



# **Environmental Decision-making from the Individual to the Global Level**

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Aral Sea Society) and universities in Central Asia**



# **Lecture Outline**

**Part 1 – Basic Concepts**

**Part 2 – A Theory of Decision-making**

**Part 3 – Practical Constraints to Efficient Decision-making**

A dramatic sky scene featuring a rainbow arching across the upper half, a bright sun partially obscured by clouds in the lower center, and silhouetted grass at the bottom. The text "Part 1 – Basic Concepts" is centered in the middle of the image.

# Part 1 – Basic Concepts

# Justification

- Almost all decisions connected to social welfare in society are related to environmental issues
- An absolute majority of governmental activities in different countries have a focus on economic growth and improved welfare
- Environmental issues are extremely complex and consequences of misplaced decisions often take long time to manifest themselves
- The concepts of a Sustainable Development and resulting Sustainability requires an increased focus on environmental and ecologic sustainability

# Sustainable Development and Sustainability

A development meeting the needs of the present without compromising the ability of future generations to meet their own needs (Brundtland Commission 1987)

Sustainability is the balance between the environment, equity, and economy (University of California Los Angeles)

Sustainable Development means that Life on Earth should thrive (B Frostell, inspired by John R. Ehrenfeld)

# Decision

- A choice that you make about something after thinking about several possibilities (Cambridge Dictionary)
- The act or process of deciding (Merriam-Webster Dictionary)
- When you make a decision, you choose what should be done or which is the best of various alternatives (Collins Dictionary)

# Environment

- The air, water, and land in or on which people, animals, and plants live (Cambridge Dictionary)
- The complex of physical, chemical, and biotic factors that act upon an organism or an ecological community and ultimately determine its form and survival (Britannica Dictionary)
- The circumstances, objects, or conditions by which one is surrounded: the factors and influences that affect the growth, health, progress, functioning, etc., of someone or something (Merriam-Webster Dictionary)

# Decision-making and planning

**Decision: A conscious choice between different alternative ways of acting**

- Conscious acting as opposed to more habitual acting
- Using a search for alternative ways of acting
- Evaluating alternative ways of acting

**Planning: Coordination of a number of minor decisions into a strategic whole**

**Environmental decision-making and planning occur at different levels and usually in different organisations**

# Basic aspects of decision-making

- A multitude of interlinked factors influence decision-making, such as diverse physical, chemical, biological, economic, ethical, legal, moral, political, psychological, social, and technical factors (cf. Sexton et al 1999)
- Therefore, while it is easy to theoretically describe a good decision-making, the practical reality makes it difficult to reach good decisions in many cases
- A combination of theoretical knowledge about what is considered a good decision-making and practical experience may prepare actors for better decision-making

