Resilience of social-ecological systems depends greatly on three types of knowledge: knowledge from the past (memory), knowledge of the present (monitoring), and knowledge of the future (envisioning). This knowledge is coupled with the learning, reflection, and innovation that occur in an iterative cycle between learned experiences and anticipated yet unknown prospects. This interplay between knowledge and learning constitutes the core of adaptive capacity, or the ability to anticipate, prepare for, and respond to adverse effects under possible futures. We argue that such iterative processes of learning from the past, monitoring the present, and envisioning the future enhance resilience among social-ecological systems and prevent learning by shock (Tschakert and Dietrich 2010).

We present two methodological tools – mapping of drivers of change and participatory scenario building – used in the context of a climate change adaptation project (ALCCAR) in Ghana and Tanzania. We draw from resilience theory and action research/learning to validate accumulated knowledge and stored or latent potentials for renewal and reorganization. Memory, also referred to as “experiential grounding,” serves as the knowledge base underlying the capacity for anticipating and envisioning future uncertainty and surprise.

Our first tool engages men and women in eight rural communities (four in Ghana and four in Tanzania) to elicit what they consider major changes that have influenced their locale over the past 30 years, including exogenous environmental and economic factors and policies and endogenous drivers related to health, education, and social organization. Participants discuss which of these changes are likely to continue over the next 30 years and which new changes may emerge. Drivers of these changes are assessed by differentiating slow-changing and relatively predictable changes or trends and fast-changing disturbances with abrupt shifts. Also, participants debate what degree of control they have over specified processes and which are most worrisome.

The second part constitutes local-scale exploratory scenario building that is linked to the previously discussed and other, larger-scale drivers of change. The intent is to move from memory and relatively predictable trends to surprises, discontinuities, and potentially cataclysmic events. Scenario building allows us to explore local visions coupled with externally introduced, down-scaled climate projections that bring to the fore uncertainties and surprises. Typical elements in such co-created storylines include local and regional environmental change and development trajectories coupled with actual manifestations of poverty. Moving from one plausible future (a ‘snapshot’ in time) to variations of this one future to interlinked scenarios for the year 2035 offers informative, innovative, and potentially empowering learning spaces for climate change adaptation.
We present the opportunities, challenges, and limits of such innovative learning spaces in areas where local resource managers and policy makers alike struggle to make sense out of the complexities and uncertainties of climate change. We find that it is crucial to introduce, translate, un-pack, re-abstract, and use external science information in various learning cycles through storylines and experimentation to develop management probes that exceed current adaptation repertoires and overcome denial and hopelessness, as well as the tendency to idealize potential future realities.