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WATER AS A PUBLIC COMMODITY

BARTON H. THOMPSON, JR.*

I. INTRODUCTION

Three themes have dominated the principal debates over water law and policy during the last quarter century. The first theme is water as a *public trust*, with title to water resources held by the state as custodian for the public as a whole and with an obligation to manage water on a holistic basis to maximize overall societal benefit.[1] While the public trust doctrine historically emphasized the importance of waterways for navigation and commerce, it recently has focused on the need for sustainable environmental protection for current and future generations.[2] The second theme is water as an *economic commodity*, to be priced, traded, and managed by the private sector.[3] The final vision is water as a global *human right*, under which all people have access to

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1. For the classic article on the public trust doctrine, see Joseph L. Sax, *The Public Trust Doctrine in Natural Resources Law: Effective Judicial Intervention*, 68 MICH. L. REV. 471 (1970).

2. Alison Rieser, *Ecological Preservation as a Public Property Right: An Emerging Doctrine in Search of a Theory*, 15 HARV. ENVTL. L. REV. 393, 393–96, 402–09 (1991); *see also* Marks v. Whitney, 491 P.2d 374, 380 (Cal. 1971) (concluding that the "public uses" which the trust protects "are sufficiently flexible to encompass changing public needs," including ecological preservation).

3. *See, e.g.*, Jennifer Davis, *Private-Sector Participation in the Water and Sanitation Sector*, 30 ANN. REV. ENV'T & RESOURCES 145, 153–56 (2005) (detailing the privatization of water supply and sanitation services in both developing and industrial nations).

clean and adequate water resources for basic personal and domestic needs.[4]

All three themes have gained ascendancy in recent years, despite claimed and perceived inconsistencies. According to many commentators, treating water as a commodity is incompatible with managing water as either a public trust or a human right.[5] Full-cost pricing of water, allocation of water to the highest bidder, and private-sector involvement in water management are all, from the perspective of these commentators, inconsistent with the view that water is a unique public resource that should be managed to promote the broad public interest (particularly with regards to the environment and the rights of the poorest members of society).[6] Given this claimed inconsistency, the simultaneous rise of all three themes would seem incoherent and surprising.

In fact, all three themes are potentially harmonious, although there inherently will be tensions. Indeed, any one theme by itself will result in either an impoverished or ineffective water vision. Water policies that fail to protect the environment are unlikely, certainly in the long run and potentially even in the short run, to fulfill human needs not only for basic domestic needs, but also for food security and economic development. And economic tools such as pricing, markets, and privatization can be important and even essential means of meeting both human and environmental needs, as well as maximizing the economic benefits to be derived from water resources. Only a combination of the three ascendant themes can provide a holistic and workable vision for water management.

When combined, the three themes suggest an alternative vision of water as a *public commodity*. This vision recognizes that the public has a critical interest in water. Water is unique among all resources. Water

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4. For general analyses of water as a human right, see Erik B. Bluemel, *The Implications of Formulating a Human Right to Water*, 31 ECOLOGY L.Q. 957, 967–77 (2004); Peter H. Gleick, *The Human Right to Water*, 1 WATER POL'Y 487 (1999).

5. For criticisms of the view that water should be treated as a commodity, see MAUDE BARLOW, BLUE COVENANT: THE GLOBAL WATER CRISIS AND THE COMING BATTLE FOR THE RIGHT TO WATER 58–62, 91–101 (2007); VANDANA SHIVA, WATER WARS: PRIVATIZATION, POLLUTION, AND PROFIT 15, 27–28, 34–36 (2002); Williamson B.C. Chang, *Water: Consumer Commodity or Government Subsidy?*, *in* WATER VALUES AND MARKETS: EMERGING MANAGEMENT TOOLS 18, 18–20 (Linda Schroeder ed., 1986); Eric T. Freyfogle, *Water Rights and the Common Wealth*, 26 ENVTL. L. 27, 35–37 (1996).

6. *See* BARLOW, *supra* note 5, at 58–62, 91–97; SHIVA, *supra* note 5, at 27, 34–36; Chang, *supra* note 5, at 18–20; Freyfogle, *supra* note 5, at 35.

is essential not only to life, but to virtually any human endeavor and thus the betterment of society. Water is an irreplaceable element of most healthy, functioning ecosystems—and thus the production of ecosystem services is of importance to people. Water also is intrinsic to most religions and cultural systems. For all these reasons, water is inherently public, and governments have a continuing obligation to ensure its effective management for overall societal well-being, including both environmental protection and essential human consumptive needs. However, commodifying water can actually help promote these goals. Pricing, markets, and even the participation of private entities have helped ensure that water is not wasted and, when properly directed and regulated, can help promote the environment and increase drinking-water access. Treating water as public but not as a commodity will fail to maximize societal benefits, while treating water as a commodity but not as public will fail to ensure that water meets all public needs.

Part II of this Article sets out the three basic themes, their importance to water policy, and their simultaneous rise over the last several decades. Part III then considers potential inconsistencies between the themes and examines, in particular, how the commoditization of water has helped increase societal benefits from scarce water resources and how it can help further maximize those benefits in the future. Part IV briefly concludes by setting out a vision of water as a public commodity.

II. THREE THEMES

An examination of international documents, statutes, and judicial opinions displays a wide variety of themes that pervade the thinking and analyses of policy makers and jurists. However, three themes in particular have grown increasingly common in recent decades: the public trust doctrine, water as a human right, and the roles of markets and the private sector in managing water resources.

A. Water as a Public Trust

The oldest and most established theme is water as a public trust.[7] As

7. *See generally* Sax, *supra* note 1. For articles examining the applicability of the public trust doctrine to water resources, see Michael C. Blumm & Thea Schwartz, Mono Lake *and the Evolving Public Trust in Western Water*, 37 ARIZ. L. REV. 701 (1995); Cynthia L. Koehler, *Water Rights and the Public Trust Doctrine: Resolution of the* Mono Lake *Controversy*, 22

elaborated in the cases and laws cited and discussed below, the public trust doctrine incorporates at least three important principles. First, the government holds ultimate title to water on behalf of the public as a whole. Although the government can grant individuals and private entities limited rights to use water (as it does, for example, under both the riparian and prior-appropriation systems), the government should and does retain ultimate title and control over the water. Second, the government holds title to water as a trustee for the public as a whole. Water is not like other governmental property—such as post offices, city halls, military bases, or even parks—over which the government holds broad ownership rights and discretion. Instead, the government has a responsibility to manage water for the interests of the public and, as a result, holds more restricted ownership rights. Finally, irrespective of what private rights the government has awarded in the past or what actions individuals and private entities have taken in reliance on prior policies, the government has both the authority and the obligation to reallocate water and change management rules at any point in time in response to changing conditions, information, or public norms because it has a continuing obligation to manage water for public trust purposes.

During the nineteenth century and the first half of the twentieth, the public trust doctrine found voice primarily in decisions of U.S. courts dealing with navigation rights and other non-consumptive uses of navigable waterways.[8] Recent decades, however, have seen an expansion of the public trust doctrine both substantively to environmental and cultural interests in water and geographically to a broader set of common law jurisdictions. In the United States, courts of a number of states have explicitly held that the public trust doctrine applies not only to waterways, but also to the waters of those waterways.[9] Furthermore, driven by evidence that extensive diversions

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ECOLOGY L.Q. 541 (1995); Joseph L. Sax, *The Constitution, Property Rights and the Future of Water Law*, 61 U. COLO. L. REV. 257 (1990); and *The Public Trust Doctrine in Natural Resources Law and Management: A Symposium*, 14 U.C. DAVIS L. REV. 181 (1980).

8. *See, e.g.*, Ill. Cent. R.R. v. Illinois, 146 U.S. 387, 452–64 (1892); Arnold v. Mundy, 6 N.J.L. 1, 41 (1821).

9. The key precedent here is the California Supreme Court's decision in *National Audubon Society v. Superior Court of Alpine County* (*Mono Lake*), 658 P.2d 709, 728–32 (Cal. 1983). At least five other states have also held that the public trust doctrine applies to water resources. *See, e.g.*, *In re* Water Use Permit Applications (*Waiahole Ditch*), 9 P.3d 409, 445, 453 (Haw. 2000); Idaho Conservation League v. State, 911 P.2d 748, 750 (Idaho 1995); Selkirk–Priest Basin Ass'n v. State, 899 P.2d 949, 953, 956 (Idaho 1995); Dep't of State Lands v. Pettibone, 702 P.2d 948, 957 (Mont. 1985); Lawrence v. Clark Cnty., 254 P.3d 606, 608, 612–14, 617 (Nev. 2011); United Plainsmen Ass'n v. N.D. State Water Conservation Comm'n, 247

of water from rivers and lakes are harming fish and threatening overall aquatic ecosystems, several of these courts have used the public trust doctrine to limit such diversions and increase environmental flows.[10] For example, in its 1984 *Mono Lake* decision, the California Supreme Court concluded that the public trust doctrine requires the government to manage water use where possible to protect the environment.[11] And in a subsequent decision, the Hawaii Supreme Court held that the public trust doctrine, as incorporated in Hawaii's constitution, requires the state not only to protect the environment, but also to manage surface and groundwater on a sustainable basis for the benefit of both native communities and future generations.[12]

At the same time, a growing set of common law nations have explicitly recognized the relevance and importance of the public trust doctrine in water management.[13] For example, in a 1997 case involving the realignment of a river by a corporate interest, the Supreme Court of India explicitly held that, as a vestige of its common law background, the public trust doctrine applies to running waters and legally obligates the government to protect aquatic environments.[14] Subsequent decisions by courts of both Sri Lanka and Kenya have followed suit in recognizing that the government holds all the waters of the nation, as well as other publicly important property, in trust for the public.[15] South Africa has

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N.W.2d 457, 463 (N.D. 1976).

10. *See, e.g.*, *Mono Lake*, 658 P.2d at 728–29, 732; *Waiahole Ditch*, 9 P.3d at 461.

11. 658 P.2d at 728.

12. *Waiahole Ditch*, 9 P.3d at 451, 453 & n.41 (citing HAW. CONST. art. XI, § 3).

