USING ADAPTIVE GOVERNANCE TO PROTECT OREGON'S WATER RESOURCES

by
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Over 30 years ago, Oregon adopted the innovative In-Stream Water Rights Act, which introduced new regulatory tools and incentives for encouraging efficient water consumption, and paved the way for the emergence of water trusts. However, Oregon's water resources are under increasing strain as the state faces the challenges of over-appropriation and climate change. New solutions are needed to augment the existing regulatory framework. This Comment draws on the principles of adaptive governance and ecological resilience to formulate possible legal solutions to help the state adapt to increasing demands for water, proposing that Oregon leverage corporate social responsibility to encourage investments in water trusts; implement mandatory corporate water consumption disclosures; and use taxes to generate revenue for acquiring instream water rights.

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INTRODUCTION

Garrett Hardin's "The Tragedy of the Commons" is an economics problem meant to illustrate the reality of limited natural resources, and therefore the function of property rights to protect natural resources.[1] The problem posits that without formal limits on human access to land and natural resources, individuals have little incentive to avoid over-exploitation and will likely deplete the resource.[2] To avoid "destruction of the commons," Hardin argues that human use of the commons must be either limited by regulation or by conversion of the property into plots of privately-owned property.[3]

The "commons" at issue in this Comment is Oregon's freshwater supply. Like most western states, Oregon's water law and policy respond to the state's limited water resources and deter over-exploitation by placing limits on the quantity of surface and groundwater that property owners may appropriate from their land.[4] Compared to eastern states, which principally grant water rights based on ownership of the land hosting the water source, Oregon's prior appropriation doctrine uses a mix of both property rights and regulatory mechanisms to allocate water equitably among diverse stakeholders.[5] Although allocating water rights under prior appropriation is better suited to Oregon's geography, the doctrine has not erased tension among Oregon's competing water rights holders who face increasing water scarcity challenges.[6] This ongoing competition for water has also created challenges for state efforts to maintain adequate instream flow for the public benefit and for environmental conservation.[7]

More than 30 years ago, Oregon adopted the innovative In-Stream Water

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[1] Garrett Hardin, *The Tragedy of the Commons*, 162 SCIENCE 1243, 1244 (1968).

[2] *Id.* at 1244–45.

[3] *Id.*

[4] OR. REV. STAT. §§ 537.110, .130(1)–(2) (2019).

[5] *See* Janet Neuman, Anne Squier & Gail Achterman, *Sometimes a Great Notion: Oregon's Instream Flow Experiments*, 36 ENV'T L. 1125, 1131–32 (2006).

[6] *See infra* Section I.D.

[7] *See infra* Section I.C.

Rights Act, which introduced new regulatory tools and incentives for encouraging efficient water consumption and increased instream flows.[8] Soon after, water trusts emerged as complementary, private-sector actors that help facilitate instream rights transfer agreements and fundraise capital for acquiring state instream flow rights.[9] These water trusts have been largely successful in augmenting instream flow, and Oregon's citizens and geography have benefited from the environmental conservation effects, recreational benefits, and other public uses of adequate instream flow.

However, Oregon's water resources are under increasing strain as the state faces the challenges of over-appropriation and climate change. Balancing the efficient allocation of water rights for human needs while also preserving instream flows will require additional innovative thinking to augment the existing regulatory framework. Alone, neither regulation nor privatization are capable of managing efficient water allocation. For example, Oregon's *regulatory* water permit system has created a culture of frequent and expensive litigation in certain regions of the state.[10] On the other hand, *privatization* of water rights cannot stand alone as a solution where the basic nature of water is its role in the commons or the public trust.[11]

This Comment relies on principles of adaptive governance and ecological resilience to formulate possible legal solutions to help the state adapt to increasing demands for water. Part I explains the concept of adaptive governance, which describes a method of lawmaking that responds to stakeholder input, relies on private–public collaboration, and adopts policies that balance environmental conservation with human demands. Part II highlights Oregon's water trusts as a commendable example of adaptive governance that promotes water conservation and environmental protection. Building on the success of Oregon's water trusts' ecosystem services markets, this Comment explores the concept of an expanded free-market water trading platform as a solution to over-appropriation, but ultimately disregards that concept due to risks of private investor monopolies and price hikes. Part III raises three adaptive governance-based proposals for augmenting and enhancing Oregon's existing water policy: (1) leveraging corporate social responsibility to encourage investment in water trusts; (2) implementing mandatory corporate water consumption disclosures; and (3) using taxes to generate revenue for acquiring instream water rights.

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[8] 1987 Or. Laws 1757–59 (codified at OR. REV. STAT. §§ 537.332–.360 (2019)).

[9] *See infra* Part II.

[10] Jennie L. Bricker, *Entitlement, Water Resources, and the Common Good*, 18 WILLAMETTE J. INT'L L. & DISP. RESOL. 143, 154 (2010).

[11] A. Dan Tarlock, *Prior Appropriation: Rule, Principle, or Rhetoric?*, 76 N.D. L. REV. 881, 897 (2000) ("All usufructuary rights in fugitive resources are to some degree correlative because there are inherent limitations on exclusivity.").

I. BACKGROUND

A. Western Water Law

Based on English law, the eastern half of the United States generally governs its water rights using a riparian system under which a landowner holds the rights to any sources of water on that land.[12] However, the geography of the American West—with less consistent rainfall and fewer rivers, streams, and lakes—is ill-suited for a riparian system.[13] As a result, virtually all western states chose to adopt prior appropriation instead.[14] Prior appropriation is based on a "first-in-time, first-in-right" principle that grants water rights to the most senior user who puts the water to a beneficial use.[15] Senior users—as determined by priority date—take priority over junior users of water.[16] In other words, in times of water shortage, water rights holders receive water in the order of their priority dates, beginning with the oldest priority date.[17] Although the senior user may use their full right before a junior user receives any water, a water user must exercise their right in a beneficial manner without waste.[18] If a user fails to put the water to beneficial use, the user may be found to have forfeited their right.[19] A water rights holder "forfeits" her water rights if she fails to use the full amount of water or fails to use it beneficially for five successive

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[12] Mary Ann King, Recent Development, *Getting Our Feet Wet: An Introduction to Water Trusts*, 28 HARV. ENV'T L. REV. 495, 499–500 (2004) (citing JOSEPH L. SAX, BARTON H. THOMPSON, JR., JOHN D. LESHY & ROBERT H. ABRAMS, LEGAL CONTROL OF WATER RESOURCES 20 (3d ed. 2000)).

[13] Robin Kundis Craig, *Trickster Law: Promoting Resilience and Adaptive Governance by Allowing Other Perspectives on Natural Resource Management*, 9 ARIZ. J. ENV'T L. & POL'Y 140, 149 (2019); King, *supra* note 12, at 500.

[14] Craig, *supra* note 13, at 149. California recognizes *both* riparian and appropriative rights. Roderick E. Walston, *California Water Law: Historical Origins to the Present*, 29 WHITTIER L. REV. 765, 766–77 (2008). Hawai'i is the only western state that has not adopted the prior appropriation doctrine, instead adopting a riparian-public trust hybrid model based on laws from the Kingdom of Hawai'i and Hawaiian tradition. D. KAPUA'ALA SPROAT, UNIV. HAW. MĀNOA, OLA I KA WAI: A LEGAL PRIMER FOR WATER USE AND MANAGEMENT IN HAWAI'I 7 (2009), https://www.law.hawaii.edu/files/content/news/18470/WaterPrimer.pdf.

[15] MATTHEW J. MCKINNEY & JONATHAN G. TAYLOR, U.S. DEP'T OF THE INTERIOR, BIO. REP. 89(2): INSTREAM FLOW INFO. PAPER: NO. 18, WESTERN STATE INSTREAM FLOW PROGRAMS: A COMPARATIVE ASSESSMENT 2 (1988).

[16] Adell Amos, *Freshwater Conservation in the Context of Energy and Climate Policy: Assessing Progress and Identifying Challenges in Oregon and the Western United States*, 12 U. DENV. WATER L. REV. 1, 20, 52 (2008).

[17] *Id.* at 52.

[18] *Id.* at 20; Janet C. Neuman & Keith Hirokawa, *How Good Is an Old Water Right? The Application of Statutory Forfeiture Provisions to Pre-Code Water Rights*, 4 U. DENV. WATER L. REV. 1, 2, 7 (2000).

