



Understanding water policy sustainability: A case study in San Francisco and San Jose California



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ABSTRACT

This research works to create a clearer understanding of sustainability in water policy through an examination of current water policies in San Francisco and San Jose, California. San Francisco was selected because it appears on various lists of as one of the “Most Sustainable US Cities.” San Jose was chosen as a control city based on being similar in demographics, climate, and in the same state, but did not appear on any sustainability lists. A comparison of the sustainability of water policies between the two cities was undertaken based on the traditional pillars of social, economic, and environmental themes highlighted in the literature. The results suggest that, as expected and for the most part, San Francisco has more sustainable policies than San Jose, although there is overlap. The environmental pillar was the least included of the three traditional pillars in each city while economic interests were the most prevalent. San Francisco was only missing two of the twenty-one themes while San Jose was missing ten. This cursory research suggests that to increase sustainability within water policy city agencies, policy writers, and water board members should address these themes in the writing of water policy. The study did not attempt to address the effectiveness of any policies.

1. Introduction

The long-term viability of water management systems is contingent on sustainable water policies. The question remains, though, what makes a sustainable policy? Research has been undertaken that specifies certain concepts and themes that might be found in water policy for it to be considered sustainable (see, for example, Gleick, 1998; Feldman, 2010). However, while these concepts and themes have been suggested as indicators of water policy sustainability, there has been little research determining if they are integrated into current policies. In this work, we examine the extent to which these concepts and themes have been incorporated into the water policy of two major California cities. We record the presence or absence of themes within the policies without addressing effectiveness at this time. We assume that the presence of more themes in policies suggests greater sustainability. This article focuses on a comparison between San Francisco, a listed sustainable city, and San Jose.

2. Literature review

While understanding water management is essential to ensuring sustainability of the overall system, it does not address the underlying concepts associated with public policy. Currently, there is a heavy

emphasis placed on the sustainability of water management. In a review of water policy reform and innovation, Moore et al. (2014) determined that academic research surrounding water policy, innovation, and sustainability is severely limited even though practitioners, urban planners, and policy agencies realize the importance of these topics (See Campbell, 1996). The goal of our research is to add to the literature in defining sustainability within the framework of water policy.

The problem of considering sustainability is exacerbated by the lack of a precise definition; as definitions often differ depending on the field being discussed. Sustainability can be a helpful, unifying concept that brings together many stakeholder concerns under one overarching value, as long as that value is understood by all parties involved (Campbell, 1996). Weber-Blaschke et al. (2005, p. 10), for example, assert that the definition of sustainability is “affected by ‘time and place in response to prevailing social, economic, and political conditions’.” Solow (1991) argues that sustainability is intended to be vague to act as a general guide for policies deal with investment, conservation, and resource use. However, Rydin (1999) discusses the potential problems with this approach as different understandings of the term can lead to conflict. Rydin continues with the suggestion that each discussion of sustainability starts with a precise definition before proceeding with any political discourse and policymaking. Therefore, at this time, sustainability is perhaps best understood through the 1997 United Nations

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Table 1
Social Sustainability Themes.

	Metric	Description & Example
Quality of Life		
Meet basic human need	50 to 100 liters of water, per person, per day	Sufficient water for basic need. Gleick (1998) suggests a minimum of 50 liters per person, per day.
Maintain human safety	Planned steps in case of purification failure or water shortage	Examples: failure plan, secondary water source, backup, emergency supply
Maintain human health	Additional water quality standards above national regulations.	Sustainability policy will also include standards specific to the region.
	Standards for separate uses including potable, non-potable, and ecological	Policy should develop lower water quality criteria for industrial, commercial, or landscaping purposes as well as water criteria for ecological water use.
Reliable service	Reliability understood as systems that allow for basic needs	Examples: diverse water source, supply portfolio, reliability
Democratic Water Decisions		
Government participation	Integrated decision making from all pertinent staff and government agencies.	Holistic decision making is key to long-term sustainability. Examples: inter-government, inter-agency cooperation
Community participation	Public participation in government	Examples: public meeting, open discussion, hearing, democratic
Available data resources	Data resources accessible to the public promptly	Examples: database access, research request, data collection report
Pricing		
Equitable distribution	Water for domestic, urban, industrial, or agricultural use is allocated proportionately and allows for basic need to be met.	Examples: equitable, apportionment, priority use, distribution
Socially just	Water systems available to citizens of all economic standing and the system does not put undue stress on individuals	Examples: accessibility, affordability, socially fitting

definition which states that “economic development, social development, and environmental protection are all interdependent and mutually reinforcing components” of sustainability (UN, 1997, p. 1). Using this three-pillar approach to sustainability, where economic, environmental, and social issues are all considered proportionately, ensures that water policy balances the needs of each aspect of the community.

