The Heritage Foundation Backgrounder

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HOW MARKETS FOR WATER WOULD PROTECT THE ENVIRONMENT

INTRODUCTION

George Bush repeatedly stresses his intention of making the environment a priority issue for his administration. His first step was last week's ambitious proposal for amending the Clean Air Act. As important will be his commitment to revising America's water policy.

While the nation by no means is running out of water, the most accessible — and therefore the cheapest — sources have been already developed. It is for this reason that fears are voiced of severe future water shortages.

In many instances these concerns about water stem not from an absence of supplies, but from the absence of a proper market to insure a balance between consumer demand and those supplies. Freely operating markets are the most effective means for distributing goods, whether food, shoes, or water. If government regulations and subsidies distorting water use were eliminated, water markets would allow excess supplies of water to be sold or leased to those who desire more. In this way, a market would replace the bureaucratic controls imposed by government, enabling the price mechanism to assure a balance between the supply and demand for water — just as prices do for other goods and services in the economy.

Example: A recent National Public Radio (NPR) broadcast discussed California's "water wars." It mentioned that California has suffered three consecutive drought years, putting increasing pressure on municipal water supplies as reservoirs have been lowered. Yet, noted NPR, agriculture consumes over 80 percent of all water used in California. Marc Reisner, a

consultant to the Ford Foundation's National Water Policy Reform Project, explained that "most urban customers pay two to four hundred dollars in the West for water that the farmers pay three to twenty dollars for."[1] Since water use by farmers is heavily subsidized by taxpayers, farmers waste water while urban homeowners are growing desperate for new supplies.

Example: Despite being one of the wettest areas of the country, Southern Florida faces local water supply problems. Though restrictions on water use have been instituted, the problem persists. The reason: southern Florida's municipalities charge no more for water than do areas of the country that are not facing Florida's rapid population growth pressures. Predictably, demand increases with a growing population while supplies run short.[2]

In both of these examples, the problem is not an inherent lack of supplies. The problem, instead, is a failure to use markets as a tool to encourage residents and industry to use water efficiently. As with any commodity, the amount of water "needed" changes with the price paid for it. The higher the price, the less the "need" will be. If water in a city is free, or priced well below the cost of developing supplies, residents have the incentive to make heavy use of water — perhaps to fill swimming pools or maintain lush lawns in the peak of summer — even while expressing concern about impending supply shortages. The "water shortage" problem is, in fact, a problem of a shortage of water pricing.

Rather than instituting market pricing for water, cities usually respond to perceived water shortages by pressing for major new federal projects to recycle existing supplies or to secure new sources. Yet lawmakers who address water supply issues find that they must consider two powerful constraints.

First, budget pressures created by federal and state spending limits make funding for major new water projects difficult to obtain.

Second, there is growing concern among environmentalists over the damage caused to America's aquifers[3] and rivers by incessant demands for new water supplies. Much of Florida, for example, relies upon aquifers for water supplies. Increased pumping from the aquifers is exceeding the natural rate of recharge from river and rainwater seepage. When an aquifer's water level drops in coastal areas salty ocean water can be drawn underground, ruining the aquifer.

Hidden Costs. The underlying problem that policy makers must recognize is that Americans have come to view water as a plentiful and "free" commodity to be provided by government. Yet this has two serious hidden costs: 1) heavy taxpayer funding for supply and wastewater treatment

1 From broadcast on National Public Radio network, *Morning Edition* program of March 23, 1989. Segment provided by member station KQED of San Francisco, California.

2 From conversations with South Florida Water Management District personnel, February 1989.

3 Aquifers are subterranean rock formations that are sufficiently porous to be able to hold large amounts of water.

facilities and 2) environmental damage to the rivers and aquifers. To reduce or eliminate these costs, markets should be used to distribute the actual costs of the water to the users. This would discourage users from wasting valuable water, would channel supplies to those who value them most, and would moderate demands for those additional supplies which, in many cases, damage the environment.

To encourage wider use of water markets in America, the Bush Administration should:

♦ ♦ Propose a moratorium on all new water projects until they can be justified on economic grounds.

♦ ♦ Introduce water markets as an integral part of all existing and future water supply projects.

