1a) Cognitive Map (A) of Water System in Central AZ-Phoenix

1) Current State Analysis
   a) Cognitive mapping: key components of the water system
   b) System analysis: key interactions between components

2) Creating a Sustainability Vision
   a) Sustainability principles, best practices, and stakeholder values
   b) Craft vision using Decision Theater
   c) Develop alternative future scenarios
   d) Develop strategies to achieve vision and avoid undesirable alternatives

1b) System Analysis C(A): Creating a Coherent Sustainability Vision (V)

Systems analysis is a tool to assure vision is internally consistent. Identified components are used as variables in systems analysis conducted using SysDAM.

Residential Water Demand as Example of System Complexity

(i) "Demands": Boxes and circles are the key components of residential water demand
(ii) "Layers": Domains to organize key components
(iii) "Influence": Systemic linkages that are influenced by the particular layer within residential water demand
(iv) "Are Influenced by": Systemic linkages that influence the particular layer within the residential water system

2a) Sustainability Principles (P), Best Practices (B), and Stakeholder Values (S)

P. Sustainability Principles
- Precaution & adaptation: Decision-making that considers unintended, adverse effects and incorporates response strategies
- Socio-ecological system integrity: Development and maintenance of human-ecological relationships to meet the current and long-term needs of the whole system
- Resource efficiency & maintenance: Avoid waste, reduce damages, and decrease human use of natural resources
- Socio-ecological civility & democratic governance: Participatory decision-making, collective understanding and responsibility

S. Stakeholder Values
- Inter- & Intra-generational equity: Equitable access for current and future populations to resources that support a decent life, opportunities for improvement, and dignity
- Interconnectivity of global system: Incorporate into decision making at a local level the potential for global consequences and vice versa

B. Best Practices
- Tiered pricing system
- Network of smart meters for water use
- Increase use of wastewater
- Reduce outdoor water consumption
- Cover pools to reduce evaporation losses
- Install high-efficiency water fixtures

2b) Crafting a Sustainability Vision (V) in Decision Theater

- Tradeoffs in water management and use are inevitable and difficult
- Stakeholder values can be conflicting and need to be reconciled
- Develop model where stakeholders and decision-makers can make choices about water management and use
- Choices visualized in real-time using the Decision Theater

March 6th, 2010 Visioning Workshop with the City of Phoenix Planning Department and Citizen Stakeholders

*Stakeholder visioning workshops capture a diverse range of values and perspectives, though not all. Special effort will be made to reach out to underrepresented groups, in particular the local Native American community, through interviews with local members of the Gila River and Pima-Maricopa Indian Communities.

Sources

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