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ARTICLE

Do Water Law and Policy Promote Sustainable Water Use?

DAN TARLOCK*

I. SUSTAINABLE DEVELOPMENT: A BENCHMARK NORM?

Sustainable development, contested as it is, has emerged as both an international policy objective and a legal principle[1] against which resource exploitation and use can be measured. The core idea of sustainable development is that resources should be used to both serve the needs of present and future generations.[2] This requires that extraction, production and consumptive patterns integrate economic development and

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* Distinguished Professor of Law, Chicago-Kent College of Law and Honorary Professor UNESCO Centre for Water Law, Policy, and Science, University of Dundee, Scotland. I wish to thank Mr. Paul Lee, J.D. candidate, Pace University School of Law, for his helpful research assistance.

1. A legal principle has been defined as a legal norm which "provides the general orientation and direction to which positive law must conform, a rationale for the law, without itself constituting a binding norm," as opposed to "rules of indeterminate content, having a degree of abstraction so great that it is not possible to deduce obligations from them with any degree of certainty." ALEXANDRE C. KISS & DINAH SHELTON, INTERNATIONAL ENVIRONMENTAL LAW 203 (3d ed. 2004).

2. United Nations Conference On Environment and Development, Rio de Janiero, Braz., June 3-14, 1992, *Rio Declaration on Environment and Development,* Principle 3, U.N. Doc. A/CONF.151/26/Rev.1 (Vol. I), Annex I (Aug. 12, 1992). All definitions derive from the World Comm'n on Env't and Dev., Report of the World Commission on Environment and Development: Our Common Future 43, U.N. Doc. A/42/427 (1987), *available at* http://www.undemocracy.com/A-42-427.pdf. Edith Brown Weiss' book is the foundation of legal norms to implement the principle. *See generally* EDITH BROWN WEISS, IN FAIRNESS TO FUTURE GENERATIONS: INTERNATIONAL LAW, COMMON PATRIMONY, AND INTERGENERATIONAL EQUITY (1989).

environmental protection and be socially inclusive. This article asks whether the principle of sustainable development is a useful lens with which to evaluate United States water law and policy. My basic argument is that water law and policy have some capacity to promote more sustainable use patterns and that the careful use of "sustainable" as a label can move law and policy in this direction. The promotion of sustainable use is necessary because too many laws and policies provide deeply embedded incentives for immediate resource consumption that often reflects a small percentage of the total social cost of consumption and offer few, if any, incentives for alternative, more sustainable exploitation and consumption options.

Water law has always contained the core elements of sustainable development, although the label has not been used to describe them. The law has had an inter-generational perspective, if only because users will only invest in infrastructure if long-term future supplies are secure. It has also tried to ensure that renewable supplies are used *relatively* efficiently and that non-renewable groundwater supplies are not recklessly mined. Sustainable development has an important inclusion or social justice component, and water law has had to face the challenges of accommodating multiple demands, including new, often socially marginal, uses such as Native American claims and environmental protection. Finally, the law has had to adjust to changed conditions such as Global Climate Disruption [hereinafter "GCD"], which threaten future supplies.[3] Thus, water law and policy can fairly be described as a system that promotes sustainable water use.

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3. The term seems have originated in a 2007 Harvard lecture by Professor John P. Holdren, now the White House Science Advisor. *See* John P. Holdren, Presentation at John F. Kennedy School of Government Forum: Global Climate Disruption: What Do We Know, What Should We Do? (Nov. 6, 2007), *available at* http://belfercenter.ksg.harvard.edu/files/uploads/2007_11-6_Forum_(NXPowerLite).pdf. The term was introduced to counter the idea that global warming will be gradual and benign instead of more rapid and harmful as originally anticipated. This is now the Obama Administration's preferred term. *See* Carol Driver, *White House Solves the Problem of Climate Change Overnight...By Officially Changing the Phrase to 'Global Climate Disruption'*, DAILY MAIL, Sept. 17, 2010, *available at* http://www.dailymail.co.uk/news/worldnews/article-1312874/White-House-changes-global-warming-global-climate-disruption.html.

Sustainable development can serve as a useful benchmark against which existing laws and policies can be measured. To merit the label sustainable, water laws and policies must meet two old and two new standards: (1) can they secure long term supplies for both consumptive and non-consumptive uses; (2) can they do so equitably; (3) do they adequately promote aquatic ecosystem conservation and restoration; and, (4) do they promote effective GCD adaptation? In short, sustainable development should only refer to game changing policies and legal reforms.

II. FROM THE DEVELOPING TO THE DEVELOPED WORLD

To understand the challenges of applying sustainable development to concrete laws and policies, one must understand its political history and the legacy of this history. Politics has left us with two versions of sustainable development, hard and soft. Hard sustainable development remains a very contested principle because in many cases it requires that the status quo be changed to rebalance extraction, production and consumption patterns.[4] On the other hand, soft sustainable development is all too often simply a relabeling device, "green washing," to avoid the concrete reforms that hard sustainable development requires.[5]

A. The Modern Origins of the Construct

The modern origins of the construct stem from political efforts to engage the developing world in the project of environmental protection, but the construct draws from the earlier economists' warnings against over-rapid, often wasteful, resource exploitation.[6] At the 1972 international environmental

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4. *See generally* Johan Rockström et al., *Planetary Boundaries: Exploring the Safe Operating Space for Humanity*, 14 ECOLOGY & SOC'Y 32 (2009).

5. Greenwashing refers to efforts by corporations to promote products as environmentally "friendly" to attract caring consumers. *See Greenwashing/United States*, SOURCE WATCH, http://www.sourcewatch.org/index.php?title=Greenwashing/United_States#External_links (last visited Mar. 26, 2011).

6. JACK HIRSCHLEIFER, JAMES C. DEHAVEN & JEROME W. MILLIMAN, WATER SUPPLY: ECONOMICS, TECHNOLOGY, AND POLICY 59- 66 (1960).

conference in Stockholm, Sweden, the developing world rejected the idea of universal, aggressive environmental protection as a new form of colonialism.[7] To bridge this north-south divide, the construct of sustainable development as a "soft" norm was created. Although it was essentially a political compromise, the idea of sustainable development has its roots in classical resource economics. Since at least the 1930s, economists have tried to determine the optimal time horizon for the exploitation of nonrenewable resources, as well as the best exploration rate of renewable resources to guarantee their perpetual (or at least long term) availability.[8]

Sustainable development worked because each side got enough to launch the construct, and it was left to future generations to sort out its inherent contractions. The north was forced to recognize the post World War II international law right to develop, embraced by developing nations to assert ownership and control of their valuable natural resources.[9] This right is an incident of territorial sovereignty, and its post World War II recognition helped to convince the newly independent nations of Africa and Asia to embrace international law despite its history as serving as a justification for the conquest and subjugation of the uncivilized world.[10] In return, the north forced the south to accept limitations on the right beyond those recognized by customary international law.[11] The word "sustainable" was

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7. LYNTON KEITH CALDWELL, INTERNATIONAL ENVIRONMENTAL POLICY: FROM THE TWENTIETH TO THE TWENTY-FIRST CENTURY 64-65 (3d ed. 1996).

8. HIRSCHLEIFER, DEHAVEN & MILLIMAN, *supra* note 6, at 63-64.

9. The right is enshrined in the first part of Principle 21 of the 1972 Stockholm Declaration, United Nations Conference on the Human Environment, Stockholm, Swed., June 5-16, 1972, *Stockholm Declaration of the United Nations Conference on the Human Environment,* U.N. Doc. A/CONF.48/14 (June 16, 1972), and Principle 2 of the 1992 Rio Declaration, United Nations Conference on Environment and Development, Rio de Janiero, Braz., June 3-14, 1992, *Rio Declaration on Environment and Development,* U.N. Doc. A/CONF.151/26/Rev.1 (Vol. I), Annex I (Aug. 12, 1992).