♦ ♦ Make greater use of markets to improve water quality, to curb water pollution and environmental damage.

In this way, Bush would spur the use of water markets throughout the federal system. This would assure the most economical use of water supplies and defuse the tension between users, suppliers, and environmentalists.

THE GROWING PRESSURE TO REFORM WATER POLICIES

For decades, there has been political pressure from localities for increased federal spending on water supply and treatment facilities. This has spurred many major projects. Recent cutbacks in federal spending and growing resistance from environmental organizations, however, have constrained these pressures, encouraging lawmakers to question carefully proposals for new major water projects.

The Drought in Federal Funding

One result of the federal budget deficit has been a cutback in federal support for water projects and a shifting of water supply costs to the states. The Clean Water Act amendments of 1987, for instance, phase out federal sewage treatment plant construction grants in favor of a revolving loan fund operated by states. The Act also requires that the states contribute a larger share of construction costs for treatment plants. The Environmental Protection Agency (EPA) Office of Water estimates that the Safe Drinking Water Act amendments of 1986, together with the 1987 Clean Water Act amendments, will require the states to spend an additional $300 million annually to comply with the new federal requirements and to make up for reduced federal funding.[4]

4 "Paying for Cleaner Water: The State Funding Study," U.S. Environmental Protection Agency, Office of Water, 1988.

At the same time, the Tax Reform Act of 1986 effectively eliminated many financial mechanisms for funding water projects.[5] For example, caps were placed on the amount of tax-exempt Industrial Development Bonds that states can issue to finance project construction. Meanwhile, the federal tax code's Accelerated Depreciation Schedules were curtailed and the Investment Tax Credit repealed, making alternative private water project construction ventures and wastewater treatment projects much less enticing to investors.

These federal law changes force cities to find new ways of financing the supply of clean water – particularly in the case of recycled wastewater.

Example: Lubbock,Texas is one of several cities to use new wastewater treatment plant designs to permit recycled water to be used to irrigate local crops and parks. This process avoids traditional expensive technologies by relying upon natural bacteria to decompose wastes. Michigan's Muskegon County pioneered this technique and has recycled over 40 million gallons of wastewater each day since 1972.[6]

Example: Auburn, Alabama, has turned to private contractors to build and operate the city's sewage plant; city officials expect to save an estimated $1 million per year in operating costs. The city even has rejected available "free" federal funding because regulatory delays created by federal programs made federally assisted construction more expensive than relying upon local financing.[7]

The Environmental Backlash

Increasing concern about the environmental impact of water projects also constrains efforts to improve water supplies. Two decades ago, the National Environmental Policy Act of 1969 (NEPA) introduced requirements on federal agencies to consider the environmental consequences of their major policy initiatives. Under NEPA requirements, an environmental impact statement must be prepared for any "major federal action significantly affecting the quality of the human environment."[8] Originally this was a fairly simple procedure. But as new laws and regulations have amended the process over the years, this document now must contain minute detail of the potential impacts of proposed activities and can lead to years of disputes over the validity of its conclusions.

Most of the great river projects in America, whether dams or irrigation systems or flood control levees, were completed well before the full range of

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5 *Ibid.*

6 See John R. Scheaffer, William W. McGuire, and Wayne Cowlishaw,"Managing Water Resources: A Better Way: A Report on Water Resources in the Midwest," a paper presented at the 1987 American Legislative Exchange Council Midwest Economic Summit, Milwaukee, Wisconsin, March 13-14, 1987.

7 Stephen Moore and Stuart M. Butler, eds., *Privatization: A Strategy for Taming the Federal Budget* (Washington, D.C.: The Heritage Foundation, 1987), Chapter 8, "Cleaning up Federal Water Policy Through Privatization."

8 42 U.S.C. Sec.4332(2)(C)

these environmental restrictions was put into effect. Similar projects proposed today in most instances would be blocked by NEPA standards. But even if a newly proposed project meets today's exhaustive legal standards, it is still likely to encounter opposition from many national and local groups concerned over potential damage to the environment.