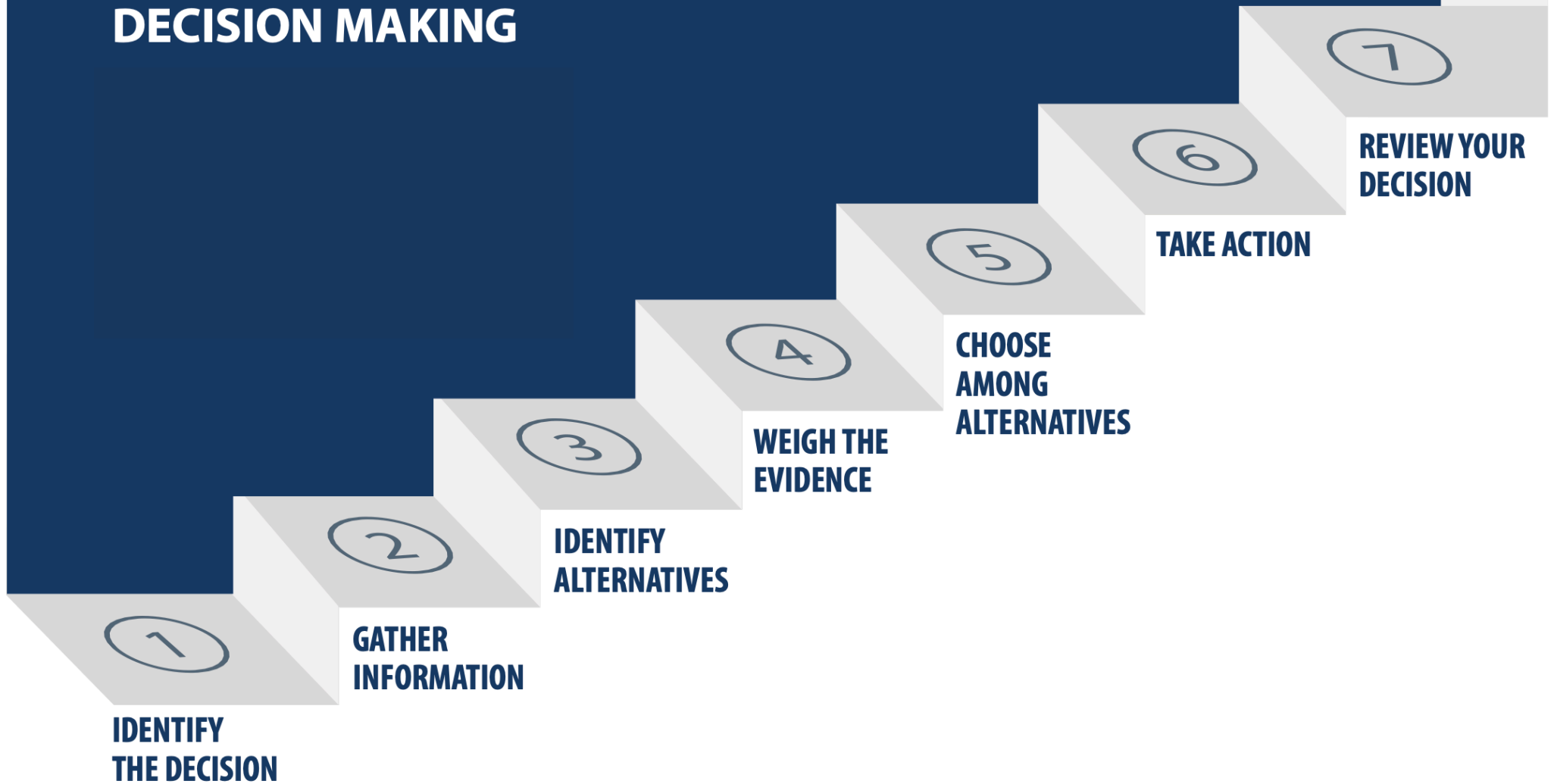
# Good decision-making

- Good decisions require more than good analyses and good intentions. They require judicious blending of facts and values to make informed judgments about critical trade-offs
- The challenge then is to find ways of improving both the decision process and its outcomes
- Improved environmental decisions require an increased integration of perspectives among regulating agencies (authorities), business and different communities

A dramatic sky scene featuring a bright sunburst breaking through a layer of dark, heavy clouds. A faint rainbow is visible in the upper right portion of the sky. The overall color palette is dominated by blues, greys, and bright yellows/whites from the sun.