10. For summaries of the vast literature on this subject *see generally* B S Chimni, *The Past, Present and Future of International Law: A Critical Third World Approach,* 8 MELB. J. INT'L. L. 27 (2007); B. S. Chimni, *The Principle of Permanent Sovereignty over Natural Resources: Toward a Radical Interpretation,* 38 INDIAN J. INT'L. L. 208 (1998).

11. The basic duty is not to cause harm to the territory of other states. *See* The Trail Smelter Case (U.S. v. Canada), 3 R.I.A.A. 1905 (1938 & 1941).

designed to constrain rapid exploitation by replacing it with less environmentally destructive[12] and more socially equitable[13] development options, although the standard definitions do not expressly impose this limitation. Thus, sustainable development is an important aspiration. However, it was dismissed from the start as incoherent and incapable of application, because sustainable development contains three linked, potentially inconsistent,[14] standards designed to be "game changers" for three marginalized classes: (1) the poor by providing a measure of social justice to victims of development;[15] (2) future generations; and, (3) the nonhuman, "natural" world.[16]

Despite the incoherence argument, sustainable development has persevered as an international policy norm for political reasons. The European donor community has embraced the concept and imposed it on donees. Any project that hopes to qualify for funding must be styled in an effort to promote sustainable development.[17] Developing nations are happy to play the relabeling game because any project can be styled sustainable. Without universal standards, there is no effective way to question "sustainability" of the subsequent project. Both donors and donees are happy. Donors have imposed a progressive international norm and donees have the money, even if only green or blue washing has occurred.

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12. *See generally* James C. Coomer, *The Nature of the Quest for a Sustainable Society*, *in* QUEST FOR A SUSTAINABLE SOCIETY 1 (James C. Coomer ed., 1981).

13. *See* Edward B. Barbier, *The Concept of Sustainable Economic Development*, 14 ENVTL. CONSERVATION 101, 103 (1987).

14. Jaye Ellis & Stepan Wood, *International Environmental Law*, *in* ENVIRONMENTAL LAW FOR SUSTAINABILITY: A READER 343, 373 (Benjamin J. Richardson & Stepan Wood eds., 2006).

15. *See* Klaus Bosselmann, *Ecological Justice and the Law*, *in* ENVIRONMENTAL LAW FOR SUSTAINABILITY: A READER 129, 150-55 (Benjamin J. Richardson & Stepan Wood eds., 2006); *see also* ANDREW DOBSON, FAIRNESS AND FUTURITY: ESSAYS ON ENVIRONMENTAL SUSTAINABILITY AND SOCIAL JUSTICE (1999).

16. *See* Klaus Bosselmann, *Ecological Justice and the Law*, *in* ENVIRONMENTAL LAW FOR SUSTAINABILITY: A READER 129, 152 (Benjamin J. Richardson & Stepan Wood eds., 2006).

17. See Benjamin J. Richardson, *Sustainable Finance: Environmental Law and Institutions in Environmental Law for Sustainability*, *in* ENVIRONMENTAL LAW FOR SUSTAINABILITY: A READER 309, 332-335 (Benjamin J. Richardson & Stepan Wood eds., 2006).

To turn the principle from a "soft" to a "hard" legal one, scholars have attempted to reconcile and apply the three linked standards: economic, environmental stewardship over generations and social justice. Economists have taken the lead. The economic dimension emphasizes two strands of neo-welfare economics. The first and more familiar standard adopts the concern for more accurate measures of efficiency.[18] The environmental movement brought the marginal economic concept of external costs to the forefront. Too many products and activities are under priced because production does not reflect the full or social cost of the product or activity. Under pricing occurs either because regulations do not force the internalization of all externalities or because there is a partial subsidy.[19] The second standard is the concept of foregone opportunity costs. These are the foregone revenues (or other benefits) from alternative uses of the resource.[20] Economists have consistently taught that it is rational to prefer present consumption to deferred consumption.[21] Future benefits have been discounted and the opportunity costs - the future value - of foregone resource development and use ignored.[22] The efforts to calculate these costs force private and public actors to consider the long-term economic consequences of decisions as well as a broader mix of alternative activities. The removal of old dams is an example of greater attention to opportunity costs. The United States is starting to remove small- and medium-sized dams, which yield smaller hydroelectricity benefits compared to economic values of a free-flowing river.[23]

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18. *See e.g.*, ROBERT COSTANZA ET AL., AN INTRODUCTION TO ECOLOGICAL ECONOMICS (1997).

19. Subsidies can be major barriers to sustainable development because they "have generated heavy economic and environmental costs and create unsustainable dependencies, especially in the agriculture, transportation, and energy sectors." ROBERTO DE ANDRACA & KEN F. MCCREADY, INTERNALIZING ENVIRONMENTAL COSTS TO PROMOTE ECO-EFFICIENCY 42 (1994).

20. *Id.*

21. *Id.*

22. DAVID W. PEARCE ET AL., SUSTAINABLE DEVELOPMENT: ECONOMICS AND ENVIRONMENT IN THE THIRD WORLD 45 (1990).

23. *See* Brian Graber, *Potential Economic Benefits of Small Dam Removal, in* DAM REMOVAL RESEARCH: STATUS AND PROSPECTS 56, 61-64 (William L. Graf ed., 2003); David D. Hart et al., *Dam Removal: Challenges and Opportunities for Ecological Research and River Restoration*, 52 BIOSCIENCE, 669, 670 (2002).

B.Sustainable Development Policy and Law in the United States

Sustainable development is embedded in the political vocabulary of the United States, but its impact on the law has thus far been marginal. Under the influence of Vice President Gore, the Clinton Administration (1992-2000) embraced it;[24] the Bush II Administration (2000-2008) did not repudiate the idea,[25] but did little to advance it. Only a few remnants linger in areas such as water resources as a tag line.

Federal water planning illustrates the trivialization of sustainable development. Since the late 1960s, when the era of dam building ended, the federal government has lacked a coherent water resources policy.[26] In the interim, federal agencies are left to try and fill the gap on an ad hoc basis. The main federal guidance document for the four major federal water resource agencies is the *1983 Federal Economic and Environmental Principles and Guidelines for Water and Related Land Use Implementation Studies* (hereinafter "P & G"). The P & G were out of date when they were issued during the first Reagan Administration because they inadequately reflected the end of the Big Dam Era. In 2007, Congress finally directed the U.S. Army Corps of Engineers to revise them, and in 2008, in an attempt to revive this moribund institution, the Obama White House reassigned the task to the Council on Environmental Quality.[27]

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24. *See generally* William K. Stevens, *Gore Promises U.S. Leadership on Sustainable Development Path*, N.Y.TIMES, June 15, 1993.

25. *See* Exec. Order No. 13,423, 72 Fed. Reg. 3919 (Jan. 26, 2007).

26. To mix a metaphor, rivers of paper have flowed, documenting the need for a more coherent and sustainable federal water policy. *See e.g.*, NAT'L WATER COMM'N, WATER POLICIES FOR THE FUTURE: FINAL REPORT TO THE PRESIDENT AND TO THE CONGRESS OF THE UNITED STATES (1973); W. WATER POLICY REVIEW ADVISORY COMM'N, WATER IN THE WEST: CHALLENGE FOR THE NEXT CENTURY (1998). However, with the exception of calls for new federal infrastructure funding, the recommendations have been ignored. For a concise history of federal water policies and why they gather dust, *see generally* Janet C. Neuman, *Are We There Yet? Weary Travelers Along the Road to Water Policy Reform*, 50 NAT. RESOURCES. J. 139 (2010).

27. *See generally* COUNCIL ON ENVTL. QUALITY, PROPOSED NATIONAL OBJECTIVES, PRINCIPLES AND STANDARDS FOR WATER AND LAND RELATED RESOURCES IMPLEMENTATION STUDIES 4 (2009).