13. For discussions of the public trust doctrine outside the United States, see Lucas Bento, *Searching for Intergenerational Green Solutions: The Relevance of the Public Trust Doctrine to Environmental Preservation*, 11 COMMON L. REV. 7, 12 (2009); Philippe Cullet, *Water Law in a Globalised World: The Need for a New Conceptual Framework*, 23 J. ENVTL. L. 233, 234–36, 242–43 (2011); Patricia Kameri-Mbote, *The Use of the Public Trust Doctrine in Environmental Law*, 3/2 L. ENV'T & DEV. J. 195 (2007), *available at* http://www.lead-journal.org/content/07195.pdf; and David Takacs, Student Essay, *The Public Trust Doctrine, Environmental Human Rights, and the Future of Private Property*, 16 N.Y.U. ENVTL. L.J. 711, 712, 735–47 (2008).

14. M.C. Mehta v. Kamal Nath, (1996) Supp. 10 S.C.R. 12, 45 (India) ("The State is the trustee of all natural resources which are by nature meant for public use and enjoyment."). According to the India Supreme Court, running waters are natural resources to which the public is a beneficiary. *Id.*

15. *See* Waweru v. The Republic, (2006) 1 K.L.R. 677, 692 (H.C.K.) (Kenya) (holding that the government holds waterways "under a public trust to manage them in a way that maintains a proper balance between the economic benefits of development with the needs of a clean environment"); Bulankulama v. Sec'y, Ministry of Indus. Dev., 3 SRI L.R. 243, 253–54 (Sup. Ct. 2000) (Sri Lanka) (adopting concept of public guardianship).

recognized the public trust doctrine by statute. Under South Africa's 1998 National Water Act, the national government is the "public trustee of the nation's water resources" and must "ensure that water is protected, used, developed, conserved, managed and controlled in a sustainable and equitable manner, for the benefit of all persons and in accordance with its constitutional mandate."[16]

Although the most explicit statement of the public trust doctrine is found in cases of common law nations, the doctrine's pedigree is not purely common law. Most experts trace the doctrine's lineage to the *Corpus Juris Civilis*, commissioned by the Roman Emperor Justinian, which stated that "running water," along with such resources as air and the sea, are "common to all" by the nature of the resources themselves.[17] Not surprisingly, the laws of a wide variety of jurisdictions, both civil and common law, incorporate and reflect key elements of the public trust doctrine. Governments almost universally hold title to their nation's water resources, and private rights in the water—where recognized at all—are at the discretion of the government.[18] Moreover, most nations emphasize that the government holds the water as a guardian for the people as a whole. For example, China's constitution provides that the state owns water, as well as a number of other natural resources, on behalf of the "whole people,"[19] and the French Water Act of 1992 states that the use of water belongs to everyone.[20] Increasingly, national constitutions and laws emphasize the importance of managing water for environmental sustainability, although such provisions are less

16. National Water Act 36 of 1998 § 3(1) (S. Afr.).

17. J. INST. 2.1.1 (J.B. Moyle trans., 1913). For discussions of the public trust doctrine's presumed Roman roots, see Bento, *supra* note 13, at 7; William Drayton, Jr., Note, *The Public Trust Doctrine in Tidal Areas: A Sometime Submerged Traditional Doctrine*, 79 YALE L.J. 762, 763–64 (1970); Kameri-Mbote, *supra* note 13, at 197–98; Takacs, *supra* note 13, at 711, 713.

18. There are exceptions, however. For example, the Chilean Constitution of 1980 provides that "[t]he rights of private citizens over waters, recognized or constituted in conformity with the law, shall grant proprietorship to the owners thereof." CONSTITUCIÓN POLÍTICA DE LA REPÚBLICA DE CHILE [C.P.] art. 19, § 24; *see also* Constitución Política de los Estados Unidos Mexicanos [C.P], *as amended*, art. 27, Diario Oficial de la Federación [DO], 5 de Febrero de 1917 (Mex.) (establishing the power in the government to transmit title to water to private persons in the form of private property).

19. XIANFA. art. 9 (1982) (China).

20. Loi 92-3 du 3 janvier 1992 sur l'eau [Law 92-3 of January 3, 1992, On Water], JOURNAL OFFICIEL DE LA RÉPUBLIQUE FRANÇAISE [J.O.] [OFFICIAL GAZETTE OF FRANCE], Jan. 4, 1992, p. 187.

common and more hortatory than mandatory.[21]

B. Water as a Commodity

Neoliberal ascendancy in law and policy during the second half of the twentieth century also saw increased emphasis on the importance of treating water as a commodity. Several factors beyond ideology, however, have helped drive the commoditization of water. First, growing water scarcity generated demands for greater water-use efficiency through full-cost pricing and more rigorous management of water systems.[22] Second, continued urbanization increased interest in reallocating water from agriculture to growing cities, for which markets seemed the most politically palatable mechanism.[23] Finally, the inability of public water suppliers to provide access to ever increasing urban populations in developing nations, and a need for greater levels of investment in infrastructure throughout most of the world, created a potential market for private water suppliers.[24]

A variety of legal and policy documents over the last quarter century have incorporated or reflected the vision of water as a commodity. Most prominently, the Dublin Statement on Water and Sustainable Development, which arose out of the International Conference on Water and the Environment in Dublin, Ireland, in 1992, established as one of its guiding principles that "[w]ater has an economic value in all its competing uses and should be recognized as an economic good."[25] According to the Dublin Statement, "Past failure to recognize the economic value of water has led to wasteful and environmentally damaging uses of the resource [and m]anaging water as an economic good is an important way of achieving efficient and equitable use, and of

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21. At the most general level, almost 120 nations currently provide for environmental protection in their constitutions. Takacs, *supra* note 13, at 726.

22. *See, e.g.*, Peter Rogers et al., *Water Is an Economic Good: How to Use Prices to Promote Equity, Efficiency, and Sustainability*, 4 WATER POL'Y 1, 1–4, 7–9 (2002).

23. *See, e.g.*, ROBERT STAVINS, TRADING CONSERVATION INVESTMENTS FOR WATER 37–38 (1983) (arguing for the use of water markets to meet the growing demands of Southern California urban areas).

24. *See, e.g.*, Davis, *supra* note 3, at 154–56 (noting that capital investment and the need for more efficient service delivery has driven the interest in private firms).

25. Int'l Conference on Water and the Env't, Dublin, Ir., Jan. 26–31, 1992, *The Dublin Statement on Water and Sustainable Development*, princ. 4, U.N. Doc. A/COMF.151/PC112 [hereinafter *Dublin Statement*], *available at* http://www.wmo.int/pages/prog/hwrp/documents/english/icwedece.html.

encouraging conservation and protection of water resources."[26] Outside the Dublin Statement, the vision of water as a commodity is found most frequently in laws enabling or dictating particular market policies, such as full-cost pricing or water markets,[27] and in the guidance documents, strategic plans, and loan conditions of international economic organizations, such as the World Bank and the International Monetary Fund.[28]

1. Full-Cost Pricing of Water

The vision of water as a commodity incorporates at least three separate but overlapping concepts. The first is water as a fully priced resource. Most nations historically not only charged nothing for the extraction of water from the environment, but also subsidized the transportation, purification, and delivery of water, reflecting both a desire to promote economic development for which water is an essential input and to recognize water's fundamental importance to all citizens.[29] Some water managers even denied that the normal rules of economics applied to water: water demand, it was claimed, was highly elastic and

26. *Id.*

27. For discussions of the rise of water markets and supporting legal structures in the western United States and elsewhere, see OLIVER M. BRANDES ET AL., CONFERENCE BD. OF CAN., GOING WITH THE FLOW? EVOLVING WATER ALLOCATIONS AND THE POTENTIAL AND LIMITS OF WATER MARKETS IN CANADA app. B, at 33–38 (2008); Jedidiah Brewer et al., *Law and the New Institutional Economics: Water Markets and Legal Change in California, 1987–2005*, 26 WASH. U. J.L. & POL'Y 183, 186–95 (2008); Barton H. Thompson, Jr., *Institutional Perspectives on Water Policy and Markets*, 81 CALIF. L. REV. 671, 676, 701–03 (1993); R. Quentin Grafton et al., *An Integrated Assessment of Water Markets: Australia, Chile, China, South Africa and the USA* 2–3, 31 (Nat'l Bureau of Econ. Res., Working Paper No. 16203, 2010).

28. *See, e.g.*, THE WORLD BANK, INT'L BANK FOR RECONSTRUCTION & DEV., WATER RESOURCES SECTOR STRATEGY: STRATEGIC DIRECTIONS FOR WORLD BANK ENGAGEMENT 22–25 (2004) (describing a "principled pragmatism" approach toward water pricing and water rights); KAREN BAKKER, PRIVATIZING WATER: GOVERNANCE FAILURE AND THE WORLD'S URBAN WATER CRISIS 166–67 (2010) (discussing how the IMF in 1988 conditioned a loan to Bolivia on the privatization of water supply systems and other state-owned enterprises).

29. *See, e.g.*, JOSEPH L. SAX, ROBERT H. ABRAMS & BARTON H. THOMPSON, JR., LEGAL CONTROL OF WATER RESOURCES 689–90 (2d ed. 1991) [hereinafter LEGAL CONTROL OF WATER RESOURCES I]; Davis, *supra* note 3, at 165 (noting that for "largely political reasons" publicly provided water has often been priced below cost); Duane Mecham & Benjamin M. Simon, *Forging a New Federal Reclamation Water Pricing Policy: Legal and Policy Considerations*, 27 ARIZ. ST. L.J. 507, 509–10 (1995) (discussing pricing policies and subsidies under the federal reclamation program); Barton H. Thompson, Jr., *Water Allocation and Protection: A United States Case Study*, *in* EARTH SYSTEMS: PROCESSES AND ISSUES 476, 482 (W.G. Ernst ed., 2000) [hereinafter *Water Allocation*].

thus not influenced by price.[30]

Increasing water scarcity, however, upended that view and replaced it with the principle that water should be priced at or near its full cost in order to avoid waste and, instead, encourage conservation—in short, that water should be treated as an economic commodity.[31] In the late twentieth century, for example, Congress passed several laws in the United States to reduce or eliminate the historical subsidization of federal reclamation water for farmers in the West.[32] In addition, an increasing number of cities and nations have chosen to charge urban residents the full cost of delivered water, although allocations of that cost across classes of customers differ significantly among jurisdictions.[33] Both the World Bank and the International Monetary Fund similarly have called for full-cost pricing.[34]

2. Water Markets

The vision of water as a commodity also incorporates water marketing. Many jurisdictions, including in the western United States, historically proscribed water marketing.[35] Because water was a common good rather than a commodity, profiting from the sale of water seemed inequitable. If a water user no longer needed the water he or she was using, others should have the right to use the water without having to pay the original user. Water belonged to the public as a whole, not the historical user.[36]

Again, in response to water scarcity, a growing number of countries and sub-national jurisdictions have begun not only to authorize water

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30. LEGAL CONTROL OF WATER RESOURCES I, *supra* note 29, at 689.

