Resilience in Social-Ecological Systems

- Recognizes the interconnectedness of ecological systems in nature and in human activities.

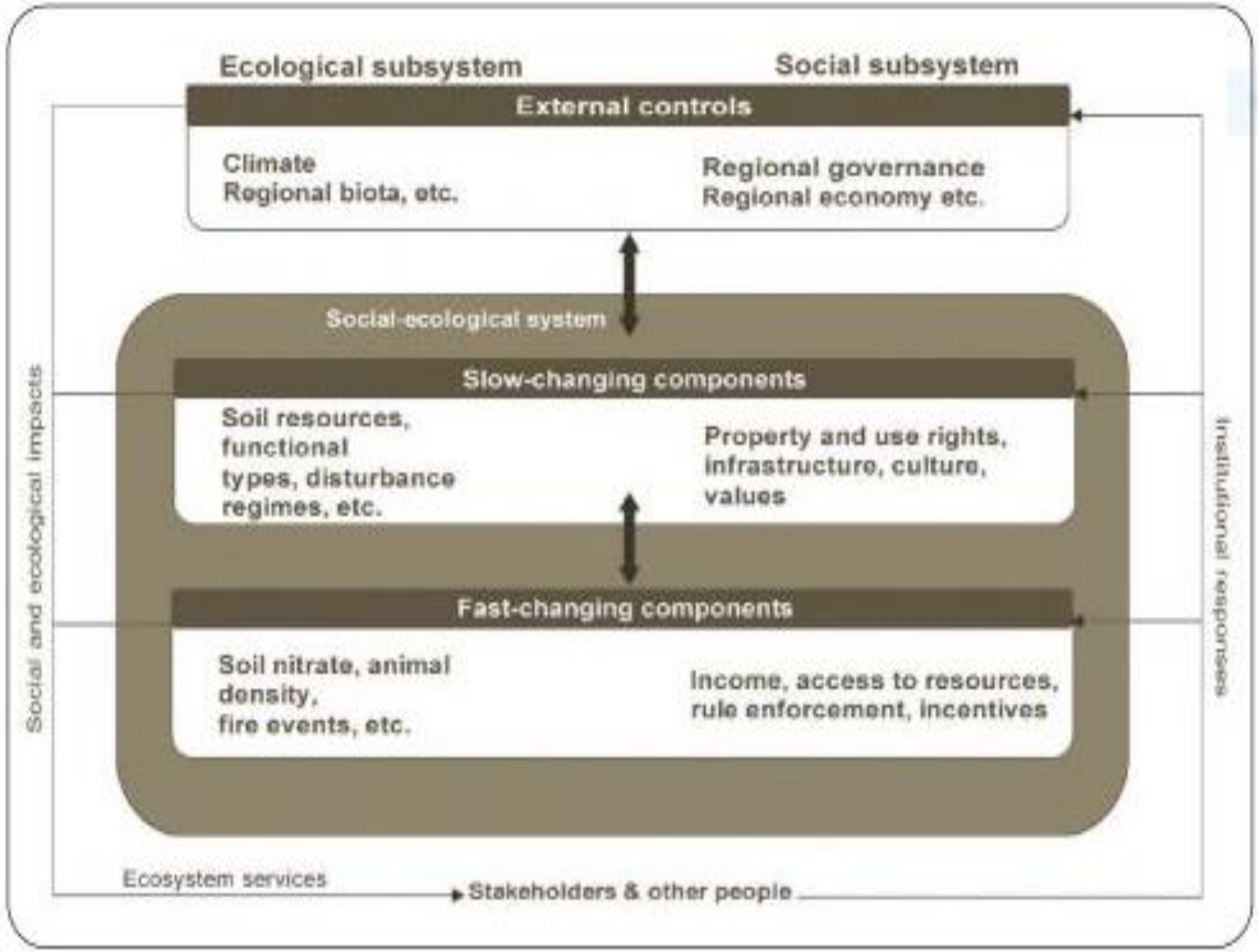
- Emphasizes that humans and ecosystems are mutually dependent.