[19] Amos, *supra* note 16, at 19.

years.[20]

During times of drought or water scarcity, senior users' water consumption tends to deplete the West's limited water supply, even if they consume only the quantity of water to which they lawfully hold rights.[21] This leads to over-appropriated streams which often run dry, thereby negatively impacting the environment as well as outdoor recreation.[22] In recent decades, state governments and environmental interest groups have stressed the importance of careful regulation of prior appropriation systems, and the need for flexible, continual updates.[23] For example, a 1998 Western Water Policy Review Advisory Commission Report encouraged water rights-related interest groups to take *innovative* approaches, using a combination of "physical solutions, conservation, and voluntary transfers."[24]

B. Oregon's Water Code

Oregon's adoption of the prior appropriation doctrine is based on the idea that the waters of the state belong to the public, and the state retains the power to award people the right to use water through its permitting system.[25] In an early lawsuit challenging Oregon's codification of prior appropriation, the Oregon Supreme Court cited the U.S. Supreme Court to confirm the unambiguous power of the state to "permit the appropriation of the flowing water for such purposes as it deems wise."[26] Oregon's strict statutory provisions regarding use, transfers, and forfeiture are a core feature of prior appropriation water law.[27] These bright-line rules are critical for western water allocation, where there is simply not enough water to make blurry "reasonableness" rules associated with riparian water law useable or effective.[28]

Oregon's water code (the "Code") assigns rulemaking authority to the Water Resources Commission. Many Oregon state agencies are involved in managing various aspects of Oregon's water resources, such as the Water Resources Department,

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[20] OR. ADMIN. R. 690-017-0400.

[21] MCKINNEY & TAYLOR, *supra* note 15, at 2.

[22] *Id.* at 1–2.

[23] Neuman & Hirokawa, *supra* note 18, at 26–27.

[24] *Id.* at 27 (citing WESTERN WATER POL'Y REVIEW ADVISORY COMM'N, WATER IN THE WEST: THE CHALLENGE FOR THE NEXT CENTURY 3-6, 3-8 (1998)).

[25] OR. REV. STAT. §§ 537.110, .130(1)–(2) (2019).

[26] *In re* Hood River, 227 P. 1065, 1084 (Or. 1924) (citing United States v. Rio Grande Dam & Irrigation Co., 174 U.S. 690, 702–03 (1899)).

[27] Neuman & Hirokawa, *supra* note 18, at 2, 9 (citing Carol M. Rose, *Crystals and Mud in Property Law*, 40 STAN. L. REV. 577 (1988)).

[28] *Id.* at 9.

the Oregon Department of Fish and Wildlife, the Parks and Recreation Department, and the Department of Environmental Quality.[29] For the purposes of this Comment, the most important state agency is the Water Resources Department, which implements the state's water rights permits, transfers, and adjudications.[30]

The Water Resources Department utilizes "watermasters" to regulate water distribution and enforce the priority dates of water rights.[31] To regulate water allocation, the watermaster manages infrastructure such as headgates and valves to control the local water works.[32] For enforcement purposes, a watermaster may conduct their own investigations or respond to complaints by an appropriator.[33] If a rights holder does not comply with the enforcement action, the Water Resources Department may enforce civil penalties.[34] Although watermaster-led enforcement has been shown to be highly effective once commenced, some have criticized the Department for merely responding to complaints and not initiating its own investigations.[35]

State administrative regulations require the Water Resources Department to make water-permitting decisions based on efficient technology and management practices.[36] However, some interest groups have questioned the Water Resources Department's compliance with this requirement and criticized the Department for granting permits based on "generous customary standards of beneficial use" rather than enforcing efficient water conservation measures.[37] For example, by relying on streamflow averages to calculate water rights allocations, the Code does not currently account for daily or instantaneous flows that are often ecologically significant for tracking streamflow under different environmental conditions.[38] This means that

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[29] DENNIS RICHARDSON, OR. OFF. OF THE SEC'Y OF STATE, *Water Resources Department*, *in* OREGON BLUE BOOK 86 (2019–2020 ed.); OR. ADMIN. R. 690-033-0120 (2021). *See generally* OR. ADMIN. R. 690-033-0000 to -0340.

[30] RICHARDSON, *supra* note 29, at 86.

[31] OR. REV. STAT. § 540.045(1)(a) (2019).

[32] *Id.* § 540.045(1)(c).

[33] Amos, *supra* note 16, at 53.

[34] *Id.*

[35] *Id.* at 62. In 2005, the Water Resources Commission reported a 96% compliance rate with enforcement actions. *Id.* at 53.

[36] OR. ADMIN. R. 690-400-0010(16).

[37] Janet C. Neuman, *Beneficial Use, Waste, and Forfeiture: The Inefficient Search for Efficiency in Western Water Use*, 28 ENV'T L. 919, 960–61 (1998).

[38] DONALD W. MEALS & STEVEN A. DRESSING, NAT'L NONPOINT SOURCE MONITORING PROGRAM, TECH NOTES 3: SURFACE WATER FLOW MEASUREMENTS FOR WATER QUALITY MONITORING PROJECTS 6–8, 12, 14 (2008), https://www.epa.gov/sites/production/files/2016-05/documents/tech_notes_3_dec2013_surface_flow.pdf.; RICHARD M. COOPER, STATE OF OR. WATER RES. DEP'T, DETERMINING SURFACE WATER AVAILABILITY IN OREGON 12 (2002), https://www.oregon.gov/owrd/WRDPublications1/DeterminingSurfaceWaterAvailabilityInOregon.pdf. The Water Resources Department issues new water permits based on its measurements of consumptive use, rather than the sum of allocated quantities under existing permits. *Id.* at 3–

the Water Resources Department may unwittingly grant inefficiently allocated water rights simply due to a lack of detailed data regarding consumptive use.[39]

Although Oregon's water policy often receives national attention for its often-pioneering focus on water conservation,[40] the above shows that opportunities remain for the law to further promote efficient consumption, reduce competition among users, and enhance the public benefits of instream flows.

C. Oregon's In-Stream Water Rights Act

More than three decades ago, the Oregon legislature passed the 1987 In-Stream Water Rights Act (the "Act") to protect and promote instream uses of water.[41] The Act seeks to protect the state's rivers, streams, lakes, and wetlands by maintaining "the amount of water required for aquatic and fish life, wildlife or fish and wildlife habitat."[42] It also strives for water quantities adequate for "public use," which includes recreation, conservation, pollution abatement, or navigation.[43]

Rather than allocating water rights to agricultural, municipal, or industrial uses, the Act allows the state to hold instream rights in trust and the water to remain in its natural stream for public benefit.[44] Before the Act was passed, a water rights holder leaving water instream would have been considered to have forfeited her water rights.[45] By acknowledging instream flow as a "beneficial use," the Act allows and even encourages users to leave the water instream through a voluntary permanent transfer or temporary lease to the state's trust.[46]

The state has the general right to establish instream rights through agency requests,[47] transfers, and the Conserved Water Program.[48] The Conserved Water Program rewards water users who reduce their water consumption by allowing them to transfer a portion of the conserved water to the state while retaining their rights to the remaining conserved water with no loss of priority date.[49] Like most Oregon

4. Because in any given year a rights holder may not use the full amount allowed under their permit, the Water Resources Department can potentially allocate more water permits than there is available water. *Id.*

[39] *See* COOPER, *supra* note 38, at 17.

[40] Amos, *supra* note 16, at 98.

[41] 1987 Or. Laws 1757–59 (codified at OR. REV. STAT. §§ 537.332–.360 (2019)).

[42] OR. ADMIN. R. 635-400-0010(11) (2021).

[43] *Id.* at 340-056-0015(1)(d); *id.* at 690-400-0010(3), (13).

[44] OR. REV. STAT. § 537.336(1) (2019).

[45] *See* King, *supra* note 12, at 500–03.

[46] OR. REV. STAT. § 537.348(2).

[47] The DEQ has authority to apply for instream flow rights which protects existing quantities from appropriation. *Id.* § 537.336(2).

[48] *Id.* §§ 537.455–.500.

[49] *Id.* § 537.470(3), (6).

water rights, instream rights receive a priority date and cannot impair senior water rights.[50] Generally, a user who applies for an allocation of conserved water under the program must convert at least 25% of the conserved water to instream flow.[51] The program is intended to address rights holders' reluctance to adopt modern water conservation practices by allowing users to retain 75% of the conserved water for almost any beneficial use without completely forfeiting their rights or senior priority date.[52]

Water rights holders also have the option of temporarily leasing their rights for instream use for up to five years.[53] Because an instream rights lease is considered a "beneficial use," the lessor avoids risk of forfeiture as long as she maintains her original diverting facilities and remains "ready, willing, and able" to use the water.[54] Allowing instream leases creates additional opportunities for water rights holders to transfer their water rights to instream use, thereby increasing the likelihood instream flow will be available during times of water shortage.[55] Overall, onlookers have praised Oregon's instream rights protection initiative for its "innovative and incentive-based approach to freshwater conservation."[56]

D. The Problem of Over-Appropriation

A significant amount of Oregon's surface water has already been appropriated.[57] Existing water rights holders tend to hold their water rights permits for long periods of time, meaning the current hierarchy rarely opens up for new permit holders.[58] Further, the risk of forfeiture creates reluctance among rights holders to use their allocated water quantity *efficiently*, since efficiency runs the risk of surrendering their rights in the amount of any unused water.[59] In response to rights holders' re-

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[50] *Id.* § 537.334(2); *see also* OR. ADMIN. R. 690-077-0000(5)–(6) (2021).

