Importance and Utilization of Theory-Based Evaluations in the Context of Sustainable Development

3 Oct 2019

Taka Miyaguchi, Ph.D.
Director of the Career Center and Associate Professor
Kyoto University of Foreign Studies (Japan)
takaakinet@gmail.com / t_miyagu@kufs.ac.jp

Independent Evaluation Office GLOBAL ENVIRONMENT FACILITY

Earth-Eval

Conclusion of This Presentation

1. Theory-Based Evaluation, based on Critical Realism, is well suited to evaluating SD at the nexus of human and natural systems
2. When constructing a Program Theory/ToC for evaluating SD, “Socio-Ecological Systems” and “Coupled Human and Natural Systems” concepts are useful

Independent Evaluation Office GLOBAL ENVIRONMENT FACILITY

Earth-Eval

Challenges in Evaluating SD

1. The nature of SD
2. Complementary evaluation criteria*

(1) Attribution

(2) Temporal & Spatial Frames

(3) Values

(4) Achieving Use & Influence

3. The difficulty in evaluating SD "at the nexus"

- Aggregation challenge → micro-macro paradox
- "Either" social OR natural science focused (but dominated by the former) → Reductionism
- Complex AND Complicated

Source: Rowe (2014) Evaluation at the Nexus. Principles for evaluating sustainable development interventions

Independent Evaluation Office GLOBAL ENVIRONMENT FACILITY

Earth-Eval

4 Modes of Inference

- **"What works?"** (regardless of its context)
  → through *deduction* and *induction*
- *Abduction*: "to interpret and recontextualize individual phenomena within a conceptual framework to understand something in a new way" = Constructing programme theories
  → **"What *may* work for whom, how"**
- *Retroduction*: "to reconstruct the basic conditions for these [conceptually abstracted] phenomena to be what they are" → **"In what circumstances?"** (The essence of CR)

Source: Danermark, B., Ekström, M., Jakobsen, L., & Karlsson, J. C. (2002). Explaining Society. Critical realism in the social sciences.

Application of Different TBE Approaches

- (1) Realist Approach: more concerned with promising Context-Mechanism-Outcome configurations
  → It helps to deliver more precise and substantive program learning but deals less well with highly complex, multi-site interventions with multiple outcomes
- (2) Theory of Change/PT: more concerned with overall program outcomes
  → it helps to provide a strategic perspective on a complex program

Source: Blamey and Mackenzie (2007) Theories of Change and Realistic Evaluation. Peas in a Pod or Apples and Oranges

3 Approaches in Constructing PT

According to Funnel & Rogers (2011)*1:

- (1) Articulating Stakeholder Mental Model
- (2) Inductive Development
- (3) Deductive Development

However the tendency for TBE is:

- Deductive: 91% / Stakeholder Mental Model: 49% / Inductive: 13% based on 41 filtered, identified TBE cases*2
- Over-reliance of social scientists and their disciplinary inquiries*2

*1: Funnel & Rogers (2011) Purposeful Program Theory;
*2: Coryn, Westine and Schroeter (2011) A Systematic Review of Theory-Driven Evaluation Practice From 1990 to 2009

Appropriate Theories for Evaluating SD

- When constructing a PT for evaluating SD, the following transdisciplinary science and its framework can be of reference:
  - **SES** (Social-Ecological System) and
  - **Coupled Human and Natural Systems** (CHANS)