- Provides useful means to understand our interconnected relationships, the influence of our actions and how to properly manage resources.

NASA. (Photographer). (2002). *Much of the information contained in this image came from a single remote-sensing device-NASA's Moderate Resolution Imaging Spectroradiometer, or MODIS* [Digital Image]. Retrieved from https://commons.wikimedia.org/wiki/File:Earth_Western_Hemisphere.jpg

Figure 2. Conceptual model of an integrated social-ecological system.

Ecological components interact with social components at multiple levels. Processes external to the system influence slow-changing components, which in turn influence faster-changing components that impact people more directly. People respond to system changes through institutional mechanisms, creating feedback loops that affect environmental benefits and human well-being (modified from Chapin et al. 2006, PNAS).



Gunderson et al., 2010

Social-Ecological: “Humans-in-Nature” (Gunderson et al., 2010)

Dorrah, Ed. (Photographer). (n.d). *Explore the incredible landscape at Joshua Tree National Park* [Digital Image]. Retrieved from http://intelligenttravel.nationalgeographic.com/2012/06/13/i-heart-my-city-shiras-los-angeles/2009-09-04_0611073-subscriber-false-marketing-false-newsletter-false-regysnewsletter-false-microtransactions-false/

Resilience Thinking

1. The systems are self-organizing

2. There are limits to the capacity of thresholds

3. The social, economic and biophysical domains are linked

1. Self-organizing systems go through adaptive cycles

2. Self-organizing systems operate at different scales (which are linked)

6. Specified and general resilience

7. Involves adapting and/or transforming

8. Has a cost

9. Not everything is important – resilience thinking helps to decide what is

10. Resilience is not about changing but requires change (Salt, 2015)

Lanting, Frans. (Photographer). (n.d.). *Rainforest in Borneo* [Digital Image]. Retrieved from https://genographic.nationalgeographic.com/background_nationalgeographic_1372756

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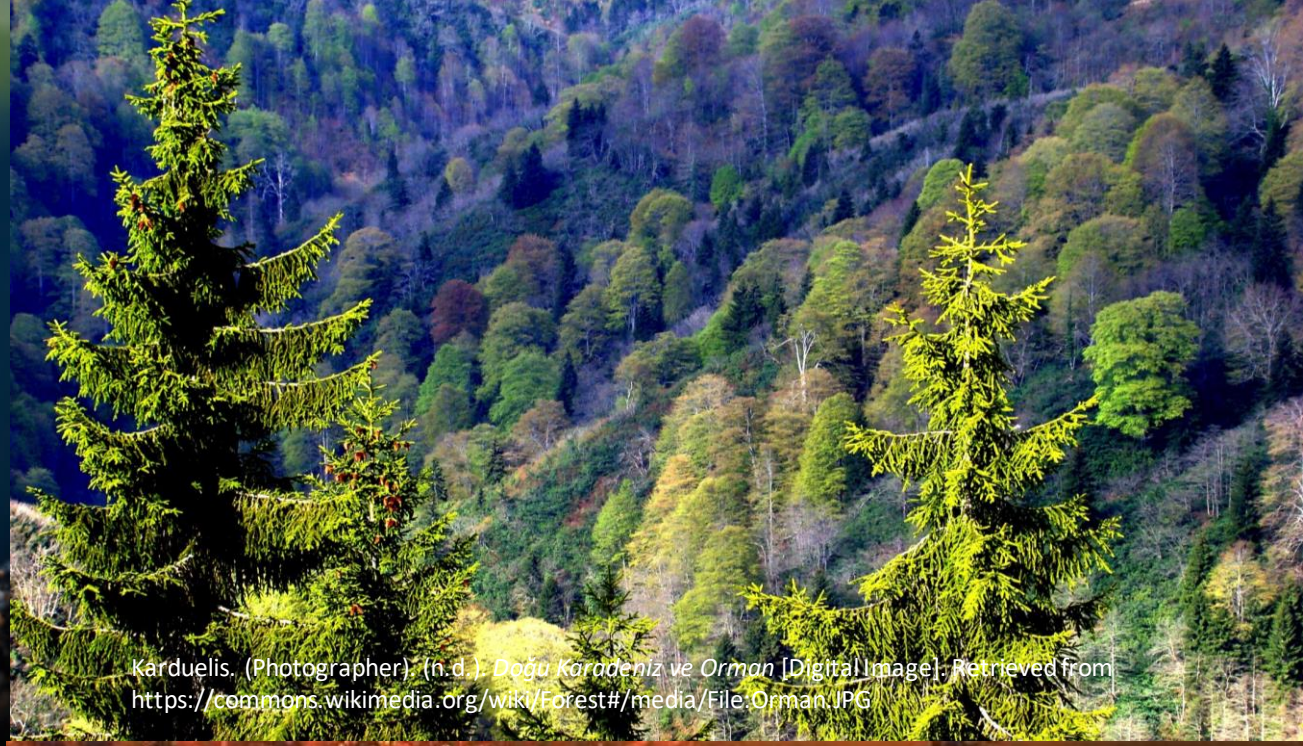