31. *See, e.g.*, Rogers et al., *supra* note 22, at 2 (noting that water usage is most valuable when the price of water reflects its true cost); *Water Allocation*, *supra* note 29, at 482–83.

32. *See, e.g.*, Central Valley Project Improvement Act, Pub. L. No. 102-575, §§ 3402, 3405, 106 Stat. 4600, 4706 (1992); Reclamation Reform Act of 1982, Pub. L. No. 97-293, §§ 202, 205, 96 Stat. 1261, 1263–64, 1265–66 (1982). For a general overview of federal reclamation pricing reforms, see JOSEPH L. SAX, BARTON H. THOMPSON, JR., JOHN D. LESHY & ROBERT H. ABRAMS, LEGAL CONTROL OF WATER RESOURCES 771–96 (4th ed. 2006) [hereinafter LEGAL CONTROL OF WATER RESOURCES II].

33. *See, e.g.*, LEGAL CONTROL OF WATER RESOURCES I, *supra* note 29, at 690 (discussing water pricing reform in cities of the western United States).

34. *See generally* K. William Easter & Yang Liu, *Cost Recovery and Water Pricing for Irrigation and Drainage Projects* (The World Bank, Agric. and Rural Dev. Discussion Paper No. 26, 2005).

35. LEGAL CONTROL OF WATER RESOURCES II, *supra* note 32, at 266–67.

36. *Id.* at 266–67 (citing and quoting ELWOOD MEAD, IRRIGATION INSTITUTIONS 264, 365–67 (1903)).

marketing and remove legal obstacles, but also to affirmatively promote market transfers—adopting here too a vision of water as a commodity.[37] For example, in the United States, both the federal government and western states have adopted procedures for reviewing and approving water transfers, established water banks through which water can be purchased and sold, authorized members of water districts to sell water even over the opposition of the districts themselves, opened up conveyance facilities for use by market participants, and enacted other provisions designed to increase the number and size of transactions.[38] The western United States, moreover, has not been alone in promoting water markets. Nations as diverse as Australia, Canada, Chile, China, Mexico, and South Africa have authorized commercial water transfers in at least some of their regions.[39]

These legal changes have resulted in often robust water markets. For example, in both Chile's Limarí Valley and Australia's Murray-Darling Basin, approximately one-third of all water entitlements change hands each year.[40] According to economic estimates, such markets also involve sizable amounts of money and contribute significantly to the local economy. Economists, for example, estimate that water markets in the Limarí Valley contribute $22 million annually to the local economy (ranging in any given year from 8% to 32% of the agricultural contribution to local GDP) and that markets in the Murray-Darling Basin contribute almost half a billion dollars in dry years.[41] Water markets in the western United States have contributed anywhere from approximately $1 million in Montana and Wyoming to as high as $223 million in California.[42]

The movement toward water marketing is neither universal nor

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37. *See, e.g.*, Grafton et al., *supra* note 27, at 14–21 (noting the economic efficiency of water markets).

38. For a general overview of these institutions and the law of water markets, see LEGAL CONTROL OF WATER RESOURCES II, *supra* note 32, at 264–98, 731–46, 778–79.

39. *See, e.g.*, National Water Act 36 of 1998 § 6(1)(g) (S. Afr.); Water Act, R.S.A. 2000, c. W-3, s. 5, 11 (Can. Alta.); Law No. 382 art. 7, Diciembre 30, 1988, DIARIO OFICIAL [D.O.] (Chile); Law No. 1122, Agosto 13, 1981, DIARIO OFICIAL [D.O.] (Chile). *See generally* Grafton et al., *supra* note 27 (discussing water markets in Australia, Chile, China, and South Africa); Theodore M. Horbulyk & Lynda J. Lo, *Welfare Gains from Potential Water Markets in Alberta, Canada*, *in* MARKETS FOR WATER: POTENTIAL AND PERFORMANCE 241 (K. William Easter et al. eds., 1998); Wim H. Kloezen, *Water Markets Between Mexican Water User Associations*, 1 WATER POL'Y 437 (1998).

40. Grafton et al., *supra* note 27, at 17.

41. *Id.* at 18.

42. *Id.*

complete. Water marketing remains controversial.[43] Only a small minority of nations have laws that encourage water transactions.[44] Moreover, even where the law permits water transfers, both institutional impediments—e.g., lengthy and costly administrative review procedures—and community opposition to trades have limited the number and type of transactions.[45] Most water trades are from farmer to farmer within the same watershed; few agriculture-to-urban water transfers, or inter-basin transfers, have occurred to date in most jurisdictions.[46] And many water markets see only a handful of transactions in any given year. For example, in the ten years that Alberta, Canada, has authorized water transfers, only twenty-eight transfers have occurred; only six transfers, representing just 0.05% of the total water supply in the relevant basin, were permanent.[47]

3. Private participation in water provision

A final component of the vision of water as a commodity is the role of private companies in the supply of water to urban users. Private companies have always played a role in water provision. In the United States, private companies were early water suppliers to many major cities, such as New York and San Francisco.[48] In the late nineteenth and

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43. For current critiques of water markets, see Chang, *supra* note 5, at 18–20; Freyfogle, *supra* note 5, at 30–34; *see also* LEGAL CONTROL OF WATER RESOURCES II, *supra* note 32, at 298–300 (identifying concerns of some legal scholars).

44. *See* Henning Bjornlund & Jennifer McKay, *Aspects of Water Markets for Developing Countries: Experiences for Australia, Chile, and the US*, 7 ENV'T & DEV. ECON. 769, 769–70 (2002) (noting that "[a]ctual experiences within water markets are still sparse," and identifying a few countries that maintain water markets).

45. For a general discussion of a number of the current obstacles to effective water markets in the western United States, see LEGAL CONTROL OF WATER RESOURCES II, *supra* note 32, at 264–98.

46. *See, e.g.*, Grafton et al., *supra* note 27, at 21–22 (discussing the limited nature of water transfers in Chile, the western United States, and South Africa).

47. BRANDES ET AL., *supra* note 27, app. B, at 32.

48. *See, e.g.*, NELSON MANDFRED BLAKE, WATER FOR THE CITIES: A HISTORY OF THE URBAN WATER SUPPLY PROBLEM IN THE UNITED STATES 63–78 (1956); LEGAL CONTROL OF WATER RESOURCES II, *supra* note 32, at 682 & n.2; ERWIN COOPER, AQUEDUCT EMPIRE: A GUIDE TO WATER IN CALIFORNIA, ITS TURBULENT HISTORY AND ITS MANAGEMENT TODAY 54 (1968) (noting how San Francisco turned to a private firm to provide it with water); Jessica Budds & Gordon McGranahan, *Are the Debates on Water Privatization Missing the Point? Experiences from Africa, Asia and Latin America*, 15 ENV'T & URBANIZATION 87, 90 (2003); Davis, *supra* note 3, at 147 (noting that private firms, "often with encouragement from local government, undertook a large share of the investment required to construct the first water and sewer networks of major cities in the United States and England").

early twentieth centuries, however, many cities replaced private supply companies with municipal water agencies (although private companies continue to supply approximately 15% of all domestic water in the United States today).[49] This evolution stemmed in large part from a concern that water was too important to leave to private economic actors; it was feared that private companies would not adequately protect water quality or invest sufficiently in the extension and maintenance of water systems.[50] Many other nations never had significant private involvement in the water sector.

Disillusionment with varied public suppliers, however, has driven a reevaluation of this perspective. Many public suppliers have proven inefficient and incapable of meeting rising demands for both greater access and higher quality water, and public suppliers have often not generated the reserves needed to expand, modernize, or even maintain water infrastructure.[51] In the face of these problems, international financial institutions have pushed for varying degrees of privatization of local water suppliers.[52]

Partly as a result, a growing set of nations, including developing nations such as Chile, Mexico, and Morocco, have passed laws authorizing and facilitating privatization of water-supply systems. Some

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49. LEGAL CONTROL OF WATER RESOURCES II, *supra* note 32, at 682; Budds & McGranahan, *supra* note 48, at 91; Davis, *supra* note 3, at 147.

50. As one early 20th century commentator put it,

> We have municipal ownership of our police and fire protection because we know enough not to entrust the safety of ourselves and our family silver to seekers after profit. . . .
>
> Municipal ownership [should dominate] the water business primarily for the same reason. We will entrust our light, heat and transportation, but not our life, to the mercies of . . . money-making concern[s].

Evans Clark, *Municipal Ownership in the United States*, INTERCOLLEGIATE SOCIALIST, Oct.–Nov. 1916, at 1, 8–9, *reprinted in* 4–5 LABOR AGE, 1915–1917 (1968); *see also* Budds & McGranahan, *supra* note 48, at 90–91 (noting that governments decided that public supply systems were "important for both public health and national economic development").

51. For empirical evidence that "the public sector has been a costly and inefficient provider of infrastructure," see Davis, *supra* note 3, at 154 (citing and quoting Theodore Panayotou, *The Role of the Private Sector in Sustainable Infrastructure Development*, *in* BRIDGES TO SUSTAINABILITY: BUSINESS AND GOVERNMENT WORKING TOGETHER FOR A BETTER ENVIRONMENT 46, 46 (Yale Sch. of Forestry & Envtl. Stud., Bull. Ser. No. 101, 1997)); *see also* Budds & McGranahan, *supra* note 48, at 87 ("There is general agreement that public utilities have been too slow in extending access to services and that they can be inefficient and corrupt.").

52. Bluemel, *supra* note 4, at 965; Budds & McGranahan, *supra* note 48, at 90–92.

countries, such as Great Britain, have turned virtually all of their water-supply systems over to the private sector.[53] Encouraged to consider privatization, a growing number of cities have engaged private companies or examined the opportunity.[54] By 2000, at least ninety-three countries had privatized at least some aspects of their water supplies.[55] Indeed, the number of people served by private water suppliers increased sixfold from 1990 to 2002, from approximately 50 million people to over 300 million.[56]

Like water marketing, water privatization remains controversial.[57] In the 1990s, some privatization efforts generated substantial public opposition, in part because privatization was generally accompanied by more universal collection of water bills and movement toward full-cost pricing of water.[58] In many of these cases, public officials ultimately reversed the initial decision to privatize the municipal water supply.[59] Perhaps because of such opposition, privatization efforts appear to have peaked in the 1990s.[60] Where privatization has occurred, however, water has begun to look more like other commodities, with private enterprise playing a significant role in the production, transportation, purification, and delivery of water supplies to domestic users.