In 2009, the CEQ issued the first part of the revision.[28] Principle 1A states that the national water-planning objective is to "protect and restore natural ecosystems and the environment while encouraging sustainable economic development," but the document does not further refine the construct.[29] Sustainable development has fared better at the state and local level, at least in terms of being a policy goal.

The development of a law of sustainability is another matter. Lawyers have tried to apply the norm, but they have been stymied by its incoherence.[30] An influential concurring opinion in an International Court of Justice case embraced the construct as an international norm,[31] but United States' courts have not recognized it as an international or domestic norm. For example, the Court in the Rio Tinto litigation refused to hold that the discharge of mining wastes in Papua New Guinea violated the international duty to practice sustainable development, because it lacks the definition, obligatory nature and universal condemnation required under the Alien Tort Claims Act.[32] At best, sustainability is invoked as an additional, non-necessary justification for government action. For example, courts have

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28. *See id.*

29. The revision simply adopts the vacuous definition found in Exec. Order No. 13,423, 72 Fed. Reg. 3,919 (Jan. 26, 2007) (defining the term "sustainable" as "conditions, under which humans and nature can exist in productive harmony, that permit fulfilling social, economic, and other requirements of present and future generations . . . ."). A National Research Council Committee, on which I served, criticized the revision for its lack of "clarity and consistency." COMM. ON IMPROVING PRINCIPLES & GUIDELINES FOR FED. WATER RES. PROJECT PLANNING, NAT'L RESEARCH COUNCIL OF THE NAT'L ACADEMIES, A REVIEW OF THE PROPOSED REVISIONS TO THE FEDERAL PRINCIPLES AND GUIDELINES WATER RESOURCES PLANNING DOCUMENT 2, 4 (2010).

30. For early, somewhat optimistic, attempts to apply the norm, *see* J.B. Ruhl, *Sustainable Development: A Five-Dimensional Algorithm for Environmental Law*, 18 STAN. ENVTL. L. J. 31 (1999); David R. Hodas, *The Role of Law in Defining Sustainable Development: NEPA Reconsidered*, 3 WIDENER L. SYMP. J. 1 (1998).

31. *See* Gabcikovo-Nagymaros Project (Hung./Slovk.), 1997 I.C.J. 7, 112 (Sept. 25) (separate opinion of Judge Weermantry).

32. *See* 28 U.S.C. § 1350 (2006); *see also* Sarei v. Rio Tinto PLC, 221 F. Supp. 2d 1116, 1160-61 (C.D. Cal. 2002), *aff'd in part, rev'd in part, vacated in part*, 456 F.3d 1069 (9th Cir. 2006). *Accord* Flores v. S. Peru Copper Corp., 414 F.3d 233, 237 (2d Cir. 2003).

occasionally upheld land use sustainability initiatives, which are easily justified on more traditional grounds.[33]

III. SUSTAINABLE DEVELOPMENT AND WATER LAW

A. Water Law: Stability versus Adaptive Flexibility

Water law is both the engine of unsustainable use practices and a basis for reform. Water law allocates water among competing uses by performing three functions. First, it sets the ground rules for the acquisition of the right to use water. Second, because water performs a variety of essential societal functions, the law controls its allocation among competing private and public uses. Third, the law distributes the pain of shortages among rights holders. The law's primary objective has been to create secure, semi-exclusive rights. This is a desirable goal, but the resulting rights can "lock" water use into unsustainable use patterns.

The extent of the "lock in" has become more important in recent decades for two reasons: (1) the demand for more water for aquatic ecosystem conservation and restoration has increased, and (2) GCD, which will potentially impact water use and management in all areas of the United States. There is a relatively firm consensus that arid regions will face a net loss of stream flows.[34] Predictions are cloudier and mixed for more humid areas, many of which may face increased, severe flood

33. *See, e.g.*, Greenwood v. Mayor of Twp. of Hopewell, 2008 WL 3462431 at *14 (N.J. Super. Ct. App. Div. Aug. 14, 2008) (upholding minimum lot requirement characterized as promoting sustainable development for a mountain area because the ordinance protected aquifer recharge areas and assured that each residence would obtain sufficient water).

34. *See e.g.*, NAT'L RESEARCH COUNCIL OF THE NAT'L ACADEMIES, COLORADO BASIN WATER MANAGEMENT: EVALUATING AND ADJUSTING TO HYDROCLIMATIC UNCERTAINTY 73-92 (2007). This report summarizes the studies of the potential impact of warmer temperatures in the Colorado River Basin. It concludes that more scenarios predict modest stream flow decreases but "[a]ny future decreases in the Colorado River stream flow . . . would be especially troubling because the quantity of water allocations under the Law of the River already exceeds the amount of the annual mean Colorado River Flows." *Id.* at 92. *See also* Stephen Saunders et al., HOTTER AND DRIER: THE WEST'S CHANGED CLIMATE 10 (2008).

events, while others may experience lower stream flows and more frequent droughts. For example, many scenarios predict that the naturally fluctuating lake-level cycles in the Great Lakes may produce lower lows and less-high highs.[35] The legal implication is that water rights need to have some flexibility in order to respond to changed supplies and new demands.[36]

Water law has some capacity to respond to these "lock in" problems because water rights have always been incomplete rather than complete property rights.[37] Water is simultaneously a semi-exclusive, shared, and partially communal resource.[38] Water law has always provided users clear notice of the risks of a reduction in the amount of water to which they will be entitled. The risks include reduced quantities because of a drought, the wasteful or non-beneficial use of water, and total or partial displacement by "higher" or subsequent uses including public rights.[39] This article will explore specific legal responses to these questions and evaluate their adequacy. It will also examine how the law both seeks to provide users secure rights and adjusts them based on changed conditions.

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35. *See generally*Noah D. Hall & Bret B. Stuntz, *Climate Change and the Great Lakes Water Resources: Avoiding Future Conflicts with Conservation*, 31 HAMLINE L. REV. 641 (2008).

36. *See* Carolyn Brickey et al., *How to Take Climate Change Into Account: A Guidance Document for Judges Adjudicating Water Disputes*, 40 ENVTL. L. REP. 11215, 11226-27 (2010).

37. *See In re* Water Use Permit Applications, 9 P.3d 409, 493 (Haw. 2000).

38. *See* Joseph W. Dellapenna, *Global Climate Change and Water Law Reform*, 15 WIDENER L. REV. 409, 418 (2010).

39. In rare cases, the public trust may require the displacement of existing water rights that impair trust values. *See* Nat'l Audubon Soc'y v. Superior Court of Alpine Cnty., 658 P.2d 709, 712 (Cal. 1983), *cert. denied*, 464 U.S. 977 (1983); *In re* Water Use Permit Applications, 9 P.3d at 461. In Stop the Beach Renourishment, Inc. v. Fla. Dep't of Envtl. Prot., 130 S. Ct. 2592 (2010), the Supreme Court held, in a unanimous 8-0 decision, that a Florida statute which replaced the common law rule that littoral owners are entitled to coastal accretions with a statute that fixed erosion control lines and awarded any gain (or loss) seaward of the line to the state was not a taking. *Id.* at 2612. However, the four-justice plurality opinion also suggested, but did not hold, that a judicial decision, such as the Florida Supreme Court opinion upholding the statute, could be a judicial taking. *Id.* at 2615. Four justices disagreed with the principle or reasoned that the case was not an appropriate one to formulate a judicial takings doctrine. Justice Stevens, a Florida beachfront condominium owner, did not participate in the decision. *Id.* at 2597.

