

Bridging the Gap Between Principle and Practice in Agricultural Water Management

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Principle and Practice

There are some basic principles of good water management that we could probably all agree on. Water should be used efficiently and should be allocated fairly. Also, users should avoid actions that impair the quality and quantity of water available for other uses or users. Finally, water management should be responsive to both public and private interests. While these principles might mean different things to different people, one thing is certain: to an outside observer, agricultural water management practices in the West do not seem to square with principles of good management.

The perceived gap between sound water management principles and actual practices in agriculture is, in large part, true. Of course there are exceptions, as some farmers have adopted very efficient irrigation technologies and conservation programs, have switched to high value crops, or undertaken aggressive pollution control programs. However, in an era of fast growing urban populations, increasing public concern over environmental resources, ballooning budget deficits and the end of public financing for large-scale water projects, that gap is troublesome to those outside of agriculture. For agriculture, the increased scrutiny and finger-pointing over water management practices can be uncomfortable, to say the least.

California is a good case in point. The agricultural sector in California uses over 80% of the developed water supplies in the state, and yet it represents only 3% of the state's \$700 billion economy. Agricultural water prices are highly subsidized with farmers paying little to nothing for the water they use. (The costs of water to farmers ranges from approximately \$3.50 per acre-foot to \$80 per acre-foot, an order of magnitude cheaper than costs to urban users.) Most agricultural users also enjoy long-term contracts to water, thereby "locking in" the same overall pattern of water allocation of decades at a time. In addition to water subsidies and contracts, government commodity programs like the Payment-In-Kind program (PIK) and dairy price support programs also play a role in encouraging inefficient agricultural water use.

Secure with the lion's share of water at subsidized rates, agricultural production in California includes over 9 million acres of irrigated lands, including former wetlands, riparian habitat, and even poor quality lands that have been converted to agriculture. Unregulated groundwater pump-

ing, surface and subsurface runoff, and toxic pesticides associated with agriculture pose significant threats to the environment and other water users.

As California grapples with a potential seventh year of drought, the attitudes of the public, the media, and other water interests toward agricultural practices are increasingly intolerant. However, if the aim is to solve the problem rather than to criticize, it is important to understand the roots of current practices. In fact, the reason agricultural practices don't make sense is because the underlying policy signals don't make sense, at least not in the political, economic, and environmental context of the 1990's.

Policy Roots of Current Practices

Agriculture is the darling of water policy at both the federal and state levels. It has dominated western water policy for more than a century, and, more than other interest groups, agriculture has been successful in compelling institutions, bureaucrats, and politicians to protect and advance its interests.

Policies governing agricultural water management are the product of another era, a time when the limiting factor for the settlement of the West was that water was in the wrong place. Piece by piece, water policy evolved as a response to natural limits and the challenge of getting water from where it was to where it was needed, and then diverting water for more and distant, non-riparian uses.

The prior appropriation doctrine is the cornerstone of all water development policy (and, by extension, land use patterns) in the West. Unlike riparian water law, the prior appropriation doctrine embraced the twin principles of "first in time, first in right", and "use it or lose it". Thus, the actual diversion and use of water became the measure of the right, and the privilege of using it was secured through its continued use.

Agriculture has always taken a supply-side approach to water management, with the primary aim of developing and securing additional supplies. One hundred years ago, the federal government, under the banner of reclamation, took on the mission of financing and constructing irrigation projects with the aim of supporting small farming operations. The Central Valley Project of California (CVP), the largest reclamation project in the West, is one such project. Paid for by taxpayer dollars and constructed

by the United States Bureau of Reclamation, the CVP is a massive network of 20 major dams and reservoirs controlling a full 20 percent of California's developed water supply. Everything about the CVP is big, including its cost (\$3.7 billion), its service area (the CVP provides irrigation water to 3.5 million acres of agricultural land and to another two million urban customers), its total storage capacity (12 million acre-feet), and its subsidies.