While attracting most of the attention, large-scale privatization of municipal suppliers remains only the tip of the iceberg that constitutes

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53. *See* PETER H. GLEICK ET AL., PAC. INST., THE NEW ECONOMY OF WATER: THE RISKS AND BENEFITS OF GLOBALIZATION AND PRIVATIZATION OF FRESH WATER 24 (2002); Davis, *supra* note 3, at 153 (noting that private water companies serve all households in England and Wales and 80% of French households).

54. *See, e.g.*, SAX ET AL., *supra* note 32, at 716 (noting that almost a third of the largest metropolitan governments in the United States were considering privatizing some or all of their water system and infrastructure in the late 1990s).

55. Davis, *supra* note 3, at 153.

56. *Id.* Despite the increase in privatization, however, some estimates show that the private sector still provides water to only about 5% of the world's population. Budds & McGranahan, *supra* note 48, at 88.

57. For discussions of the controversy from various perspectives, see Budds & McGranahan, *supra* note 48; and Davis, *supra* note 3.

58. *See* Davis, *supra* note 3, at 165–69.

59. *See, e.g.*, PUB. CITIZEN, WATER PRIVATIZATION FIASCOS: BROKEN PROMISES AND SOCIAL TURMOIL 3–7 (2003) (noting the situations in Atlanta, Manila, Cochabamba, and Jakarta).

60. *See* Budds & McGranahan, *supra* note 48, at 102 (noting that privatization peaked in 1997 and thereafter began to decline); Davis, *supra* note 3, at 175 (noting both that the "cancellation of high-profile concession agreements . . . has helped galvanize civic and advocacy groups opposed to privatization" and that several global firms have "reevaluated their involvement" in light of "political and financial risk").

the growing involvement of private entrepreneurs in water supply. The rise of small-scale private suppliers, often with the tacit approval of local officials, has been of far greater importance to most urban and agricultural water users in developing nations. Using carts, bicycles, poles, or trucks, small private entrepreneurs supply water to a substantial proportion of the one billion people around the world who lack access to improved water supplies.[61] Indeed, by one estimate, small private entrepeneurs supply water to anywhere from one-quarter to one-half of all urban residents of Latin America and Africa.[62] In many urban areas, households with direct access to public water systems also sell water to their neighbors, often through rudimentary piping systems that constitute informal extensions of the public-supply infrastructure. Recognizing the value of these informal water markets, some city administrators are now looking at how to promote them.[63]

Similar small-scale markets have also arisen in agricultural regions. In parts of Asia, for example, farmers are highly dependent on groundwater to irrigate their crops.[64] Declines in groundwater tables, however, have made it prohibitively expensive for poorer farmers to drill and operate wells. Many farmers with wells have responded by selling a portion of their groundwater to farmers who lack direct access of their own. Significant "tubewell markets" now exist in China, India, and Pakistan.[65] In northern China, 44% of farming villages have active tubewell markets (up from only 9% as recently as 1995).[66] More than 70% of tubewell owners, moreover, sell at least some groundwater through these markets.[67] On the other side of the supply–demand equation, approximately 20% of households in the region depend on

61. Davis, *supra* note 3, at 150.

62. *Id.* (citing Tova Maria Solo, *Small-Scale Entrepreneurs in the Urban Water and Sanitation Market*, 11 ENV'T & URBANIZATION 117, 118 n.1 (1999)).

63. STANFORD UNIV., WOODS INST. FOR THE ENV'T, PROGRAM ON WATER, HEALTH AND DEVELOPMENT: PROMOTING SAFE, SUSTAINABLE WATER SUPPLY AND SANITATION FOR DEVELOPING COUNTRIES 5, 9, 11–13 (2010), *available at* http://woods.stanford.edu/ideas/water-and-development/water-and-development.pdf (describing activities in Mozambique).

64. Tushaar Shah, *The Groundwater Economy of South Asia: An Assessment of Size, Significance and Socio-ecological Impacts*, *in* THE AGRICULTURAL GROUNDWATER REVOLUTION: OPPORTUNITIES AND THREATS TO DEVELOPMENT 7, 7 (Mark Giordano & Karen G. Villholth eds., 2007).

65. *See, e.g.*, Lijuan Zhang et al., *Development of Groundwater Markets in China: A Glimpse into Progress to Date*, 36 WORLD DEV. 706, 709 (2008).

66. *Id.* at 709–10 & tbl.1.

67. *Id.* at 720.

these markets to meet their domestic and agricultural needs.[68]

4. Summary

While many parts of the world continue to reject the Dublin Statement's view that water should be viewed as an "economic good," the theme has attracted a substantial number of adherents over the last quarter century. More importantly, it has led to significant practical change in the provision and management of water. Water is now subject to economic pricing, markets, and private provision in many parts of the world—eroding the old perspective of water as a common good.

C. Water as a Human Right

The most recent and least developed view of water is water as a human right.[69] Interestingly, water was not included in early lists of human rights. Over the last thirty years, however, access to an adequate supply of safe water for personal and domestic use has slowly emerged as a fundamental human right, although many developed nations, including the United States, continue to oppose the concept.

Lacking any direct support for a human right to water in international law, proponents of the right initially argued that the right to water was implicit within various other recognized rights, reasoning that access to water was necessary to effectuate those rights. For example, in the latter half of the twentieth century, various commentators and international institutions linked a right to water to the rights to life and health found in the International Bill of Human Rights.[70] The right to water elsewhere was associated by rights recognized by the International Covenant on Economic, Social, and Cultural Rights, including rights to adequate housing and food.[71]

The right to water for personal and domestic use has picked up significant independent support in the twenty-first century. In 2002, for example, the United Nations Committee on Economic, Cultural, and Social Rights formally recognized access to water for basic domestic needs as an independent human right—although the committee

68. *Id.* at 718.

69. For general analyses of water as a human right, see both Bluemel, *supra* note 4, and Gleick, *supra* note 4.

70. *See, e.g.*, Bluemel, *supra* note 4, at 968; Gleick, *supra* note 4, at 488.

71. *See, e.g.*, Bluemel, *supra* note 4, at 969–70 (noting that all are three rights are fundamental to an adequate standard of living).

continued to justify the right as essential to meet other human rights.[72] According to the U.N. Committee, "The human right to water entitles everyone to sufficient, safe, acceptable, physically accessible, and affordable water for personal and domestic use[s]."[73] At approximately the same time, the International Law Association concluded that "every person has a right . . . of access to water adequate to meet that person's vital human needs."[74] In 2005, the U.N. Sub-Commission on the Promotion and Protection of Human Rights declared that the right to adequate water is both a separate human right and a corollary of other human rights.[75]

The drive to recognize a human right to water recently culminated in an explicit declaration of the United Nations General Assembly, which concluded that "clean drinking water . . . [is] integral to the realization of all human rights" and "essential for the full enjoyment of life."[76] The resolution also called on all nations to help meet this human right by providing financial resources, building capacity, and transferring needed technology to developing countries.[77] One hundred twenty-two nations, including most members of the European Union, voted in favor of the assembly declaration, and none voted against.[78] However, forty-one

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72. Comm. on Econ., Soc. & Cultural Rights, *Substantive Issues Arising in the Implementation of the International Covenant on Economic, Social and Cultural Rights*, ¶¶ 1–3, U.N. Doc. E/C.12/2002/11 (Jan. 20, 2003).

73. *Id.*

74. Two years later, the International Law Association concluded that "[e]very individual has a right of access to sufficient, safe, acceptable, physically accessible, and affordable water to meet that individual's vital human needs." Int'l Law Ass'n, Berlin Rules of Water Resources art. 17, § 1, *in* 71 INT'L L. ASS'N REP. CONF. 337, 365 (2004).

75. Special Rapporteur of the U.N. Comm'n on Human Rights, Sub-Comm'n on Promotion & Prot. of Human Rights, *Economic, Social & Cultural Rights: Promotion of the Realization of the Right to Drinking Water and Sanitation*, pmbl., § 1, E/CN.4/Sub.2/2005/25 (July 11, 2005) (by El Hadji Guissé).

76. The Human Right to Water and Sanitation, G.A. Res. 64/292, ¶ 1, U.N. Doc. A/RES.64/292 (July 28, 2010); Press Release, Gen. Assem., General Assembly Adopts Resolution Recognizing Access to Clean Water, Sanitation as Human Right, By Recorded Vote of 122 in Favor, None Against, 41 Abstentions, U.N. Press Release GA/10967 (July 28, 2010).

77. Press Release, *supra* note 76.

78. *Id.*; *see also* Peter H. Gleick, *The Human Right to Water (and Sanitation)*, HUFFINGTON POST (Aug. 4, 2010), http://www.huffingtonpost.com/peter-h-gleick/the-human-right-to-water_b_671175.html; Mark Leon Goldberg, *Why the United States Did Not Support "Water as a Human Right" Resolution*, UN DISPATCH (July 28, 2010), http://www.undispatch.com/why-the-united-states-did-not-support-water-as-a-human-right-resolution; *General Assembly Declares Access to Clean Water and Sanitation Is a Human Right*, UN NEWS CENTRE (July 28, 2010), http://www.un.org/apps/news/story.asp?NewsID=

countries, including the United States, Australia, Canada, and the United Kingdom, abstained.[79] While only abstaining, the United States publicly declared its view that there is no human right to water as a matter of international law.[80]

The constitutions of a small but growing number of countries also recognize a right to water for personal and domestic use.[81] In a handful of cases, the right is explicit in the constitution.[82] For example, South Africa's 1996 Bill of Rights explicitly provides that everyone enjoys the "right to have access to . . . sufficient . . . water," and provides that the government must take "reasonable legislative and other measures, within its available resources, to achieve the progressive realization" of the right.[83] In other cases, courts or governmental agencies have concluded that other rights within their constitutions implicitly embody a right to water. For example, India's courts have concluded that its constitutional right to life includes the right to clean and sufficient water.[84]

Like water as a commodity, the view that water is a human right remains highly contested. As noted, approximately 20% of all the countries who are members of the United Nations voted to abstain from the recent declaration of water as a human right. Except in a few countries such as South Africa, there has been far more discussion of why water should be a human right than action taken to actually supply the poorer residents of developing nations with an adequate and clean supply of water for personal and domestic use. Indeed, because the

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79. *See* Gleick, *supra* note 78; Goldberg, *supra* note 78 (identifying the United States as one of the abstaining countries).