[51] OR. REV. STAT. § 537.470(3).

[52] *Id.* § 537.470(3), (6).

[53] *Id.* § 540.523(1).

[54] OR. ADMIN. R. 690-380-8002(4).

[55] Amos, *supra* note 16, at 77.

[56] *Id.* at 98.

[57] OR. WATER RES. DEP'T, WATER RIGHTS IN OREGON: AN INTRODUCTION TO OREGON'S WATER LAWS 15 (2018), https://www.oregon.gov/owrd/WRDPublications1/aquabook.pdf. Oregon Administrative Rules define surface water over-appropriation as when "the quantity of surface water available during a specified period is not sufficient to meet the expected demands from all water rights at least 80 percent of the time during that period." OR. ADMIN. R. 690-400-0010(11)(a)(A).

[58] OR. WATER RES. DEP'T, *supra* note 57, at 15.

[59] *See* ADAM SCHEMPP, ENV'T L. INST., WESTERN WATER IN THE 21ST CENTURY 9 (June 2009), https://www.eli.org/sites/default/files/eli-pubs/western-water-21st-century-eli.pdf.

luctance to adopt efficient water practices, in 1997 the Oregon legislature introduced a "ready, willing, and able" defense for rights holders fearing forfeiture.[60] If a senior rights holder using less than her full allotment can prove she had facilities capable of using the full amount, but did not do so due to some other circumstance, the rights holder may rely on the defense to avoid forfeiture. [61] Although the defense was intended to avoid wasteful water diversions, the doctrine has ultimately further established senior users' water rights rather than preventing wasteful use.[62] Instead of relinquishing water rights for the community to determine the most beneficial or efficient use of the water, the senior appropriator has unilateral decision-making power and control of a scarce resource.[63]

A fully-appropriated water system means that to access water resources, new users must rely on the Water Resources Department's transfer process.[64] A transfer may not injure existing water rights (unless there is consent by all parties by affidavits),[65] so upon receiving a transfer application, the Water Resources Department publishes notice of the proposed transfer so any person may file a protest.[66] However, this requirement acts as a significant burden because transfer applicants must devote additional resources to gather proof for a protest hearing.[67] The expense of transfer application hearings and related litigation can impose high costs on poor land users and exacerbate any limitations they have on pursuing farming or other profitable activities.[68]

Conflict among competing users is especially prevalent during non-winter months when Oregon's surface waters are inevitably fully- or over-appropriated.[69]

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[60] OR. REV. STAT. § 540.610(3)(b) (2019); S. 869, 69th Legis. Assemb., Reg. Sess. § 1(3) (Or. 1997) (enacting OR. REV. STAT. § 540.610(3) (1997)).

[61] OR. REV. STAT. § 540.610(3) (2019).

[62] Krista Koehl, *Partial Forfeiture of Water Rights: Oregon Compromises Traditional Principles to Achieve Flexibility*, 28 ENV'T L. 1137, 1157–58 (1998). Because instream rights fit the statutory definition of "beneficial use," some commentators have suggested that the state enact an additional policy where the state permanently transfers forfeited water rights to instream use, but Oregon has not yet adopted such a policy. OR. REV. STAT. §§ 537.334, 537.350(1); Robert David Pilz, Comment, *At the Confluence: Oregon's Instream Water Rights Law in Theory and Practice*, 36 ENV'T L. 1383, 1401 (2006).

[63] Koehl, *supra* note 62, at 1160.

[64] Amos, *supra* note 16, at 28.

[65] OR. REV. STAT. § 540.530(1)(b).

[66] *Id.* § 540.520(5)–(6); OR. ADMIN. R. 690-380-4010(2)(d) (2021).

[67] *See* Kusyk v. Water Res. Dep't, 994 P.2d 798, 801 (Or. Ct. App. 2000) (noting the uncertainty regarding petitioners' ability to provide information sufficient for the department to make a pre-transfer determination in their favor).

[68] Stefano Pagiola & Gunars Platais, *Payments for Environmental Services*, ENV'T STRATEGY NOTES, May 2002, at 1, 1.

[69] STATE OF OR. LEG. POL'Y & RSCH. OFF., WATER MANAGEMENT BACKGROUND BRIEF 3 (2018), https://www.oregonlegislature.gov/lpro/Publications/Background-Brief-Water-

Because senior rights holders have little incentive to conserve water resources, the junior users often rely on litigation solutions to access their water rights.[70] These disputes have contributed to a significant body of litigation.[71] For example, the Klamath River Basin has become a nationwide cautionary tale since 2001, when irrigators in the region were the first to be cut off from water supply during an unprecedented drought, launching nearly two decades of litigation among irrigators, the Yurok Tribe, the fishing industry, and conservationists.[72] Oregon irrigation farmers are particularly affected by the overall strain on water resources, and often resort to filing lawsuits against state and federal regulatory authorities for a declaration of water rights.[73] In an interview with an Oregon State Bar journalist, Oregon Department of Justice attorney Denise Fjordbeck noted, "The way the system is built, there's almost an assumption that you are going to go to litigation over water rights."[74]

The Water Resources Department also faces an increasing number of legal challenges to its water rights applications and transfers decisions. During the state's 2015–2017 budget cycle, the Department was involved in 25 new lawsuits, compared to 13 during the 2013–2015 cycle, and only four from 2011–2013.[75] Spurring these legal conflicts is the demand for new business, agricultural, and municipal development, and the inability of these stakeholders to obtain new water rights in Oregon's fully-appropriated system.[76]

Adjudicating water rights is often based on fact-specific scenarios involving subjective evidence of the irrigator's intent to put the water to beneficial use, often leading to complicated transfers and a general uncertainty on entitlement to water

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Management-2018.pdf.

[70] Janine Robben, *Navigating Water Law in Oregon: Water, Water, Everywhere*, OR. ST. B. BULL., Nov. 2008, at 17, 22–23.

[71] Formal adjudication of water rights in Oregon has a history extending back to the early 20th century. *Id.* at 19.

[72] Alicia Rubin, *Farmers Organize Convoy to Call Attention to Water Issues in Klamath Basin*, KDRV, https://www.kdrv.com/content/news/Farmers-organize-convoy-to-call-attention-to-water-issues-in-Klamath-Basin-570883461.html (Oct. 1, 2020, 9:36 AM). Oregon's Klamath Basin's long history of water rights litigation has led to "an effort in many places to not become the next Klamath." Robben, *supra* note 70, at 23 (quoting Bud Ullman, attorney for the Klamath Tribes).

[73] A. Dan Tarlock, *Ecosystem Services in the Klamath Basin: Battlefield Casualties or the Future?*, 22 J. LAND USE & ENV'T L. 207, 213 (2008).

[74] Robben, *supra* note 70, at 23.

[75] Mateusz Perkowski, *Water Scarcity Incites Oregon Legal Conflicts*, CAP. PRESS (Feb. 6, 2020), https://www.capitalpress.com/state/oregon/water-scarcity-incites-oregon-legal-conflicts/article_9a1edfce-4855-11ea-9ac5-638d120088c1.html.

[76] *Id.*

rights in Oregon.[77] Further, allowing the transfer process to revolve around litigation can unintentionally "shift the focus from . . . conservation to adoption of only minimal mitigation measures . . . or to push the problem forward a few years."[78] Litigation is a limited solution because rather than facilitating compromise among the competing water users, it often results in a "winner takes all" outcome.[79]

As the system continues to strain under the demand for water, taxpayers will increasingly be responsible for funding efficiency and conservation efforts. Facing an unprecedented volume of legal challenges, in 2017 the Water Resources Department quickly depleted its $835,000 legal services budget and had to request emergency funding from lawmakers to cover its costs.[80] In addition to state-level litigation costs, federal taxpayers fund the bulk of Oregon's water infrastructure and related agency programs.[81] In 2020, $30 million in federal spending was allocated to the Watershed and Flood Prevention Operations Program in Oregon for the maintenance and construction of new water facilities in irrigation districts across the state.[82] Despite this multi-million dollar allocation, the 2020 Senate Appropriations Committee Budget Report indicates that water conservation efforts are underfunded and facing limited conservation planning capacity, and specifically names the Klamath River Basin water crisis as a top priority.[83] To achieve water conservation goals, the report encourages *stakeholder collaboration* between irrigators, and urges states and irrigation districts to adequately balance agricultural needs with natural resource protection.[84]

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[77] For examples of cases involving evidence of the irrigator's intended use of the water, see Wilber v. Wheeler, 543 P.2d 1052, 1055–56 (Or. 1975); *In re* Hood River, 227 P. 1065, 1074 (Or. 1924).

[78] *See* Tarlock, *supra* note 73, at 218.

[79] Bricker, *supra* note 10, at 156.