Dovers (1996) makes a strong case that sustainability is different from other policy fields and should be treated differently. He lists characteristics that define policy problems when considering sustainability. Most notably, Dovers contends that spatial and temporal scale – where sustainability concerns extend past city, state, and national lines and where goals will not be achieved within one political cycle – make it difficult for policymakers to understand the depth and scope of sustainability within policy. Searle (2007) and Kua and Asanga (2013) also found that conflicts among the three pillars of sustainability can cause turbulence as policymakers must work to accommodate all three, which is usually not possible. Campbell (1996), in his article “Green Cities, Growing Cities, Just Cities?” discusses these conflicts as something that an urban planner must find a way to reconcile to ‘grow’ the economy, distribute that growth equitably, and not harm the environment in the process (1996). In the same way, policymakers must also attempt balance these three needs.

Water policy may magnify these problems because each of the three pillars has specific requirements that must be met within the same policy. Socially, people require access to clean water for drinking; economically, businesses need access to water both in industrial uses like cooling systems and agricultural uses like field watering; and ecologically for aquatic ecosystems that require water to sustain life. It is clear that water policy has to balance the three pillars of sustainability while still meeting the basic needs in each area.

Nevertheless, work has been done to identify themes that should be in water policy for it to be considered sustainable. The most prominent lists of water policy sustainability themes have been compiled by Gleick (1998), and Feldman (2010). Other lists and research have been proposed by Brown et al. (1987), Goodland (1995), Kuhlman and John (2010), Meindl (2011), Sedjo (2008), Sen (2000), and Shabman (2008). These articles were chosen as the starting point for the conceptual framework because they describe each theme in a way that can repeatedly be found in the policy text and thoroughly explain why that theme is necessary for policy. The research did not include those documents created by government institutions like the EPA as it was our goal to focus on articles that had been peer-reviewed.

Other work has been done that involves the review of comprehensive planning documents (see Berke and Conroy, 2000). However, the

themes presented in this type of research were not included in our work as the documents that focus on comprehensive community development are much broader than those documents that focus water. As a result, the themes provided are more extensive and not always focused on water use. This research also avoids using the results of work done in the growing field of climate policy specifically because climate change policy is currently voluntary whereas water policy is necessary and already in place. These are two different circumstances that result in two different sets of outcomes.

In our research, we compile the themes from peer-reviewed documents on water policy into a conceptual framework which we employ to determine if the theoretical ideas about sustainability have been introduced into policy. It should be noted, however, that data needed to facilitate political decision-making, while meeting the challenges of sustainability, are not addressed here (See, for example, Rajagopal, 2009; Tobin, 2009).

3. Methods

In step one of the research, we collected all current water policies for San Francisco and San Jose using municode.com. Step two involved reading and analyzing documents using the framework described below and keywords that were compiled from the literature. The purpose was to establish if the policy included the sustainability themes not if they were then implemented. If the theme was in the policy, it received a “yes,” and if not, a “no.” Finally, a frequency tally was kept to determine the most cited sustainability themes.

Themes identified during a literature review were compiled into a conceptual framework. Articles for the literature review were selected using keywords including “sustainable,” “water” and “policy” as well as all iterations of the words. The search was done using the University of South Florida Library journal collection. The framework of these themes was divided into the main pillars of sustainability, social, economic, and environment. These main pillars were split into subsections. It is important to note that some subsections overlap with one another, just as when considering sustainability. However, to best understand the results, the themes were organized by the most predominant characteristic. To use these data in a meaningful way, the themes were expanded to include metrics, keywords, and descriptions (for full description, see David, 2017). The final conceptual framework is found in Tables 1–3 each representing one pillar – social, economic, and environmental.

All the cities codes and plans were held to this final framework to determine which of the themes have become a part of the overall water

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