Agriculture also has been persuasive in lining up allies to help promote its water development agenda. Until recently perhaps, agriculture found that ally in urban users who share the same interests in the development of new water supplies. Farmers also have been persuasive in getting states to enter into the business of financing, building, and operating large-scale water projects. In California, the State Water Project came on line in the early 1970's as the junior sister to CVP. Its developed supply of approximately 2.3 million acre-feet is delivered to agricultural and urban users in southern California.

Over time, the pieces of western water policy — laws, institutions, agencies, politicians and special interests — have coalesced into a perpetual motion machine — designed and operating to ensure that water for agriculture is both abundant and cheap. Agricultural interests have captured the loyalty of the brotherhood of bureaucrats, engineers and politicians — the “iron triangle” — who reign over the development of western water supplies.

It is little wonder, then, that water management practices which evolved in the context of supply-side policies look inconsistent with principles of efficiency, equity, conservation that are so important today. However, the historic preference for structural solutions and the bias towards out-of-stream consumptive uses — practices and policies designed to overcome natural limits — have fostered a new set of limits in the form of environmental degradation, costs to the taxpayer, inequity to small farmers and urban users outside the halo of federal (or state) water development. These new limits pose a new challenge to agricultural interests and water institutions.

Principles of efficiency and stewardship were not given much consideration in water policies of the last 100 years. Now that must change. The tremendous bias against non-consumptive uses of water has severely impacted aquatic habitats and the species that depend on them, as well as recreational and aesthetic uses of water. In California, groundwater overdraft averages approximately 1.3 million acre-feet per year, and toxic discharges from agriculture are the leading cause of water pollution in over 500 miles of surface streams. At the same time, agricultural, urban and environmental representatives are locked in a contentious debate over the future allocation of the state's water.

Getting the Signals Straight

Agricultural water management practices are in fact improving, partly as a function of drought-related reductions in water supplies, and partly in response to other economic and political pressures. In California, cut-backs in water deliveries to agriculture have encouraged farmers to adopt more efficient irrigation technologies and practices. Sprinklers have been substituted for furrow irrigation, half-mile furrows have been shortened to quarter-mile furrows, and sometimes only every other furrow is flooded. Some farmers have selectively fallowed lands or switched to higher value, less water intensive crops. Others have implemented irrigation scheduling or hired conservation specialists. Farmers have installed collection systems at the bottom of their fields to capture and recirculate runoff. Along with farmers, water districts have begun using pricing systems and other incentives to encourage more efficient on-farm practices.

The drought notwithstanding, agricultural water management practices in California, and the West, are still largely a product of policies and institutions of a different era. In order for practices to better reflect good water management principles, water policies will have to be reformed to more accurately reflect a changed West, and changing public interests in water. Today, approximately 80 percent of the people in the West live in metropolitan areas; in California more than 95 percent of the people live in cities. Moreover, California dominates the West, in terms of its size (100 million acres), its population (over 35 million), its economy (the 7th largest domestic economy in the world), as well as its agricultural sector (approximately \$18 billion per year).

The interest of *this* public in water also has changed with more and more people concerned about the environment and urban uses. Finally, there are new players in the water policy arena. In addition to environmental interests, federal agencies and Indian tribes are asserting historic rights to water, and rural communities and family farm organizations are joining in the debate over efficient and equitable water management.

Some specific policy changes can improve the signals to agricultural water users about good water management practices. First, water prices should reflect the value of water in different uses. Excessive subsidies to agriculture create an inherent economic weakness in the industry and external costs to society. The gap between principle and practice in agricultural water management is directly related to the gap between what irrigator pays to use water and the social cost (e.g., pollution, groundwater overdraft, insufficient instream flows) of that use. Tiered water pricing, or other pricing systems, are essential for ensuring the long-term viability of the agricultural sector.

Second, water policies generally should rely more on marketplace incentives and alternatives through water transfers, input pricing, pollution fees, and conservation requirements to encourage more efficient use of existing supplies.

A third way to improve water policy signals would be to integrate the management of water quantity and water quality. Agricultural run-off is the largest non-point source of water pollution in the nation. Yet, despite the direct relationship between water allocation, use and water quality, water policies and therefore practices separate issues of water quantity and water quality. Agencies charged with management and stewardship of water supplies are not the agencies with authority over water quality, and yet these attributes are integrally related. Similarly, surface and groundwater supplies are integrally related and should be managed conjunctively, with groundwater conservation and metering on par with that for surface water resources.