[80] Perkowski, *supra* note 75.

[81] *Funding for Public Water Systems,* OR. DEP'T OF ENV'T QUALITY, https://www.oregon.gov/deq/wq/programs/Pages/DWP-Funding.aspx (last visited Dec. 27, 2021).

[82] Press Release, Ron Wyden, Sen., S., Merkley, Wyden Announce Investments in Rural Communities Included in Spending Bill (Dec. 22, 2020), https://www.wyden.senate.gov/news/press-releases/merkley-wyden-announce-investments-in-rural-communities-included-in-spending-bill. The Watershed Protection and Flood Prevention Program provides for cooperation between the Federal government and states to "prevent erosion; floodwater and sediment damage; to further the conservation development, use and disposal of water; and to further the conservation and proper use of land in authorized watersheds." *Watershed and Flood Prevention Operations (WFPO) Program*, U.S. DEP'T OF AGR., https://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/programs/landscape/wfpo/?cid=nrcs143_008271 (last visited Dec. 27, 2021).

[83] STAFF OF S. COMM. ON APPROPRIATIONS, 117TH CONG., EXPLANATORY STATEMENT FOR AGRICULTURE, RURAL DEVELOPMENT, FOOD AND DRUG ADMINISTRATION, AND RELATED AGENCIES APPROPRIATIONS BILL 66 (Comm. Print 2021), https://www.appropriations.senate.gov/imo/media/doc/AGRept.pdf.

[84] *Id.* at 67.

1. Corporate Water Consumption in Oregon

In addition to irrigation farming and individual consumption, private businesses' water usage places significant strain on municipalities' water resources, with technology companies often being the biggest water consumers in their districts.[85] Dubbed "Silicon Forest," Oregon is home to several technology companies whose operations require vast amounts of water. Prineville, a town of about 11,000 residents located on the Oregon side of the Columbia River Gorge, has received national attention as an unexpected technology hub due to the recent construction of data centers by large technology companies such as Facebook and Apple.[86] These server farms, which process millions of digital communications every day, require tremendous amounts of water to keep the systems cool.[87] Just one medium-sized data center consumes hundreds of thousands of liters of water per day.[88]

Aware of the current and probable future strain on water resources, some of these technology companies have begun to examine their water usage and take steps to reduce their consumption. In fact, Facebook's Prineville data center was the first of its kind to publicly report its water-use efficiency, currently boasting numbers reflecting water usage of less than a quarter of conventional facilities.[89] However, despite this and other similar high-profile efforts by large tech companies, industry-wide progress remains slow. A recent survey showed most data center operators see water conservation as a low priority, and fewer than 30% of data centers report even tracking their water-use efficiency.[90]

Oregon also hosts manufacturing facilities for several large semiconductor companies, including Intel, Applied Materials, and Lattice Semiconductors.[91] Like data centers, these chip manufacturing facilities require an astounding amount of water for cooling purposes. For example, a single chip requires 30 liters of water to produce, and the average semiconductor factory consumes in one year about the same amount of water as a town of 50,000 people.[92] A single semiconductor manufacturing plant uses more water in one day than most data centers consume in a

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[85] Julia Rosen, *Thirsty Business: How the Tech Industry is Bracing for a Water-Scarce Future*, EARTH MAG. (Sept. 13, 2016), https://www.earthmagazine.org/article/thirsty-business-how-tech-industry-bracing-water-scarce-future/.

[86] *Id.*; *QuickFacts: Prineville City, Oregon*, U.S. CENSUS BUREAU, https://www.census.gov/quickfacts/prinevillecityoregon (last visited Dec. 27, 2021) (estimating a population of 10,736 people as of April 1, 2020).

[87] Rosen, *supra* note 85.

[88] *Id.*

[89] *Id.*

[90] *Id.*

[91] *Key Industries*, CITY OF HILLSBORO, https://www.hillsboro-oregon.gov/our-city/departments/economic-development/key-industries (last visited Dec. 27, 2021); *see also About Us*, LATTICE SEMICONDUCTOR, https://www.latticesemi.com/About (last visited Dec. 27, 2021).

[92] Rosen, *supra* note 85.

year.[93] In a recent corporate responsibility report, Intel acknowledged that "[s]emiconductor fabrication requires significant water use."[94]

Notably, as drought conditions and limited water resources have pushed the price of water up, these facilities face new incentives to develop new technologies to reduce their water consumption—typically by reusing or recycling the water.[95] However, without faster innovation across the industry, municipalities, communities, and businesses will continue to compete for limited water resources.[96] Although environmental interest groups and corporate responsibility advocates are encouraging technology companies to disclose their efficiency metrics and technology developments, [97] these companies may be generally reluctant to disclose and lose any competitive edge they have gained from reducing water costs.

E. Climate Change in Oregon

The threat of climate change looms over Oregon's already strained and overappropriated water system. Like most regions in the United States, research indicates Oregon is facing increasing water scarcity.[98] In particular, the southern and eastern regions of the state are most likely to face increasing droughts as a result of climate change.[99]

Many of Oregon's water reservoirs are fed by rainfall and snowmelt, but precipitation levels have been declining for the past several years. As a result, reservoir levels have fallen too low to maintain drinking water quality, forcing the system to pull from groundwater instead.[100] Reduced rainfall is also likely to force the agricultural industry to adapt to less water-demanding planting practices.[101] Other Oregon industries that rely on hydropower are likely to face long-term viability challenges if

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[93] *Id.*

[94] CORPORATE RESPONSIBILITY AT INTEL: 2019–2020 REPORT, INTEL 40 (2020), http://csrreportbuilder.intel.com/pdfbuilder/pdfs/CSR-2019-20-Full-Report.pdf; Rosen, *supra* note 85.

[95] Rosen, *supra* note 85.

[96] *Id.*

[97] *Id.*

[98] Bricker, *supra* note 10, at 147–48; Alan K. Brickley, Steven R. Schell & Edward J. Sullivan, *Climate Change and Oregon Law: What Is to Be Done?*, 33 J. ENV'T L. & LITIG. 235, 241–44 (2018).

[99] OR. HEALTH AUTH., PUB. HEALTH DIV., CLIMATE AND HEALTH IN OREGON 28, 36 (2020), https://www.oregon.gov/gov/Documents/Climate-Health-Oregon-2020%20-Full-Report.pdf.

[100] Jennie Bricker, *Water, Water, Everywhere: Drinking Water in Oregon*, OR. ST. B. BULL., Feb./Mar. 2019, at 17, 21.

[101] Brickley et al., *supra* note 98, at 241.

water flows are reduced, thereby increasing demand for more expensive energy alternatives.[102] Although there are innumerable expected social impacts from climate change and water shortage, other measurable consequences include less snowfall for recreation, increased summer water shortages, and more frequent forest fires.[103]

One way to mitigate the effects of climate change is to promote the health and preservation of instream flows. Adequate water supply in natural streams and wetlands provides quantifiable benefits such as reducing sedimentation, preventing natural disasters, improving carbon sequestration, and promoting recreation, navigation, and biodiversity conservation.[104] To maintain water availability and reduce the social impacts of climate change, Oregon and its residents must consider refining the state's water policy to reduce rates of water consumption and promote instream flows.

F. Adaptive Governance and Ecological Resilience

Environmentalism does not advocate for a strict prohibition on any human intrusion on natural systems.[105] Rather, modern environmentalism sees ecosystems as dynamic systems that have the capability to adapt to change and stress.[106] Modern environmental policy has adopted a utilitarian rationale for ecosystem protection and recognizes the quantitative utility of biodiversity and ecosystem services.[107] This perspective recognizes that "the strongest case for environmental protection remains the ability to show that protection can be justified by hard numbers."[108] This Comment specifically relies upon two separate but related doctrines of modern environ-

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[102] *Hydropower in Oregon*, OR. DEP'T OF ENERGY, https://www.oregon.gov/energy/energy-oregon/Pages/Hydropower.aspx (last visited Dec. 27, 2021).

[103] *See Recreation*, U.S. DEP'T OF AGRIC., https://www.fs.usda.gov/ccrc/topics/recreation (last visited Dec. 27, 2021) (less snowfall for recreation); *Water Supplies & Climate Change*, WASH. DEP'T OF ECOLOGY, https://ecology.wa.gov/Air-Climate/Climate-change/Climate-change-the-environment/Water-supply-impacts (last visited Dec. 27, 2021) (increased summer water shortages); Hal Bernton, *Forests West of the Cascades Will See More Fires, Bigger Fires with Climate Change*, SEATTLE TIMES, https://www.seattletimes.com/seattle-news/environment/pacific-northwest-forests-west-of-the-cascades-will-see-more-fires-bigger-fires-with-climate-change/ (Sept. 9, 2017, 5:29 PM) (more frequent forest fires).

