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

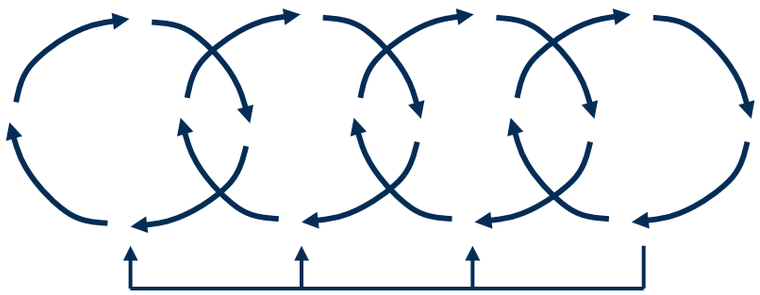
1. Scenarios
Exploring the Future



2. Implications
Future Challenges

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

3. Systems Mapping
Current Understanding



Power and Process

4. System Re-Design
Changes to Improve the System

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

Review & Feedback

5. Engagement

Reports

Forums

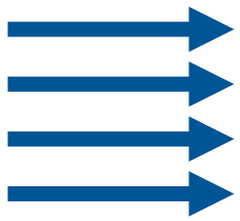
Briefings

Process of Scenario Development

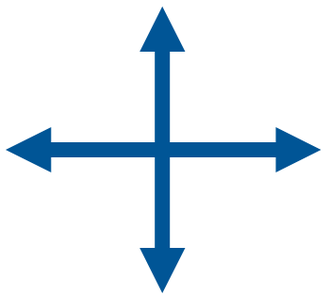
Define Focal Issue / Question and Relevant Timeframe

