Sustainability Science • Sustainability Science: A guide for researchers

Terms & Definitions in Sustainability Science

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Action situations: contexts of nature–society interactions in which particular actors, operating in particular institutional structures, make choices about using particular resources to achieve their particular goals

Actors: entities with agency—the ability to choose or decide; they include people, communities, firms, other organizations, and states, but also some nonhuman organisms and their assemblages (see also our definition for **power**)

Adaptation: response to potentially disruptive change that seeks to limit damage or seize opportunities for improvement to a development pathway within a regime (contrast with transformations, resilience)

Adaptation pathways: dynamical, and typically path-dependent, sequences of adaptations in which early adaptations influence the conditions that call for later adaptations

Anthropocene System: a term for what some call the earth system or world system that better captures the increasingly global and intimate intertwining of nature and society ([Wing and Members of the Anthropocene Working Group 2019](#)).

Boundary work: process through which research communities organize their relations with new science, other sources of knowledge, and the worlds of action and policy-making

Capacity: the intention and the ability to accomplish a task or achieve an outcome

Capital assets: resource stocks—both natural and anthropogenic—on which society draws for its well-being ([see Table 2](#))

Complex adaptive systems (CAS): relationships among diverse elements that give rise to novelty and dynamics that feed back on those elements and relationships, resulting in a continually evolving system

Co-production: knowledge and society continually shaping each other in a dynamic, path-dependent process

Disruptions: shocks, surprises, innovation, and the unfolding unknown

Elements: variables or components of structure; may be coupled via functional relationships or processes

Fit: emphasizes the importance of matching governance arrangements to the characteristics of the action situation being governed

Frameworks: the most general form of conceptualization in science; provide checklists or building blocks for consideration in constructing theories or models ([Ostrom 2011](#))

Governance: the arrangements by which any collectivity, from the local to the global, seeks to manage its common affairs ([Ruggie 2014](#))

Heterogeneity: characteristics of actors and other elements that are distinctive and cannot be understood in terms of averages (also referred to as individuality or diversity)

Hysteresis: the tendency of a system change to be irreversible even when forces that caused the change are reversed

Imaginaries: collectively held visions of good or attainable futures that serve to envision the possible and motivate action toward new development pathways

Incumbency: relationships among actors and institutions through which power differentials shape, stabilize, and reinforce existing regimes and their associated development pathways

(In)equality: a positive or descriptive concept referring to the distribution of assets or freedoms among actors

(In)equity: a normative concept referring to the qualities of justness, fairness, and impartiality

Informed agitation: the arousing of public concern about an issue, through the means of knowledge sharing, research, and deliberation, for the purpose of bringing about action ([Sen 2013](#))

Innovation: the **interplay of** actors, institutions, goals, and resources through which new artifacts and practices are invented, selected, adapted, adopted, and brought into widespread use

Institutions: the rules, norms, rights, culture, and widely shared beliefs that shape the behavior of social actors in their relationships with one another and with nature

Logics of appropriateness: the idea that action is often driven by norms of behavior rather than by rules and regulations alone; asks “what does a person such as I do in a situation such as this?” ([March and Olsen 2011](#))

Multi-level perspective (MLP): a hierarchical framework for analyzing innovation in sociotechnical systems

Pathways of development: temporal changes in patterns of observed or predicted covariation in nature and society

Polycentric: systems with multiple sources of partial authority and semiautonomous decision-making that interact to create multi-level governance arrangements

Power: the ability of actors to deploy their agency in ways that affect the beliefs or actions of other actors

Productive base: the total set of resource stocks or capital assets on which society draws for its well-being

Public Trust Doctrine (PTD): holds that governments have a legal duty to hold certain natural resources in trust on behalf of present and future citizens

Reflexive governance: governance arrangements that promote the ability to question one's own core commitments

Regimes: sets of dominant relationships (both natural and social) that give rise to characteristic dynamics and development pathways

Resilience: a system's ability to utilize the "breathing room" provided by its robustness to disturbance to fundamentally change how it uses resources under the new conditions (see also adaptation, transformations)

Risk: the prospect of loss or gain under uncertainty of something thought to be of value, often incorporating estimates on the likelihood of a change and consequences if the change occurs

Safe spaces: institutional arrangements that encourage experimentation and the timely acknowledgment of error

Threshold: condition at which small changes can have big effects, leading to qualitatively different pathways of development; closely related to tipping point and catastrophic bifurcation

Transformations: shifts from one regime and its associated development pathways to another; also called transitions (contrast with adaptation)

Vulnerability: the likelihood that a particular subpopulation will lack or lose access to the resources they need to secure their well-being in the face of disruptions

Well-being: an integrating concept of the good life, the constituents of which will vary among people and across time

Citations

1. Wing, Scott, and Members of the Anthropocene Working Group. 2019. “Letters: ‘The Anthropocene Epoch Is Not Hubris.’” *The Atlantic*, October 11, 2019.
<https://www.theatlantic.com/letters/archive/2019/10/readers-defend-the-anthropocene-epoch/597571/>. [↵](#)
2. Ostrom, Elinor. 2011. “Background on the Institutional Analysis and Development Framework.” *Policy Studies Journal* 39 (1): 7–27. <https://doi.org/10.1111/j.1541-0072.2010.00394.x>. [↵](#)
3. Ruggie, John Gerard. 2014. “Global Governance and ‘New Governance Theory’: Lessons from Business and Human Rights.” *Global Governance* 20 (1): 5–17. [↵](#)
4. Sen, Amartya. 2013. “The Ends and Means of Sustainability.” *Journal of Human Development and Capabilities* 14 (1): 6–20. <https://doi.org/10.1080/19452829.2012.747492>. [↵](#)
5. March, James G., and Johan P. Olsen. 2011. “The Logic of Appropriateness.” In *The Oxford Handbook of Political Science*, edited by R. Goodin, 478–497. Oxford, UK: Oxford Univ. Press. [↵](#)