80. Explanation of Vote by John F. Sammis, U.S. Deputy Rep. to the Econ. & Social Council, on Resolution 1/64/L.63/Rev.1, the Human Right to Water (July 28, 2010), http://usun.state.gov/briefing/statements/2010/145279.htm (by John F. Sammis).

81. *See generally* Bluemel, *supra* note 4, at 977–85 (most notably, South Africa, India, and Argentina).

82. In addition to the discussion of South Africa's constitutional provision in the text, see CONST. OF THE REPUBLIC OF UGANDA art. XIV, § (*b*) ("[A]ll Ugandans enjoy rights and opportunities and access to . . . clean and safe water . . . .").

83. S. AFR. CONST. § 27(1)–(2), 1996; *see also The Gov't of the Republic of S. Afr. v. Grootboom* 2000 (1) SA 46 (CC) at 49 F (S. Afr.). In 1998, the South African government, through its National Water Act, provided for the implementation of the affirmative duty to provide water. National Water Act 36 of 1998 § 5(1), (3). For a general discussion of the South African right to water, see Takacs, *supra* note 13, at 740–47.

84. *See, e.g.*, Narmada Bachao Andolan v. Union of India, 10 S.C.C. 664, 767 (2000) (India) (water is part of right to life under article 21 of the Indian Constitution); Attakoya Thangal v. Union of India, 1990 (1) Ker L.T. 580 (India).

concept of water as a human right is so new, there is still significant uncertainty as to what it means and requires, both within countries and internationally. The view that water is a human right, nonetheless, has picked up considerable support over the last quarter century and has provided forensic support to individuals and nongovernmental organizations arguing for policies designed to provide adequate and clean water access for the poor.

III. TENSIONS AND HARMONIZATION

Looked at individually, the ascendancy of the themes discussed in Part I is not surprising. Each theme responds to a particular set of needs and parallels general thematic trends elsewhere in the field of the environment and natural resources. The theme of water as a public trust responds to growing environmental concerns over the world's aquatic ecosystems and parallels the new global emphasis on environmental sustainability. Water as a commodity responds to the growing recognition that water is too scarce to waste and parallels the general interest in market solutions to environmental problems. Finally, the emphasis on water as a human right responds to the devastating fact that over one billion people in the world still do not have access to adequate and clean freshwater, and it forms one part of a growing global focus on human rights.

What may seem surprising is that all three themes have become more influential at the same time. As discussed below, the themes are frequently seen as conflicting. Water as a commodity, in particular, is often viewed as inconsistent with and even undermining the themes of water as a public trust and a human right. An open question, therefore, is whether the three themes will continue to grow in tandem, or whether one or more of the visions will win out over the others.

A. Perceived Conflicts

1. Public Trust Versus Human Right

Of the three themes, "water as a public trust" and "water as a human right" would seem the most reconcilable. If the government holds water in trust for the overall public, ensuring adequate and safe water for personal and domestic needs should arguably be at the top of the list of trust purposes. And citizens without adequate access might legitimately urge that the nation has failed to meet its trust responsibilities.

Interestingly, public trust cases have never addressed this issue. As noted in Part II.A, public trust cases in the United States historically

focused on non-consumptive uses of water (e.g., navigation, commerce, and fishing) and, more recently, have turned to environmental protection.[85] Given the particular freshwater concerns at the relevant points of time in U.S. history, these emphases might not be surprising, as there has never been a major human-rights focus on water issues in the United States. Yet public trust cases in developing nations, all of which have been of recent vintage, also have focused primarily on environmental concerns.[86]

Commentators have begun to see the potential connections between water as a public trust and water as a human right. Thus, a recent paper commissioned by the IUCN Environmental Law Programme discusses the public trust doctrine in connection with the potential use of customary international law to enforce a human right to water.[87] Even here, however, the paper uses the public trust doctrine as an example of the power of customary legal doctrines, and it never expressly suggests that the public trust doctrine requires universal access to adequate and clean water.[88]

In theory, the emphasis in modern public trust cases on environmental protection could conflict with the growing emphasis on a human right to water. The potential for conflict depends on how broadly a human right is defined. For example, could a human right require governments to import and provide water to growing urban populations in water-scarce regions, to the detriment of instream flows or other parts of the environment, rather than permit them to deter additional growth by refusing to provide new water supplies? A governmental policy that considers water availability in planning land uses and that discourages urban growth in areas with already-scarce water supplies would seem consistent with both public trust and human-right themes. Indeed, such a policy might prove more effective in meeting a human right to water than trying to find the domestic or international resources necessary to provide needed urban infrastructure. However, the vast majority of urbanization in the developing world is unplanned, leaving open the question of whether a nation could try to discourage new urban growth by announcing that it

85. *See supra* notes 7–13 and accompanying text.

86. *See, e.g.*, M.C. Mehta v. Kamal Nath, (1996) Supp. 10 S.C.R. 12 (India); Waweru v. The Republic, (2006) 1 K.L.R. 677, 687–88 (H.C.K.) (Kenya).

87. John Scanlon et al., *Water as Human Right?* 9–10 (IUCN Envtl. Pol'y & L. Paper No. 51, 2004).

88. *Id.*

will not furnish water to unauthorized urban slums. While such a policy might be consistent with treating water as a public trust, it could be arguably inconsistent with a broadly defined human right to access.

Opponents of environmental protection have occasionally invoked a broad claim of human rights to justify harmful water withdrawals. Governmental efforts to protect California's San Joaquin–Sacramento Delta provide a recent example. Federal agencies and courts have limited exports of water from the Delta to protect endangered and threatened fish species, including Delta smelt and winter-run Chinook salmon.[89] The San Joaquin Valley agricultural community, which has received less irrigation water as a result, has argued that the human need for food and jobs should trump these environmental concerns.[90] Drawing on a broad vision of the human right to water that emphasizes the importance of water not only to personal and domestic needs, but also for the production of an adequate food supply to feed the world's burgeoning population and for jobs, opponents of Delta restrictions have attempted to shape the dispute as a battle between the environment and human rights.[91]

2. Conflicts Stemming from Treating Water as a Commodity

Despite occasional concerns about potential conflicts between treating water as a public trust and recognizing a broad human right to water, the major concern raised by commentators has been the possibility of conflicts with these two visions if water is treated as a commodity.[92] This is not surprising. As discussed in Part II, many traditional water rules and policies, driven in large part by views consistent with the public trust vision of water, seem inconsistent with the commoditization of water. Efforts to price water at its full price, promote water markets, and privatize the public supply of water often seem to clash with ethical precepts underlying the public trust doctrine.

Consider, for example, privatization. The Supreme Court's 1892

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89. For overviews of the Delta controversy, see ELLEN HANAK ET AL., MANAGING CALIFORNIA'S WATER: FROM CONFLICT TO RECONCILIATION 59–65 (2011); LEGAL CONTROL OF WATER RESOURCES II, *supra* note 32, at 628–39.

90. *See, e.g.*, Katie Paul, *Dying on the Vine*, DAILY BEAST (Aug. 23, 2009), http://www.thedailybeast.com/newsweek/2009/08/23/dying-on-the-vine.html.

91. *See* Malia Wollan, *Hundreds Protest Cuts in Water in California*, N.Y. TIMES, Apr. 16, 2009, at A17.

92. *See, e.g.*, *Corporate Water Privatization: Water is a Human Right, Not a Commodity*, SIERRA CLUB, http://www.sierraclub.org/committees/cac/water/human_right/ (last visited Oct. 8, 2011) [hereinafter SIERRA CLUB].

opinion in *Illinois Central Railroad Co. v. Illinois*,[93] the progenitor of the modern trust doctrine in the United States, appeared explicitly to conclude that the privatization of a public trust resource is inconsistent with the government's public trust responsibilities.[94] In *Illinois Central*, the issue was whether the government could turn the harbor of a major city over to a private railroad company to manage and develop.[95] Concluding that such a transfer was either void or voidable under the public trust doctrine (even though the railroad agreed to protect and promote navigation), Justice Stephen Field noted, "The State can no more abdicate its trust over property in which the whole people are interested, like navigable waters and soils under them, so as to leave them entirely under the use and control of private parties . . . than it can abdicate its police powers."[96] If the government cannot turn a harbor over to a private company, how can it privatize an entire urban water system? If anything, the public interests in public control are arguably greater in the case of water supplies than in navigation. As discussed in Part II.B.3, concerns over the ability of profit-maximizing companies to protect water quality and invest in adequate infrastructure led most cities in the late nineteenth and early twentieth century to replace private water suppliers with municipal water agencies.

Or consider water marketing. As noted earlier, most governments, including many states and territorial governments in the nineteenth century American West, explicitly prohibited water transfers for reasons that parallel elements of the vision of water as a public trust. One of the most influential opponents of water transfers was Elwood Mead, Wyoming's state engineer and a key leader in the development of the prior-appropriation system of water rights. In Mead's view, water markets were inconsistent with the view that water was a public resource with ownership held by the government for the ultimate benefit of all citizens:

> If water is to be so bartered and sold, then the public should not give streams away, but should auction them off to the highest bidder.
>
> . . . .

93. 146 U.S. 387 (1892).
94. *Id.* at 452–53.
95. *Id.* at 433–34.
96. *Id.* at 453.

> In monarchies streams belong to the crown, and in the early history of irrigation in Italy and other parts of Europe, favorites of the rulers were rewarded with grants of streams. But in a republic they belong to the people, and ought forever to be kept as public property for the benefit of all who use them, and for them alone, such use to be under public supervision and control.[97]

Apparent conflicts between water commoditization and the other two ascendant water themes continue today. One of the reasons that human-rights advocates have pushed strongly in recent years for the explicit recognition of a human right to water has been to help fight against efforts at privatization.[98] The advocates fear that privatized water companies will make it more difficult for the poor to obtain water directly from urban systems. Part of the reason is that privatization of urban water supplies almost always has been accompanied, often at the explicit request of the contracting government, by increased collection of water bills and higher water rates.[99] Empirical studies have confirmed that privatization virtually always leads to increases in monthly water fees.[100] Part of the reason is also the belief that profit-maximizing water companies will inevitably favor the richer communities of a city and neglect poorer areas because of the differences in potential profits.[101]

Advocates for the urban poor have been successful in disrupting privatization plans through the assertion of human rights. The demonstrations and general strike that followed Bolivia's efforts to privatize the water system of Cochabamba provides the best-known example. Rate increases that followed the takeover of the water system by Bechtel Corporation, along with other actions, led to substantial and ultimately successful opposition.[102] The resulting Cochabamba

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97. MEAD, *supra* note 36, at 264, 365–66.

