



FROM CRISIS TO CONNECTIVITY

*Renewed Thinking About Managing
California's Water & Food Supply*

Ag Innovations Network
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Guiding Principles



CONNECTED THINKING

1. Understand natural systems: Integrated thinking and science-based solutions
2. Recognize that water, farmland, and habitat are finite resources that depend on each other
3. Emphasize connected-benefit projects
4. Recognize that food is water
5. Focus on long-term goals versus short-term fixes
6. Avoid unintended negative consequences of past and emerging approaches



INSTITUTIONAL LINKAGES

1. Move beyond institutional goals and entrenchment
2. Address conflicting policies and regulations
3. Manage political and economic drivers
4. Shift from 'one-size-fits-all' solutions to collaborative, regionally-appropriate, whole systems strategies
5. Assess and manage unintended consequences
6. Design and implement approaches to manage the transition from existing to new practices



PUBLIC AND STAKEHOLDER ENGAGEMENT

1. Participate versus consume
2. Public action from the ground up
3. Communicate with the public
4. Increase awareness and effectiveness of educational programs

Five cases have been selected to highlight water management projects that are already employing these principles. The cases are summarized in this report, and described more fully in the accompanying booklet, *Applying the Connectivity Approach: Water and Food Supply Projects in California that Connect, Link, and Engage*, which can be accessed at aginnovations.org/roundtables/crwfs/action/#Connectivity.

As more and more of us begin to apply the connectivity approach to the water challenges currently facing California we will develop longer-term and more systemic solutions to California's water quality and supply reliability issues.

METHODOLOGY

Since 2010, the California Roundtable on Water and Food Supply (CRWFS) has been cultivating a systemic approach to understanding and addressing the complex water and food supply issues in California. The results of this approach can be found in the three completed modules: ag water stewardship, water retention in the landscape, and improving connectivity in our water management approach.

Underlying this systemic approach, and central to the production of the reports from each module, is the social methodology that CRWFS uses to develop and support the capacity for renewed thinking and leadership among its members. Two critical elements of this methodology are bringing together diverse stakeholders and engaging them in respectful, trusting, and generative dialogue over time. This emphasis on strong relationships across different perspectives and over long time cycles enables a more thoughtful, holistic, and overarching perspective than any one stakeholder could achieve alone. It is within this type of atmosphere that a group of diverse stakeholders are best positioned to understand the needs of the whole system and to develop systemic recommendations, guiding principles, and strategic solutions that can address them. The social methodology used for CRWFS is, in fact, an approach for achieving connectivity. Members connect with one another, work together to identify an approach and guiding principles, and in this way generate the kind of connected thinking and connected-benefit solutions we advocate for in this report.

Dialogic inquiry, which is an important component of the CRWFS methodology, is used to guide the discovery process to build shared understanding of a topic. A dialogic inquiry is guided by questions that evolve as insights become clear and the focus of a topic sharpens. This is accomplished by suspending judgment in the initial stages and seeking to understand underlying assumptions. Out of this practice mutual understanding and consensus often emerges. The dialogue on connectivity that ensued over the course of 2013 was guided by the following questions:

1. What are the missing, broken, or dysfunctional connections in our water and food supply system? Which are most serious? Are there patterns that cause those systemic failures, and what are they?
2. What reconnections or new connections would effect the most change at this time, and into the long-term future?
3. How do we best conceptualize a framework for connectivity that will help us think about and identify strategies and principles to build a more connected and resilient water and food supply system?
4. What are the guiding principles for building a more effectively connected water and food supply system, and what current projects may already demonstrate these guiding principles in action?

This report captures the critical insights that CRWFS members gained from these dialogues.



Rice from Knaggs Ranch. Photo courtesy of Jacob Katz.

RE-VISIONING CONNECTIVITY

California's water and food supply systems are supported by two related and highly interdependent systems: ecosystems and human systems. Both of these systems are constantly evolving and interacting with one another. The following definitions highlight the characteristics of connectivity within each system. We propose that human systems are a central subsystem of the larger ecosystems, rather than systems that exist apart from and only linked to ecosystems.