B. Three Uses of Sustainability to Evaluate Water Law

Sustainable development can potentially serve three important functions to move water law and policy to more sustainable use patterns. First, it can be used to spotlight existing laws and policies which promote unsustainable uses and, therefore, should be reformed. Second, it can be used as a positive label to provide additional support for efforts to promote more efficient, less wasteful, and socially inclusive water uses. Third, it can be a concrete standard to constrain unsustainable uses, thereby freeing up more water for sustainable uses, which include more efficient consumption, environmental protection, and the promotion of social justice. However, these uses carry two major risks. First, relabeling a law or policy as sustainable or unsustainable can be a formal change with no substantive consequences, also referred to as "blue washing." Second, given the vagueness of the construct, labeling a law or policy as unsustainable will be contested by users who seek to preserve the status quo.

1. Spotlighting Unsustainability

Spotlighting is a mixed negative-positive use of sustainable development. The hope is that the identification of obvious candidates for the unsustainable label will produce change. For good reason, much sustainable development scholarship focuses on deeply-rooted and persistent unsustainable policies, laws and practices because they are widespread. As the leading legal scholar of the construct has observed, "[s]ince 2002 . . . [the United States] . . . most often [has] moved in the wrong direction - toward greater consumption of energy, materials, land, and other resources, and more negative environmental consequences, with damaging social, economic, and security consequences."[40] This section briefly examines two well-known examples of

40. Contributing Authors, *Progress Toward Sustainability: A Report Card, in* AGENDA FOR A SUSTAINABLE AMERICA 15 (John C. Dernbach ed., 2009). This is a follow-up to an earlier comprehensive and critical look at United States' efforts to promote sustainable development, many of which began in the Clinton Administration during the period 1992-2000. *See generally* STUMBLING TOWARD SUSTAINABILITY (John C. Dernbach ed. 2002).

unsustainable water use: irrigation subsidies and the over-exploitation of semi-renewable groundwater.

One of the key indicators of unsustainable development is the presence of a subsidy. Subsidized development is often styled as the opposite of sustainable development because it does not have to bear the full costs of production and thus is not efficient and is often socially inequitable. Although not all subsidies are bad,[41] those, which are not designed to promote social justice or to induce sustainable development, are vulnerable to being labeled unsustainable and unjustified. Bureau of Reclamation subsidies to farmers are a prime example of a subsidy that merits such a label.

The Reclamation Act of 1902[42] envisioned a Western United States with many small irrigation communities. To achieve this utopian vision, the original idea was that the federal government would loan newly formed districts the necessary money to construct a project, and that over time the districts would repay the federal loan.[43] Some small districts have repaid these loans, but in other areas the Reclamation Program has become an example of unsustainable agriculture that rivals the documented

41. The development of the technology to render omega-3 and fish oil from Asian carp, which threaten to disrupt the Great Lakes ecosystem, is an example of a sustainable subsidy. The technology exists to render Asian carp for this purpose with no resulting odor or waste water, and thus provide incentives for fishermen to catch them before they migrate into the Lakes. However, the gap between what a plant can pay and what fishermen will accept in exchange for catching them is ten cents per pound. This is not a "pay-to-pollute" subsidy granted to an industry that is trying to avoid bearing the full cost of its externalities. Instead, there is a need for a startup subsidy to create a business whose primary purpose is to harvest an invasive species that needs to be controlled or eradicated. *See, e.g.*, Andrea J. Fowler et al., *Failure of the Lacey Act to Protect U.S. Ecosystems Against Animal Invasions*, 5 FRONTIERS ECOLOGY & ENV'T 353 (2007). I am indebted to Kate Thomas, J.D. Candidate, Class of June 2011 at Chicago-Kent College of Law, for her water law paper that brought this method of dealing with exotic species to my attention. *See* Kate Thomas, One Man's Trash . . . Is Another Man's Treasure (2010) (unpublished manuscript) (on file with author).

42. Reclamation Act of 1902, Pub. L. No. 57-161, 32 Stat. 388 (1902) (codified at of 43 U.S.C. § 371 (2006)).

43. *See e.g.*, HOLLY DOREMUS & A. DAN TARLOCK, WATER WAR IN THE KLAMATH BASIN: MACHO LAW, COMBAT BIOLOGY, AND DIRTY POLITICS 50 (2008).

waste and over-production of water intensive crops in countries such as Egypt and India.[44]

California's massive Central Valley Project [hereinafter "CVP"] illustrates how federal water policies encourage unsustainable agricultural practices to both the detriment of the environment and farmers themselves. The CVP was authorized in 1936 and constructed over the next three decades[45] at an initial cost of $3.6 billion.[46] A massive subsidy was incorporated into the project from the start; $2 billion of the total cost was classified as non-reimbursable.[47] For example, individual farmers were not expected to pay for the flood control component of the CVP. Even with this generous federal subsidy, only 11 percent of the remaining repayment obligation had been repaid by 2002.[48] The Bureau of Reclamation's 40-year supply contracts set water rates too low to pay back the reimbursable construction costs.[49]

The poster children of subsidy beneficiaries are the large farms in the Westlands Water District in the Upper San Joaquin Valley. Farmers there pay about $17.00 per acre-foot instead of the $39.00 necessary to recoup the costs.[50] The opportunity costs of the subsidy become apparent when clean alternative values of the water are calculated. For example, in 1992, Congress responded to the environmental impacts of CVP agricultural diversions by creating an 800,000 acre-foot Environmental Water Account.[51] Federal officials can purchase water for instream

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44. *See* SANDRA POSTEL, LAST OASIS: FACING WATER SCARCITY 166-67 (2d ed. 1997).

45. *See* NORRIS HUNDLEY, JR., THE GREAT THIRST: CALIFORNIANS AND WATER: A HISTORY 235-76 (1st ed., revised 2001) (setting out the political history of the project).

46. *Executive Summary, Taxpayers Guarantee Central Valley Farms Water Through a Subsidy Worth Up to $416 Million Per Year*, ENVT'L WORKING GRP., CAL. WATER SUBSIDIES, http://archive.ewg.org/reports/Watersubsidies/printerfriendly.php (last visited Feb. 14, 2011).

47. *Id.*

48. *Id.*

49. *Id.*

50. *Id.*

51. Reclamation Projects Authorization and Adjustment Act of 1992, Pub. L. No. 102-575, § 3406(b)(2), 106 Stat. 4600, 4604 (1992).

flows to offset the damage to fish stocks caused by project diversion. In 2002, the Bureau paid $122.00 per acre-foot.[52]

Westland's unsustainable use of water is widely known,[53] but the question is what does labeling the use as unsustainable accomplish? The answer is mixed. The district is facing pressures to rethink its water use. As the last unit of the CVP, they are the first to be cut back in drought years, which were frequent in the first decade of this century. The District soils are rich, but intensive irrigation has rendered over 100,000 acres too saline to grow crops and up to 200,000 more need to be retired because they are contaminated with selenium or have drainage problems. The combination of environmental demands for upstream water, self-induced contamination, the vagaries of California's climate and the ability of urban water suppliers to pay top dollar for water have forced the district to make some sustainability moves, such as drip irrigation, crop substitution and land fallowing.[54] However, spotlighting has not changed the game. It has not caused the District to confront the limits of its current practices and change its consumption water patterns. The District has taken these steps to maintain the status quo to the maximum extent possible for the foreseeable future. Despite the efficiency moves, water use has remained constant.

Arizona's efforts to use its groundwater sustainably are a more complex example of the strengths and limits of spotlighting. As central Arizona began to grow after World War II, the state steadily mined its aquifers, betting that eventually the federal government would build a pipeline from the Colorado River to Phoenix and Tucson. Congress did build the pipeline under the Central Arizona Project, but the Carter Administration exacted a high price. Arizona was forced to enact the 1980 Groundwater

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52. *Executive Summary, Taxpayers Guarantee Central Valley Farms Water Through a Subsidy Worth Up to $416 Million Per Year*, ENVT'L WORKING GRP., CAL. WATER SUBSIDIES, http://archive.ewg.org/reports/Watersubsidies/printerfriendly.php (last visited Feb. 14, 2011).