EPA Interference. In some cases, this political pressure forces modifications in the project; in other cases it can derail a sensible project. For example, in Colorado, Environmental Protection Agency Administrator William K. Reilly has stepped in to prevent regional EPA office approval of the Two Forks dam project on the South Platte River. Reilly is calling for further study of the environmental impact of the proposed dam. Reilly is taking this action despite a $37 million study that determined the project's design will avoid harm to the total environment by replacing any recreational or environmental losses. Moreover, no federal subsidies are involved since this project would be funded completely by the private and municipal beneficiaries of the water provided.[9]

In another Colorado struggle over water supplies, the Sierra Club is seeking to set a legal precedent by suing the federal government to require federal agencies preemptively to claim all water rights associated with federally owned wilderness areas. The organization claims that the federal government retains an "implied" water right in all wilderness areas under the 1964 Wilderness Act.[10] The case is intended to deny state and private access to federal wilderness area water supplies, even though the Forest Service and the Department of the Interior have argued that there is no need to create an "implied" right in the federal government.[11] If the Sierra Club ultimately prevails, the long-term water development and supply plans of many Colorado communities will be seriously hampered.

Disappearing Wetlands. Although they sometimes exaggerate the danger, environmentalists correctly point out that major water projects can pose a severe threat to sensitive wetlands and their wildlife. Most wetlands are found along the courses of rivers, areas that are home to much of America's waterfowl and commercial fishery spawning grounds. For instance, the state of Louisiana contains over one-quarter of America's wetlands. But the state's wetland acreage is declining. One major reason for this is that, since the 1920s, the federal government has tried to increase the amount of agricultural lands by reducing flooding along the Mississippi River with an extensive levee system. This has turned what were once wetlands into fertile lands for growing crops. Another reason is that the river has continually been dredged, chiefly by the Army Corps of Engineers, to remove sandbars impeding navigation. As a result of this dredging, the river no longer changes its course from time to time, creating new wetlands. Further, the levee system

9 For further information, see David K. Stalland, "Build Two Forks For Us, Young Colorado Argues,"*Independence Issue Paper* No. 10-88, The Independence Institute, Denver, Colorado, May 3, 1988.
10 See *Sierra Club v. Block*, 622 F. Supp. 842 (D. Colo., 1985)
11 See Steve Janes, "Whose Water Is It?"*Our Land* Magazine, Spring 1989, p. 30.

extends through the Mississippi delta to the open sea. This means the silt carried by the Mississippi River, that normally would have replenished the wetlands, flows straight out into the Gulf of Mexico. Thus, the wetlands are gradually disappearing. Without a constant supply of fresh silt and nutrients, the wetlands and the unique plant and animal life they contain are being washed away by storms and wave action from the sea.

Threats to smaller wetlands areas also have become the focus of national attention. The National Wildlife Federation, for instance, has opposed a federal plan to contribute $41 million to help fund a Canadian dam project on the Souris River near the border with North Dakota. The U.S. government claims that the project would aid flood control efforts downstream at Minot, North Dakota. But the National Wildlife Federation fears that two wildlife refuges on the American side of the border will suffer.

THE BENEFITS OF INTRODUCING MARKETS FOR WATER SUPPLY

The battles between water users, environmentalists, and government officials in many cases arise because there is no economic mechanism to force costs and benefits to be judged. Neither side in each skirmish, therefore, has the incentive to weigh the economic implications of its demands. In most instances, users of water are not charged the economic cost of water. Thus they have an incentive to demand more projects to increase supplies, and little reason to explore more economic means of obtaining water. For their part, environmentalists either discount the economic aspects of their demands or ignore markets as a tool to balance demand for water with appropriate concerns about potential damage to the environment.

A market for water works like any other market. Owners of water supplies offer their water for sale and users offer to buy it, with the two parties negotiating an agreeable price. As this type of transaction is repeated by many other buyers and sellers, an efficient, competitive water market develops which balances supply and demand — without the need for government control over water distribution.

Encouraging Conservation. Besides achieving this equilibrium between existing supply and demand, a market for water leads to other valuable benefits. Among them:

1) By requiring users to pay the full market price of supplies, prices rise when supplies are short. This automatically encourages conservation.

2) When facing high market costs for limited supplies, potential users — such as a developer considering a new housing project — would be forced to consider whether the cost of water made the development worthwhile. In this way, overbuilding in areas where water is scarce would be discouraged.