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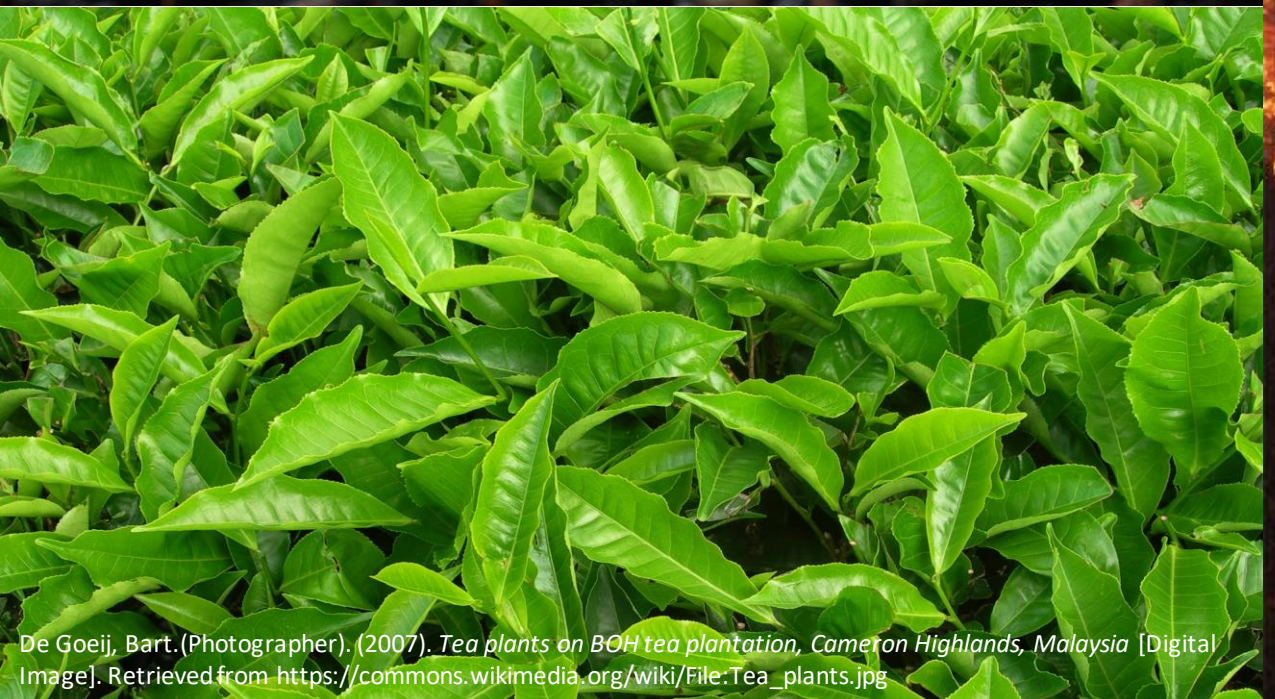