53. *See e.g.*, Matt Jenkins, *The Cadillac of California Irrigation Districts' Has More Than a Tiny Fish to Blame for Its Troubles*, HIGH COUNTRY NEWS, Jan. 11, 2010, at 2, 5, *available at* http://www.revivethesanjoaquin.org/content/cadillac-california-irrigation-districts-has-more-tiny-fish-blame-its-troubles.

54. *See id.* at 5-8.

Management Act (GMA).[55] The goal of the GMA is to limit groundwater use in the four Active Management Areas to safe yield.[56] The law also imposed a duty on developers and their municipal suppliers to establish that "sufficient supplies of water are physically available to meet all or part of the estimated water demand of the development for 100 years."[57] Initially, the 100-year guaranteed supply rule set off a scramble to acquire agricultural water rights in remote counties, but more recently municipal suppliers began paying the high CAP rates for Arizona's under-used Colorado River entitlement.[58] This price shock was alleviated by the creation of the Central Arizona Groundwater Replenishment District, which allows members to bank and withdraw groundwater.[59] As Phoenix and Tucson have used more surface water from CAP, municipal water use has started to decline in part because of a wetter than average cycle, groundwater conservation, and the increasing reliance on recycled ("gray") water for turf irrigation. Still, safe yield, i.e., sustainable use, remains an unfulfilled aspiration,[60] and other parts of the state are mining their supplies.[61] Furthermore, central Arizona is facing serious subsidence problems.[62]

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55. *See* ARIZ. REV. STAT. §§ 45-401-45-704 (2010).

56. *See generally* Robert Jerome Glennon, *"Because That's Where the Water Is": Retiring Current Water Uses to Achieve the Safe-Yield Objective of the Arizona Groundwater Management Act*, 33 Ariz. L. Rev. 89 (1991).

57. ARIZ. ADMIN. CODE § R12-15-703(b) (1995).

58. *See generally* ROBERT GLENNON, WATER FOLLIES: GROUND-WATER PUMPING AND THE FATE OF AMERICA'S FRESH WATERS (2002).

59. *See* Katharine L. Jacobs & James M. Holway, *Managing for Sustainability in an Arid Climate: Lessons Learned from 20 Years of Groundwater Management in Arizona, USA*, 12 HYDROGEOLOGY J. 52, 58-60 (2004).

60. *See* Paul Hirt, Annie Gustafson & Kelli L. Larson, *The Mirage in the Valley of the Sun*, 13 ENVTL. HIST. 482, 486 (2008).

61. A study of North Arizona's needs found that continued reliance on groundwater use was unsustainable and recommended that water be transferred by pipeline from Lake Powell. *See* U.S. DEP'T OF INTERIOR, BUREAU OF RECLAMATION, NORTH CENTRAL ARIZONA WATER SUPPLY STUDY, REPORT OF FINDINGS iv (2006), *available at* http://www.usbr.gov/lc/phoenix/reports/ncawss/NCAWSSP1NOAPP.pdf.

62. *See generally* ROBERT GLENNON, UNQUENCHABLE: AMERICA'S WATER CRISIS AND WHAT WE CAN DO ABOUT IT (2009).

Wallace Stegner has argued that water stress is a sign that we have used the benefits of western civilization and technology to create a society largely disconnected from the landscape and climate.[63] Ideally, spotlighting should promote a new dialogue about the sustainable settlement patterns appropriate for a climate. Fragments of the dialogue occur, but the result is primarily hand-wringing as cities scramble to support unlimited growth. But the reality remains- there are few, if any, natural barriers to the endless growth of the West. However, the limits question is an important one that will eventually have to be addressed. As much of the West continues to grow or be exploited for raw commodities, the opportunity costs of the choices we make increase.[64]

2. A Gold Star for Legal and Policy Innovation

a. Legal Innovation

Sustainable development is a potentially destabilizing idea because it requires the modification of the status quo, including property rights that support unsustainable resource use patterns. The need to introduce some limitations on resource use is bitterly contested, and the need for stable property rights is often raised as argument against any change.[65] Certainly sustainable development requires investment protected by a high degree of stability. However, at the margin, property law has always been open to change.[66]

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63. *See generally* WALLACE STEGNER, THE AMERICAN WEST AS LIVING SPACE (1989).

64. *See* A. Dan Tarlock, *A Brief Examination of the History of the Persistent Debate About Limits to Western Growth*, 10 HASTINGS W.- NW. J. OF ENVTL. L. & POL'Y 155, 159-166 (2008) (tracing the history of dissenters to the conclusion that as the West grows, the opportunity costs of choices we make increase).

65. *See e.g.*, Soctt Andrew Shepard, *The Unbearable Cost of Skipping the Check: Property Rights, Takings Compensation & Ecological Protection in the Western Water Law Context*, 17 N.Y.U. ENVTL. L. J. 1063 (2009).

66. *See* William A. Fischel, *The Evolution of Homeownership*, 77 U. CHI. L. REV. 1503, 1505 (2010) ("Property institutions . . . are not static, and new economic and technological conditions warrant some modification in the infrastructure of property . . . law.").

Anglo-American property law is grounded in the thinking of Hume and Bentham, although there is a great deal of natural law noise. Hume argued that we recognize property because otherwise no one would work and society would be worse off.[67] Bentham took Hume's utilitarian theory of property as a mental state and reduced it in his famous phrase "Property is nothing but the basis of expectation."[68] Expectation is a function of law and thus can change over time. Thus, property is positive and political – not pre-political as Locke posited.[69] Thus, expectations must adjust to extraordinary and long-lasting changed conditions such as GCD and social costs of unsustainable resource use impact. Courts have increasingly refused to recognize abstract property rights when there was no reasonable expectation of the interest and limited demoralization costs to non-recognition.[70] It is a logical step to adjust expectations in light of increased state regulation and great owner responsibility for mitigating the expected impacts of GCD.[71]

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67. *See* Frank I. Michelman, *Property, Utility, and Fairness: Comments on the Ethical Foundations of "Just Compensation" Law*, 80 HARV. L. REV. 1165, 1208- 1211 (1967) (tracing the development of utilitarian property theory).

68. *See* JEREMY BENTHAM, THEORY OF LEGISLATION 137 (1840); *see also* Frank I. Michelman, *Property, Utility, and Fairness: Comments on the Ethical Foundations of "Just Compensation" Law*, 80 HARV. L. REV. 1165, 1208- 1213 (1967) (tracing the development of utilitarian property theory).

69. JOHN LOCKE, SECOND TREATISE OF GOVERNMENT 17- 18 (Bobbs-Merrill ed. 1952). The leading modern theorist of property as a fundamental, pre-political right grounded in human nature is the late Robert Nozick. *See generally* ROBERT NOZICK, ANARCHY, STATE, AND UTOPIA (1974).

70. *See e.g.*, Chance v. BP Chemicals, Inc., 670 N.E.2d 985, 991 (Ohio 1996) (refusal to apply trespass to chemical plume that migrated beneath plaintiff's land but caused no damage because subsurface rights are limited).

