

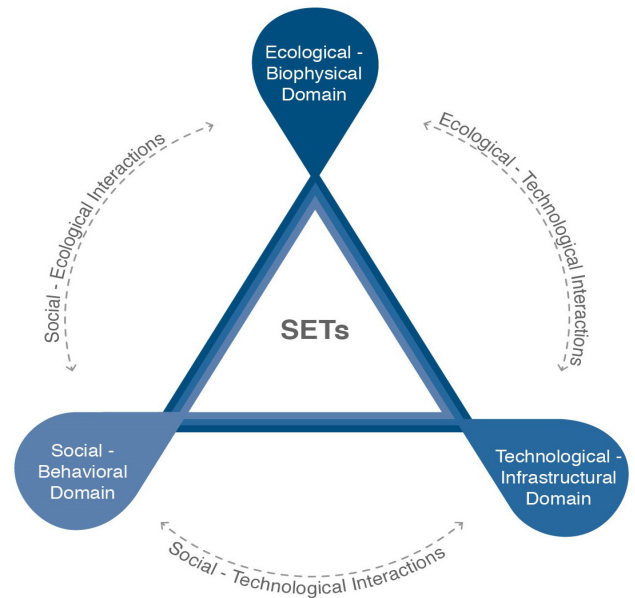
SETS Factsheet

What is the SETS perspective and why do we need it?

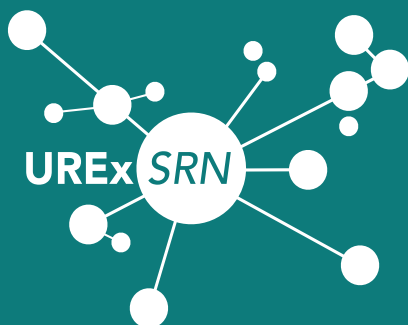
Wicked problems cannot be solved without diverse knowledge, experience, and perspectives. One such wicked problem is how we transform our cities into places and communities that are resilient. Resilient cities are able to persist, grow, and even transform while keeping their essential identities in the face of external forces like climate change that threaten lives, livelihoods, and the structures and processes of the urban environment. SETS thinking, which integrates social, ecological, and technological domains in a systems perspective, is essential to building resilience in cities, and ultimately, to enabling transformation to sustainable pathways to the future.

Cities are SETS (Social-Ecological-Technological Systems), and so are parts of cities like neighborhoods, parks, and infrastructure of various kinds. Perhaps the most important thing about SETS is that they are systems. This means that we cannot consider the parts in isolation, since they interact to form the whole. In SETS, social dimensions include both decision-making components (actors) and outcomes (ways that people are affected by the interactions within a SETS). Ecological dimensions are the elements of non-human nature that are part of the fabric of cities, with their associated processes (for example, tree growth and soil formation). Technological dimensions include the built components and processes of the urban system (for example, the system of roads or public transportation networks, the buildings, and the knowledge embodied in technology).

Cities rely on infrastructure to protect against extreme events. Familiar examples are sea walls to protect communities from storm surge, reservoirs to buffer against water scarcity, housing to protect people from temperature extremes. Most urban infrastructure has been designed for past conditions and therefore may prove inadequate under future conditions, such as an increased number and size of rainstorms causing flooding, or more severe droughts. SETS thinking re-defines infrastructure to include the three dimensions: social, ecological, technological, working together as a system. Scholars have considered the social-technical and social-ecological integration to be critical to understanding cities. But for infrastructure to be flexible, reflective, multifunctional, responsive, inclusive, integrative, and thereby resilient, it should include all three of the SETS dimensions. What institutions and knowledge are needed, and which people are affected by infrastructure changes? How can the services provided by natural ecosystems be integrated into the built environment? How can technological advances be used to impart flexibility or redundancy to infrastructure? The SETS approach demands that such questions – reflecting the three SETS dimensions – be answered to build resilience and support sustainable pathways.



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UREx SRN's Mission

Our mission is to link scholars with city and community practitioners to produce resilient infrastructure data, models, images, maps, stories, and on-the-ground projects in 10 cities, to accelerate innovative urban sustainability knowledge and application.

