

# Institutional Challenges in Providing for Water for the Non Human Environment

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## Introduction

Providing sufficient water for environmental services and ecological sustainability presents institutional problems in many areas around the globe. The purpose of this brief discussion paper is to broadly outline these institutional conundrums. This paper will first explore the difficulty faced by environmental claimants to water resources, relative latecomers among water users. It will then turn to the legal, scientific, economic and political stature of environmental water claims. It will conclude with a plea for a better balance between physical and social science research related to water resources, especially where a healthy environment is at issue.

## Timing of Environmental Claims

Institutions tend to be backward looking, enshrining and perpetuating past values. To institutionalize means to regularize, make predictable, and sustain the observance of rights, priorities and practices that protect certain values. The longer institutions persist, the more entrenched they become as interests benefitting by institutions gain power and legitimacy. Institutions tend to become path dependent, that is they continue to persist even in face of mounting evidence that change is necessary (Pierson,2000) Since environmental values are relative latecomers among the values most societies view as important they become overlays upon long established rights, priorities and practices. For most of modern human history, water for human uses and economic development has taken precedence to the practical exclusion of all else. As a consequence institutions have been designed to protect the investment in water developments that have dammed,

diverted and channelized watercourses in ways that have badly damaged the environment. While these damages are widely recognized, and it is possible to design more environmentally friendly projects today, many past environmental insults of previously built projects are irreversible. Further while some infrastructure can be re-engineered to mitigate damage to fish and other wildlife, such action comes at a cost to the already served beneficiaries who resist changes and when change comes expect to be compensated.

Environmental claims also come at a time when other recently invigorated claimants to water are pressing forward competing demands. Environmental water, defined as water of sufficient quantity and quality to sustain environmental quality, faces rivalry from growing urban areas, newly empowered cultural claims from indigenous communities, and high priority, water intensive energy development. Moreover, the timing of these demands when many river basins are at or are exceeding their naturally available supplies, and recently recognized climate change that makes water supplies even scarcer in arid areas, and more variable most places. The institutional challenge for environmental water is not just to compete with the past but also to rank high among new values that are pressing for change.

#### Laws, Court Rulings, and Administrative Procedures

Making, interpreting and administering laws are primary instruments in institutional change, and have been widely employed in efforts to direct more water to the environment. Environmental values are widely embraced in important new laws like the European Union Water Framework Directive and are an explicit part of the extensively

embraced Integrated Water Resources Management. In the United States attempts to bring wildlife interests into water resources planning began as long ago as the Fish and Wildlife Coordination Act of 1934 that was supposed to elevate the status of these interests to the same level as irrigation, energy generation and other values. While repeatedly amended, the legislation has never achieved its goals because of other pre-existing laws protecting the rights of other users and implementation failures (Doremus and Tarlock, 2008). The weakness of fish and wildlife agencies was and is part of the problem, and politics will be addressed later in this paper. Other laws like the Environmental Policy Act of 1960 and the Endangered Species Act of 1973 (ESA) are less dependent upon administrative agency capacity and commitment because their full impact is often triggered by litigation. In recent years the ESA has been especially effective against activities that threaten the survival of rare and endangered species. Invoking the ESA is often spoken of as exercising the “nuclear option” in Western U. S. water wars because of the very large negative fallout. Simply shutting down water supplies to irrigators, as in the case of the Klamath Basin, or to irrigators plus growing cities as is the case of the California Bay Delta is politically risky and ultimately infeasible. Therefore the ESA is more useful as a threat than a policy tool, and its most effective use may be in forcing stakeholders to the bargaining table. What sort of bargains are struck brings back the issue of politics to be covered below. Further, court cases are time consuming and expensive to litigate, and results may depend upon legal talent that is not usually equitably distributed among contending interests.

Biological and Physical Sciences

It is important to know how much water, of what quality, must be made available where and when in order to protect the environment. Biologists and other scientists generally agree about the general desirability of protecting and restoring wetlands and mimicking the “normative river” with seasonal cycles, periodic floods and other “natural” characteristics. However, the devil is in the details, and especially when it comes to understanding the needs of specific species in particular cases, and scientists are often at a loss to say that a greater or lesser quantity or quality of water at a specific place is the critical factor in species survival. Yet, science on just such questions is often the crux of ESA litigation. Not surprisingly, what has developed in the Western United States are science wars in which all sides engage scientists whose scientific findings supports their interests. ” The absence of adherence to the precautionary principle in the United States (the norm that when in risk of harm is in doubt, action should not proceed) places the burden of proof on the challengers to ongoing water allocation and operations. In science, all the interesting questions are at the frontiers of the unknown, but when science is used to backstop administrative regulations, scientific uncertainty and disagreement can become very damaging to the agencies and often to the reputation of science itself. Agencies that can not prove with scientific certainty that water project operations or allocations will critically damage species are accused of “junk science. The result is that the overall reputation of science is damaged in the eye of the public when different scientists hired by different sides seem to take contrary positions.

Many reform minded analysts place a great deal of faith in adaptive management in which uncertainty is embraced and management builds in scientific experiments and learning by doing. There is no question that more resources need to be directed to the

biological and ecological sciences and that management agencies need to be learning organizations. It would be a mistake, however, to think that science can put the rest of the big questions concerning environmental water. Conflicts are basically about differing values (Doremus and Tarlock, 2008).