71. Professor Holly D. Doremus has identified some of the relevant factors that justify changes in regulations that serve as a starting point to analyze the role that GCC may play in changing the law of regulatory takings. They are (1) justification for the change; (2) the foreseeability and ability of property owners to adapt to change; (3) the abruptness of the change; and (4) the general nature of the new regulation. *See* Holly D. Doremus, *Takings and Transitions*, 19 J. LAND USE & ENVTL. L. 1, 31 (2003). Palazzolo v. Rhode Island, 533 U.S. 606 (2001) refused to hold that long standing state regulation of wetlands was a defense to takings challenge to a denial of permit to fill. However, Justice O'Connor's concurring opinion argued that the length of the regulation of a factor to be considered in calculating the land owner's investment backed expectations. *See id.* at 632. On remand, The trial court found that proposed fill

A 2007 Colorado Supreme Court decision[72] is an example of a decision that can be labeled as promoting sustainable development though the adjustment of unreasonable expectations, although there is a counter-conclusion. A Colorado water court had previously awarded two small districts serving Pagosa Springs (a small, not rapidly growing city in southwestern Colorado) a conditional water right for 29,000 acre-feet, return flows, and the right to continuously refill a reservoir based on a 100-year planning horizon.[73] No study had demonstrated need for the water in the foreseeable future; a local water district saw that unappropriated water was available and made an impulsive purchase. The district thought it did not have to go through the trouble of making the best practicable future demand projection. They were not wrong to make this assumption. Municipal water suppliers have long enjoyed a super preference to acquire the water rights necessary to support unlimited growth. In the West, municipalities have been exempt from the prohibition against holding water rights for future use and thus for a "speculative" purpose.[74] This has shielded cities from making realistic planning projections that incorporate climate change, for example, and asking questions about the amount of growth desired.

The Colorado Supreme Court remanded the Water Court's decision because the Water Court failed to make sufficient findings concerning the area's future growth projections and refused to give cities a blanket exemption from the need to demonstrate that they would put the water to actual beneficial use within a reasonable period of time.[75] Citing a National Research Council study, the Court reasoned that municipalities' statutory exemption from the need to have a vested legal interest

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would be a public nuisance. *See* J.B. Ruhl, *Making Nuisance Ecological*, 58 CASE W. RES. L. REV. 753, 776 (2008).

72. Pagosa Springs Area Water & Sanitation Dist. v. Trout Unlimited, 170 P.3d 307 (Colo. 2007).

73. *See id.* at 309.

74. *See* A. Dan Tarlock, *We Are All Water Lawyers Now: Water Law's Potential but Limited Impact on Urban Growth Management*, *in* WET GROWTH: SHOULD WATER LAW CONTROL LAND USE? 57, 80 (Craig Anthony Arnold ed., 2005).

75. Pagosa Springs Area Water & Sanitation Dist.,170 P.3d at 309-310.

in the lands served does not immunize governmental water supply agencies from the state's anti-speculative doctrines.[76] Cities must have considerable latitude to plan for future growth, but a supplier must still demonstrate three elements to make a non-speculative appropriation: (1) what is a reasonable water supply planning period; (2) what are the substantial population projections based on a normal growth rate for that period; and (3) what amount of available unappropriated water is reasonably necessary to serve reasonably anticipated needs of the governmental agency for the planning period, above its current supply?[77]

On remand, the Water Court declined to take new evidence and instead entered a new proposed degree awarding the District 25,300 acre feet of storage rights and reduced the planning horizon to 2055.[78] The Colorado Supreme Court agreed that the Water Court properly reduced the planning horizon to 2055,[79] but held that the District had not carried its burden of showing that they had a non-speculative intent to put the water to beneficial use given the wide variation in area population projections between the District's projections and a state study.[80] The city argued that the municipal conditional water appropriations were legislative or quasi-legislative acts immune from judicial review,[81] but the court rejected the argument as inconsistent with Colorado water law. The holding of this case may be limited to smaller cities with unrealistic growth projections, but it has been attacked as a major barrier to municipal water supply planning.[82] Still, the case can be labeled as a gold star effort to promote sustainable development because it asks cities to claim

76. *Id.*

77. *Id.* at 313.

78. Pagosa Area Water & Sanitation Dist. v. Trout Unlimited, 219 P.3d 774, 776 (Colo. 2009).

79. *Id.* at 777.

80. *Id.* at 785.

81. *Id.* at 788.

82. For an alarmist reading of the case which suggests that Denver may become a Mesa Verde – an abandoned civilization, *see* Casey S. Funk & Daniel J. Arnold, *Pagosa - - The Great and Growing Cities Doctrine Imperiled: An Objective Look From a Biased Perspective*, 13 U. DENV. WATER L. REV. 283, 318-19 (2010) (discussing how *Pagosa I* and *II* may create future Mesa Verdes).

water only for realistic future demand and opens up the possibility that other claimants, in this case environmental interests, may be able to dedicate some of the area's water supply to alternative, sustainable uses.

Hawaii's creative use of the public trust doctrine to rebalance municipal and environmental water use has also resulted in other decisions that merit the sustainability label. In 2000, the Supreme Court held that the public trust required the state to establish minimum stream flow standards before it reallocated water from an abandoned sugar plantation.[83] One of the key legal principles of sustainable development is the precautionary principle, and the Court merged it with the public trust by mandating its use to establish instream flow standards in advance of the necessary research and monitoring.[84] In subsequent cases, the Court subordinated new urban water rights' applications, and Native Hawaiian needs, in addition to instream flow needs.[85]

b. Policy Innovation

The sustainability label can also be used to more clearly articulate important emerging policy changes. The growing recognition of the idea of the normative river is an example of this use. For the first sixty years of the twentieth century, United States water policy was based on the assumption that rivers should be rationally developed through large and small projects

83. *In re* Water Use Permit Applications, 9 P.3d 409, 460 (Haw. 2000).

84. *Id. at* 467.

85. *See e.g. In re* Waiola O Molokai, Inc., 83 P.3d 664 (Haw. 2004); *In Re* Water Use Permit Application (Kukui Molokai), Inc., 174 P.3d 329 (Haw. 2007); *see also* David L. Callies & Calvert G. Chipchase, *Water Regulation, Land use, and the Environment,* 30 U. HAW. L. REV. 49, 94 (2007) (criticizing the decisions for giving a strong but not absolute preference to non-economic uses of water and reducing, "nearly to the point of extinction" private water rights). *But see* Robin Kundis Craig, *Adapting to Climate Change: The Potential Role for State Common-Law Public Trust Doctrines,* 34 VT. L. REV. 781, 838-41 (2010) (discussing how the public trust supports adaptation to climate change and how Hawaiian Supreme Court decisions provide examples of its evolutionary and adaptive potential).

so that not a drop of water would be wasted.[86] Today, for budgetary and environmental reasons, the United States must learn to learn to live with that legacy of water infrastructure, as we have come to appreciate the ecosystem functions and services that natural systems such as rivers provide.[87] Modern water planning must now accommodate a wide range of river functions, from power generation to ecosystem protection. Put differently, we now want rivers that work, not just working rivers.[88]

The normative river tries to mimic, to the extent feasible, flow patterns that existed prior to the time that a river was dammed and the channel modified. Although the concept is still only a scientific construct, we are implementing it in all but name. All over the country, on rivers large and small, we have imposed minimum flows. The process is ad hoc, the coverage spotty, the amounts vary, and often flow targets or ecosystem restoration objectives have not been met. Often these flows are the result of relicensed hydroelectric facilities or the settlement of disputes over protection of endangered species or Indian water rights.[89] For example, we often mandate minimum flows when threatened or endangered species are at risk.[90] We are also doing this to restore entire ecosystems which have been altered by human intervention. For example, in 2000, Congress enacted the Comprehensive Everglades Restoration Plan as part of the omnibus Water Resources Development Act.[91] The Everglade's

86. *See* NAT'L RESEARCH COUNCIL OF THE NAT'L ACADEMIES, U.S. ARMY CORPS OF ENGINEERS WATER RESOURCES PLANNING: A NEW OPPORTUNITY FOR SERVICE 38 (2004) (Rational water resources planning "would eliminate the 'waste' of water and control the vagaries of nature.").

87. *See id.* at 41- 45.