Review Past Events & Alternative Interpretations

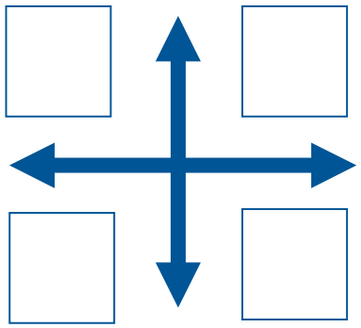
Identify Driving Forces



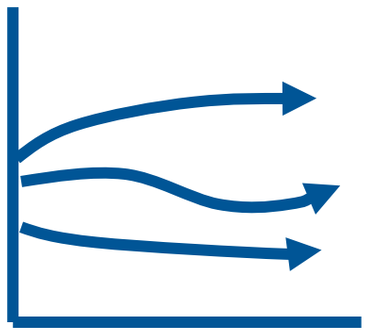
Identify Critical Uncertainties



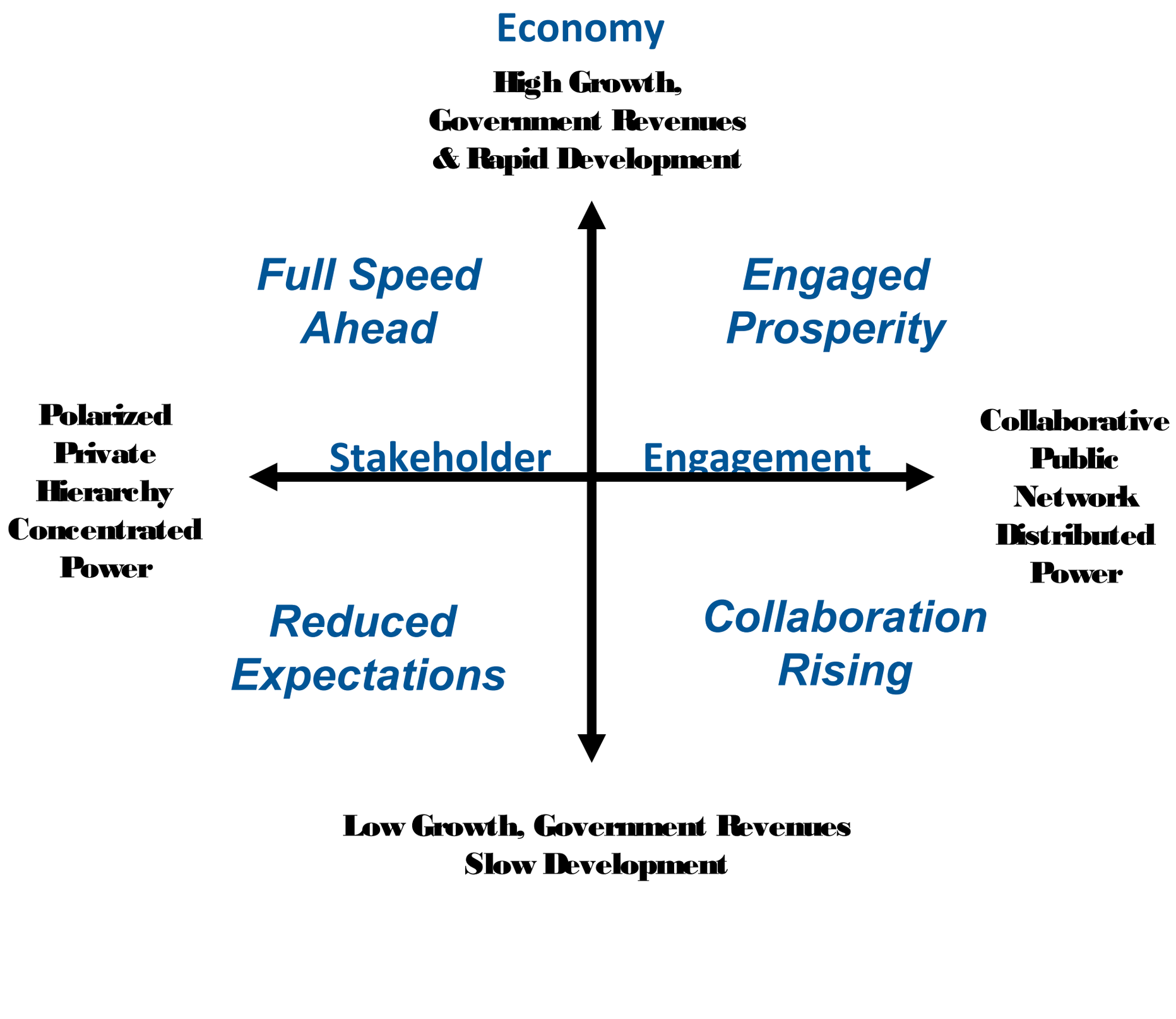