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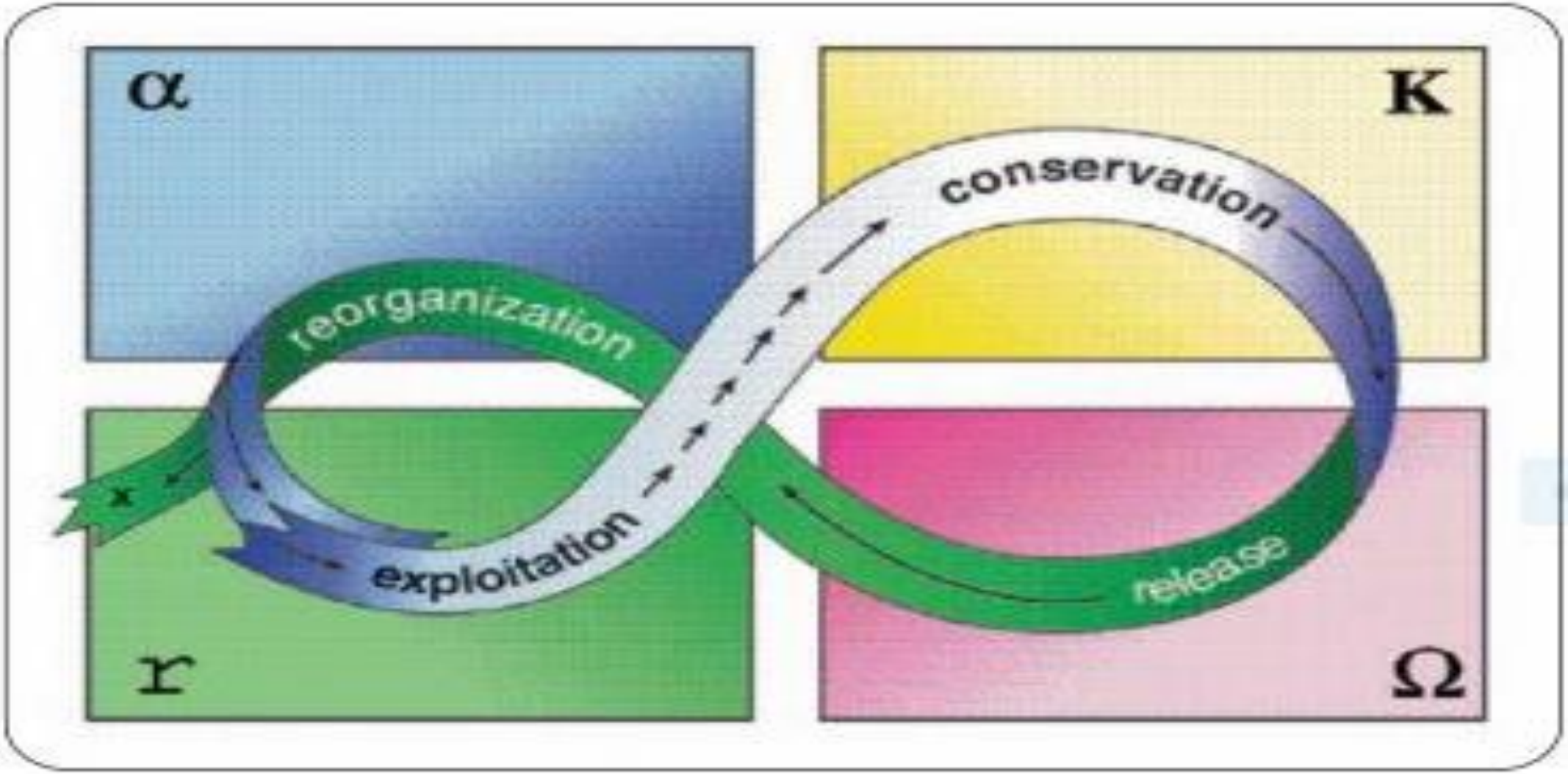