→ Inspired from the Ostrom work on adaptive management / governance research

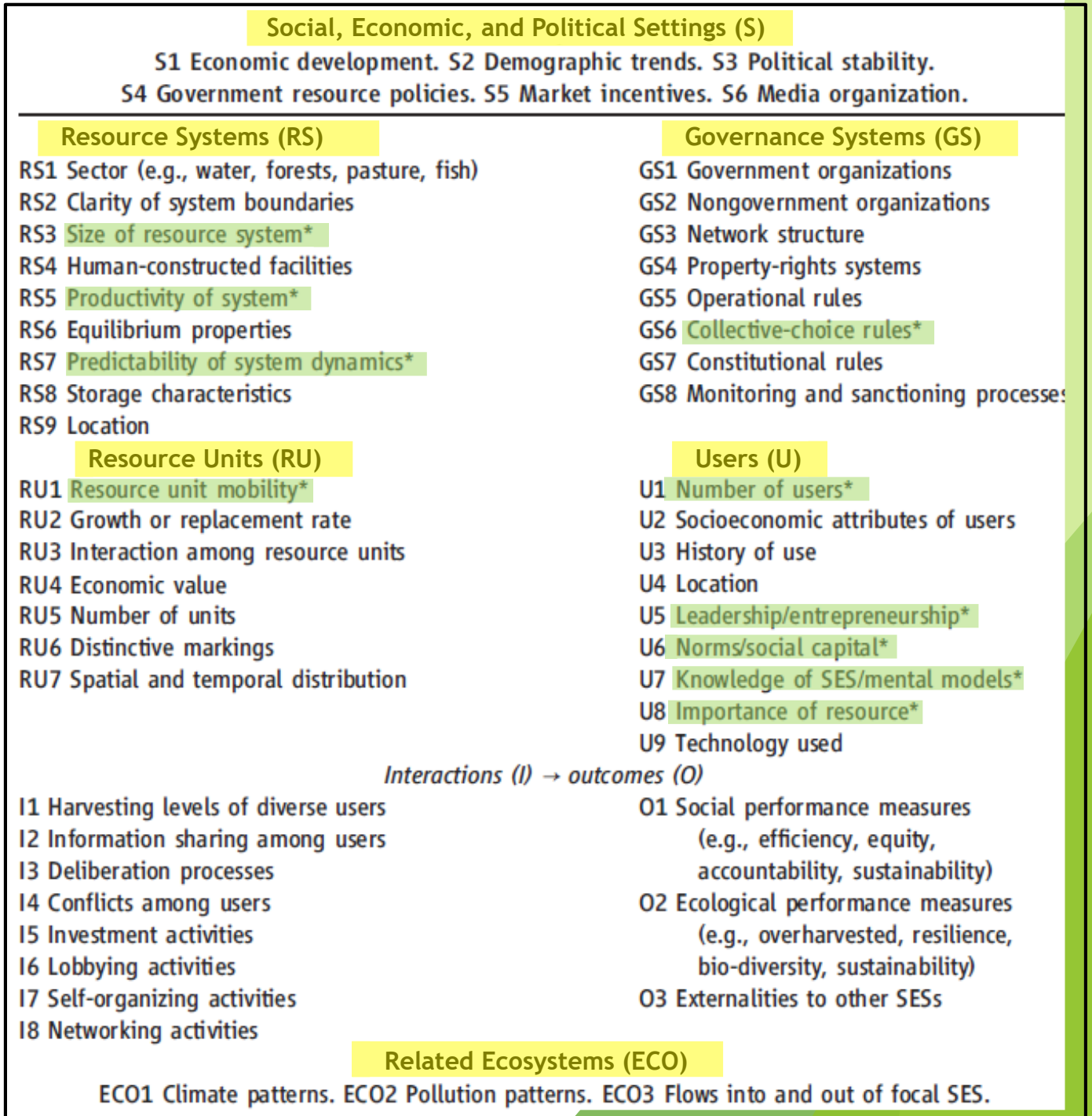
→ Their applications are now beyond Common Pooled Resources (CPR)

Independent Evaluation Office GLOBAL ENVIRONMENT FACILITY

Earth-Eval

Without a framework like this, “isolated knowledge from studies is not likely to cumulate”

→ Focus on the ‘context’ under a common theoretical framework



Social, Economic, and Political Settings (S)

S1 Economic development. S2 Demographic trends. S3 Political stability. S4 Government resource policies. S5 Market incentives. S6 Media organization.