# **Part 2 – A Theory of Decision-making**

# 7 STEPS TO EFFECTIVE DECISION MAKING

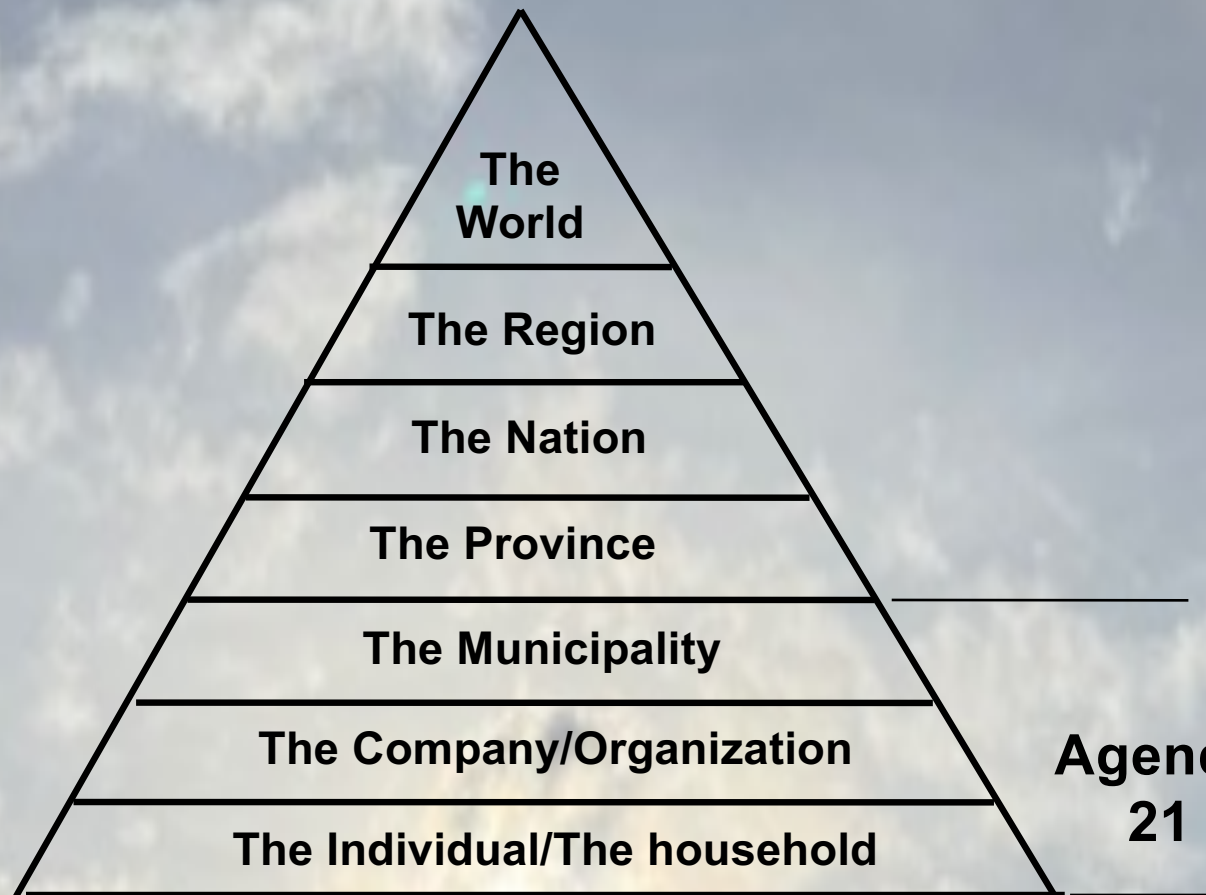


# 1. Identify the decision

## The six overarching questions to define an environmental decision situation

- 1.1 At what social level does the environmental decision occur?
- 1.2 What are the important substantive aspects of the environmental decision?
- 1.3 What is the social setting for the environmental decision?
- 1.4 What is the mode of environmental decision making?
- 1.5 What are the assumptions about basic underlying causes of the environmental problem?
- 1.6 What criteria are used to evaluate the environmental decision?

# 1.1 Social level of the environmental decision



**Agenda  
21**

# **1.2 Substantive domain of the environmental decision**

## **A. Type of issue**

- Air quality control
- Preservation of natural areas
- Energy production/distribution
- Green technologies
- Natural resource management
- Historic, cultural and aesthetic resources
- Urban infrastructure/growth management
- Waste management
- Water allocation
- Water quality control

## **B. Spatial extent**

- Socially constructed scales
- Natural system scales
- Geologically based scales

## **C. Temporal factors**

- Persistence
- Reversibility
- Cumulative effects
- Context (past, current, future)

# 1.3 Social setting for the environmental decision

## **A. Key decision-maker**

- Individual acting as an independent agent
- Individual acting as a member of a group or an organisation

## **B. Decision participants**

- Governments
- Regional governmental organisation
- Business associations
- Environmental advocacy groups
- Community/neighborhood groups
- Affected or interested individuals

## **C. Urgency of decision**

- Urgent
- Deliberative

## **1.4 Modes of environmental decision-making**

- Emergency action**
- Routine procedures**
- Analysis centered**
- Conflict management**
- Collaborative learning**



## **1.5 Assumptions about basic underlying causes of environmental problems**

- **Lack of scientific knowledge and understanding about natural systems or impacts of technology**
- **Imbalanced or inappropriate economic incentives**
- **Misplaced belief systems and core values**
- **Failure to use comprehensive approaches (overly narrow perspective)**

# **1.6 Criteria for evaluating environmental decisions**

## **A. Decision process**

- Fair
- Inclusive
- Informed

## **B. Decision outcome**

- Workable
- Accountable
- Effective (doing the right things)
- Efficient (doing things right)
- Equitable (fair)
- Sustainable