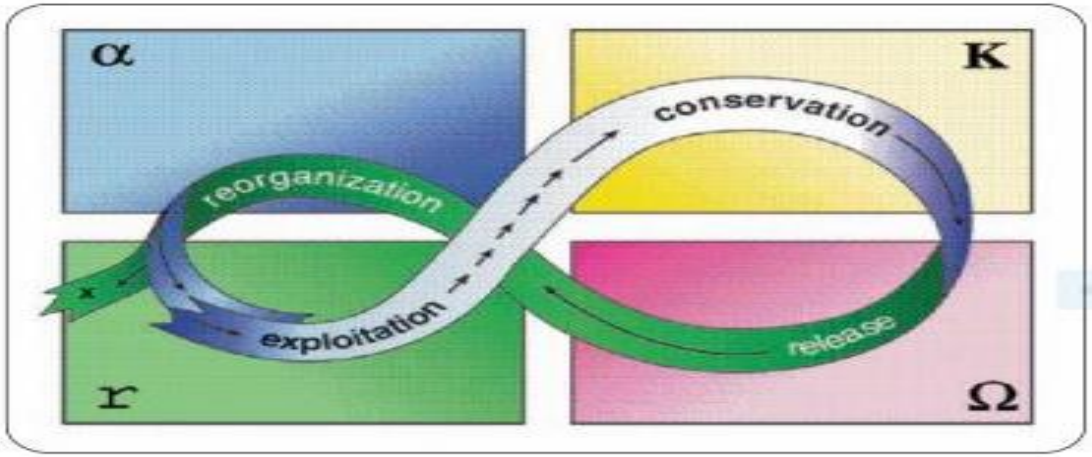
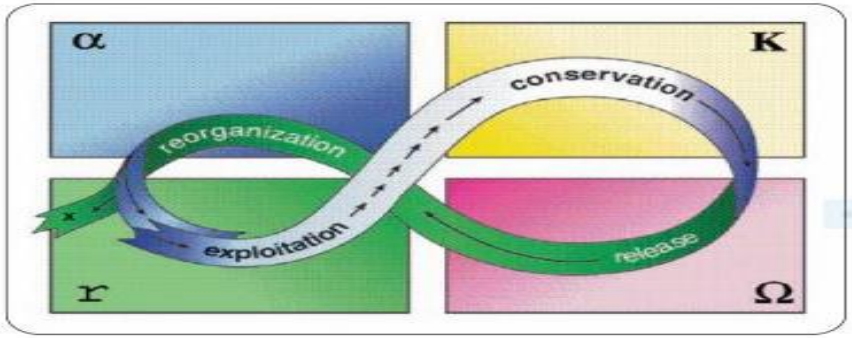
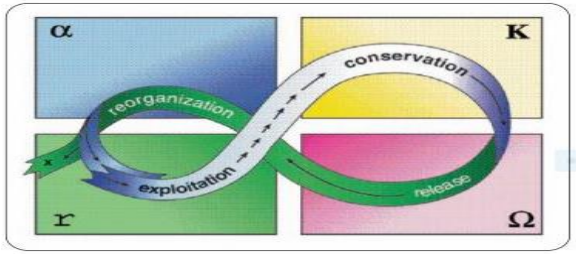