Resource Systems (RS)

- RS1 Sector (e.g., water, forests, pasture, fish)
- RS2 Clarity of system boundaries
- RS3 Size of resource system*
- RS4 Human-constructed facilities
- RS5 Productivity of system*
- RS6 Equilibrium properties
- RS7 Predictability of system dynamics*
- RS8 Storage characteristics
- RS9 Location

Governance Systems (GS)

- GS1 Government organizations
- GS2 Nongovernment organizations
- GS3 Network structure
- GS4 Property-rights systems
- GS5 Operational rules
- GS6 Collective-choice rules*
- GS7 Constitutional rules
- GS8 Monitoring and sanctioning processes

Resource Units (RU)

- RU1 Resource unit mobility*
- RU2 Growth or replacement rate
- RU3 Interaction among resource units
- RU4 Economic value
- RU5 Number of units
- RU6 Distinctive markings
- RU7 Spatial and temporal distribution

Users (U)

- U1 Number of users*
- U2 Socioeconomic attributes of users
- U3 History of use
- U4 Location
- U5 Leadership/entrepreneurship*
- U6 Norms/social capital*
- U7 Knowledge of SES/mental models*
- U8 Importance of resource*
- U9 Technology used

Interactions (I) → outcomes (O)

- I1 Harvesting levels of diverse users
- I2 Information sharing among users
- I3 Deliberation processes
- I4 Conflicts among users
- I5 Investment activities
- I6 Lobbying activities
- I7 Self-organizing activities
- I8 Networking activities

- O1 Social performance measures (e.g., efficiency, equity, accountability, sustainability)
- O2 Ecological performance measures (e.g., overharvested, resilience, bio-diversity, sustainability)
- O3 Externalities to other SESs

Related Ecosystems (ECO)

ECO1 Climate patterns. ECO2 Pollution patterns. ECO3 Flows into and out of focal SES.

Source: Ostrom (2009) A General Framework for Analyzing Sustainability of Social-Ecological Systems

Independent Evaluation Office, Global Environment Facility

Earth-Eval

What is Couple Human and Natural Systems?

- The major barrier against effective implementation of SD is the lack of sufficient knowledge on the complex relationships between humans and nature*1
- "This approach is intended to serve as a pragmatic, heuristic tool for analyzing interrelationships between people and the environment"
- The CHANS framework emphasizes that the human and natural components are coupled rather than separate*2

*1 Lie, et al. (2016) Framing sustainability of coupled human and natural systems in: Pandas and People: Coupling Human and Natural Systems for Sustainability

Source: *2 Carter, et al. (2014) Coupled human and natural systems approach to wildlife research and conservation

Key Concepts of CHANS

Organizational Couplings

1. Reciprocal Effects and Feedbacks (with nested hierarchies)
2. Indirect Effects
3. Emergent Properties
4. Vulnerability
5. Thresholds and Resilience

