Decision Research in Water Resources Management:
A Multiple-objective, Multiple-stakeholder Analysis

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Abstract

We used a multiple objective decision modeling approach to create a comprehensive catalog of concerns identified by key stakeholders for guiding water resource policy in Central Arizona.

Objectives

To provide a comprehensive list of the criteria that capture the significant concerns of stakeholders as they would affect the central Arizona water system. The primary uses for this list of criteria are:

- Provide policy makers with a comprehensive catalog of stakeholder concerns for evaluating alternative water resource paths;
- Highlight the special interests of important stakeholders; and
- Help to focus discussion and promote constructive interaction for the purpose of developing appropriate water resource policies for central Arizona.

Methods

The preliminary list of concerns was identified by a review of written documents from various stakeholders and from personal communications with DCDC community partners.

A web survey instrument was used to obtain a broader set of inputs from the stakeholder community.

- 74 people were invited to participate, in two waves
- 46 respondents (62%)

Respondents were surveyed from 8 of 13 stakeholder groups, with emphasis on water providers, environmental groups, developers, and federal entities (see Figures 2 and 3).

Analysis of the survey responses is currently being conducted. Figures 2 and 3 exhibit preliminary findings with regard to stakeholder priorities.

Figure 1. An screen shot of one of the questions from the survey.

Stakeholders

13 categories of stakeholders were identified; all are concerned, at least in part, with water management in Central Arizona (some of the groups also focus on issues relevant to other geographies in the Southwest). The groups in gray were not contacted for this survey.

Federal Entities
Indian Tribes
State Entities
Elected Officials
Local Water Departments & Regional Agencies
Regional Water Providers
Private Water Providers
Electricity Providers
Agricultural Users
Municipal (Residential) Users
Mining and Sand & Gravel Industry
Private Sector Users
Environmental Groups

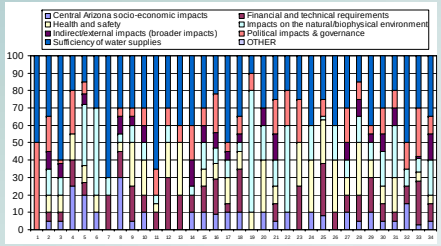

Figure 2. Preliminary results of 34 of the responses shows high variability of priorities among the stakeholder groups.

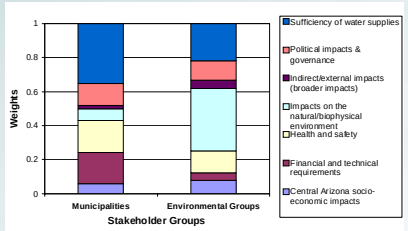

Figure 3. Examples of group differences in concerns, as identified in the survey responses.

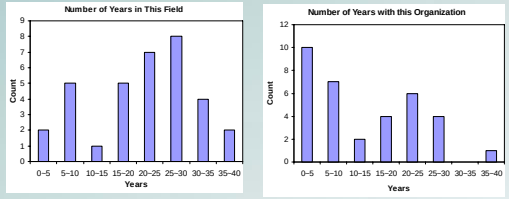

Figure 4. The majority of survey respondents had more than 20 years of experience in their profession, yet many were recently employed by their current organizations.

Stakeholder Concerns

Seven categories of stakeholder concerns were identified and for each, subcategories were defined.

Central Arizona socio-economic impacts
Factors that influence the conditions of public and the local economy
Financial and technical requirements
System costs and performance that apply to organizations
Health and safety
The quality of the water supply and its resistance to contaminants
Impacts on the natural/biophysical environment
Effects to the local environment, including riparian and other non-urban uses of water
Indirect/external impacts (broader impacts)
Planning impacts that extend beyond the institutional capacity of your agency
Political impacts & governance
Identifying and meeting stakeholder and policy development concerns
Sufficiency of water supplies
Availability of the water supply and its resiliency to climatic impacts such as drought

Conclusions

Preliminary review of the survey results shows significant variation of the concerns of stakeholders (see Figures 2 and 3). Most respondents appear to have a fairly specific focus for their future policy and decision interests. This indicates that taking a "whole system" approach is a gap where DCDC could provide a valuable addition to existing stakeholder efforts.

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