Develop Plausible Scenarios



Paths & Implications



Scenario Framework



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.

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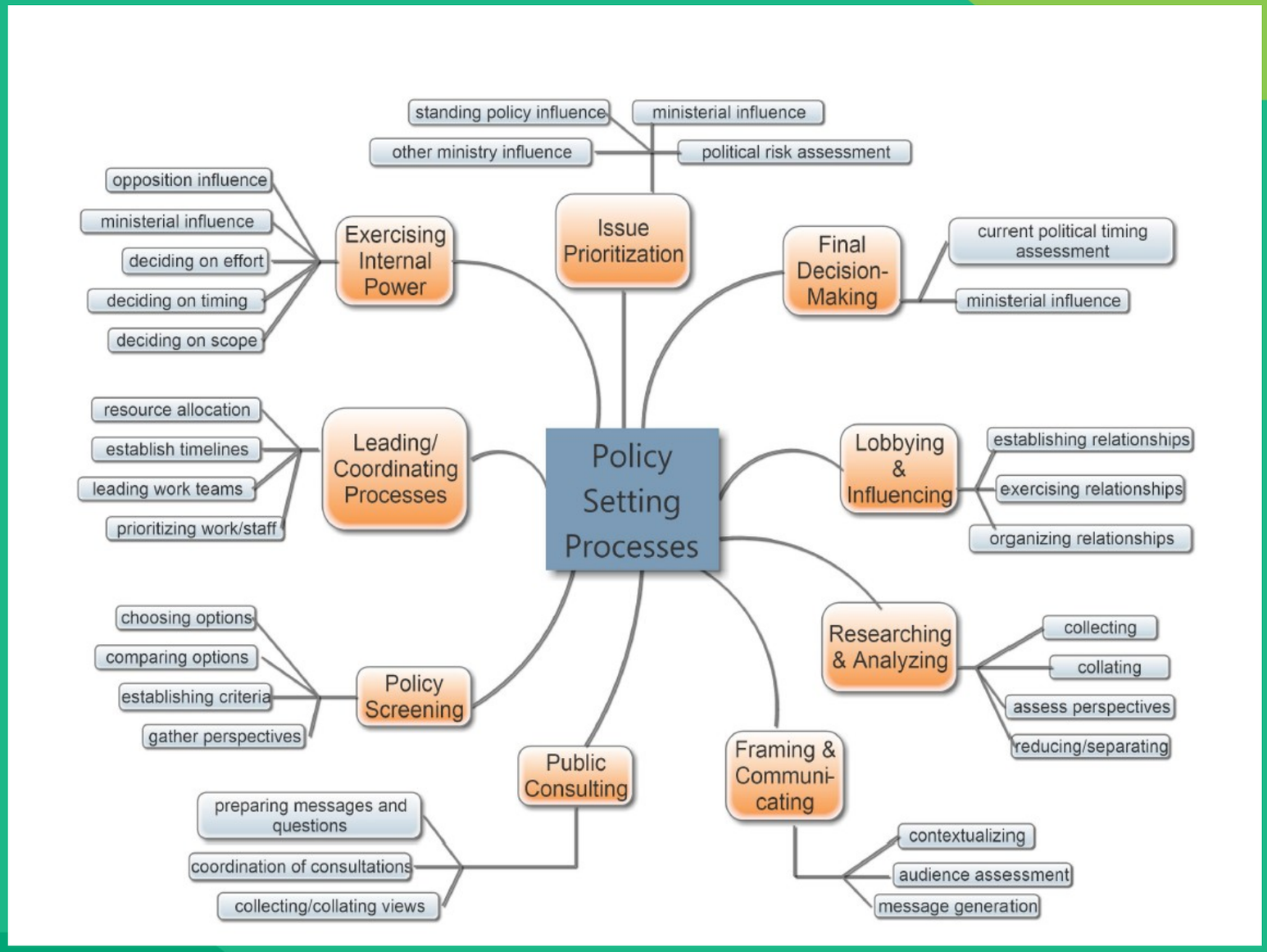
Creating Systems Maps