Spatial Coupling

1. Couplings across Spatial Scales
2. Couplings beyond Boundaries
3. Heterogeneity

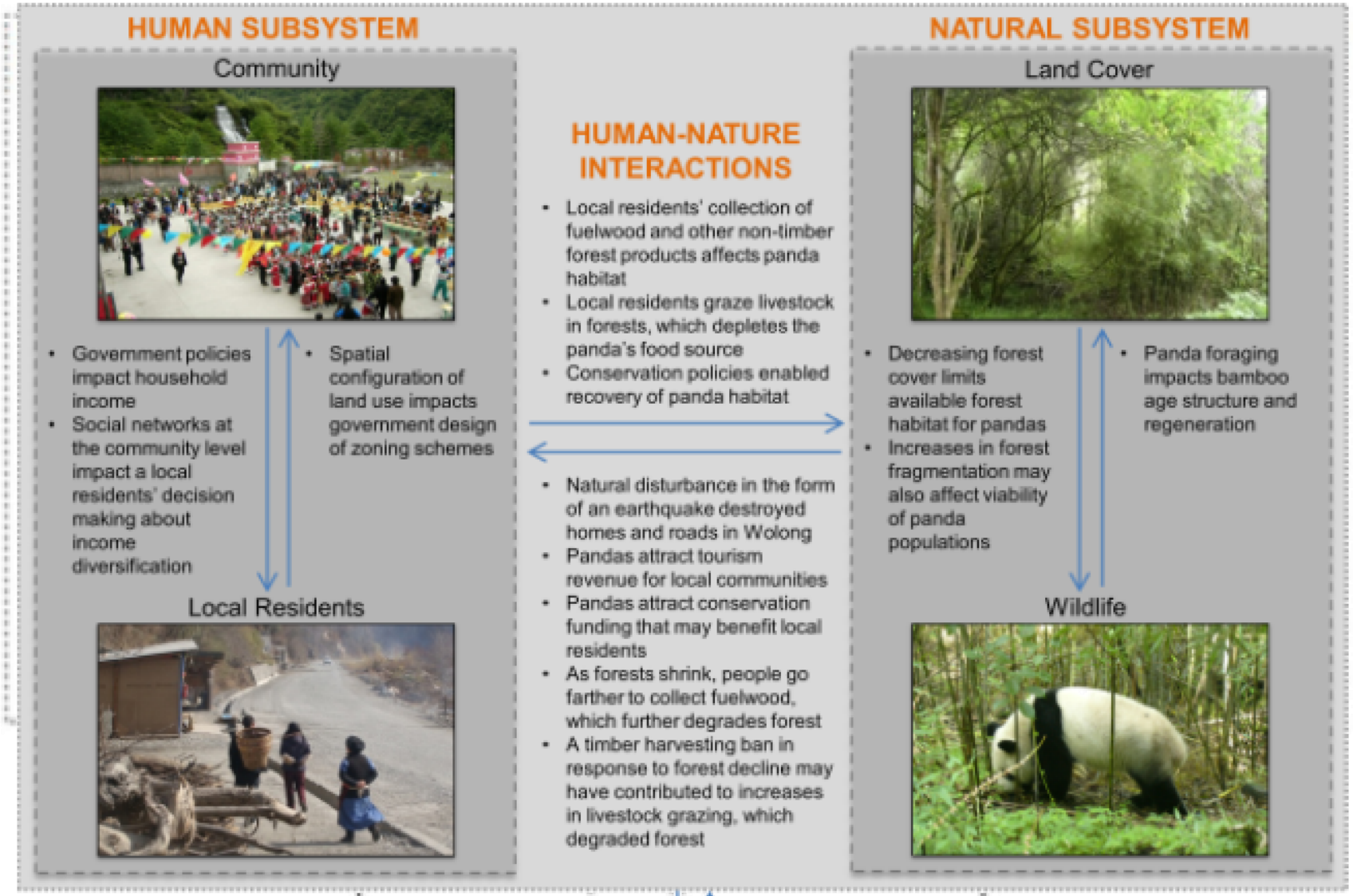
Temporal Couplings

1. Human impacts on natural systems
2. Rising Natural Impacts on Humans
3. Legacy Effects
4. Time Lags
5. Increased Scales and Pace
6. Escalating Indirect Effects

→ Resonates much with the challenging elements for evaluating SD at the nexus

Source: * Lie, et al. (2016) Framing sustainability of coupled human and natural systems in: Pandas and People: Coupling Human and Natural Systems for Sustainability

Couple Human and Natural Systems, e.g.



Source: Carter, et al. (2014) Coupled human and natural systems approach to wildlife research and conservation

Appropriate Methodologies for Evaluating SD

- TBE, based on CHANS framework, with:
  - (1) Triangulation
  - (2) Cross scale/layer comparisons*1
    → Nested Layered ToC
  - (3) Causal inference (even in Nat. Sci.)
  - (4) Usage of Meta-analysis*1

*1 Weiss (2007) Theory-Based Evaluation Past, Present, and Future

Independent Evaluation Office GLOBAL ENVIRONMENT FACILITY

Earth-Eval

Critical Points for Discussion

1. No conceptual model for “evaluating SD with a holistic lens”

   → Necessary to adopt CHANS (SES) theoretical framework in evaluating SD

2. Impossible to evaluate the outcomes that the program cannot hope to influence

   → CHANS/SES model focuses on the interlinkage and mutual-influence at the nexus

3. Evaluation vs. evaluation

   → Former: mere intellectual pursuit? Latter: with people’s money and reporting

Independent Evaluation Office GLOBAL ENVIRONMENT FACILITY

Earth-Eval

Thank you very much!