► Ecosystems

In broad terms, an ecosystem is best described as a lattice of physical, chemical, and biological connections. Interconnected natural resources flow between them. This lattice of connections and flows provides a framework for the structure and function of an ecosystem. Our ecosystems have been extensively altered by human systems. A more detailed look at the variety of connections and flows follows:

- **Physical connections:** climatic, geologic, geomorphic, hydrologic, etc.
- **Chemical connections:** salts, nutrient cycles, etc.
- **Biological and ecological connections:** species and the relationships between species, habitat, etc.
- **Interconnected natural resources:** air, water, soil, salts, nutrients, etc.

► Human Systems

The human system is described as the lattice of physical, cultural, and institutional connections. Interconnected natural- and human-created resources flow between them. This lattice of connections and flows structures the way that human communities engage with each other, and how they relate to ecosystems. The system of connectivity between human systems and ecosystems is shaped by natural processes and systems and at times is disrupted by extreme or catastrophic natural events. A more detailed look at the variety of connections and flows of human systems follows:

- **Physical connections:** engineered systems such as water delivery systems, flood management systems, food cultivation systems, food delivery systems, transportation systems, etc.
- **Cultural and institutional connections:** governance/political systems, legal systems, educational systems, cultural/personal value systems, monetary systems, economic value systems, etc.
- **Interconnected resources:** money, information, knowledge, human communication, etc.

► Common Perception of Connectivity

The common perception is that ecosystems and human systems are separate, with distinct features, operational dynamics, and processes that act upon each other. We believe that this perception has misled us to exploit and degrade the natural resources that are necessary for human survival, and limits us from seeing how interdependent the two systems really are.

Underlying this misperception is the fact that we have historically

valued the resource needs of our human systems above the needs of ecosystems to maintain equilibrium and resilience over time. By functioning almost exclusively within the realm of our human systems, disconnected from the realm of ecosystems, we are forced to invest excessive amounts of time and resources in managing the limitations and breakdowns that result when our human systems collide with the powerful nature of ecosystems (e.g., climate change and land subsidence). The ongoing failure of human systems to align with ecosystems will continue to degrade both our human and natural resources, and potentially lead to catastrophic environmental, economic, and/or social consequences.

Common Perception of Connectivity

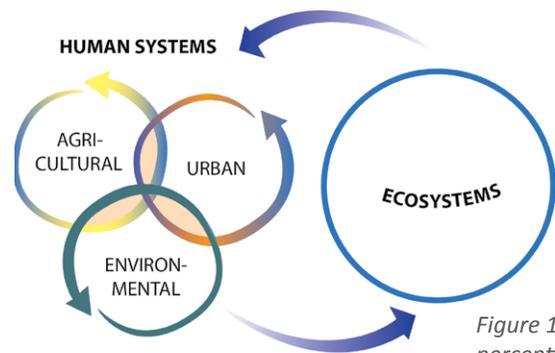


Figure 1. Common perception of connectivity

► New Vision of Connectivity

When human systems are seen as a subset of ecosystems, forming one interrelated system, we reduce contradictions between the two systems and generate new opportunities. Though the systems will always act upon each other, their interconnectivity expands the range and potential of human systems, and allows significant reductions in the resources needed to manage the existing disconnects between our human systems and the ecosystems in which we live. We can avoid costs and achieve more sustainable outcomes by utilizing nature's services and synchronizing ourselves with natural systems.

New Vision of Connectivity

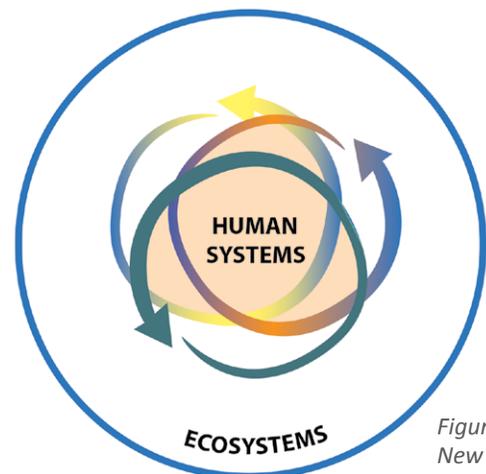


Figure 2. New vision of connectivity



The California Roundtable on Water and Food Supply is a project of Ag Innovations Network, a nonprofit organization dedicated to helping stakeholders solve systemic issues through effective collaboration.

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