88. *See, e.g.,* W. WATER POLICY REVIEW ADVISORY COMM'N, WATER IN THE WEST: CHALLENGE FOR THE NEXT CENTURY 2-13 (1998) (discussing the distinction between a working river, which is dammed and managed for flood control, irrigation, hydroelectric generation and municipal water supply, and a river that works by providing a wide range of ecosystem services).

89. *See e.g.,* Natural Res. Def. Council v. Rodgers, No. CIV S-88-1658 LKK/GGH, 2006 WL 4589446 (E.D. Cal. Oct. 23, 2006) (settlement providing for both instream flows and flows to support irrigation diversions).

90. *See* A. DAN TARLOCK, JAMES N. CORBRIDGE, JR., DAVID H. GETCHES, & REED D. BENSON, WATER RESOURCE MANAGEMENT 737-47 (6th ed. 2009); *see also* Riverside Irrigation Dist. v. Andrews, 758 F.2d 508 (10th Cir. 1985).

91. *See* Water Resources Development Act, Pub. L. 106-541, §601, 114 Stat 2572 (2000); *see also* DAVID MCCALLY, THE EVERGLADES: AN ENVIRONMENTAL

ecosystem depends on seasonal sheet flows of water from the Kissimmee River in central Florida and Lake Okeechobee.[92] To make South Beach, South Beach, these flows were substantially diverted for agricultural and urban development and flood control. The objective of the 2000 legislation is no less than to replumb the Everglades to restore some measure of pre-diversion flows.[93] The 1992 Central Valley Project Improvement Act[94] is another, earlier example of restoration ecosystem flows; the Act mandates an 800,000 acre environmental account to prevent further environmental degradation in the California-Bay Delta.[95]

The important point is that minimum flow requirements are increasingly seen as a necessary and legitimate constraint on hydroelectric production and the exercise state water rights in order to redress the costs of the historic pattern of using water without consideration of the environmental impacts. However, we lack a consistent and comprehensive approach to redressing the past abuses of our rivers. Affixing the sustainable development label to these ad hoc experiments will not in and of itself create this approach. However, it can clarify a policy evolution and add legitimacy to the normative river, which is still perceived as radical and destabilizing, by linking it to more accepted norms. It also contributes a new construct which is consistent with GCD adaptation strategies.

3.Social Justice Promotion: The Case of Indian Tribal

HISTORY (2000); EVERGLADES: THE ECOSYSTEM AND ITS RESTORATION (Steven M. Davis & John C. Ogden eds., 1994); C. Walters, Lance H. Gunderson & C.S. Holling, *Experimental Policies for Water Management in the Everglades*, 2 ECOLOGICAL APPLICATIONS 189 (1992).

92. *See* C. Walters, Lance H. Gunderson & C.S. Holling, *Experimental Policies for Water Management in the Everglades*, 2 ECOLOGICAL APPLICATIONS 189, 192 (1992).

93. *See* U.S. ARMY CORPS OF ENG'RS & S. FLA. WATER MGMT. DIST., CENTRAL AND SOUTHERN FLORIDA COMPREHENSIVE REVIEW STUDY, FINAL INTEGRATED FEASIBILITY REPORT AND PROGRAMMATIC ENVIRONMENTAL IMPACT STATEMENT 7 (1999); *see also* Michael Voss, *The Central and South Florida Comprehensive Review Study: Restoring the Everglades*, 27 ECOLOGY L.Q. 751, 757 (2000).

94. Reclamation Projects Authorization and Adjustment Act of 1992, Pub. L. No. 102-575, 106 Stat. 4600 (1992).

95. *See* Reclamation Projects Authorization and Adjustment Act of 1992, 106 Stat. at 4714; *see also* Dave *Owen, Law, Environmental Dynamism, Reliability: The Rise and Fall of CALFED*, 37 ENVTL. L. 1145 (2007).

Water Rights

Explicitly labeling a doctrine as a positive example of sustainable development can sometimes clarify and solidify its social justice base. The Supreme Court's creation of a special class of water rights for Indian reservations is an example of this use of sustainable development, although students of water and Indian water law would be surprised at this characterization.[96] The Supreme Court's decision to mitigate the impacts of "progress" and "civilization" on the surviving tribes is an amazing story. In the 19th century, Indian tribes were herded onto remnant reservations to move them out of "harm's way."[97] Reservations were seen as a way to assimilate[98] into the superior white, agricultural and Christian society by the most adaptive Indians.[99] Water law proceeded on the assumptions that prior appropriation was the only system of water allocation suitable for the inter-mountain West because it was a natural adaptation to a new environment and that all water rights issued from the states not the federal government.[100]

The right arose when the federal government claimed a state appropriated right for an Indian reservation in Montana, but it turned out that the white irrigators' rights were superior by four days. Nonetheless, the Tribe prevailed. *Winters v. United*

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96. *See generally Winters v. United States*, 207 U.S. 564 (1903); *see also* A. Dan Tarlock, *Tribal Justice and Property Rights: The Evolution of Winters v. United States*, 50 NAT. RESOURCES J. 471, 477 (2010).

97. *See generally* BRIAN W. DIPPIE, THE VANISHING AMERICAN: WHITE ATTITUDES AND U.S. INDIAN POLICY (1982).

98. The literature on Indians and Indian policy is vast. Among the best treatments are BRIAN W. DIPPIE, THE VANISHING AMERICAN: WHITE ATTITUDES AND U.S. INDIAN POLICY (1982); FRANCIS PAUL PRUCHA, THE GREAT FATHER: THE UNITED STATES GOVERNMENT AND THE AMERICAN INDIANS (1984); AUGIE FLERAS & JEAN LOENARD ELIOT, THE "NATIONS WITHIN": ABORIGINAL-STATE RELATIONS IN CANADA, THE UNITED STATES, AND NEW ZEALAND 2 (1992).

99. *See* R. DOUGLAS HURT, INDIAN AGRICULTURE IN AMERICA: PREHISTORY TO THE PRESENT 96-100 (1988) (tracing the idea of civilizing the Indians through agriculture from the late 18th century to its first legislative manifestation in 1819); *see also* DAVID RICH LEWIS, NEITHER WOLF NOR DOG: AMERICAN INDIANS, ENVIRONMENT, AND AGRARIAN CHANGE (1994).

100. In 1935, the Supreme Court held that three Congressional acts between 1866 and 1877 severed water from the public domain and acquiesced in exclusive state control of water allocation. *See* Cal. Or. Power Co. V. Beaver Portland Cement Co., 295 U.S. 142, 153- 164 (1935).

States[101] created an unprecedented hybrid appropriative-riparian right for tribes.[102] The Court unanimously held that Indian reservations have an implied water right, a priority as of the date of an 1888 Treaty modifying the reservation.[103] However, reserved rights or "*Winters* rights", as they came to be called, do not depend on application to beneficial use. As is the case with riparian rights, a reserved right can be claimed at any time and has a priority superior to all pre-reservation state appropriative rights.[104]

For most of the 20th century, the right remained inchoate, but starting in the 1960s it became a source of empowerment for tribes.[105] During the golden era of reclamation projects (1902-1963), the states and federal government made sure that Indian irrigation projects were funded at a very low rate.[106] Congress approved some small project appropriations, but they were subject to the condition that water rights be acquired under state law. Not surprisingly, the weak Indian Office[107] deferred the increasingly powerful Reclamation Service's policy of filing for state appropriations.

Epic litigation between Arizona and California revived *Winters* rights and ultimately empowered tribes to chart a sustainable future. In the course of apportioning the Colorado River among Arizona, California, and Nevada, the Supreme Court awarded several tribes along the River substantial amounts of water based on the "practicable irrigable acreage" of

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101. *See* Winters, 207 U.S. 564.

102. *See id.* at 574-78.

103. *See id.* at 576.

