Introduction: a learning systems framework for building adaptive capacity and resilience

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Panel session: Methodologies for building adaptive capacity through shared learning among scientists, stakeholders and practitioners

Development of scientific and technological solutions is necessary but not sufficient to facilitate transitions to more sustainable socio-ecological systems. What is additionally required is a transformation of the values and worldviews that have engendered currently unsustainable socio-ecological systems. Shared learning is essential to the deep-rooted cultural transformation required for actors to embrace strategies promoting adaptability to uncertain futures. But how can robust shared learning emerge from multiple worldviews and ways of knowing of the actors at issue? And how can a shared learning process work with the complexity, systemicity and uncertainty inherent in sustainability challenges? We explored the development of learning systems within which scientists and practitioners co-create and act upon the holistic understanding needed to enhance adaptability. Towards this end, we convened participatory scenario processes with practitioners, comprised mostly of community and political leaders and natural resource professionals, to co-investigate plausible futures for the US state of Minnesota in 2050. Our experiences from this project, combined with ideas from experiential learning theory and cognition theory, led us to identify generic elements of a critical learning system for sustainability. Actors go through an iterative cycle of group learning processes to: (1) experience the complexity and interconnectedness of the situation, (2) create a shared model that makes sense of the complexity and systemicity of the situation and accommodates different worldviews, (3) design and deliberate options for action, (4) implement action and monitor effects on and transformation of the socio-ecological system, and (5) link to other learning systems. What makes the learning system ‘critical’ is the group’s capability to move from initial learning about the specific situation at hand (cognition) to learning how to improve their quality of learning (meta-cognition) and then learning to identify the worldviews at play and cope with their limitations for addressing the problematic situation (epistemic cognition). We hypothesize that adaptive capacity emerges from progressive turns through this learning cycle and the enhanced reflexivity when a group achieves meta- and epistemic learning. This panel offers an opportunity to discuss the panelists’ insights from their different experiences with scientist-practitioner participatory processes alongside these elements of a critical learning system.