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

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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

Policy Screening	informs	Leading & Coordinating
Policy Screening	tests	Public Consulting
Policy Screening	informs	Policy Screening
Policy Screening	xx	Final Decision-Making
Policy Screening	underpins	Researching & Analyzing
Policy Screening	provides content for	Lobbying & Influencing
Policy Screening		Issue Prioritization
Policy Screening		Framing & Commun.

Public Consulting	strengthens/informs	Leading & Coordinating
Public Consulting		Public Consulting
Public Consulting	xx	Policy Screening
Public Consulting	shapes	Final Decision-Making
Public Consulting	calibrates	Researching & Analyzing
Public Consulting		Lobbying & Influencing
Public Consulting	strengthens	Issue Prioritization
Public Consulting	limits	Framing & Commun.

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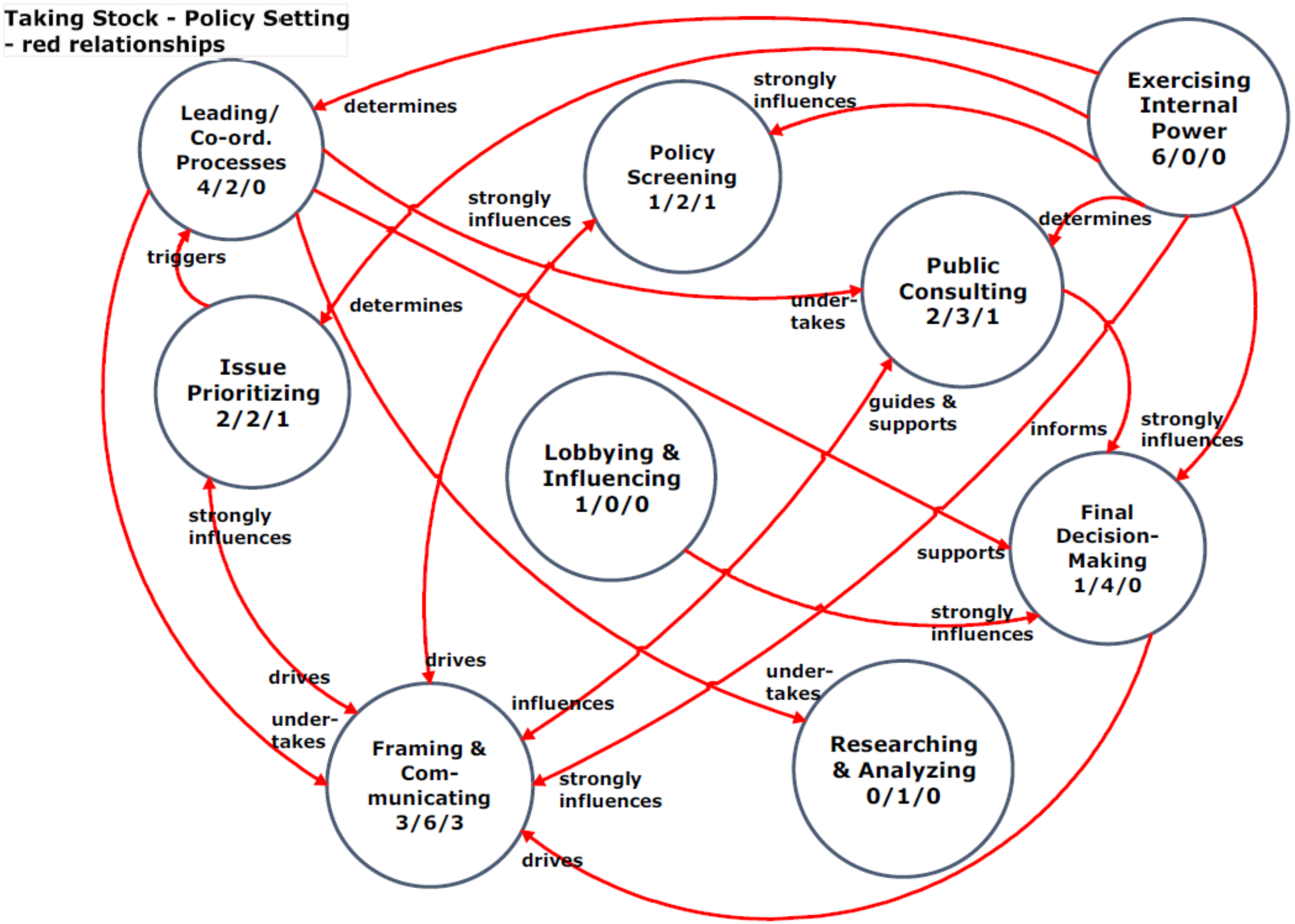
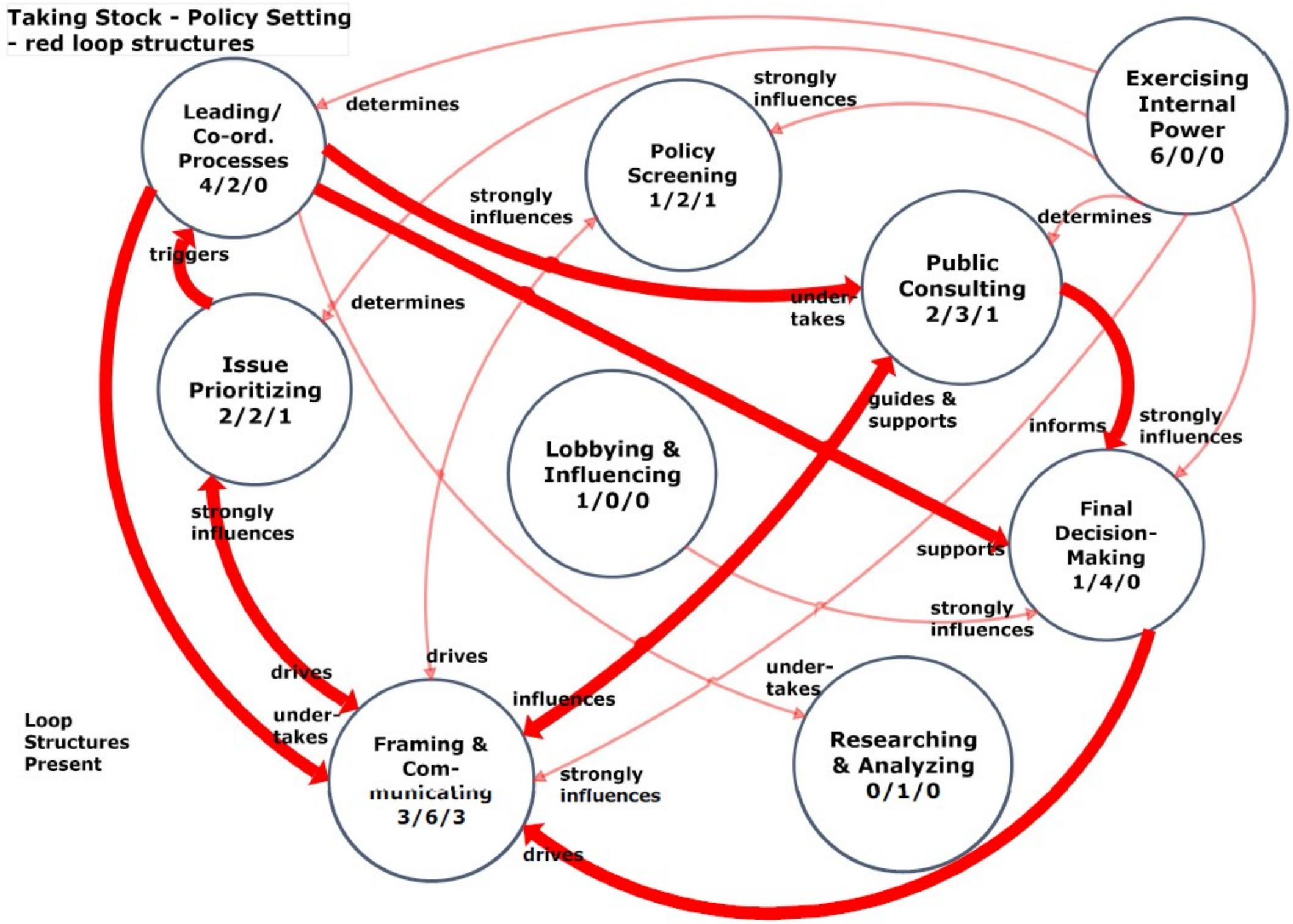
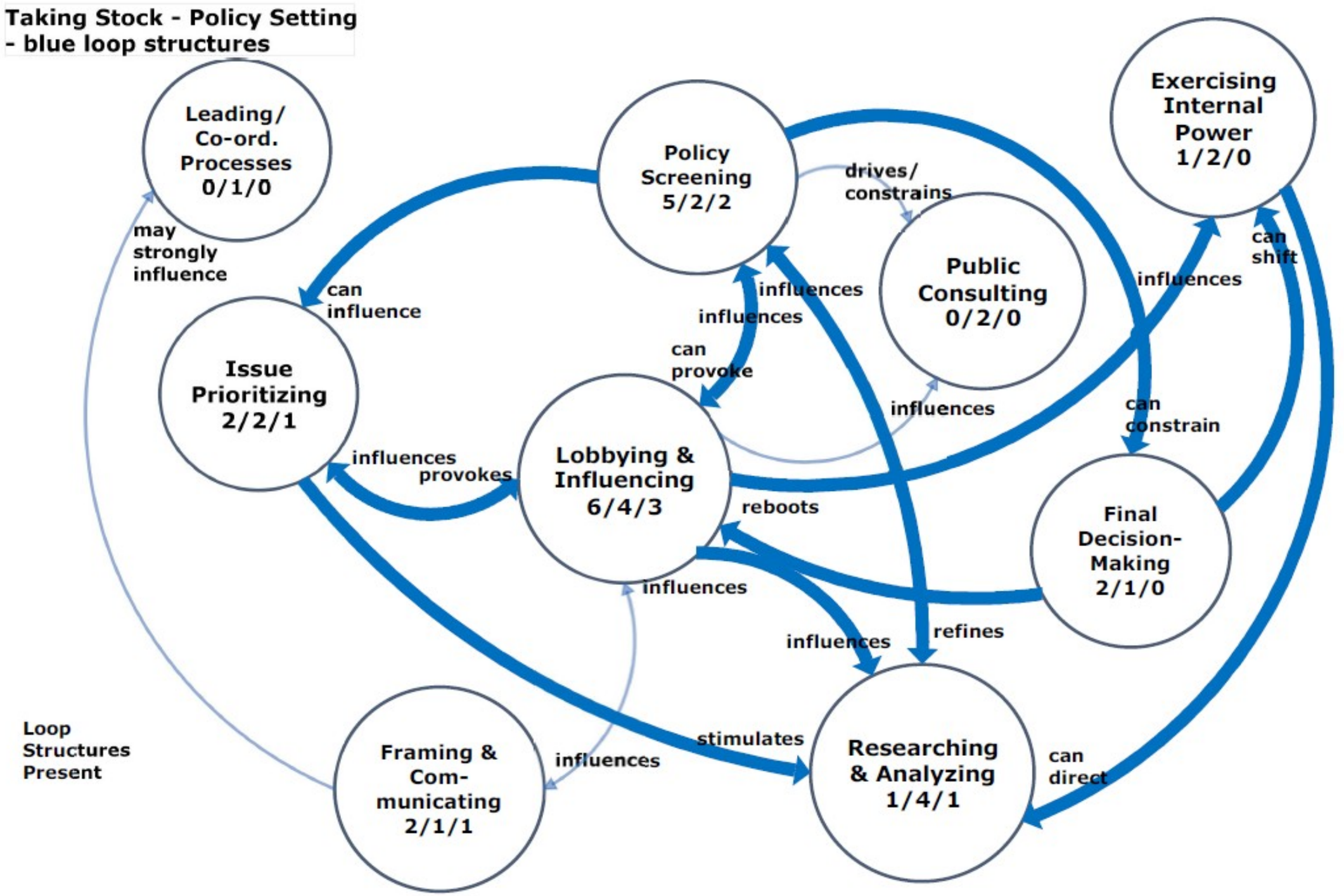
Systems Map – Red (Formal)