[104] Martin W. Doyle & Todd BenDor, *Evolving Law and Policy for Freshwater Ecosystem Service Markets*, 36 WM. & MARY ENV'T L. & POL'Y REV. 153, 154 (2011); Pagiola & Platais, *supra* note 68.

[105] Tarlock, *supra* note 73, at 216.

[106] *Id.*

[107] MILLENNIUM ECOSYSTEM ASSESSMENT, LIVING BEYOND OUR MEANS: NATURAL ASSETS AND HUMAN WELL-BEING 7 (2005), http:// www.millenniumassessment.org/documents/document.429.aspx.pdf.

[108] Tarlock, *supra* note 73, at 217.

mentalism: "ecological resilience" and "adaptive governance," both of which promote a collaborative approach to address resource management conflicts.[109]

"Ecological resilience" describes the ability of the ecological system to absorb disturbances caused by human activities and maintain at least part of its natural state.[110] Because market forces can fill gaps in state-enforced regulatory policy, the doctrine of ecological resilience encourages collaboration between regulation and private market sources.[111]

This interpretation of ecological resilience segues to the doctrine of "adaptive governance," which broadly refers to the use of both formal and informal mechanisms to achieve collective goals.[112] By definition, adaptive governance cannot be forced or mandated.[113] However, societal pressures and expectations can lead to legislation reflecting this adaptive governance.[114] Although the law can play a significant role proactively creating conditions for ecological resilience, it must also have the capacity to be reactive to stakeholders demanding change.[115] Similarly, an adaptive governance system requires input from diverse stakeholders that represent community, the private market, and state actors.[116]

Collaboration across interest groups—including the state, private organizations, and landowners—is essential to ensuring protection of water-dependent conservation efforts. Stakeholder and cultural expectations can provide momentum sufficient to change the law.[117] Oregon's water law, specifically its promotion of instream flow protections, provides an example of adaptive governance where the state's legal and regulatory authorities provide a strong foundation for building resilience into water systems.[118] Nonetheless, there remains opportunities for the law

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[109] For an example of a collaborative approach in action, see Robben, *supra* note 70.

[110] C.S. Holling, *Engineering Resilience Versus Ecological Resilience*, *in* ENGINEERING WITHIN ECOLOGICAL CONSTRAINTS, NAT'L ACAD. ENG'G 31, 33 (Peter C. Schulze ed., 1996).

[111] Craig, *supra* note 13, at 144; Thomas Dietz, Elinor Ostrom & Paul C. Stern, *The Struggle to Govern the Commons*, 302 SCI. 1907, 1909 (2003).

[112] Barbara A. Cosens, Lance Gunderson & Brian C. Chaffin, *Introduction to the Special Feature Practicing Panarchy: Assessing Legal Flexibility, Ecological Resilience, and Adaptive Governance in Regional Water Systems Experiencing Rapid Environmental Change*, 23 ECOLOGY & SOC'Y (2018).

[113] *See* Brian C. Chaffin, Hannah Gosnell & Barbara A. Cosens, *A Decade of Adaptive Governance Scholarship: Synthesis and Future Directions*, 19 ECOLOGY & SOC'Y (2014).

[114] Barbara A. Cosens, Robin K. Craig, Shana Lee Hirsch, Craig Anthony (Tony) Arnold, Melinda H. Benson, Daniel A. DeCaro, Ahjond S. Garmestani, Hannah Gosnell, J.B. Ruhl & Edella Schlager, *The Role of Law in Adaptive Governance*, 22 ECOLOGY & SOC'Y (2017).

[115] *Id.*

[116] Chaffin et al., *supra* note 113. Meaningful participation across these interest groups also increases the likelihood of the adaptive governance's success. *Id.*

[117] Bricker, *supra* note 10, at 166.

[118] Amos, *supra* note 16, at 31.

to create additional economic incentives for individuals, landowners, businesses, and state agencies to collaborate in creating conditions that promote sustainable water use practices.

1. Ecosystem Service Markets

Ecosystem service markets provide a specific example of sustainable, adaptive governance that leverages collaboration between a variety of stakeholders working towards ecological resiliency. Ecosystem service markets are markets that trade commodities based on a quantifiable ecological benefit, rather than units of weight or volume.[119] For example, streams and wetlands provide a quantifiable benefit of retaining nitrogen in regions where excess nitrogen levels in watersheds have led to unacceptable water quality standards.[120] However, despite the quantifiable benefits environmental services provide, without an economic reason to participate in conservation efforts land users may contribute to the decay of environmental services.[121] To promote conservation and maintain environmental services, the market must somehow pay for the water or other natural resources to remain in the environment for public good.

Ecosystem service markets are a form of "incentive-based conservation," where property owners are compensated for their voluntary conservation of natural resources.[122] These incentives may take the form of monetary compensation, tax deductions, or specialized easement markets.[123] Rather than utilizing a strict remedial approach (such as expensive litigation), or a strict regulatory approach (which is often difficult for states to enforce due to limited resources), ecosystem service markets offer a valuable alternative by rewarding landowners for their conservation efforts.[124]

Compared to traditional and often adversarial "command and control" regulatory schemes, incentive-based conservation makes the conservation effort *collaborative* with the property owner.[125] An ecosystem service market approach is attractive because it "utilizes existing legal and economic structures to promote change without upsetting the status quo in any paradigmatic way."[126] In recent years, interest in ecosystem service markets has gained traction, as evidenced by the recent formation

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[119] Morgan M. Robertson, *Emerging Ecosystem Service Markets: Trends in a Decade of Entrepreneurial Wetland Banking*, 4 FRONTIERS ECOLOGY & ENV'T 297, 297 (2006).

[120] Doyle & BenDor, *supra* note 104, at 154.

[121] Pagiola & Platais, *supra* note 68.

[122] A.M. Merenlender, L. Huntsinger, G. Guthey & S.K. Fairfax, *Land Trusts and Conservation Easements: Who is Conserving What for Whom?*, 18 CONSERVATION BIOLOGY 65, 66 (2004).

[123] King, *supra* note 12, at 511.

[124] Pagiola & Platais, *supra* note 68.

[125] King, *supra* note 12, at 511.

[126] Bricker, *supra* note 10, at 156.

of the Office of Ecosystem Services and Markets within the U.S. Department of Agriculture.[127]

2. Water Transfer Markets

Similar to ecosystem service markets, some legal scholars have argued that formal water transfer markets are the best way to resolve issues of water scarcity and over-exploitation.[128] Professor Andrew P. Morriss of Case Western Reserve University School of Law offers several reasons why economics-driven water markets are the only way to value and efficiently allocate water without creating conflicts among interested parties: (1) markets reduce transaction costs; (2) markets allow flexible and dynamic valuations of water; and (3) markets encourage investment in new knowledge.[129]

a. Reduced Transaction Costs

Water markets provide signals to other users regarding where water flow produces the largest net benefit.[130] Further, by facilitating the valuation and pricing of water, water markets ultimately reduce transaction costs and allow parties to make efficient and informed decisions.[131] This efficiency-based economic principle is perhaps most clearly illustrated by the Coase Theorem. Ronald Coase's Nobel Prize-winning article, *The Problem of the Social Cost*, posits that regardless of the initial allocation of property rights, market actors will bargain towards an efficient allocation of resources.[132] The transactions themselves provide important information about the parties' valuation of resources, providing all participants with means to assess the value of their own resources.[133] In other words, market prices are a simple, low-cost indicator of significant information.[134] Coase's analysis implies that lowering transaction costs improves public welfare by encouraging transactions that would normally be deterred by prohibitive transaction costs.[135]

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[127] *See USDA Office of Environmental Markets*, U.S. DEP'T OF AGRIC., https://www.fs.fed.us/ecosystemservices/OEM/ (last visited Dec. 27, 2021) (noting the Office of Environmental Markets "was established in December 2008").

[128] *See* Andrew P. Morriss, *Real People, Real Resources, and Real Choices: The Case for Market Valuation of Water*, 38 TEX. TECH. L. REV. 973, 974–76 (2006).

[129] *Id.* at 974.

[130] *Id.*

[131] King, *supra* note 12, at 507.

[132] R. H. Coase, *The Problem of Social Cost*, 3 J.L. & ECON. 1 (1960).

[133] Morriss, *supra* note 128, at 979.

[134] For example, the Australian water market began utilizing electronic water trading platforms in the late 1990s, and is currently regarded as an international example of a successful water market. James D. Bradbury, Courtney Cox Smith & Kyle Weldon, *Water Markets: What Are They and Why Do They Develop?*, *in* STATE BAR OF TEXAS 18TH ANNUAL TXCLE CHANGING FACE OF WATER RIGHTS § II.C.3 (2017).