# 2 Gathering information

## A. Data collection

- Sampling & analysis
- Measurements
- Sensors
- Photography & analysis

## C. Environm. Systems Analysis

- CBA, Extended CBA
- EFA & MFA
- LCA & LCC
- EIA & SEA
- PIOTs
- etc

## B. Data processing

- Computing
- Tables, figures & pictures

## D. Preparing information

- Reports
- Films, videos, animations

### Legend

CBA = Cost-Benefit Analysis

EFA = Element Flow Analysis

MFA = Material Flow Analysis

LCA = Life Cycle Assessment

LCC = Life Cycle Costing

EIA = Environmental Impact Assessment

SEA = Strategic Environmental Assessment

PIOTs = Physical Input/Output Tables

# **3 Identify alternatives**

## **A. Information digestion**

- Reading reports
- Seeing videos & animation
- Preparing draft alternatives and/or scenarios

## **B. Alternatives identification**

- Workshops & Consultations
- Referrals
- Consultation with AI

## **C. Decision on alternatives**

# **4 Weigh the Evidence**

## **A. Integration of Knowledge & Interests**

- Spreading of information
- Organisation of workshops and consultations
- Referrals
- Public debate(s)
- Consultation with AI

## **B. Decision on preferred alternative**



# **5 Choose among alternatives**

**5.1 Make a formal decision**

**5.2 Communicate decision to stakeholders**



## **6 Take action**

**6.1 Implement planned activities**

**6.2 Implement continuous follow-up**

**6.3 Stay prepared to revise plans**

**6.4 Have continuous dialogue with stakeholders**

# **7 Review decision**

## **Six critical questions**

**7.1 What kinds of consequences may occur?