

## PROJECT SUMMARY

Five years ago, in response to the original Decision Making Under Uncertainty solicitation, a group of researchers at Arizona State University proposed Greater Phoenix as a compelling laboratory for the study of water-management decisions in the face of climate uncertainty and rapid growth. In 2004, NSF established the Decision Center for a Desert City (DCDC) as a boundary organization at the interface of science and policy and as a center for climate-adaptation research and experimentation. It is now clear that the fundamental challenges facing Phoenix—physical exposure, lack of adaptive capacity, institutions ill suited to 21<sup>st</sup>-century uncertainties, and weak linkages between the science and policy communities—are in no way unique to this desert region, but transferable to rapidly growing cities across the West and, indeed, across the world.

DCDC II, infused with new and enhanced collaborations with investigators at ASU and community partners, will: 1) broaden and deepen our interaction with the decision-making community to include private-sector actors and public interests and move closer to the ideal of a boundary organization that translates science into decisions and actions; 2) extend research domains to address not only water, but interconnected energy and land-use decisions in a complex dynamic urban system; 3) refine DCDC's water-simulation model (WaterSim) to capture the scale dynamics, economic feedbacks, and distributional effects of climate-change decisions; and 4) work with the Central Arizona–Phoenix Long Term Ecological Research project to measure, monitor, and model tradeoffs among ecosystem services, social equity, and economic well-being. DCDC II will present concrete approaches for institutionalizing the boundary-organization concept: it will expand the collaborative beyond water managers; engage students in the interactive, iterative, and personal process of public collaboration; and train faculty members to convey best practices in boundary work.

The **intellectual merit** of this proposal lies in the production of new knowledge about individual and societal responses to climate change and other environmental risks and about best practices for boundary organizations, those at the interface of science and policy. DCDC II explicitly seeks to identify problems in Pasteur's Quadrant where new knowledge production is coincident with solving practical problems. Given the broad mandate of conducting socially relevant research about decision making under uncertainty, it is anticipated that new knowledge production will occur at the boundaries—between and among traditional social science and environmental-science fields, between individual and institutional decision making, and across research, education, and outreach.

By focusing on these boundary zones, DCDC II will have **broader impacts** on both science and society. New knowledge about urban-system dynamics can be applied to improving planning strategies for making cities less climate-sensitive. New knowledge about decision making in the face of long-term environmental risk will aid in formulating approaches to adaptation strategies based on the best-available, social-science understanding of individual motivations and societal norms. WaterSim is a mechanism for scenario planning and, in collaboration with ASU's Decision Theater, offers a unique opportunity for collaboration with community stakeholders. DCDC students will continue their leadership of cross-DMUU site collaboration, and the educational program is already beginning to produce the next generation of transdisciplinary scholars who can move easily between the worlds of science and policy.