[135] Morriss, *supra* note 128, at 977 (discussing Coase, *supra* note 132).

b. Increased Flexibility

Because water markets provide a dynamic valuation, water users can adapt water usage to track with changes in knowledge and demand.[136] As climate conditions change, the demand for water increases, and our water-conservation technologies evolve, a flexible water rights system is crucial for efficient water allocation.[137] Water trusts, a form of ecosystem service markets, exemplify the success of introducing flexibility to Oregon water law which previously did not recognize instream use as a "beneficial use."[138] Granting private organizations a role in water conservation helps to "unleash the enormously creative power of entrepreneurs on the problems of inadequate water, inefficient uses of water, and poor quality of water."[139]

c. Investment in New Knowledge and Data-Based Decision-Making

A market for natural resources creates an incentive for a rights holder to invest in more efficient technology to maximize the value of the resources in her control.[140] Specifically, water markets can encourage private and public investment in creating new knowledge on water conservation practices.[141] For example, an irrigation farmer may be newly incentivized to adopt an innovative, more efficient form of irrigation to free up some of her water rights to "sell" in the water market. Rising water costs also create an incentive for utility companies to reduce any waste incurred by transmission to protect the potential profit of their "product."[142] Further, because public and administrative allocations of water cannot be efficient without sufficient water usage data,[143] water markets offer a valuable data-generation opportunity. Although formal administrative procedures are an essential element of a successful water market, a central state authority is typically not an efficient processor of decentralized information.[144] Without market-driven valuation of water, the state must make allocation decisions based on generalities and limited data, which may not result in the most efficient transaction. A water market fills this need by allowing private and public organizations to pool scientific data on the hydrology and wildlife of the streams, which helps the state identify potential streams for acquisition that

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[136] *Id.* at 974.

[137] *Id.* at 1008.

[138] The 1987 In-Stream Water Rights Act declared instream uses to be beneficial uses. OR. REV. STAT. § 537.334 (2019).

[139] Morriss, *supra* note 128, at 1009–10. However, as explained below in the discussion accompanying footnotes 149–61, this "creative power" of entrepreneurs may come with its own reasons for concern.

[140] *Id.* at 991.

[141] *Id.* at 974.

[142] *Id.* at 992.

[143] *Id.* at 1006.

[144] *Id.* at 1006–07.

would create the best cost-benefit.[145] Technology now allows analysis of near-real-time flow data that can be monitored from one location, increasing state agencies' ability to monitor and enforce water usage limitations.[146]

Based on these listed benefits, ecosystem service markets can lead to the overall result of enhancing government intervention by harnessing market forces to efficiently respond to potential market failures.[147] Put another way, ecosystem service markets do not seek to replace government regulatory tools, but rather complement existing programs.[148]

Oregon's Water Resources Commission may consider creating a central, public electronic water trading platform. An example of water markets in the West is found in California's agricultural water markets, which consist of a series of online exchanges that connect farmers and water brokers.[149] Under adaptive governance principles, this would reflect the cultural shift towards information sharing and increased access to instant information. However, relying on free-market forces to regulate a high-stakes issue like water availability comes with some serious cause for concern. In some states, large, private investors have begun to speculate on profit-making opportunities based on increasing water scarcity and the associated rising costs of water.[150] For example, Greenstone—a subsidiary of the Massachusetts-based financial conglomerate MassMutual—has recently come under scrutiny for a 2020 transaction in Arizona involving the water rights it held to 2,083 acre-feet of Colorado River water.[151] Several years prior, Greenstone had bought most of the water rights from Cibola, a small Arizona farming town that would no longer have enough water to irrigate its farmland.[152] In September 2020, the state of Arizona officially endorsed Greenstone's $21 million sale of the rights to Queen Creek, a growing Phoenix suburb more than 175 miles away from Cibola.[153] Redirecting water from rural areas to growing communities is not a new practice; however, these transfers have

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[145] King, *supra* note 12, at 507.

[146] Bricker, *supra* note 10, at 157.

[147] King, *supra* note 12, at 509–10.

[148] *Id.* at 510.

[149] Ben Ryder Howe, *Wall Street Eyes Billions in Colorado's Water*, N.Y. TIMES (Jan. 3, 2021), https://www.nytimes.com/2021/01/03/business/colorado-river-water-rights.html. In September 2021, Nasdaq and CME Group, the world's largest derivatives marketplace, announced plans to open a futures market for California water. *Id.*

[150] *Id.*

[151] Ian James, *'They're Going to Dry Up': Debate Erupts Over Plan to Move Water from Farmland to Suburbs,* AZCENTRAL (Nov. 20, 2019, 7:30 AM), https://www.azcentral.com/story/news/local/arizona-environment/2019/11/20/debate-erupts-over-plan-move-colorado-river-water-arizona-suburb/4241885002/.

[152] Howe, *supra* note 149; James, *supra* note 151.

[153] Howe, *supra* note 149; Letter from Thomas Buschatzke, Dir., Ariz. Dep't of Water Res., to David Bernhardt, Sec'y, U.S. Dep't of the Interior (Sept. 4, 2020).

historically been facilitated by municipalities, not private investors.[154]

Proponents of this type of private transaction point to private sector innovation and the benefits of collaboration between the private and public sectors.[155] These supporters argue that water is underpriced and overused, and that a market-based approach helps discourage wasteful water consumption.[156] Of course, the corollary to this argument is that while the environment may benefit, investors get to enjoy the profits while consumers and irrigators pay higher prices for water.[157]

These transactions have been met with resistance, as evidenced by strong public opposition to the Cibola-Queen Creek transfer.[158] Arizona state representative Regina Cobb opposed the transaction on the ground that it sets a precedent for other investors to buy farmland along the Colorado River with the sole intention of diverting water away from rural Arizona, thereby harming those communities.[159] Left unregulated, these investors could hike prices during times of water market volatility, an increasing reality due to climate change.[160] In fact, during Australia's devastating 2020 wildfires, professional investors spiked water prices, prompting the Australian government to launch an antitrust investigation.[161]

II. INSTREAM WATER RIGHTS AND WATER TRUSTS

Because natural streams provide environmental services that are difficult to replace, human-created stream depletion must be compensated for with stream restoration.[162] States, including Oregon, may be limited in their ability to acquire water rights with senior priority dates or to fund instream programs adequately. A recent, nationwide trend to achieve stream restoration has been the emergence of private water trusts.[163] Private water trusts can create a bridge between public and private stakeholders by fundraising capital to purchase willing landowners' water rights and

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[154] Howe, *supra* note 149.

[155] In an interview with The New York Times, former Colorado water chief James Eklund stated: "I have seen time and again the wisdom of using incentives that attract private sector investment and innovation. Dealing with the threat of climate change to our water requires all sectors, public and private, working together." *Id.*

[156] *Id.*

[157] *Id.*

[158] James, *supra* note 151.

[159] *Id.*

[160] Howe, *supra* note 149.

[161] *Id.*

[162] *See* Compensatory Mitigation for Losses of Aquatic Resources, 73 Fed. Reg. 19,594, 19,618 (Apr. 10, 2008) (to be codified at 33 C.F.R. pts. 325, 332).

[163] *See* Lee P. Breckenridge, *Nonprofit Environmental Organizations and the Restructuring of Institutions for Ecosystem Management*, 25 ECOLOGY L.Q. 692, 694 (1999); King, *supra* note 12, at 495–96.

transferring the rights to the state's instream flow restoration program.[164] Private water trusts have gained significant status for their environmental efforts in instream preservation, which they achieve through close collaboration with state governments.[165]

Private water trusts and public agencies engage in complementary roles in enforcing instream rights, and their collaboration has been termed "a marriage of legal necessity."[166] Because Oregon water law allows only public agencies to hold instream flow rights, water trusts can play the valuable role of acting as the broker for instream water right transfers to the state.[167] Oregon water trusts show the success of shifting some water conservation efforts from complete government control to private, voluntary conservation approaches that utilize market transactions within an existing regulatory framework.[168] Based in Oregon, The Freshwater Trust has served as a nationwide model demonstrating the benefits of private water trusts.[169] Founded in 1993, The Freshwater Trust contracts with willing water rights holders and compensates them for leaving all or part of their water right instream.[170] The Freshwater Trust purchases senior water rights to transfer instream, and by attaching a dollar amount to water quantities, has created a market for instream flows.[171] The Freshwater Trust assists the state by monitoring actual flow to ensure instream rights remain in the waterway, by facilitating adequate communication between the state and the landowners, and by conducting its own independent analyses to measure a stream's benefits on the environment.[172]

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[164] Jack Sterne, *Instream Rights & Invisible Hands: Prospects for Private Instream Water Rights in the Northwest*, 27 ENV'T L. 203, 203, 221–22 (1997); King, *supra* note 12, at 516.

[165] *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); Barton H. Thompson, Jr., *Water as a Public Commodity*, 95 MARQ. L. REV. 17, 42–43 (2011).

[166] King, *supra* note 12, at 516.

[167] Lynne Marie Paretchan, *Choreographing NGO Strategies to Protect Instream Flows*, 42 NAT. RES. J. 33, 41 (2002).

[168] King, *supra* note 12, at 497.