Gunderson et al., 2010

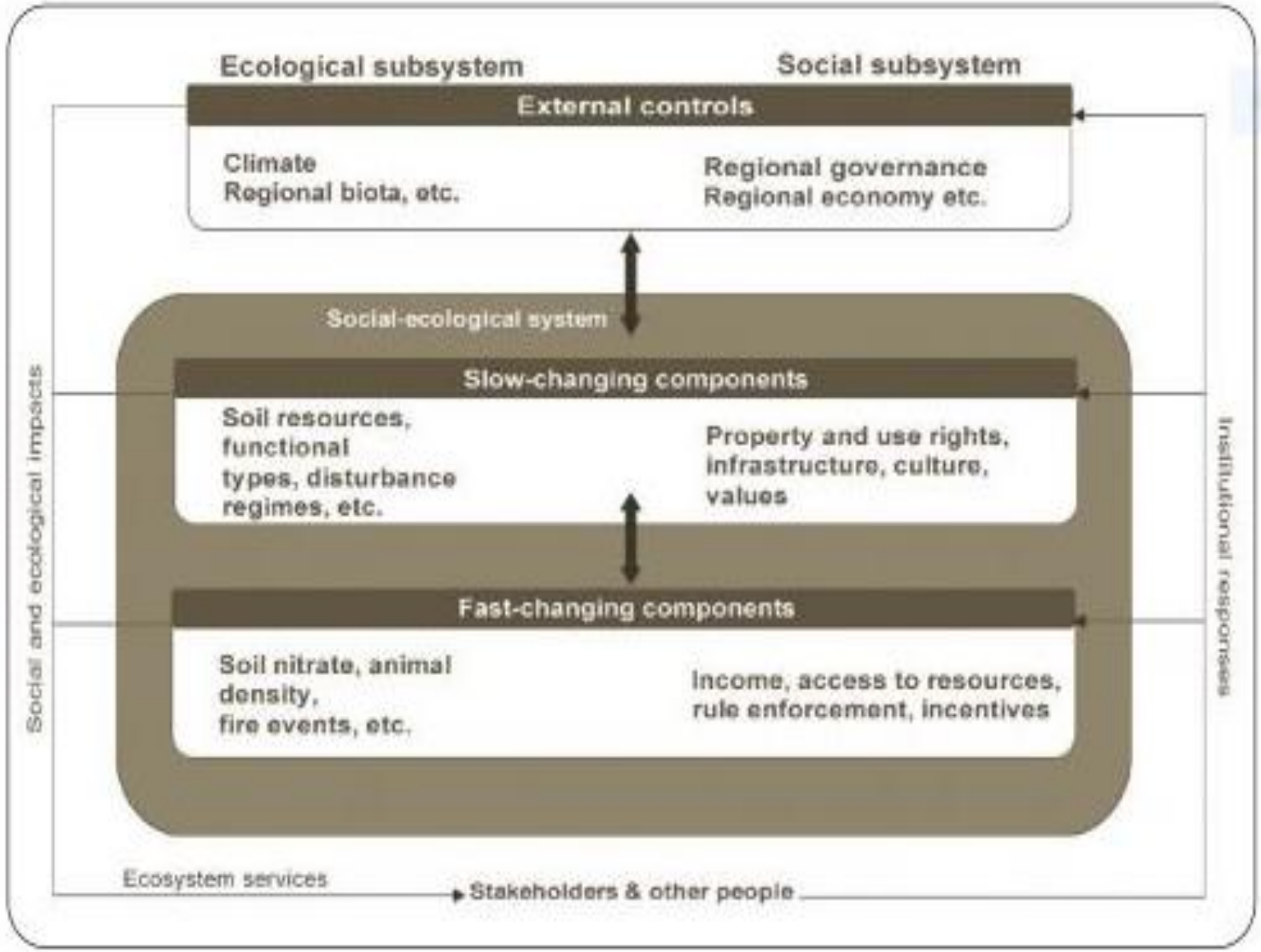
Panarchy
& Adaptive Cycle







Gunderson et al., 2010



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Gunderson et al., 2010

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