**

**7.2 What specific consequences may occur?**

**7.3 Who will be affected?**

**7.4 When will consequences occur?**

**7.5 What criteria are used to evaluate the consequences?**

**7.6 Who makes the assessment and the evaluation?**

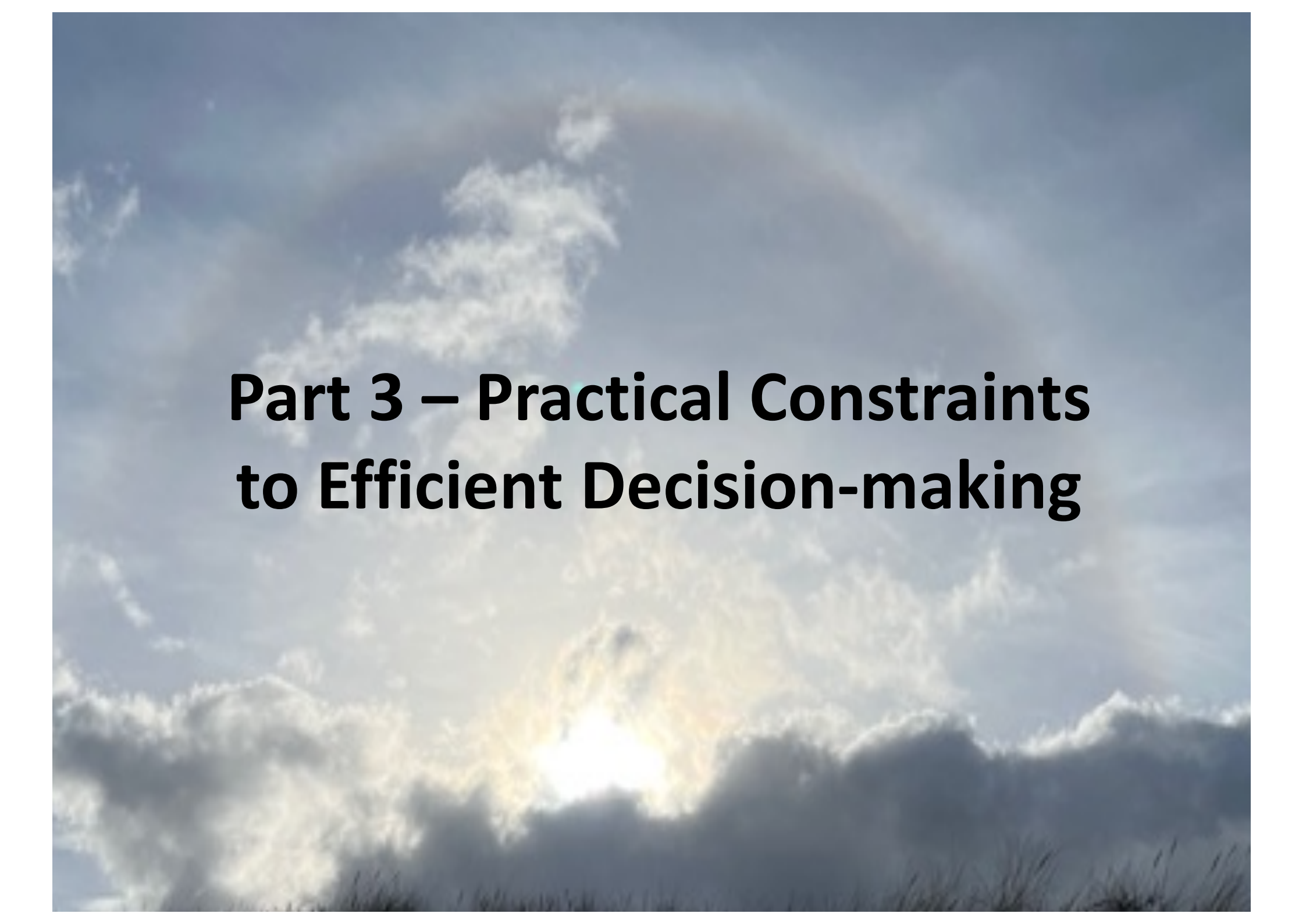
# Break exercise

Look at the following three definitions of sustainable Development:

- A development meeting the needs of the present without compromising the ability of future generations to meet their own needs (Brundtland Commission 1987)
- Sustainability is the balance between the environment, equity, and economy (University of California Los Angeles)
- Sustainable Development means that Life on Earth should thrive (B Frostell, inspired by John R. Ehrenfeld)

**Question 1: What is the primary protection object in the three definitions?**

**Question 2: Which definition sets the strictest demands on environmental decision-making?**

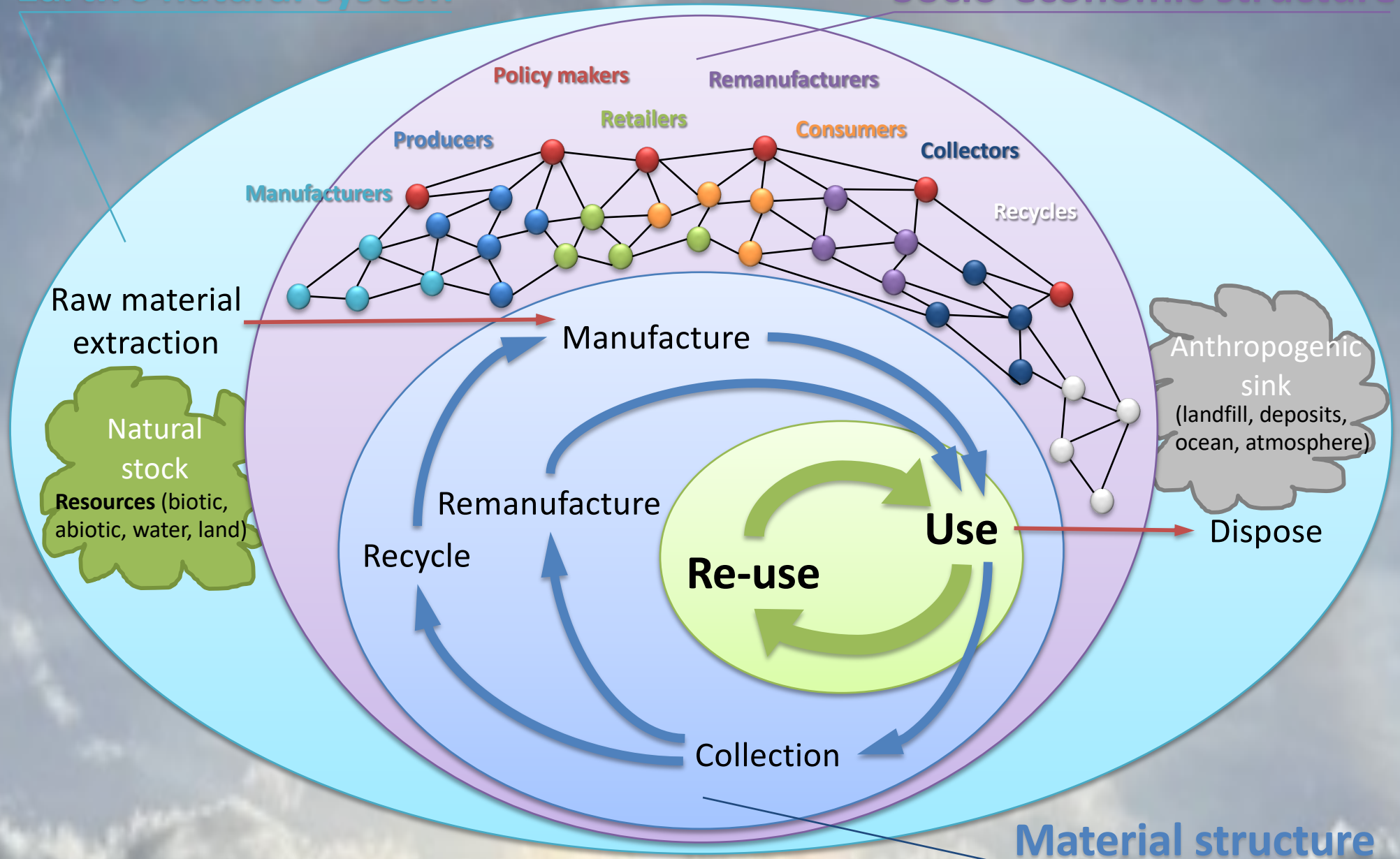
A dramatic sky with a rainbow and a sunburst through clouds. The sun is low on the horizon, creating a bright glow and illuminating the clouds. A rainbow is visible in the upper right portion of the sky. The overall scene is a mix of blue, white, and yellow tones.