104. The leading historian of the case contests this reading and argues that both the United States Attorney, the trial judge and the Ninth Circuit read the 1888 Fort Belknap Agreement "to include an explicit reservation of water." John Shurts, NW. Power and Conservation Council, Presentation at Utton Transboundary Resource Center Winters Centennial Conference: Winters in American History (Jun. 10, 2008).

105. *See* Tarlock, *supra* note 95.

106. *See generally* LLOYD BURTON, AMERICAN INDIAN WATER RIGHTS AND THE LIMITS OF THE LAW (1991); *see also* ROBERT A. SAUDER, THE YUMA RECLAMATION PROJECT: IRRIGATION, INDIAN ALLOTMENT, AND SETTLEMENT ALONG THE LOWER COLORADO RIVER (2009).

107. *See* JOHN SHURTS, INDIAN RESERVED WATER RIGHTS: THE WINTERS DOCTRINE IN ITS SOCIAL AND LEGAL CONTEXT 1880S-1930S 181-222 (2000).

the reservation.[108] States tried to cabin the standard by the inclusion of a cost-benefit standard. In subsequent litigation over the boundaries of the reservations, the Special Master rejected the use of a formal cost-benefit analysis, although he did hold that economic feasibility was a relevant factor.[109] The net result was that the tribes were able to assert large inchoate claims to water already put to use under state law.[110]

These claims increased pressure of the federal government to find an equitable solution. In the 1970s, the doctrine evolved into a strong reparations doctrine, which legitimized tribal claims. The still influential 1973 National Water Commission report laid the foundation for subsequent settlements and modifications of the doctrine:

> Following *Winters*, more than 50 years elapsed before the Supreme Court again discussed significant aspects of Indian water rights. During most of this 50-year period, the United States was pursuing a policy of encouraging the settlement of the West and the creation of family-sized farms on its arid lands. In retrospect, it can be seen that this policy was pursued with little or no regard for Indian water rights and the *Winters* doctrine. With the encouragement, or at least the cooperation, of the Secretary of the Interior – the very office entrusted with protection of all Indian rights – many large irrigation projects were constructed on streams that flowed through or bordered Indian Reservations, sometimes above and more often below the Reservations. With few exceptions the projects were planned and built by the Federal Government without attempt to define, let alone protect, prior rights that Indian tribes might have had in the waters used for the projects. Before *Arizona v. California*, referred to hereinafter, actions involving Indian water rights

108. Arizona v. California, 373 U.S. 546, 601 (1963).

109. *See* Report of Special Masters (Feb. 22, 1982), *adopted by* Arizona v. California, 460 U.S. 605 (1983); *see also* R. G. Cummings et al., *The "New" Arizona v. California: Practicably Irrigated Acreage and Economic Feasibility*, 22 NAT. RESOURCES J. 517, 517 (1982); Martha C. Franks, *The Use of the Practicably Irrigated Acreage Standard in the Quantification of Reserved Water Rights*, 31 NAT. RESOURCES J. 549, 552 (1991).

110. For example, the Navajo Tribe at one time claimed up to 2,000,000 acre feet of the Colorado River's annual flow. *See* William Douglass Back and Jeffrey S. Taylor, *Navajo Water Rights: Pulling the Plug on the Colorado River*, 20 NAT. RESOURCES J. 71, 74 (1980).

> generally concerned then existing uses by Indians and did not involve the full extent of rights under the *Winters* doctrine. In the history of the United States Government's treatment of Indian tribes, its failure to protect Indian water rights for use on the Reservations it set aside for them is one of the sorrier chapters.[111]

After the Report, western states still clung to the "museum theory" of *Winters*. They argued that reserved rights were limited to on reservation irrigation periods.[112] This argument perpetrated social inquiry because for many tribes practicable irrigable acreage was not beneficial.[113] Even tribes who wanted to irrigate were locked into a 19th century pastoral vision.

Slowly, some courts came to understand that *Winters* stood for a broader theory of tribal survival as it allowed for the tribe to make sustainable choices about the future of the reservation. The right is best understood as a right to the amount of water necessary to sustain the tribe's vision of its land base, be it environmental preservation, urban water marketing, or irrigated agriculture. An influential Ninth Circuit opinion took the first step in this direction and held that a tribe with a limited history of irrigation could claim reserved rights for pre-settlement fishing and hunting.[114] The Arizona Supreme Court took the sustainability theory to its logical conclusion. A game changing decision adopted a culturally sensitive standard, the maintenance of a tribal homeland, as the measure of the right.[115] The test is multi-factor which includes, *inter alia*:

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111. NAT'L WATER COMM'N, WATER POLICIES FOR THE FUTURE: FINAL REPORT TO THE PRESIDENT AND TO THE CONGRESS OF THE UNITED STATES 474-75 (1973).

112. *See, e.g.*, *In re* General Adjudication of All Rights to Use Water in the Big Horn River, 753 P.2d 76, 89 (Wyo. 1988) (describing Wyoming's adoption of this theory regarding limitations to on-reservation irrigation periods).

113. Elizabeth Weldon, *Practicably Irrigated Acreage Standard: A Poor Partner for the West's Water Future*, 25 WM. & MARY ENVTL. L. & POL'Y REV. 203, 222 (2000).

114. United States v. Adair, 723 F.2d 1394, 1414 (9th Cir. 1983), *cert. denied*, 467 U.S. 1252 (1983).

115. *In re* General Adjudication of All Rights to Use Water in the Gila River System and Source, 35 P.3d 68, 77 (Ariz. 2001).

> The important thing is that the lower court should have before it actual and proposed uses, accompanied by the parties' recommendations regarding feasibility and the amount of water necessary to accomplish the homeland purpose. In viewing this evidence, the lower court should consider the following factors, which are not intended to be exclusive.[116]

A tribe's history will likely be significant. Deference should be given to practices requiring water use that are embedded in Native American traditions. Some rituals may date back hundreds of years, and tribes should be granted water rights necessary to continue such practices into the future. An Indian reservation could not be a true homeland otherwise.

In addition to history, the court should consider tribal culture when quantifying federally reserved rights. Preservation of culture benefits both Indians and non-Indians.

The court should also consider the tribal land's geography, topography, and natural resources, including groundwater availability.

The homeland standard, if used to actually benefit tribes, is an example of an evolved social justice sustainability standard. However, legislation will often be required to finance a sustainable homeland. For several decades, Indian tribes have benefitted from federal water rights settlements that give them a mix of wet water, cash and the ability to lease water for off-reservation use. These settlements also include new tribal roles in resource management and environmental protection. For example, in 2004, the state of Idaho, the federal government and the Nez Perce Tribe entered into a creative settlement that provides for a more stable flow regime on Lower Snake River, which can benefit both salmon restoration efforts and hydropower generation.[117]

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116. *Id. at 318.*

117. The settlement will release water that willing state water rights holders deposit into water banks. *See* Ann R. Klee & Duane Mecham, *The Nez Perce Indian Water Right Settlement- Federal Perspective*, 42 IDAHO L. REV. 595, 611-618 (2006). The broader question of the merits of salmon restoration efforts in the Columbia-Snake River basin, including the breaching of Snake River dams, is beyond the scope of this article. *See generally* Michael C. Blumm, Erica J. Thorson & Joshua D. Smith, *Practiced at the Art of Deception: The Failure of*

IV. CONCLUSION

This article has provided examples of three uses of the sustainable development label to more closely align water law and policy with the goals of the international norm of sustainable development. First, it can be used to spotlight existing laws and policies which promote unsustainable uses and thus should be reformed. Second, it can be a positive label to add additional support for efforts to promote more efficient, less wasteful, and socially inclusive water uses. Third, it can be a concrete standard to constrain unsustainable uses, thus freeing up more water for sustainable uses which include more efficient consumption, environmental protection, and the promotion of social justice.

Columbia Basin Salmon Recovery Under the Endangered Species Act, 36 ENVTL. L. 709 (2006).