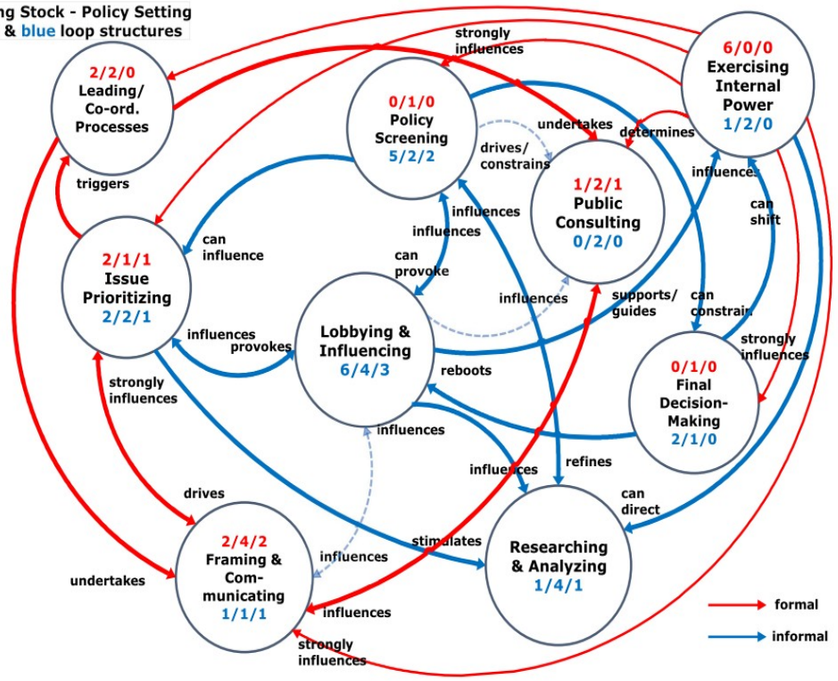
Systems Map – Formal Loop Structure



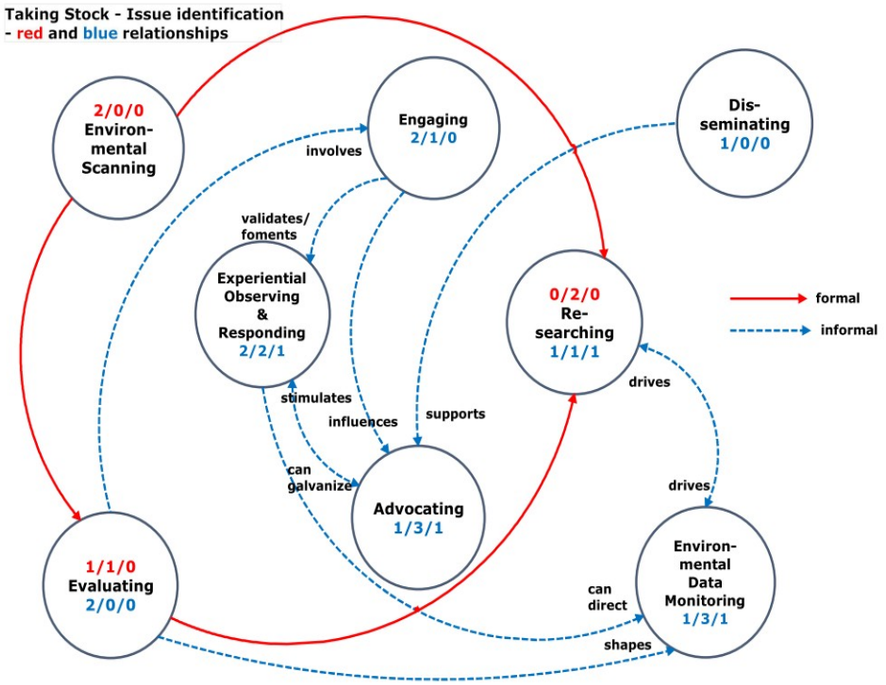
Systems Map


Taking Stock - Policy Setting
- blue loop structures
Leading/
Co-ord.
Processes
0/1/0
Policy
Screening
5/2/2
drives/
constrains
Exercising
Internal
Power
1/2/0
may
strongly
influence
can
influence
influences
influences
can
provoke
Public
Consulting
0/2/0
influences
can
shift
influences
can
constrain
Issue
Prioritizing
2/2/1
influences
provokes
Lobbying &
Influencing
6/4/3
reboots
Final
Decision-
Making
2/1/0
influences
influences
refines
Loop
Structures
Present
Framing &
Com-
municating
2/1/1
influences
stimulates
Researching
& Analyzing
1/4/1
can
direct

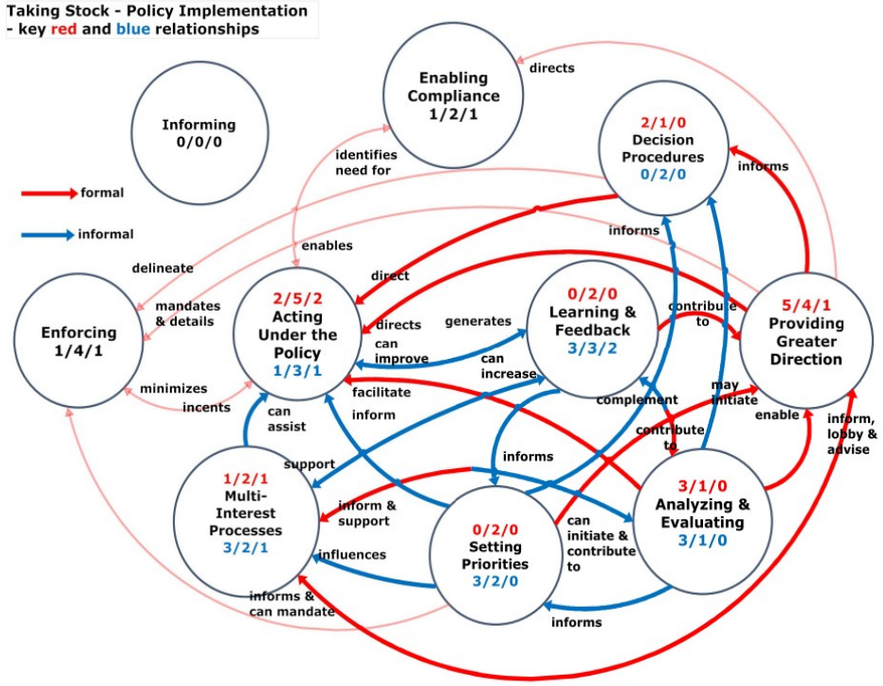
Taking Stock - Policy Setting
- red & blue loop structures