# **Part 3 – Practical Constraints to Efficient Decision-making**

# An Illustration of the Complexity of Circular Economy

Earth's natural system

Socio-economic structure



# Classification schema for the Relative Difficulty of Environmental Decisions

|                 | High uncertainty related to scientific and technical understanding   | Low uncertainty related to scientific and technical understanding  |
|-----------------|--|--|
| High complexity | <b>Very difficult</b><br>21st Century problems, like effects of human-generated Carbon dioxide emissions                 | <b>Moderately difficult</b><br>Problems in the 1980s and 1990s, like effects of CFCs on stratospheric ozone levels           |
| Low complexity  | <b>Moderately difficult</b><br>Problems in the 1980s and 1990s, like effects of airborne particle matter on human health | <b>Relatively straightforward</b><br>Problems in the 1960s and 1970s, like effects of sewage discharge on local water bodies |

# Understanding different stakeholders attitudes

## Different perspectives on environmental problems and solutions

|                                | Imperative                                     | Legitimization                    | Key Stakeholders                          | Basis for decision  | View of natural resources   | Approach to env. protection                                      | Attitude towards growth  |
|--------------------------------|--|-----------------------------------|---|---|---|--|--|
| <b>Regulatory Agencies</b>     | Implementing laws, regulations and rules       | Legal authority and power         | Elected officials, the public, the courts | Legalities, bureaucratic precedent, political realities                           | Use and protect within the confines of statutory mandates           | Legal mandates command and control methods, fines and punishment | Generally desirable within the context of the regulatory system          |
| <b>Business sector</b>         | Preserving the organisation and making profit  | Markets Information and exchange  | Shareholders, Employees, customers        | Short to medium-term return on investment   | Means to achieve and end; use efficiently based on cost             | Economic incentives, harnessing market forces                    | Always desirable in the context of expanding business opportunities      |
| <b>Environmental advocates</b> | Preserving and protecting natural systems      | Principles and passion            | Natural systems, future generations       | Long-term preservation of natural systems   | Ends unto themselves; use only within prescribed limits             | Legislative prescription, political will, ethical values         | Only desirable if it balances environmental, economic and social factors |
| <b>Affected communities</b>    | Protecting community and individual well-being | Group identity and social justice | Community members                         | Short to medium-term preservation of the community and benefits for the community | Use and protect in relation to costs and benefits for the community | Moral crusades, appeals for social justice, grassroots movements | Desirable in the context of benefits to the community                    |