Fourth, agriculture would benefit from an increased reliance on demand-side management, including conservation, conjunctive use, crop switching, and other practices for improving efficiency. Finally, with the end of the era of big dams, management decisions should be decentralized, giving more authority to local governments, and regional or watershed-based entities, to determine appropriate management practices.

Just as upstream and downstream water users are intimately related, so agricultural water policies are related to policies governing other water uses. Thus, in closing the gap between principle and practice in agricultural water management, it is also important to address those policy issues related to environmental (and urban) water management that have direct bearing on agricultural water issues. In particular, uncertainties surrounding the legal status of environmental water uses relative to more traditional consumptive uses contribute to public concerns over inefficiency in agricultural water use.

The long-standing policy preference for large-scale water projects to serve out-of-stream, consumptive uses is based on the notion that water that is left in the stream is *wasted*. Thus, while agricultural and urban uses are recognized as beneficial and have legal rights to water, instream uses to support fisheries, recreation and aesthetic purposes have only recently gained recognition as beneficial uses, and then only in a few states. Similarly, policies governing the institutional arrangements for public or private ownership of environmental water rights also are unclear.

Scarce water supplies, increasing public concern over the quality and restoration of aquatic ecosystems, and the looming uncertainties over environmental water rights have had the combined effect of focusing public and media

attention on inefficiencies and inequities associated with agricultural water practices. Policy reforms to establish secure and adequate environmental “baselines” (e.g., minimum instream flows, water quality standards, and wetland water supplies) would relieve some of the public pressures on agricultural users.

Signs of Change

Change takes time, and there are signs that the gap between principle and practice in agricultural water management in California, and the West, is beginning to close. In 1991 and 1992, elected state officials, agency representatives and opinion leaders from the western states held meetings in Park City, Utah for the first time to discuss policy and management alternatives for responding to competing and changing interests in water. Individual states, agencies, and user groups have been experimenting with a variety legislative changes, negotiated agreements, incentive programs and other approaches for improving agricultural water practices, and resolving disputes between private and public interests in water allocation and management.

At the federal level, Congress recently passed, and the President signed into law, the Central Valley Project Improvement Act. The purposes and specific provisions of that Act represent a landmark in western water reform by attempting to provide a reliable water supply for urban areas and a sustainable agricultural sector, and dedicating a sufficient amount of water for environmental mitigation and restoration. The Act also introduces greater flexibility in water management through substantial marketplace incentives and alternatives through water transfers, pricing systems and conservation requirements.

These are good beginnings, but there are plenty of obstacles that have yet to be overcome. Agricultural users and their representatives are wary of making efficiency improvements that could jeopardize their access to the lion's share of water. Bureaucrats whose jobs and expertise are rooted in traditional water management approaches are reluctant to support changes in operational or regulatory groundrules. Government agencies at both the state and federal levels tend to be inflexible institutions, and are slow to respond to opportunities for new approaches and priorities in water management.

Conclusions

Agricultural water users must come to terms a changed political, economic and environmental landscape from the one that shaped current agricultural practices. In the context of a public mandate for efficiency and conservation by all water users, there is clearly strong public support of maintaining a healthy and sustainable agricultural sector. The message for agriculture is not to “give it all up” and go out of business; only to *share* the benefits and risks associ-

ated with a scarce water supply.

All water use sectors are related by virtue of the resource. Ultimately, the gap between principle and practice in agricultural water management can be closed only if agricultural interests are willing to work with environmental and urban interests to change institutions and practices that have dominated water policy for the past 100 years. New policies and practices must recognize the value of water resources through rational water pricing. Decision-making and management must be decentralized, giving more control to local governments and room for regional or watershed-based management. Finally, equity considerations must figure more prominently in weighing water management options. A willingness to change, together with the commitment to explore and develop new institutions and approaches to water management, are what is needed to send the correct signals to agriculture about water management for the 21st century.