[169] The Freshwater Trust has been cited in several scholarly publications as a model of a successful private water trust. *See, e.g.*, Cal Dunagan, Comment, *Preserving Groundwater Rights for Your Beneficiaries in the Face of the Texas Water Crisis with the Private Water Trust*, 12 EST. PLAN. & CMTY. PROP. L.J. 309, 318 (2020); Bryan Leonard & Shawn Regan, *Legal and Institutional Barriers to Establishing Non-Use Rights to Natural Resources*, 59 NAT. RES. J. 135, 177 (2019); Robert L. Glicksman, David L. Markell & Claire Monteleoni, *Technological Innovation, Data Analytics, and Environmental Enforcement*, 44 ECOLOGY L.Q. 41, 80–81 (2017).

[170] Neuman, *supra* note 165, at 436–37.

[171] Neuman, et al., *supra* note 5, at 1151–52.

[172] Janet C. Neuman & Cheyenne Chapman, *Wading into the Water Market: The First Five Years of the Oregon Water Trust*, 14 J. ENV'T L. & LITIG. 135, 162 (1999); King, *supra* note 12, at 519–20.

Additionally, successful enforcement of instream flow transfers is "highly dependent upon the cooperation of public and private institutions."[173] Because Oregon instream rights can only be held by the state, private parties in Oregon may not enforce instream rights by directly suing a party misappropriating instream flows.[174] This means that, unlike traditional water rights transfers, instream rights transfers do not involve a party with a purely economic interest that is likely to report instream water misallocation or abuse.[175] As the "owner" of the instream rights, the overworked Water Resources Department would normally be the interested party who brings a complaint for instream flow misappropriation—but the agency may be reluctant to add to its already overburdened workload.[176] Oregon water trusts have helped fill this gap in state enforcement of instream rights by acting as a "squeaky wheel," alerting the state to possible instream flow misuse and encouraging the state to enforce instream water rights.[177]

A. Limitations of Water Trusts

Although water trusts began with the broad goal of long-term or permanent instream water rights, in practice, water trusts typically facilitate temporary leases.[178] The agricultural community has generally been reluctant to enter into permanent water transfer transactions; according to a 2015 National Fish and Wildlife Foundation report, Oregon water trusts have facilitated 1,800 temporary instream rights leases, and only 113 permanent transfers.[179] This indicates that rights holders see leases as an attractive option for protecting their rights from forfeiture, while still enjoying some compensation for the temporary transfer.[180]

Although environmentalists may see leasing as inadequate protection of water conservation, instream leases can nonetheless provide environmental benefits, accomplished by rotating instream transfer agreements in a critical region or by allowing flexible agreements such as split-season leases.[181] Further, some have argued that

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[173] King, *supra* note 12, at 517.

[174] OR. REV. STAT. § 537.332(3) (2019); Amos, *supra* note 16, at 92.

[175] Amos, *supra* note 16, at 92.

[176] Neuman & Chapman, *supra* note 172, at 172.

[177] King, *supra* note 12, at 520.

[178] *Id.* at 514.

[179] *Id.*; LEON F. SZEPTYCKI, JULIA FORGIE, ELIZABETH HOOK, KORI LORICK & PHILIP WOMBLE, NAT'L FISH & WILDLIFE FOUND., ENVIRONMENTAL WATER RIGHTS TRANSFERS: A REVIEW OF STATE LAWS 3, 43 (Aug. 31, 2015).

[180] King, *supra* note 12, at 514.

[181] Aaron Citron, *Working Rivers and Working Landscapes: Using Short-Term Water Use Agreements to Conserve Arizona's Riparian and Agricultural Heritage*, 1 ARIZ. J. ENV'T L. & POL'Y 7, 22 (2010). For example, The Freshwater Trust has entered into a permanent split-season water use agreement with ranchers along Central Oregon's John Day River, where the ranchers shorten their irrigation season by 40% in exchange for compensation from the Bonneville Power

this leasing trend may actually be a feature of a transition period, allowing hesitant rights holders to familiarize themselves with instream rights transactions.[182]

All things considered, Oregon water trusts have proven to be an effective tool in facilitating instream rights.[183] In particular, water trusts overcome state obstacles such as "inadequate funding, ineffective enforcement, the procurement of water rights with junior priority dates, and slow and expensive bureaucratic processes."[184] Perhaps most significantly, a water trust's capacity to fundraise—whether through a foundation, corporate and individual donations, or mitigation funds—creates new opportunities for funding Oregon's instream flow program.[185] More than 30 years have passed since Oregon passed its In-Stream Water Rights Act, and water trusts should be praised for their role in shaping the public's attitude towards the value of an ecosystem service and building an efficient system of public–private collaboration.[186]

III. OPPORTUNITIES FOR PUBLIC–PRIVATE COLLABORATION TO PROTECT INSTREAM FLOWS

Because water conservation and ecological resiliency depend on fostering conditions of adaptive governance—a combination of both public and private solutions prompted by social expectations[187]—Oregon law should continue its instream protection infrastructure and consider additional opportunities for private-public collaboration. This Comment presents three potential legal solutions for enhancing instream flow protections: (1) legislation or policies that build on the current corporate social responsibility trend; (2) state-mandated water use and efficiency disclosures; and (3) tax revenue for acquiring additional instream flow rights.

A. Leveraging Corporate Social Responsibility

Historically, society and the law expected businesses to focus on profit generation and for the government to address social concerns not achieved in the marketplace.[188] Today, the lines between public government responsibilities and private

Administration. *Id.* at 20.

[182] King, *supra* note 12, at 514–15.

[183] According to a 2015 National Fish and Wildlife Foundation report, Oregon water trusts have facilitated 113 instream rights transfers and 1,800 leases. SZEPTYCKI et al., *supra* note 179, at 43–44.

[184] King, *supra* note 12, at 506.

[185] Sterne, *supra* note 164, at 221.

[186] Bricker, *supra* note 10, at 158–59.

[187] *See supra* Section I.F.

[188] For further analysis of corporations and profit maximization expectations, see *infra* Section III.A.

business endeavors have blurred as governments and businesses increasingly act in interchangeable ways.[189] Environmental activists have begun to pursue not only traditional legal channels to effectuate change, but have also found ways to leverage private corporations' resources and influence.[190] The corporate world has also begun to recognize the importance of using both private and public tools to mitigate the effects of climate change. For example, in BlackRock CEO Larry Fink's 2020 annual letter to CEOs, he simultaneously called on governments *and* private firms to take action on climate change.[191]

Creating a role for private corporations to promote sustainability and environmentalism brings benefits that government action may not be able to achieve. In contrast to public law and agencies, private governance has an increased capacity to "experiment with new strategies of social action, respond quickly to new social needs, and generally provide 'social risk capital.'"[192] Further, allowing a public perception of the private sector as an adversary to environmental protection can become a self-fulfilling prophecy.[193] If business actors perceive they are not appreciated as potential partners in sustainability, they may be reluctant to participate in environmental protection efforts.[194] Even if business philanthropic giving is ultimately self-serving,[195] the concrete environmental benefits remain, and diverse stakeholders and industries benefit.[196]

Under the current state of the law, corporate principles of fiduciary duty and shareholder primacy mean that corporations are bound by the requirement to act in

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[189] Richard A. Epstein, *Executive Power in Political and Corporate Contexts*, 12 U. PA. J. CONST. L. 277, 281 (2010).

[190] Tom C.W. Lin, *Incorporating Social Activism*, 98 B.U. L. REV. 1535, 1559, 1562 (2018).

[191] Larry Fink, *2020 Letter to CEOs: A Fundamental Reshaping of Finance*, BLACKROCK (2020), https://www.blackrock.com/us/individual/larry-fink-ceo-letter ("While government must lead the way in this transition, companies and investigators also have a meaningful role to play."). In his 2019 annual letter to CEOs, Fink highlighted BlackRock's status as a founding member of the Task Force on Climate-related Financial Disclosures, and as a signatory to the UN's Principles for Responsible Investment. *Id.*

[192] King, *supra* note 12, at 516 (*citing* MICHAEL O'NEILL, THE THIRD AMERICA: THE EMERGENCE OF THE NONPROFIT SECTOR IN THE UNITED STATES 16 (1989)).

[193] Diana Kearney, *Transforming Adversary to Ally: Mobilizing Corporate Power for Land Rights*, 27 J. TRANSNAT'L L. & POL'Y 97, 127 (2018).

[194] STANLEY FOUND., POLICY DIALOGUE BRIEF: THE POWER OF THE PRIVATE SECTOR IN PREVENTING ATROCITIES AND PROMOTING THE RESPONSIBILITY TO PROTECT 3 (2016), https://www.stanleyfoundation.org/publications/pdb/PoweroftthePrivateSector_SPC1216.pdf.