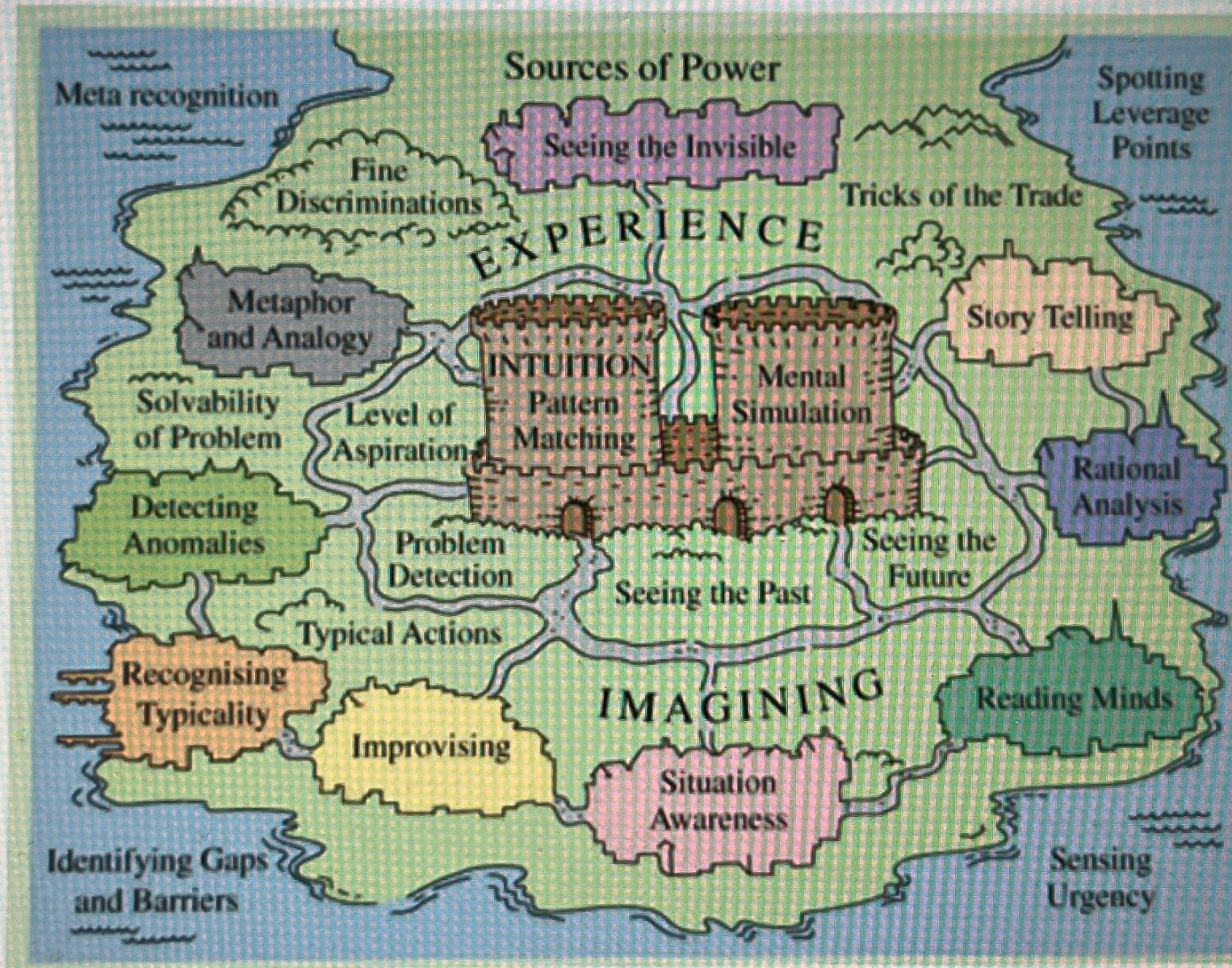
# Important practical actor constraints

- Un uneven economic situation among stakeholders and decision participants
- A narrow mandate among decision participants
- A narrow knowledge base among decision participants
- A narrow value base among decision participants
- A narrow experience base among decision participants



