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SCARCE WATER AND INSTITUTIONAL CHANGE

K. D. Frederick, ed.
Washington, D.C.: Resources for the Future. 1986.
Pp. 207 + xii. \$22.50.

Scarce Water and Institutional Change is a welcome addition to the water policy literature. Kenneth Frederick's book, like most of this literature, takes an efficiency approach to evaluating water institutions; it is happily distinguished by its appreciation for the social, political, and legal environment of water policy. This volume could be a model for the intelligent and creative use of economic data to quantify the important tradeoffs in water management. In five case studies, efficiency analysis is used to shed light on the institutional structure rather than merely to label it as irrational and deficient as many economic studies of water institutions have done. Water institutions may be irrational, but they are the framework for water management choices, and they must be respected as reality.

In the first study, Butcher, Wandschneider, and Whittlesey use the cost of irrigation diversions at various points in the hydropower system, as defined by the loss of downstream generating capacity, to identify the tradeoff between instream and diversion uses. Knowing that an acre-foot of irrigation water above Swan Falls, Idaho has an opportunity cost of \$41.00 in lost electricity puts the litigation over state water rights for hydropower and irrigation at Swan Falls Dam in perspective. In a case known locally as "Idaho Power Against the World," Idaho Power sued the Idaho Department of Water Resources and upstream irrigators for loss of its vested rights to flows for electric generation. The court found for Idaho Power, leaving the state legislature to work out a policy for irrigation rights that had been granted in the belief that hydropower rights were subordinated to diversion rights. The state's struggle to reconcile conflicting irrigation and hydropower interests under the Swan Falls decision illustrates the issues other than efficiency that make water management decisions difficult.

Vaux's contention that the irrigation districts of Kern County, California, would gain from developing a market to trade water supplies is unconvincing, largely because the districts seem to have been able to make exchanges with ease, and it is not clear that large unexploited gains are present. This chapter does explain the problems of conjunctive use management well, particularly the problem of pricing district-supplied surface water competitively with private-access groundwater so as to reduce overdraft, cover surface water costs, and still encourage farmers to maintain their pumps for emergency water supply.

Wahl and Davis summarize the economics of the Metropolitan Water District's water supply policy with a comparison of unit costs of alternative sources, including the purchase of conserved irrigation water from the Imperial Irrigation District (IID). These dollar figures are placed in context by an excellent review of the legal and contractual conditions for each of the alternatives. One is curious, however, as to why the IID recently rejected the contract for transfer of conserved water, and the Wahl and Davis study does not suggest an explanation.

In the only case involving eastern water supply, Shabman and Cox use the cost difference between two alternative water sources to estimate how much Virginia Beach is willing to pay to avoid interjurisdictional conflict. They use this \$60 million difference to evaluate the potential gains from a water market in Virginia, and conclude that it probably would cost the state more than the potential savings in efficiency to create the necessary infrastructure. They propose an arbitration board with authority to impose binding solutions as an alternative forum for resolution of water conflicts in Virginia.

In the concluding chapter, Howe, Schurmeier, and Shaw survey the lessons learned from the Colorado-Big Thompson (C-BT) Project, which developed the water distributed by the Northern Colorado Water Conservancy District (NCWCD). The authors do not call attention to one of the more interesting lessons revealed in their excellent history of the project. Like virtually all contemporary water supply proposals, the C-BT project involved two allocation questions: first, how should the area-of-origin be compensated for its lost water (the equity question); and second, how should water move from one use to another as supply and demand conditions change (the efficiency question). In June of 1937, representatives of eastern and western slope interests worked out an agreement with the Colorado congressional delegation that compensated western slope water losers for the water transferred to the eastern slope. In 1957, twenty years and a world war later, when the NCWCD got its first water deliveries, the C-BT allotment was made a freely transferable contract between the district and the holder, a decision which resulted in the "unusually effective" market established in C-BT water. In the C-BT project, the terms of compensation had nothing to do with the water transfer institution. The efficiency question was easily decided in complete isolation from the equity question.

One would like to see a sequel to *Scarce Water and Institutional Change* that focuses on quantifying the asset value of interests vested in the existing water rights institutions. In the NCWCD the asset value of allotments of C-BT water is known, because they have a market price. What was the asset value of an irrigation water right above Swan Falls Dam before the *Idaho Power* decision? After the decision? How does that

value change under alternative state policies to reconcile irrigation and hydropower rights? What other values are affected by these alternatives? The perceptions of irrigators and others of the magnitude of these values will set the parameters for conflict over proposed changes in the water institution. As this volume demonstrates, we have become much better at quantifying scarcity. The next step is to give some parameters to conflict.

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