

Social-ecological Regime Shifts and Transformation

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Building a world that remains within planetary boundaries requires transforming social-ecological systems at local to global scales. It also requires avoiding ecological thresholds that could push the Earth system into a state very different from the conditions of the Holocene under which modern societies have evolved. The concept of regime shifts has been useful for identifying critical thresholds that could lead to large-scale reorganization of planetary ecosystems. However, it is less clear how the regime shift concept applies in social-ecological systems, and how it could inform and support initiatives aimed at transforming social-ecological systems. Transformations can be viewed as regime shifts, but the central role of human agency and intentionality means they differ in important ways from ecological regime shifts. Nevertheless, understanding of regime shifts could help support transformation initiatives. Similarly, an inability to transform a system may imply a trap of some kind, and understanding of regime shifts could help identify forces that maintain such traps.

The session will open with a brief introduction to the patterns and the challenges revealed by a comparative analysis of regime shifts across different systems. This will be followed by a series of 10 minute talks that explore regime shifts and social-ecological transformation from different ecological and social-ecological perspectives. Each speaker has been asked to provide empirical examples of regime shifts in their field, and based on these shifts identify criteria used to identify regime shifts.

The talks will be followed by a half hour structured panel discussion where authors will be asked to respond to and discuss a set of prepared questions:

- 1) When is the regime shift concept useful for understanding large changes and reorganizations in social-ecological systems? What types of systems, what spatial and temporal scales, what type of changes?
- 2) How can we compare different regime shifts across different types of systems? What should be compared? Are there common patterns? What techniques are useful, what are their limits?
- 3) What are promising approaches that merit further exploration for understanding systemic change in social ecological systems? What techniques appear promising? What are the important frontiers of research?

The session will conclude with a short synthesis of the panel prior to engaging in a more open discussion, which will also be structured around the three questions listed above.

Panel participants and papers:

ReINETTE (Oonsie) Biggs - "Introduction: Operationalizing the regime shift concept"

Per Olsson - "Transformations and regime shifts: Links, similarities and differences between these concepts"

Erle Ellis - "Anthromes as social-ecological systems: mapping regime shifts globally"

Kasper Kok - "Social-ecological regime shifts a useful concept? Trajectories vs. Regime Shifts"

Carole Crumley - "Regime shifts in social-ecological systems over historical time"

Elin Enfors - "Traps and Transformations: Poverty in Sub-Saharan Africa"