98. *See, e.g.*, Bluemel, *supra* note 4, at 963 ("Calls for recognition of a human right to water have largely resulted from a mistrust and fear of treating water as an economic good.").

99. Davis, *supra* note 3, at 165–67.

100. *Id.* at 166.

101. *Id.* at 170 ("A private firm will understandably be more interested in extending services to those areas where effective demand for improved services is highest and where the cost of service provision is lowest—both characteristics which typically apply to higher-income neighborhoods.").

102. For an overview of the Cochabamba conflict, see Bluemel, *supra* note 4, at 965–67. For a more in-depth analysis, see generally OSCAR OLIVERA, ¡COCHABAMBA! WATER WAR IN BOLIVIA (2004).

Declaration provides one of the clearest statements of the perceived inconsistency of commoditization with the treatment of water as a public trust and human right:

> For the right to life, for the respect of nature and the uses and traditions of our ancestors and our peoples, for all time the following shall be declared as inviolable rights with regard to the uses of water given us by the earth:
>
> 1. Water belongs to the earth and all species and is sacred to life, therefore, the world's water must be conserved, reclaimed, and protected for all future generations and its natural patterns respected.
>
> 2. Water is *a fundamental human right and a public trust* to be guarded by all levels of government, *therefore, it should not be commodified, privatized, or traded for commercial purposes*. These rights must be enshrined at all levels of government. In particular, an international treaty must ensure these principles are incontrovertible.
>
> 3. Water is best protected by local communities and citizens who must be respected as equal partners with governments in the protection and regulation of water. Peoples of the earth are the only vehicle to promote earth democracy and save water.[103]

Subsequent to the Cochabamba Declaration, opponents of privatization have used the theme of human rights, as well as the public trust doctrine, to kill proposed private concessions in such high-profile cities as Buenos Aires, Argentina; Jakarta, Indonesia; and Manila, Philippines.[104]

Environmentalists have enjoyed a more mixed relationship with the commoditization of water. Some more market-oriented environmental organizations, such as the Environmental Defense Fund, have pushed for higher water prices and water markets as effective means of increasing conservation and thus reducing stresses on natural water systems.[105] Other environmental groups, by contrast, have worried

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103. The Cochabamba Declaration, Dec. 8, 2000, *reprinted in* OLIVERA, *supra* note 102 (emphasis added).

104. *See* PUBLIC CITIZEN, *supra* note 59, at 2–7.

105. *See, e.g.*, STAVINS, *supra* note 23, at v (highlighting an EDF study advocating the use of water markets to relieve pressure on natural water systems).

about the long-term potential impact that viewing water as a commodity would have on environmental arguments based on the public trust doctrine.[106] Whether an environmental group sees a serious conflict has depended in part on whether the group focuses on practical policy or rhetorical impact.

B. The Case for Harmonization

The three themes need not conflict, but instead can work together to provide a more complete and effective vision for water management. Harmony results in part from recognizing that the themes play different roles in shaping water management. Both the public trust doctrine and the human right to water set goals for water management. In particular, both emphasize that the goal of water management is not simply to promote economic development. While not denying the importance of using water for economic development, water managers must protect the environment and other communal interests in waterways (such as navigation and fish stocks)—this being the role of the public trust doctrine—and they must ensure that all citizens have basic access to water for personal and domestic use (the human right). Commoditization of water, by contrast, provides a mechanism for achieving these goals, as well as the separate goals of minimizing costs and maximizing the economic value of other consumptive uses of water. Viewed as a tool, commoditization can support rather than conflict with both the public trust and a human right to water—if designed to promote these goals and not simply overall societal wealth. Finally, the public trust doctrine places an institutional side constraint on water management by ensuring that the government can always reconfigure water rights and policy in the interest of the general public—no matter what private rights it has awarded. The public trust doctrine, in short, restricts the extent of commoditization that can occur.

The Dublin Statement on Water and Sustainable Development, discussed earlier, incorporates all three themes, seeing little if any apparent conflict among them. As noted, the Dublin Statement promoted recognizing water as an "economic good."[107] In introducing this principle, however, the Dublin Statement noted, "Within this principle, it is vital to recognize first the basic right of all human beings

106. *See, e.g.*, SIERRA CLUB, *supra* note 92 (objecting to view that water should be treated as a commodity).

107. *Dublin Statement*, *supra* note 25, princ. 4.

to have access to clean water . . . at an affordable price."[108] More importantly, the Dublin Statement emphasizes that water should be treated as an economic good not as a goal in itself, but because of its instrumental value. Failure to treat water as an economic good can lead to "wasteful and environmentally damaging uses of the resource."[109] Managing it as an economic good is thus a particularly effective means of encouraging conservation and "achieving efficient and equitable use."[110] Getting into specifics of water management, the statement also emphasizes that improved pricing of urban water supplies can help encourage conservation, reduce system losses, and by financially enabling recycling and reuse, hopefully free up water for both growing urban regions and environmental needs.[111]

1. Commoditization and the Public Trust

Governments can and do use markets to promote a number of public trust goals, including environmental protection. Because the environment is a public good, government intervention and regulation is essential to its protection; private markets for environmental protection will neither reflect intrinsic values of the environment nor, given collective action problems, even fully reflect personal preferences for environmental protection.[112] However, the commoditization of water, by increasing water efficiency, can reduce the pressure on existing environmental flows and on groundwater aquifers.[113] Private water markets, moreover, can both assist the government in achieving environmental protection and permit individuals to contribute toward a higher level of protection than the government provides.[114]

Because protection of aquatic environments can require reductions

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108. *Id.*

109. *Id.*

110. *Id.*

111. *Dublin Statement*, *supra* note 25, The Action Agenda.

112. *See* Barton H. Thompson, Jr., *Conservation Options: Toward a Greater Private Role*, 21 VA. ENVTL. L.J. 245, 255 (2001–2002) (noting that "philanthropic conservation" will not reflect the full value of the conservation because (1) some people will be tempted to "free ride" on the contributions of others, and (2) people will not have adequate information to judge the value); *see also* JAMES SALZMAN & BARTON H. THOMPSON, JR., ENVIRONMENTAL LAW AND POLICY 17–19 (3d ed. 2010) (explaining why public goods may be underproduced).

113. *See* STAVINS, *supra* note 23 (explaining how water markets in Southern California could help protect the environment).

114. *See* Barton H. Thompson, Jr., *Markets for Nature*, 25 WM. & MARY ENVTL. L. & POL'Y REV. 261, 263–64 (2000) [hereinafter *Markets for Nature*].

in water withdrawals, existing water users frequently oppose proposed governmental protections. In recent years, governments in developed nations have often turned to markets to achieve environmental protection over such opposition. For example, in much of the western United States, both the federal and state governments have purchased water from willing sellers and then dedicated the water to instream flow.[115] California also created an Environmental Water Account (EWA) to purchase sufficient water to offset losses in water exports when pumps in the state's Sacramento–San Joaquin Delta had to be shut down to save endangered fish.[116] Prior to the EWA, the government repeatedly ran into political opposition when it tried to shut down the pumps because this led to reduced exports; such opposition led not only to legal disputes, but also to delays in the governmental orders.[117] The EWA reduced political tensions by purchasing sufficient water to make whole the recipients of the exported water.[118]

In the American West, a growing number of philanthropic "water trusts" now supplement governmental protections of environmental flows through market transactions. Much like how The Nature Conservancy and other land trusts purchase real estate for conservation, water trusts either lease or purchase water rights and then can dedicate the water to instream flow.[119] Beginning with the creation of the Oregon Water Trust (now the Freshwater Trust) twenty years ago, water trusts now exist in a majority of the western states.[120] Land trusts, moreover, are beginning to acquire water rights as part of their conservation mission.[121] Recognizing the environmental value of such trusts, a growing number of western states have passed laws authorizing

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115. *Id.* at 267–70.

116. *Id.* at 308–10 (describing the EWA's proposals and purposes prior to the EWA being finalized). For more information on the EWA, see generally Alf W. Brandt, *An Environmental Water Account: The California Experience*, 5 U. DENV. WATER L. REV. 426 (2002); and Larry R. Brown et al., *Managing Water to Protect Fish: A Review of California's Environmental Water Account, 2001–2005*, 43 ENVTL. MGMT. 357 (2009).

117. *Markets for Nature*, *supra* note 114, at 309–10 (noting the difficulty of increasing flow requirements over opposition of existing users).

118. *Id.* at 308–10.

119. *See* Simon Hone et al., *A Role for the Private Sector in the Provision of River and Riparian Goods?*, 30 ECON. PAPERS 157, 158 (2011); *Markets for Nature*, *supra* note 114, at 271, 286–87.

120. For a history of the first ten years of the Freshwater Trust, see Janet C. Neuman, *The Good, The Bad, and The Ugly: The First Ten Years of the Oregon Water Trust*, 83 NEB. L. REV. 432 (2004).

121. *Markets for Nature*, *supra* note 114, at 271.

environmental transfers and protecting the resulting flows.[122]

In many parts of the world, privatization of water supply systems also benefits environmental protection. Water suppliers are highly fragmented throughout much of the world, including the United States (due both to the way in which water systems historically developed and to the desire of individual localities to each have their own water systems). Municipality-specific suppliers are often too small to have the expertise needed to comply with water quality regulations.[123] In many developing regions, moreover, suppliers are insufficiently staffed for environmental compliance. Privatization of water suppliers may be an effective means to provide the needed expertise and revenue to improve environmental performance. Indeed, privatization in a number of the Organisation for Economic Co-operation and Development (OECD) countries has led to greater compliance with environmental standards.[124]

Experience with privatization to date raises doubts over Justice Field's suggestion in *Illinois Central* that turning a public trust resource over to a private firm undermines the government's public trust responsibility.[125] As noted earlier, Justice Field equated privatization with abdication of the government's police power. Technically, of course, that is not true. The government retains its police power over natural resources no matter who owns them (although the takings protections may limit the ability of the government to exercise its police power without compensation in the United States). Private water suppliers must meet environmental standards no less than public suppliers. And as just noted, private suppliers may do a better job of meeting environmental standards in some cases. Interestingly, studies suggest that the better performance of private suppliers may be due not only to stronger capabilities, but also to the fact that regulatory agencies often appear to enforce standards more rigorously against private firms than against fellow governmental agencies.[126] In short, the public trust

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122. *See id.* at 287.

123. *See* SAX ET AL., *supra* note 32, at 716. The abilities of private suppliers to meet environmental standards and maintain up-to-date technology are reasons that cities have investigated privatization. *See* Barton H. Thompson, Jr., *Privatization of Municipal Water Suppliers*, LOOKING AHEAD, June 1999, at 1, 4.