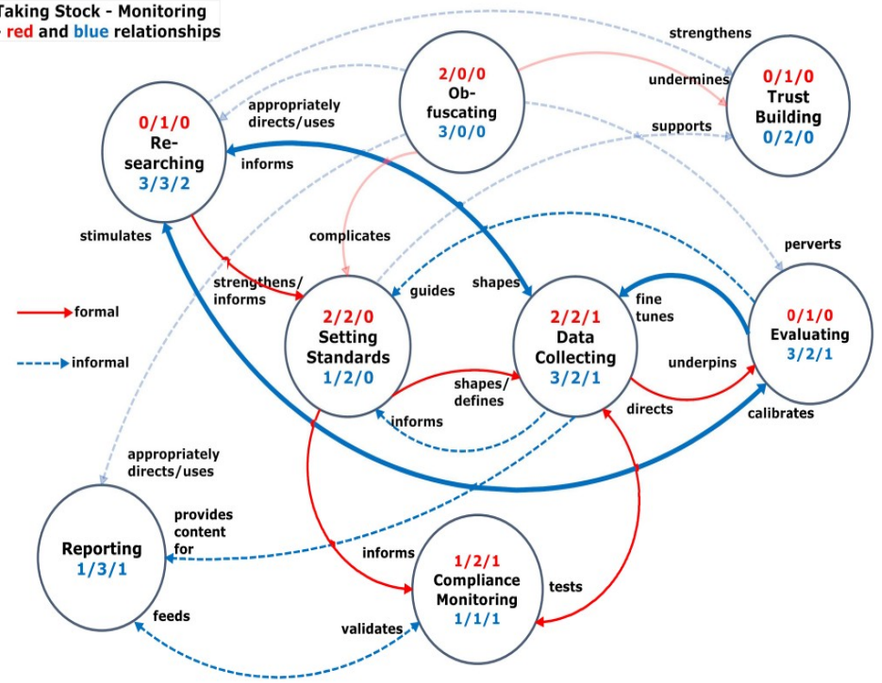
Taking Stock - Issue identification
- red and blue relationships



Taking Stock - Policy Implementation
- key red and blue relationships



Taking Stock - Monitoring
- red and blue relationships



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

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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