**An uneven power distribution in decision-making**

# Sources of Mental Power in Decision-making

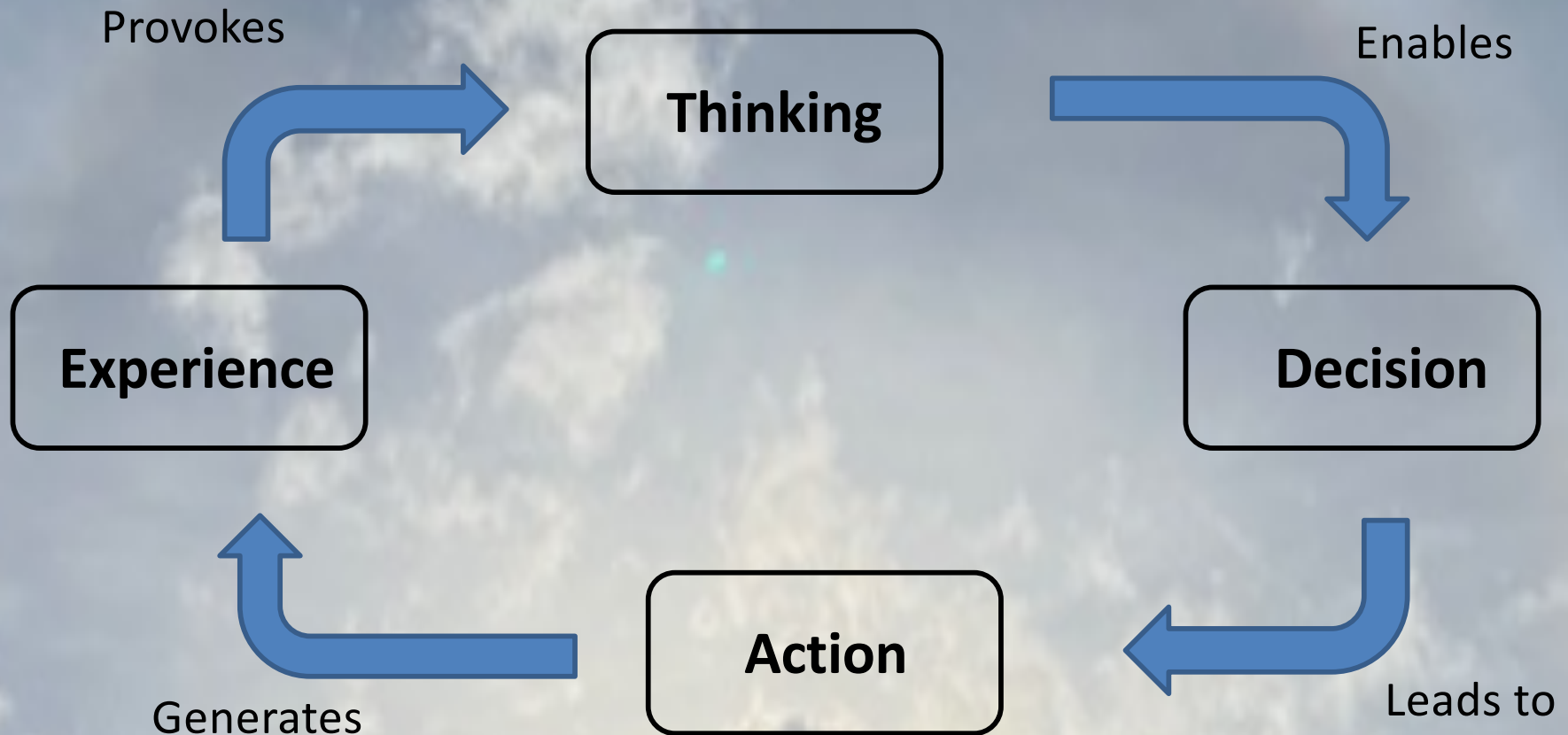


(Klein, G, 1998)

# To overcome a narrow knowledge, value and experience basis

- To overcome these three very important shortcomings for efficient decision-making, a combination of learning and experience oriented activities may be organized
- Of special interest for good decision-making should be practical experience from decision-making. Here a mixture of theoretical and reflective activities with the practical experience from different case applications are of great value according to Kolb and Fry 1975

# An Experiential Learning Cycle





**Thank you!**

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