Taka Miyaguchi
takaakinet@gmail.com

Independent Evaluation Office
GLOBAL ENVIRONMENT FACILITY

Earth-Eval

Theory-Based Evaluation/Approach

- Theory-based evaluations formulate program elements, rationale and causal linkages
  → Going beyond the relationship between inputs and effects (black box evaluations)
  → Taking into account the transformational processes that are inherent in the programs being evaluated *1
- TBE approaches include: e.g. Theory of Change, Realist Evaluation, Logic Analysis, Contribution Analysis, etc
- They have a philosophy of science in common, called Critical Realism*2

*1: Chen (1990) Theory-driven evaluations. Thousand Oaks, CA, Sage / *2: Brousselle and Buregeya (2018) Theory-based evaluations: Framing the existence of a new theory in evaluation and the rise of the 5th generation

IEO Independent Evaluation Office GLOBAL ENVIRONMENT FACILITY Earth-Eval

Critical Realism

- CR is a philosophy of science advocated by Roy Bhaskar (1944-2014). Its development stems out of the critique of a worldview: “if some factor X occurred, then Y happens”
- 3 “Domains” of World:

  (1) Empirical: when an event is “experienced”;
  (2) Actual: “factual event”, generated by mechanisms;
  (3) Real: “mechanisms” are found here, generating actual

	Domain of Real	Domain of Actual	Domain of Empirical
Mechanisms	✓		
Events	✓	✓	
Experiences	✓	✓	✓

Source: Bhaskar R (2008) A Realist Theory of Science

Closed vs. Open System

1. Closed System: an experiment where a certain mechanism is tested in an isolated laboratory set-up where such a mechanism can operate in isolation, independent of other mechanisms (= Natural science experiment)
2. Open System: social events are the products of many and simultaneously existing mechanisms, symbolizing the complex nature of society

   → **One cannot isolate mechanism and do an experiment (ref: difficulty in evaluating CCA)**

Explanations vs. Judgments/Predictions

- In a closed system, explanations are synonymous with predictions/judgments
- Explanations in an open system is in terms of tendencies
- An attempt to seek external validity, one should seek explanations, rather than predictions or judgments, by revealing the causal mechanism hidden beneath the surface layer or domain of reality

Source: Danermark, B., Ekström, M., Jakobsen, L., & Karlsson, J. C. (2002). Explaining Society. Critical realism in the social sciences.