124. *See, e.g.*, Davis, *supra* note 3, at 163 ("Case-based evidence in several OECD countries suggests that privatization has helped utilities achieve compliance with water quality and wastewater treatment standards."). That does not mean, however, that private water suppliers do not violate pollution standards. *Id.* at 164.

125. *See supra* notes 93–96 and accompanying text.

126. Davis, *supra* note 3, at 164.

might actually benefit from separating the poacher from the gamekeeper, rather than merging them through governmental control of both the water supply system and the regulatory regime.

2. Commoditization and Human Rights

Treating water as a commodity also can help implement a human right to water.[127] Although the populations of some cities have outstripped their available water supplies, the major problem in ensuring everyone a clean and adequate supply of freshwater in most of the world is access rather than total supply.[128] Many parts of the world do not have the financial capital or the political commitment to supply water to all residents through public-supply systems.[129] Lacking an improved public supply, people must obtain water themselves either from local waterways or aquifers, yet many do not have the money or other resources needed to do so.

Full-cost pricing of urban water supplies can help address both the adequacy of the water supplies and lack of access. By encouraging conservation, full-cost pricing can help stretch available supplies among a larger population. Full-cost pricing also can provide additional revenue for expansion of infrastructure. And full-cost pricing does not necessarily prevent access by the poor. For example, tiered pricing systems, under which small users receive water for free or for a "lifeline" price but water rates rise as overall consumption increases, can ensure water for the poor while confronting larger water users with the full marginal cost of their water.[130] Cities also can charge all users the full cost of their water, but provide poor consumers with an offsetting lump-sum subsidy.

As noted in Part II, small-scale water markets are also helping to provide water access to urban and rural residents in large areas of the world. Consider, for example, the groundwater markets in parts of Asia. A recent study of the groundwater markets by economists with the Chinese Academy of Sciences found that the markets provided water access to poor farmers who otherwise would have lacked feasible

127. *See* Budds & McGranahan, *supra* note 48, at 95 ("There is no inherent conceptual contradiction between private sector participation and the achievement of human rights, but contradictions will arise in particular circumstances.").

128. *See* Davis, *supra* note 3, at 165, 169.

129. *Id.* at 154–56.

130. For a recent discussion on tiered pricing in the water field, see HANAK ET AL., *supra* note 89, at 270–72.

water supplies—markets were of the greatest importance to farmers who were small, less educated, and older.[131] By bridging the access gap, the water markets also reduced income gaps among the farmers. Despite fears that water markets might lead to price gouging, the groundwater markets in Asia were very competitive—with low profit margins—so the benefits went largely to the water purchasers.[132] Studies of small-scale water suppliers in areas such as Africa also suggest that water markets can aid the poor by providing reliable water delivery and flexible financial arrangements, such as short-term credit.[133]

Large-scale privatization of urban water supply systems also can increase population coverage (as well as the quality of the water supply, as discussed earlier). Many countries have turned to privatization because of the greater access to international capital markets that many large private water suppliers enjoy.[134] Empirical studies suggest that privatization has often led to accelerated capital investment in infrastructure expansion, although the levels of investment have sometimes fallen short of the target increases agreed to by the supplier as part of the privatization agreement.[135]

Privatization does not guarantee solutions and, if poorly managed, can actually undermine access for the poorest members of society. Whether privatization improves access depends in part on how a city structures the bidding for the right to run the municipal water supply system and on the terms of the contract. For example, cities often choose a company based on the payments that each company promises to make to the city in exchange for the privilege to run its water supply system. Such a competition encourages companies to look for ways to minimize costs so that it can make larger governmental payments, undermining company incentive to reinvest in infrastructure enlargement. By contrast, La Paz–El Alto, Bolivia, set basic pricing terms and then asked each company to bid based on how much it would expand water access to local residents. As a result, La Paz–El Alto saw a significant increase in access through its privatization of the local water supply.[136]

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131. Zhang et al., *supra* note 65, at 718.
132. *Id.* at 718–20.
133. Davis, *supra* note 3, at 150–51.
134. *See supra* notes 53–56 and accompanying text.
135. Davis, *supra* note 3, at 162.
136. *Id.* at 170.

IV. WATER AS A PUBLIC COMMODITY

As discussed in Part III, all three visions for water—water as a public trust, as a human right, and as a commodity—are potentially harmonious. Tensions exist among the visions, particularly in the assumptions and perspectives often underlying them, but a well-designed water regime should be able to reduce and manage these tensions. Not only are the three visions reconcilable, but a water regime that lacks any one of the visions would be either impoverished or ultimately less effective. The public trust doctrine recognizes the critical public goods provided by freshwater resources and the need for government to protect and promote such goods. A human right to water reflects the indispensable role of water in human life and personal development. Normative obligations to current and future generations, as well as to nature, animate both visions. However, unless water is treated also as a commodity, water regimes will find it more difficult to achieve either goal. Water use for agriculture and industry, which makes up the vast majority of water use throughout the world, will also be suboptimal, undermining economic development and reducing GDP.

A vision of water as a public commodity combines all three themes, integrating them rather than pitting them against each other. Importantly, the vision starts by recognizing the "publicness" of water: its critical roles in advancing life, culture, and religion, and supporting ecosystems. But the vision goes on to recognize the importance of treating water as a commodity, both in fulfilling the public values of water and in maximizing domestic wealth and income. In this vision, the publicness of water acts both to determine a partial set of the goals of market mechanisms (and thus to shape the laws underlying the market mechanisms) and to limit the markets.

The water regimes of two developing countries—South Africa and Chile—have experimented with the vision of water as a public commodity. The main purpose of South Africa's post-apartheid water law has been to correct former injustices in the allocation of water and other resources and to protect the interests of the poor.[137] As noted

137. *See* Grafton et al., *supra* note 27, at 12. For useful analyses of South Africa's water system, including its integration of the multiple visions set out earlier in this Article, see generally ROGER BATE & RICHARD TREN, THE COST OF FREE WATER: THE GLOBAL PROBLEM OF WATER MISALLOCATION AND THE CASE OF SOUTH AFRICA (2002); and Rashid Hassan & Jackie Crafford, *Environmental and Economic Accounts for Water in South Africa*, *in* THE ECONOMICS OF WATER MANAGEMENT IN SOUTHERN AFRICA: AN ENVIRONMENTAL ACCOUNTING APPROACH 114 (Glenn-Marie Lange & Rashid Hassan

earlier, the South Africa Bill of Rights explicitly guarantees everyone a right of "access to . . . sufficient . . . water" and provides for the "progressive realisation of [this] right[]."[138] South Africa's National Water Act of 1998 furthers this guarantee, setting out goals of "meeting the basic human needs of present and future generations" and "promoting equitable access to water."[139] And the country's Free Basic Water Policy "guarantee[s] each person a minimum basic quantity of potable water."[140]

South Africa also explicitly adopts a vision of water as a public trust, situating the national government as the trustee of the nation's water supplies and calling for water to be used to promote the public interest, sustainability, equity, and efficiency.[141] Starting with its 1996 Constitution, South Africa has emphasized environmental protection as a matter of both human health and well-being.[142] In support of these goals, South African law abolishes private ownership of water and recognizes ecological water reserves to be used for basic human and environmental needs.[143]

Yet, within the scope of these goals, South Africa has recognized a role for treating water as a commodity. While unrestricted water markets might challenge the nation's equity goals, limited markets within the agricultural sector can increase efficiency without undermining the visions of water as either a human right or a public trust.[144] Therefore, as noted earlier, South Africa has established rudimentary water markets, resulting in some local increases in efficiency.[145] Water markets exist in various areas, including the Lower

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eds., 2006).

138. S. AFR. CONST. § 27(1)(a), (2), 1996.

139. *See* Rose Francis, *Water Justice in South Africa: Natural Resources Policy at the Intersection of Human Rights, Economics, and Political Power*, 18 GEO. INT'L ENVTL. L. REV. 149, 161–66 (2005); Grafton et al., *supra* note 27, at 26.

140. Francis, *supra* note 139, at 178.

141. William L. Andreen, *Water Law and the Search for Sustainability: A Comparative Analysis*, *in* WATER RESOURCES PLANNING AND MANAGEMENT 155, 162 (R. Quentin Grafton & Karen Hussey eds., 2011); Robyn Stein, *Water Law in a Democratic South Africa: A Country Case Study Examining the Introduction of a Public Rights System*, 83 TEX. L. REV. 2167, 2174–76 (2005).

142. *See* S. AFR. CONST. § 24(a), 1996 ("Everyone has the right to an environment that is not harmful to their health or well-being.").

143. Andreen, *supra* note 141, at 162–63; Francis, *supra* note 139, at 161–63; Grafton et al., *supra* note 27, at 33; Stein, *supra* note 141, at 2181–83.

144. *See* Grafton et al., *supra* note 27, at 22.

145. *See id.* at 17, 19 (noting limited water transfers in South Africa).

Orange River, the Crocodile River, and the Nkwaleni Valley.[146] Further, in one of its most controversial policies, South Africa emphasizes the importance of full-cost recovery in water management and distribution, reversing a history of subsidizing water provisions.[147]

A diverse set of public and private-sector entities also currently work to deliver domestic water, including the basic water supply guaranteed to all residents by the Bill of Rights.[148] According to the South African government, the water challenges facing the country are "simply too big to be addressed by government alone," leaving an important role for private entities to play.[149] In particular, South Africa was faced with a large backlog of infrastructure needs when the African National Congress took power in 1994, a challenge which the government felt private markets might be able to help address.[150] Privatization, to date, has occurred in such diverse areas as the Dolphin Coast (where the water concession requires the provision of free basic water),[151] Nelspruit (which has seen an increase in the number of customers at the same time that the water supplier has reduced the total amount of water

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146. *See id.* at 17, 19; W.L. Nieuwoudt & R.M. Armitage, *Water Market Transfers in South Africa: Two Case Studies*, 40 WATER RESOURCES RES. W09S05, ¶¶ 2, 32–33 (2004).

147. THE DEP'T OF WATER AFFAIRS, WHITE PAPER ON A NATIONAL WATER POLICY FOR SOUTH AFRICA 5 (1997), *available at* http://www.dwaf.gov.za/Documents/Policies/nwpwp.pdf; Reynaud Daniels, *Implementation of the Right of Access to Sufficient Water Through Privatization in South Africa*, 15 PENN ST. ENVTL. L. REV. 61, 65 (2006); Francis, *supra* note 139, at 161, 165, 170–76. These provisions of South Africa's water policy have not always meshed well with the concept of water as a human right. Thus, in some situations, the policy has led to substantial debt among the poor and, of most concern, the cutting off of water supplies despite laws designed to protect low-income consumers and reduce potential impacts. Francis, *supra*, at 170–74.