### Acquiring and Protecting Environmental Water through Markets

In capitalist societies such as the United States, at the World Bank, and in many international forums, the re-allocation of water through markets is an idea in contemporary ascendance. Certainly markets allow for differing preferences among individuals in that values are apportioned through markets or supply and demand. Markets can reallocate water to what economists term “the highest and best use” on the basis of what people are willing to pay for. From this perspective, the institutions that need reforming are vague and insecure property rights that are difficult to buy and sell, and the absence of open public markets where information about what water is available for sale and at what price is easy to find. Mechanisms to enforce contracts and to monitor water transfers must be in place, and other “transaction” costs must be kept low if efficient markets are to work.

Without question market and market like tools can help to serve the need for environmental water under some circumstances. Private environmental organizations like the Nature Conservancy buy water rights and release them to provide for in stream flows. There are also cases where governments buy up water rights to be used for environmental purposes (Ingram and Fraser, 2005).

By themselves, however, markets are not likely to be able to provide adequate

environmental water. Environmental values are hard to quantify in dollar terms. While the environmental services approach has made headway on this problem, and research using this approach has revealed the broad ecological benefits for environmental services are very large, there is a difference between numbers on paper and actual bids people are willing to pay. Environmental services are a collective good the long term benefits of which are widely shared across societies quite ignorant of total benefits and more focused on benefits that can be individualized and can be realized in the short term. Governments are likely to be the only entities that can collect sufficient funds to pay for environmental services through markets, and generally governments are distracted by many other more immediate priorities. Moreover, governments are more likely to resort to regulatory tools that are cheaper from a budgetary standpoint.

## Politics

Politics has a bad name among water scholars and practitioners because they generally prefer decisions driven by expertise, and because they deplore the messiness and unpredictability of political decision-making. Yet, politics is the means through which value conflicts are usually settled in societies, however governed. Different kinds of political systems distribute authority and power differently, but ultimately political power settles most water issues. The idea that politics can be replaced by some other more rational appearing method for collective decision making is unrealistic.

Because politics and political power are so influential, it is very important that scholarly analysis inform the research and practice of water resources about how politics

works and the political circumstances under which institutional change is likely to take place. An important rule of politics is that political authority and power used to pass laws or bring forth court decisions is different from the political authority and power needed for implementation. Among the lessons that can be drawn from the implementation of environmental laws supposed to direct more water to fish and wildlife such as the Fish and Wildlife Coordination Act, the Endangered Species Act and the like is that strong laws do not make up for the weakness of fish and wildlife agencies that shoulder much of the burden of law enforcement related to environmental water. Underfunded agencies with weak in-house capacity to engage in credible research, and not supported by powerful, engaged interest groups can not be expected to fulfill their mandates.

Another insight from political studies of water resources is that institutional change requires both political leadership and strong public mobilization (Huitema and Meijerink, 2007; Ingram and Fraser, 2005; Ingram, 2008). While environment related water problems are certainly sufficiently serious to warrant heightened public concern, easily comprehensible institutional or policy solutions that attract widespread public support are difficult to come by. Further, even when what are widely regarded as good institutional reforms are in place, good performance on this difficult issue is not guaranteed. While a great deal of faith is often placed on regional and river basin and watershed institutions with stakeholder driven collaborative decision processes, there is little evidence that such governance actually delivers decisions and results more favorable to the environment (Fritsch and Newig, 2008). Consider, for instance, the fate of environmental water during the recent drought in the Murray Darling Basin, the site of what is widely regarded as a successful institutional innovation establishing a federal-state commission charged with

setting a cap on human uses to protect the river's health. At a recent conference,

Commissioner Wendy Craik reported:

As a result of past decisions to maximize irrigation water availability, the environment suffers a proportionally greater impact of water shortage than irrigators. Although floodplain ecosystems have adapted to climatic variability, the combined effect of ongoing severe drought and over allocation are exceeding the ecosystems capacity to survive. Under natural conditions, significant flooding will occur approximately every six years. Without existing irrigation developments, significant flooding would have occurred in 2001. However, there has been virtually no natural floodplain inundation since 1992. The MDBC has engaged in critical environmental watering during 2006/07 and 2007/08. The total amount of water used for environmental purposes, during these two years represents about 1% of the total amount available to irrigators (Craik, 2008).

## Conclusion

Success in fashioning institutions to adequately respond to the problem of guaranteeing adequate flows of water to the environment and for ecological sustainability remains illusive despites decades of effort. No “magic bullet” can be found in law, science or stakeholder collaboration that overcomes continuing controversy in this area. Instead, the reality of the conflict between environmental values and established and emerging human uses of water that drive what seems to be insatiable demands will be settled through political processes. Whether those political processes can be open, fair, equitable, and informed by good science is the contemporary challenge for the water resources community.

A better balance in water resources research among social scientists and physical scientists would be helpful toward designing desirable processes that appropriately weigh available knowledge and can forge implementable agreements. There are not nearly enough studies of the politics of water resources. Water researchers need to attend to what such

studies could reveal about political opportunity structures and the cultivation of leadership through strategic and timely insertion of ideas, perspectives, relevant science, and accumulated wisdom. Political and other social science research may reveal opportunities and appropriate strategies and tools to link water for environment with other critical subjects of heightened public concern, like climate change to raise the visibility of water and to bring in a broader, more energized movements and networks.

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