3) A market price would encourage users of artificially cheap water, such as farmers cultivating arid land, to consider selling water to those who value it highly but now cannot obtain supplies.

Markets for water resources thus offer efficient means for allocating water supplies and a powerful mechanism for balancing demands for new water supplies with legitimate concerns about the environment. The pressure for many water projects, in fact, would disappear if proponents had to pay the full market cost. In many instances, the environment would be better protected from development pressures if environmental groups would recognize that markets offer a way to resolve competing interests.

Objections to the Use of Markets for Water

Critics of markets for water resources use two main arguments. First, they contend that markets would prompt owners of water rights and supplies to hoard their supplies to drive up prices for water consumers. Yet this occurs more readily under today's water policies than it could under a market approach. Consider the actions of an irrigation district receiving its water at a below-market rate which also is a fraction of the price nearby municipalities are willing to pay. With a legal system that effectively prohibits water sales, the irrigation district's managers have no incentive to economize on their water usage and make supplies available to a municipality. Meanwhile, the municipality has the incentive to press for a new water project and for taxpayer subsidies. If irrigation districts easily could sell any water in excess of their minimum requirements, they would have strong incentives not to hoard or waste water.

Serving Powerful Interests. The second common objection to water markets is the claim that it may not allocate water to important uses. Visions abound of parched schoolchildren and hospitals in crisis under a market-oriented water allocation system. But under the current system, supplies often go to powerful interests, such as farmers who use it to produce crops already in surplus, while water is scarce for less powerful industries and communities. A market would allow the latter group to purchase water from farmers, providing the farmers with an alternative source of revenue through water sales. This would encourage farmers to reduce their reliance on federal farm subsidy programs while simultaneously giving other users access to a secure supply of water.

Before a farmer can sell or trade his water to a municipal water system, of course, he must have a firmly established ownership right in the water. Private property rights are a prerequisite for a functioning market. It is difficult for markets to arise when ownership rights are unclear or when there is a constant threat of confiscation by government. This is a major impediment to water markets today. State and federal governments thus do not provide the legal basis within which water markets can function.

How Water Rights Law Complicates Water Markets

One complication in developing a legal framework for water markets is that each state has adopted its own treatment of water rights. Notes Dean Mann, professor of political science at the University of California, Santa Barbara, these differences are the result of the distinct "historical experiences, purposes, values, and clienteles" found in each region of

America.[12] These rights establish the framework within which policies to create and improve water markets must exist.

In the arid West, for example, the doctrine of "prior appropriation" was developed to address the relative shortage of water. This approach to water allocation arose in the western territories even before the states were formed. Essentially this doctrine allows for a "first come, first served" basis for the right to divert a river's flow. Under this system, a particular amount of water may be withdrawn from a river to the exclusion of later arrivals. A property right to the water was recognized and protected by the western states — but only as long as the water actually was used by the original owner. Any unused portion of the original claim could be used by others.

This property right was further limited as the young western states began to administer their water rules. The law directed that water could be appropriated, or claimed, only for a "beneficial use." The states generally defined "beneficial" to include agricultural, mining, and municipal uses, all of which were represented by powerful political constituencies. But environmental uses — such as leaving water in a stream to support the natural fish population — originally were excluded from statutory protection.

New Definition. In recent years some water supply experts have begun to argue that a legal definition of beneficial use is an inadequate substitute for an efficient market allocation of water resources. In response, California has adopted a new definition of beneficial use that includes conservation and environmental purposes. This is an important step toward creating a legal system that freely allows competition among the various uses for water — establishing, in effect, a market.

Other legal barriers also hamper the creation of water markets. In California, for example, only incorporated water districts serving municipalities or irrigated agricultural areas are entitled to receive water from state or federal water project supplies. Thus a farmer cannot sell his water rights directly, since the right to receive the water technically is held by the water district rather than the individual.

Such restrictions make it extremely difficult for a water market to function. If states and the federal government were to cooperate to simplify the legal framework, markets could become a much more useful tool to achieve the efficient use of water resources.