An Application to CCA Meta-Analysis

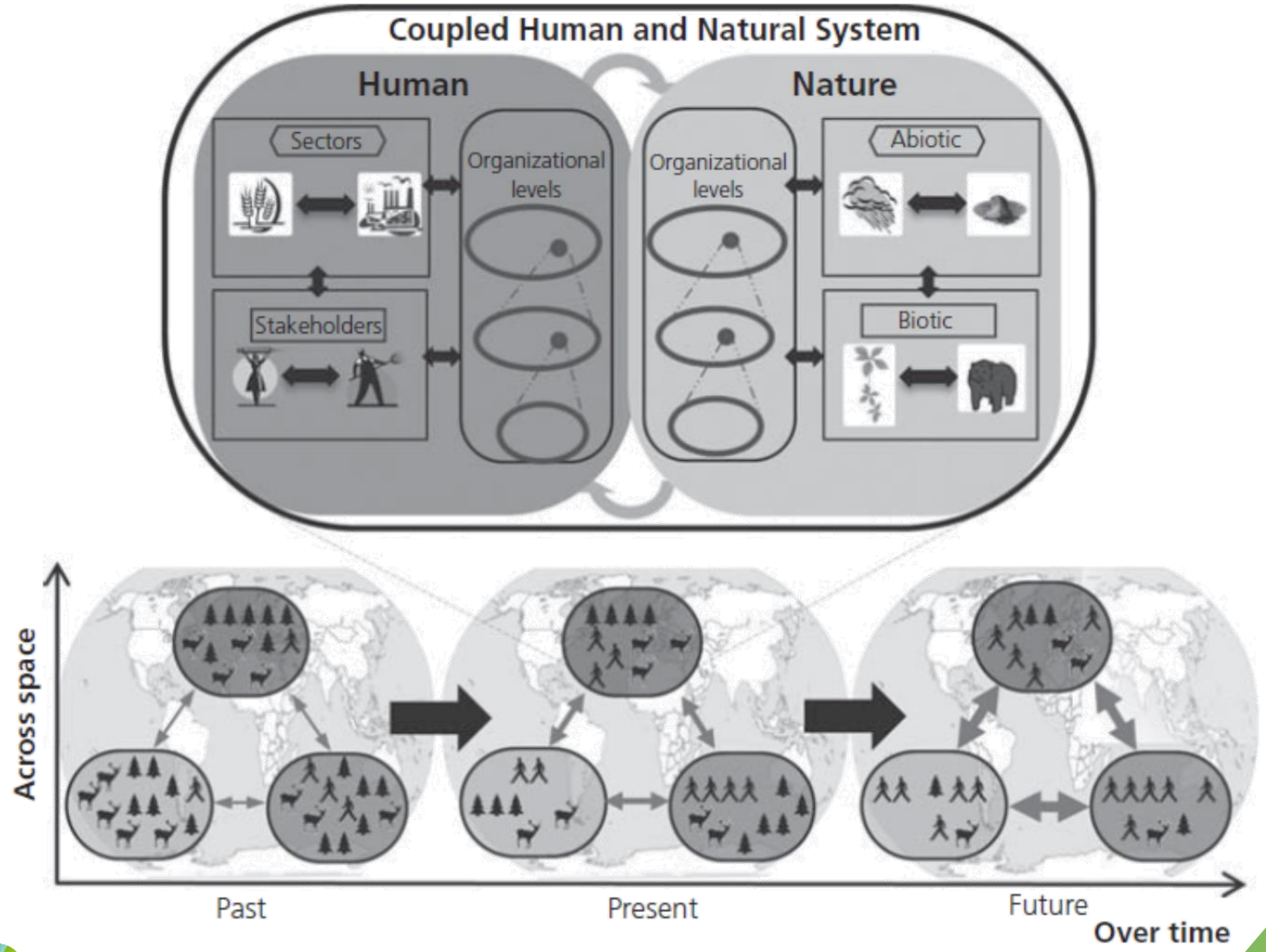
- It is possible to apply CR-based evaluation (Realist Approach) to meta-analysis of CCA evaluations
- By systematically looking at the different contexts for the same interventions (and their program theories) that resulted in different outcomes
- → One can come up with strong explanations as to which interventions may work for whom, how and under what circumstances
- → Can be a useful tool in dissecting complex issues such as CCA, DRR, Env&Dev nexus

Source: Miyaguchi and Uitto (2015) "A Realist Review of Climate Change Adaptation Programme Evaluations – Methodological Implications and Programmatic Findings", Occasional Papers Series No3. pp.1-25. UNDP/IEO; Miyaguchi and Uitto (2017) "What Do Evaluations Tell Us about Climate Change Adaptation? Meta-Analysis with a Realist Approach" in "Evaluating Climate Change for Sustainable Development"

Realist Evaluation (Pawson & Tilley)

- Introduced the concept represented by "context + mechanism = outcome" (CMO)
  → i.e. without certain contextual conditions (the real), a generative mechanism cannot be triggered (the actual) to produce an outcome (the empirical)
- Involves identifying underlying causal mechanisms
- Explores how they work for whom, under what conditions

System integration illustration of Coupled Human and Natural System (CHANS)*



Source: * Lie, et al. (2016) Framing sustainability of coupled human and natural systems in: Pandas and People: Coupling Human and Natural Systems for Sustainability

Independent Evaluation Office
GLOBAL ENVIRONMENT FACILITY

Earth-Eval