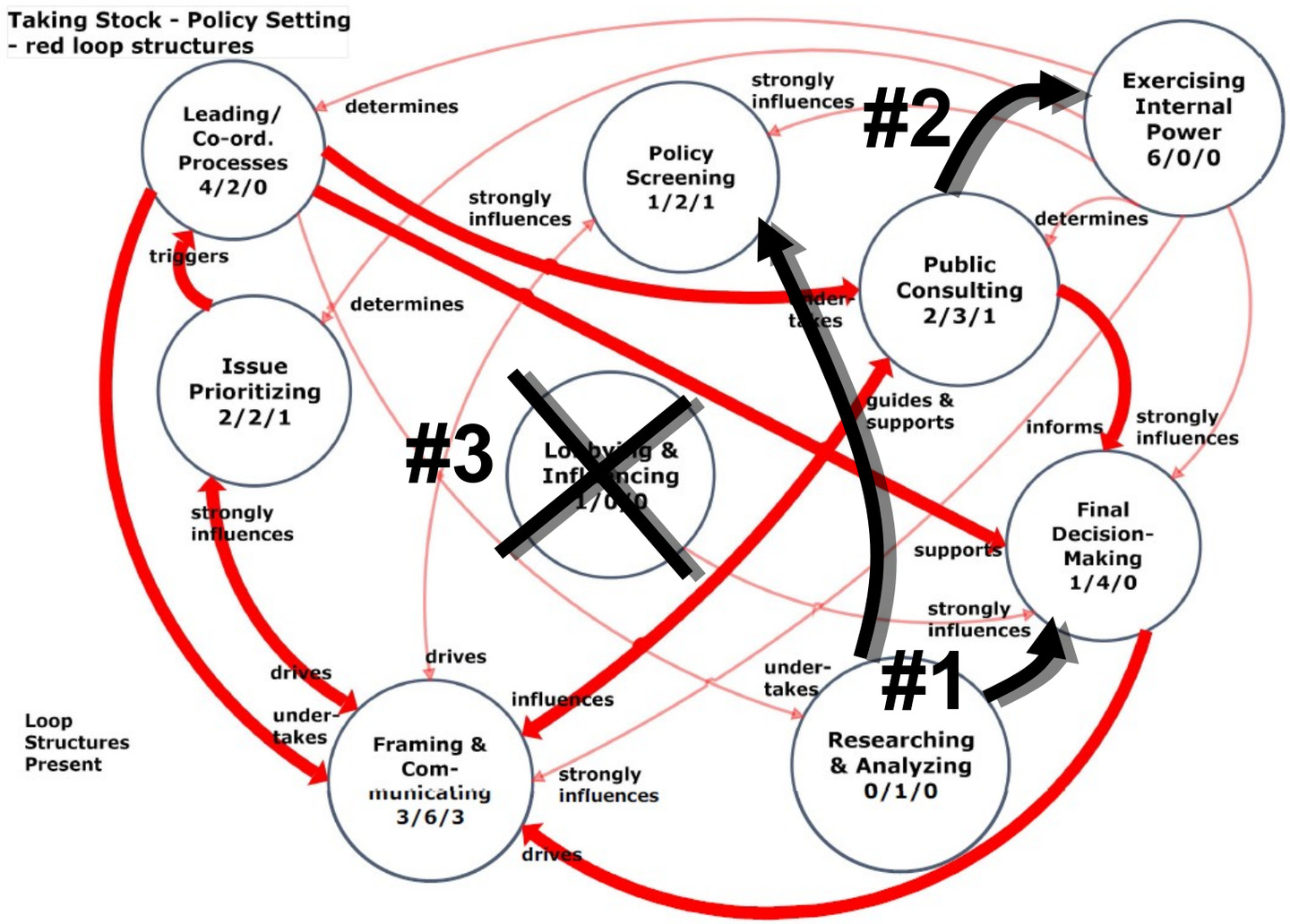
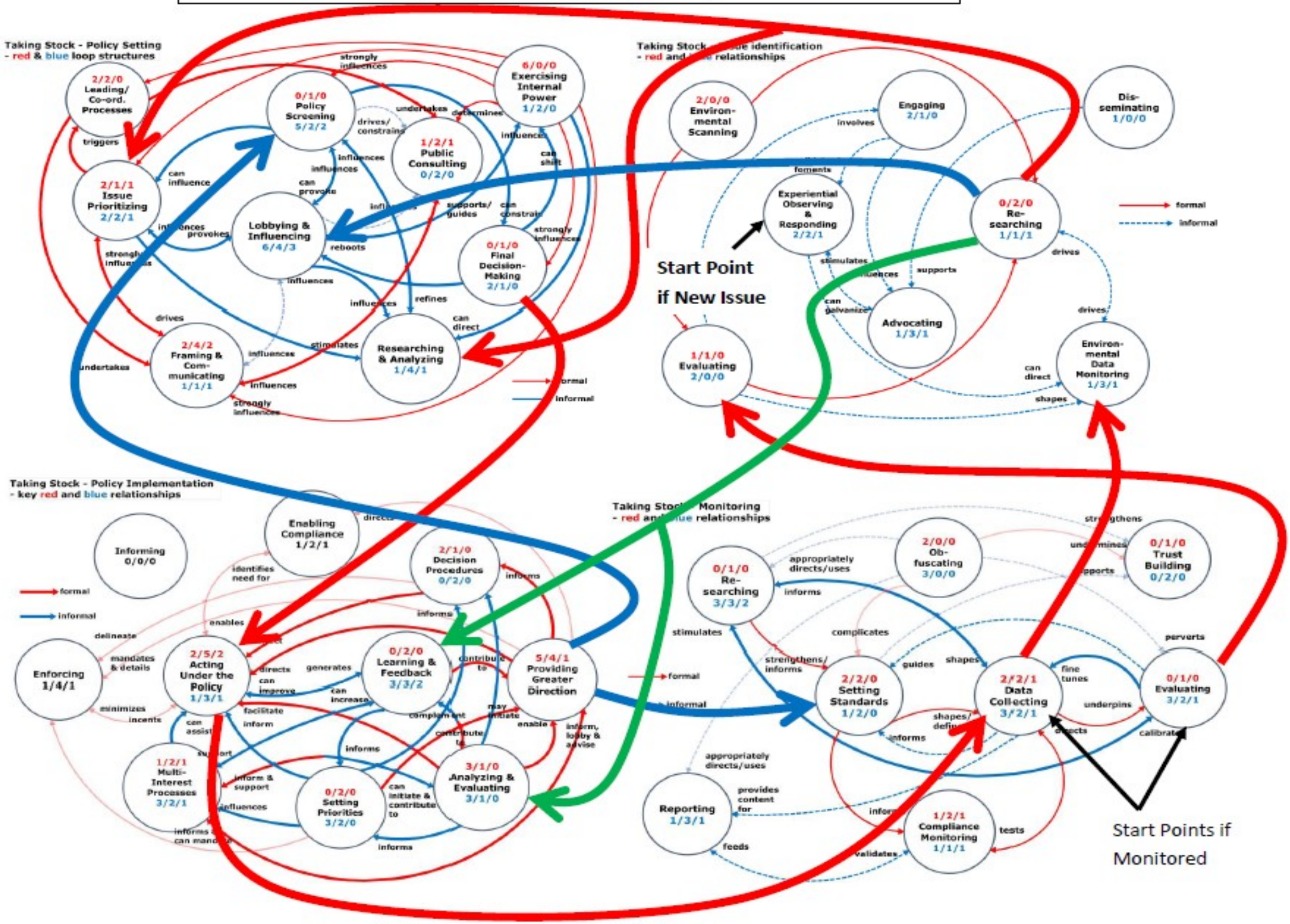


Figure 1: Groundwater Contamination is Discovered (Actual Contamination)



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

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