CRAFTING A FEDERAL POLICY TO ENCOURAGE WATER MARKETS

Markets allow water resources to be distributed efficiently with a minimum of political or judicial intervention. Through such voluntary transfers, all

12 Gary D. Weatherford, ed., *Water and Agriculture in the Western U.S.: Conservation, Reallocation, and Markets*, Studies in Water Policy and Management, No. 2 (Boulder, Colorado: Westview Press, 1982).

parties benefit. But if potential buyers and sellers are constrained by laws inhibiting the transfer, a market for water can be impossible to establish.

An initiative from the White House would be well received. First, the federal government already has been working with some states, such as California, to remove legal and bureaucratic obstacles to market oriented water use. Such growing federal-state cooperation augurs well for the Bush Administration to take the lead in encouraging water markets.

Second, even strong advocates for increased environmental protection are willing to consider market-based approaches. Such major environmental groups as the National Wildlife Federation and the Environmental Defense fund, for example, recognize the value of water markets as a means of both conservation and environmental protection. The Environmental Defense Fund long has been a champion of market-oriented reform in California water laws. The National Wildlife Federation also opposes those federal water projects that cannot be justified on an economic basis.

Removing Barriers to Markets. This attitude is reflected in a bipartisan acceptance of market mechanisms in Congress. For example, the December 1988 report of a public policy study cosponsored by Senators Timothy E. Wirth, the Colorado Democrat, and John Heinz, the Pennsylvania Republican, is entitled *Project 88: Harnessing Market Forces To Protect Our Environment*. Although the document is tentative in places in its endorsement of market mechanisms, it consistently calls for the removal of barriers to water markets. For example, the report urges the Bureau of Reclamation to establish a consistent policy "affirming the transferability of contractual rights to reclamation water supplies."[13] Currently, each proposed water transfer is examined individually, leading to unpredictability that discourages potential sales agreements.

With this broad acceptance of the role of markets, the Bush Administration, working with states and those environmental organizations ready to accept market mechanisms as a tool to conserve water and protect the environment, should launch an initiative to introduce water markets more widely. Such an initiative should include:

1) A proposal to Congress that the federal government place a moratorium on plans for all new water projects until they can be justified fully on economic, as well as environmental, grounds.

This should include all of the current federal programs for flood control, energy production, water supply, and pollution control. Only by removing federal subsidies will interest groups be forced to evaluate the true costs and benefits of projects, rather than mounting campaigns for the projects simply because subsidies are available.

13 *Project 88: Harnessing Market Forces to Protect Our Environment*. A Public Policy Study sponsored by Senator Timothy E. Wirth and Senator John Heinz, December, 1988, p. 49.

2) A policy statement that water markets should be introduced as a key element of all existing and future federal water supply projects.

As a condition for participation in federal water project supplies, states should be expected to remove legal barriers to the introduction of water markets, such as antiquated definitions of "beneficial use." By introducing markets, Bush should point out, the growing urban areas of the West would be supplied with water at a reasonable cost, while agricultural subsidies could be greatly reduced.

3) A decision to make greater use of markets to improve water quality.

The Administration should send legislation to Congress to introduce a system of tradeable pollution discharge permits, to be required for all public and private pollution discharges. This approach means the government would establish the maximum level of discharges for each water basin, or drainage area, and then allow the states to meet these goals through the most cost effective methods.

Such a system of markets would reduce water pollution at the lowest economic cost in terms of jobs lost or higher prices for consumer goods. The EPA already has experimented with tradeable air pollution permits in areas of the country that have failed to attain the air quality standards set by federal regulations. The results of these experiments indicate that markets in pollution rights achieve the same or better pollution control levels as regulations, at a greatly reduced economic cost. A similar policy program needs to be adopted in federal water pollution control programs.

CONCLUSION

The growing acceptance among environmentalists of markets for water allows George Bush to capture the initiative on this aspect of environmental policy. He can, in short, propose a new federal approach to water policy that pursues environmental as well as economic goals by introducing markets as a major tool. Environmental economists recognize the value of markets in curbing the excessive demand for water that can result in ecological damage. Cities face rising demands for supplies, while federal support for major new projects has been cut back. Markets would offer a mechanism to distribute water economically while allaying the fears of reasonable environmentalists. Bush can accomplish his goal of becoming "the environmental president" by forging a new coalition between responsible environmental groups and fiscal conservatives.

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