148. *See* S. AFR. CONST. § 27(1)(b), 1996; Davis, *supra* note 3, at 152 (citing Mike Muller, *Public–Private Partnerships in Water: A South African Perspective on the Global Debate*, 15 J. INT'L DEV. 1115, 1116–20 (2003)). *See generally* Daniels, *supra* note 147 (noting the legislative framework in the South African context); Afeikhena Jerome, *Private Sector Participation in Infrastructure in Africa*, *in* GLOBALISATION, INSTITUTIONS AND AFRICAN ECONOMIC DEVELOPMENT: PROCEEDINGS OF THE AFRICAN ECONOMIC CONFERENCE 2008, at 273 (2010) (detailing the trends of participation in infrastructure and development in Africa).

149. Francis, *supra* note 139, at 176 (quoting DEP'T OF WATER AFFAIRS & FORESTRY, STRATEGIC FRAMEWORK FOR WATER SERVICES, WATER IS LIFE, SANITATION IS DIGNITY § 3.4.7 (2003)).

150. *See* Daniels, *supra* note 147, at 65.

151. *See South Africa: Borough of Dolphin Coast*, *in* 2 CASE STUDIES OF BANKABLE WATER AND SEWERAGE UTILITIES: COMPENDIUM OF CASE STUDIES 3, 3–12 (USAID ed., 2005), *available at* http://pdf.usaid.gov/pdf_docs/PNADE148.pdf. According to the USAID, service provision under the concession is reliable, and the utility is covering all of its costs and retaining funds for infrastructure investment. *Id.* at 10.

needed to supply its customers),[152] and Johannesburg.[153] South African law requires municipalities to regulate all private providers, including controlling tariffs and avoiding interruptions in service; and municipalities remain ultimately responsible for meeting constitutional obligations.[154] Privatization has had a mixed record but appears to have worked well in those instances where careful attention has been given to the structuring of the contract and incentives.

Chile has also tried integrating multiple themes into its water system.[155] Since the 1980s, Chile has promoted the use of free markets and water transfers to allocate water resources.[156] Indeed, Chile is the only country to explicitly recognize and protect private rights to water in its constitution. Water markets have taken significant hold in some regions of the country.[157] According to economic studies, Chile's commoditization of water has significantly contributed to the GDP of these regions by allowing water to move from low-value to higher-value economic uses and by encouraging conservation.[158] For example, one

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152. *See* Daniels, *supra* note 147, at 83–85 (noting also various problems that have arisen over time in connection with the concession); Francis, *supra* note 139, at 177

153. Francis, *supra* note 139, at 177.

154. Daniels, *supra* note 147, at 69–71.

155. For overviews of Chile's water system, and in particular its use of markets, see generally CARL J. BAUER, SIREN SONG: CHILEAN WATER LAW AS A MODEL FOR INTERNATIONAL REFORM (2004); Carl J. Bauer, *Slippery Property Rights: Multiple Water Uses and the Neoliberal Model in Chile, 1981–1995*, 38 NAT. RESOURCES J. 109 (1998); Stephen E. Draper, *The Unintended Consequences of Tradable Property Rights to Water*, 20 NAT. RESOURCES & ENV'T 49, 54–55 (2005); Brendan McNallen, *Fixing the Leaks in Brazil's Water Law: Encouraging Sound Private Sector Participation Through Legal and Regulatory Reform*, 9 GONZ. J. INT'L L. 147, 159–64 (2006); Monica Ríos Brehm & Jorge Quiroz, *The Market for Water Rights in Chile* (World Bank Technical Paper No. 285, 1995).

156. For general descriptions, see Bjornlund & McKay, *supra* note 44, at 774–76; Brehm & Quiroz, *supra* note 155, at 1.

157. Bjornlund & McKay, *supra* note 44, at 775. Other parts of the country have not seen a similar growth in water transfers. A variety of factors appear to have limited the growth of water markets in these other regions, including a rigid system of water distribution, legal uncertainty over water title, the availability of other options to obtain water, and conflicting social values. *Id.* at 776. Some observers also report that water-right holders have tended to "hoard their rights as a kind of insurance policy to guard against future droughts or to await higher prices, and, in some cases, to block competitors from entering the market." Andreen, *supra* note 141, at 161.

158. The emphasis on increased efficiency has had a distributional impact, with the power sector crowding out a significant number of farmers. *See, e.g.*, Alexei Barrionuevo, *Chilean Town Withers in Free Market for Water*, N.Y. TIMES, Mar. 15, 2009, at A12 (noting competition with mining companies). Analysts have differed on the success of Chile's water markets. According to one 1995 study, Chile's water market "has worked reasonably well, especially in zones where water scarcity problems are more acute" and, in some situations,

recent study concluded that the benefits from water markets in Chile "are substantial and amount to between 8[%] and 32[%] of agricultural contribution to regional GDP, or some $22 million annually."[159]

Chile also has been one of four South American countries to actively engage in privatization of municipal water supply systems.[160] Moreover, according to many observers, Chile's privatization efforts have been highly successful, in large part because of active national efforts to regulate the water provision of private suppliers, carefully monitor the bidding process and contractual performance, and rationalize water tariffs.[161] Privatization has led to increased investments in infrastructure, improved performance, and greater conservation.[162]

Chile has tempered this commoditization with recognition of the importance of water to all members of its population, including the poor. Consequently, Chile has adopted laws and policies to ensure water access by poor farmers and urban users; among these are subsidies to help 13% of the nation's families obtain a minimum quantity of potable water at an affordable price.[163]

Chile, however, has not done as well in promoting the public trust interest in water, particularly for environmental protection. At a rudimentary level, Chile's water laws appear to support the view of water as a public trust; thus, its 1981 Water Code specifically provides that "water is a natural resource for public use."[164] But Chile has done

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"has helped to avoid expensive new water infrastructure by allowing frictionless transfers of water rights from agricultural to urban sectors." Brehm & Quiroz, *supra* note 155, at 28. For a far more skeptical view, see Andreen, *supra* note 141, at 161 (concluding that Chile's "radical free market approach failed").

159. Grafton et al., *supra* note 27, at 18 (citing Ereney Hadjigeorgalis & Jay Lillywhite, *The Impact of Institutional Constraints on the Limarí River Valley Water Market*, 40 WATER RESOURCES RES. W05501, ¶¶ 63–66 (2004)); *see also* Brehm & Quiroz, *supra* note 155, at 6–7 (estimating the economic gains from water markets).

160. *See* McNallen, *supra* note 155, at 159. The other three countries are Argentina, Bolivia, and Brazil. *Id.*

161. *Id.* at 159–64. In the early 2000s, all thirteen of the regional water utilities in Chile engaged in some type of privatization. *Id.* at 163.

162. *See* MARIA DE LA LUZ DOMPER, CHILE: A DYNAMIC WATER MARKET 4–5 (March 2009), *available at* http://www.policynetwork.net/sites/default/files/Chile_March09.pdf.

163. Davis, *supra* note 3, at 169; *see also* McNallen, *supra* note 155, at 162–63 (explaining the subsidy system for the poor). "In 2001, the scheme totaled 500,000 subsidies and cost $20.1 million. Around 15% of households were covered by the scheme, receiving an average subsidy of $10 monthly." DE LA LUZ DOMPER, *supra* note 162, at 6.

164. *See* Grafton et al., *supra* note 27, at 8 (discussing the provisions of the 1981 Water Code).

little to translate this foundation into effective environmental protection.[165] Water transfers, for example, are permitted without adequate consideration of potential environmental impacts.[166] The World Bank believes that, as a result, environmental externalities are pervasive and likely to become an increasing problem in the future unless addressed.[167] Unlike South Africa, Chile has not fully integrated the three themes into a balanced and effective vision.

Several lessons can be learned from the experiences of South Africa, Chile, and other countries. First, there are tensions between the visions of water as a public trust and a human right, on the one hand, and the vision of water as a commodity, on the other. Markets, without governmental intervention, will generally not protect the poor, promote the environment, or advance other purely public interests in water resources. The commodification of water can thus lead to greater water inequality and to environmental degradation if adequate governmental institutions do not exist to protect these other interests. When privatizing water supplies or opening up water markets, governments must both ensure that they have the expertise and resources to oversee the process and provide for effective regulation of performance.

Second, the market is not a panacea in addressing water issues. While water markets often increase water-use efficiency and help allocate water to economically more valuable uses, water markets generally face legal, economic, and cultural barriers that preclude them from achieving all that they might. While privatization has increased infrastructure investment, performance, and, in some contexts, efficiency, it has been less successful in other settings and has sometimes failed spectacularly. The difference between success and failure often has depended on the existence of adequate rules and institutions to oversee the awarding and implementation of contracts. Conversely, the government has significant roles still to play, not only in promoting public access to water and environmental protection, but also in

165. *Id.*

166. Andreen, *supra* note 141, at 161; Draper, *supra* note 155, at 55; *see also* Brehm & Quiroz, *supra* note 155, at 25–27 (noting that Chile has had difficulties implementing water policies that consider environmental impacts); Grafton et al., *supra* note 27, at 28 (noting that the Water Code fails to address "third-party effects or environmental impacts"). Water transfers also fail to adequately account for third-party impacts on other water-right holders. Draper, *supra* note 155, at 55; Grafton et al., *supra* note 27, at 28.

167. Grafton et al., *supra* note 27, at 28 (citing John Briscoe et al., *Managing Water as an Economic Resource: Reflections on the Chilean Experience* 11 (World Bank, Envtl. Econ. Ser. No. 62, 1998)).

encouraging greater efficiency.

Finally, despite these concerns, markets can play and have played a critical role in improving water management, and a well-designed water policy can harmonize the vision of water as a commodity with both of the other two visions. Water markets, pricing, and privatization are all tools that can not only promote greater economic efficiency in water use, but, when properly designed, also help increase overall access to fresh water in developing nations and increase overall environmental protection. Water systems that ignore these tools are at a disadvantage in promoting societal wealth and well-being. Rather than thinking of water in terms of any one of the visions outlined in Part II, governments, therefore, should think of water as a public commodity—a resource that is inseparable from the public values that it can promote, but a resource that is also a commodity and that should be recognized as such within the confines of the public values.