Managing a $25 million sustainability science research portfolio: Innovative strategies to maximize social-ecological learning and problem-solving

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Producing knowledge and linking it to actions that meet human needs while preserving the planet’s life-support systems has emerged as one of the most fundamental and difficult challenges of our time. There is growing consensus that traditional methods of generating and using knowledge must be fundamentally restructured to confront the magnitude, complexity and urgency of many problems now facing society. Maine’s Sustainability Solutions Initiative (SSI), which is supported in part by a $20 million, five year NSF EPSCoR grant, represents an institutional experiment designed to learn how research universities can contribute more effectively to the solution of pressing societal problems with intersecting ecological, social and economic dimensions.

SSI is guided by a belief that efforts to solve sustainability problems require high levels of program integration and organizational learning, including a deep commitment to interdisciplinary teamwork, robust stakeholder – university partnerships, and an innovative institutional culture. SSI’s approach to advancing the theory and practice of sustainability science involves three interrelated areas of research: 1) investigating the dynamics and resilience of coupled social-ecological systems (SES); 2) examining and improving links between knowledge and action (K ↔ A); and 3) analyzing and fostering organizational innovation (OI). SSI’s initial focus is on landscape dynamics, with particular emphasis on three interacting drivers of landscape change (i.e. urbanization, forest ecosystem management, and the climate/energy nexus).

SSI is designed as a portfolio of research projects, where each project constitutes a place-based, multi-scale investigation of SES, K ↔ A, and OI processes, patterns, and interactions. While each project offers important learning opportunities in its own right, one of SSI’s central goals is to create a quasi-experimental design in which particular groups of projects can be used to compare and contrast the influence of different processes shaping SES, K ↔ A, and OI. This design also increases the potential for drawing inferences about the role of contextual factors (e.g. biophysical, socioeconomic, and decision-making characteristics) and scale on system behavior.

After one year, SSI’s research portfolio has been populated with more than 10 projects that address sustainability-related problems involving town planning processes, management of the North Woods, source water protection, invasive species and renewable energy development. SSI research teams are composed of 70+ faculty with diverse expertise from UMaine, University of Southern Maine, and many other Maine colleges and universities. These teams have engaged with a wide variety of stakeholders, including towns throughout Maine, tribal communities, state and federal agencies, business and industry, and NGOs.

We review some of the challenges and opportunities we have encountered in creating and managing this research portfolio, with particular emphasis on the potential of portfolios to advance the theory and practice of sustainability science.