[195] Public charitable giving often results in "free" advertising, marketing, or tax benefits. Marianne M. Jennings, *The Social Responsibility of Business Is Not Social Responsibility: Assume That There Are No Angels and Allow the Free Market's Touch of Heaven*, 16 BERKELEY BUS. L.J. 325, 444 (2019).

[196] *Id.*

the interest of their shareholders.[197] In practice, this fiduciary duty requires corporations to maximize their profits with little regard for other stakeholder interests.[198] However, the doctrine of shareholder primacy is at odds with corporate sustainability efforts, since corporate directors expose themselves to derivative suits if spending resources on sustainability or any other social cause cuts into shareholder profits.[199]

This model conflicts with principles of sustainability, which propose that "business should maximize value for society."[200] An unregulated economy acts without regard for the environment because the environment does not respond to the economic supply and demand function of markets,[201] and therefore corporations have little incentive to voluntarily undertake conservation practices.[202] Existing federal law does impose some environmental-based limits on corporations, such as the Air Pollution Control Act of 1955,[203] and the Federal Water Pollution Control Act of 1948.[204] However, environmentalists find this patchwork of statutory limitations inadequate for meaningful or proactive adoption of conservation practices, and there has been a recent push to reform existing regulatory systems to shift towards sustainability and preserve the environment for the next generation.[205]

In response to the limitations of the shareholder primacy model, "corporate

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[197] Denise M. Alter, *Corporate Art Collecting and Fiduciary Duties to Shareholders: Legal Duties and Best Practices for Directors and Officers*, 2009 COLUM. BUS. L. REV. 1, 18 (2009).

[198] *See, e.g.*, Dodge v. Ford Motor Co., 170 N.W. 668, 684 (Mich. 1919); United States v. Auto. Workers, 352 U.S. 567, 572 (1957) ("All contributions by corporations to any political committee or for any political purpose should be forbidden by law; directors should not be permitted to use stockholders' money for such purposes; and, moreover, a prohibition of this kind would be, as far as it went, an effective method of stopping the evils aimed at in corrupt practices acts." (quoting 40 CONG. REC. 96 (1906) (President Theodore Roosevelt's annual message to the Senate)).

[199] *See, e.g.*, United Food & Com. Workers Union v. Zuckerberg, 250 A.3d 862, 869–70 (Del. Ch. 2020) (involving a shareholder derivative suit that alleged Facebook's CEO had breached his fiduciary duty by re-classifying certain stocks for philanthropic purposes); Cumming *ex rel.* New Senior Inv. Grp., Inc. v. Edens, No. 13007-VCS, 2018 WL 992877, at *14 (Del. Ch. Feb. 20, 2018) (involving a shareholder derivative suit where plaintiff claimed that a director's use of corporate funds for charitable donations compromised the director's independence).

[200] Lee-Ford Tritt & Ryan Scott Teschner, *Re-Imagining the Business Trust as a Sustainable Business Form*, 97 WASH. U. L. REV. 1, 4 (2019).

[201] Benedict Sheehy, *Private and Public Corporate Regulatory Systems: Does CSR Provide a Systemic Alternative to Public Law?*, 17 U.C. DAVIS BUS. L.J. 1, 17 (2016).

[202] *See supra* text accompanying notes 1–3 (discussing the "Tragedy of the Commons").

[203] Air Pollution Control Act of 1955, Pub. L. No. 84-159, 69 Stat. 322 (codified as amended at 42 U.S.C. §§ 7401–7671).

[204] Water Pollution Control Act of 1948, Pub. L. No. 80-845, 62 Stat. 1155 (codified as amended at 33 U.S.C. §§ 1251–1387).

[205] Sheehy, *supra* note 201, at 17.

social responsibility," or "CSR," has achieved buzzword status among both environmental circles and the corporate world. CSR posits that in addition to shareholder interests, corporations have an ethical obligation to consider the needs of society and effect social change.[206]

Recent common law development indicates the public positive perception and acceptance of CSR has already begun. In *Revlon, Inc. v. MacAndews & Forbes Holding, Inc.*, the Delaware Supreme Court found that that although shareholder primacy remains the central tenant of corporate decision-making, a board may consider other constituencies as long as the considerations are rationally related to stockholder benefits.[207] For example, a corporation may make charitable gifts, but the amount of the donations must be "reasonable," based on the charitable deduction amounts under the Internal Revenue Code.[208] A 2014 U.S. Supreme Court case, *Burwell v. Hobby Lobby Stores, Inc.*, found that with ownership approval, a closely-held corporation "may take costly pollution-control and energy-conservation measures that go beyond what the law requires."[209]

To adjust for society's demands to free businesses from this strict shareholder primacy model, states have begun to adopt optional legal mechanisms for businesses who want their model to center on sustainability.[210] Many states, including Oregon, have begun to offer the option of "benefit corporation" for a business's corporate form.[211] Benefit corporations are intended to allow a business to "pursue a dual corporate mission of shareholder wealth maximization and social good without the attendant concern of facing a lawsuit for breach of fiduciary duty."[212] Additionally, benefit corporations are designed to distinguish actually-sustainable businesses from regular corporations that have publicly signaled sustainable practices to distract from the reality of their possibly unethical practices.[213] In adopting its own benefit legislation, Canada's British Columbia favorably cited Delaware's benefit corporation

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[206] Tritt & Teschner, *supra* note 200, at 17 (citing WALTER A. EFFROSS, CORPORATE GOVERNANCE: PRINCIPLES AND PRACTICES 399 (2010)).

[207] Revlon, Inc. v. MacAndrews & Forbes Holdings, Inc., 506 A.2d 173 (Del. 1986).

[208] Theodora Holding Corp. v. Henderson, 257 A.2d 398, 405 (Del. Ch. 1969).

[209] Burwell v. Hobby Lobby Stores, Inc., 573 U.S. 682, 712 (2014).

[210] Lynn A. Stout, *Why We Should Stop Teaching* Dodge v. Ford, 3 VA. L. & BUS. REV. 163, 169 (2008).

[211] *See* OR. REV. STAT. § 60.750–.770 (2019). Thirty-eight states, including Oregon, have passed benefit corporation legislation. *Why Pass Benefit Corporation Legislation*, BENEFIT CORP. https://benefitcorp.net/policymakers/why-pass-benefit-corporation-legislation (last visited Dec. 27, 2021).

[212] Miriam F. Weismann, *The Missing Metrics of Sustainability: Just How Beneficial Are Benefit Corporations*?, 42 DEL. J. CORP. L. 1, 11 (2017).

[213] Michael Vargas, *The Next Stage of Social Entrepreneurship: Benefit Corporations and the Companies Using This Innovative Corporate Form*, BUS. L. TODAY, July 2016, at 1. Companies that market their allegedly "green" corporate practices, without real action, are considered to be

legislation as a way to "combat short-termism" and "rebuild public trust."[214]

However, businesses have been slow to incorporate under state benefit-corporation statutes. One possible reason is that adopting a benefit corporation form may ultimately *increase* directors' overall exposure to liability, as benefit corporations bind directors to their fiduciary duties owed not only shareholders, but to their stakeholders.[215] Further, benefit corporations limit business decision-making flexibility, as a benefit corporation is limited to the social purposes stated in its charter.[216] Once a benefit corporation has announced its social purpose, it becomes difficult to change it.[217] Because of these limitations, business owners may be hesitant to incorporate as a benefit corporation.

Short of converting to a benefit corporation, to promote CSR a corporation may instead adopt a public benefit purpose; there has been a significant push for large corporations to be bound by an additional public benefit purpose. The clearest example may be seen in Senator Elizabeth Warren's Accountable Capitalism Act, which would require companies with over a billion dollars in revenue to adopt a corporate charter that includes a "general public benefit" purpose, binding the corporation to consider other interests besides shareholder primacy.[218] Recognizing the limits and slow adoption of state benefit-corporation statutes, Oregon may consider alternative legislative solutions that would allow businesses to consider social interests like environmental protection, while avoiding exposure to liability for breaching fiduciary duties to shareholders.

1. The Business Case for Voluntary Corporate Investment in Instream Flows

Even if state and federal law on shareholder primacy remains static, there is a strong business case for corporations to invest in and develop relationships with Oregon water trusts. Modern society arguably *expects* businesses to act sustainably, es-

"greenwashing." For example, when Campbell temporarily promoted its soup cans with green "Earth Day" labels, but had not actually taken conservation-related corporate actions, the public criticized the marketing ploy as "greenwashing." Andrew Spicer & David Graham Hyatt, *Walmart Tried to Make Sustainability Affordable. Here's What Happened*, CONVERSATION (Aug. 13, 2018, 6:22 AM), https://theconversation.com/walmart-tried-to-make-sustainability-affordable-heres-what-happened-76771.

[214] Dennis J. Tobin, *The Evolution of the Corporation: The Public Benefit Corporation*, BLANEY MCMURTRY, 4, 9 (Oct. 13, 2015), http://blaney.com/files/EvolutionPublicBenefitCorporations_DTobin_2013.pdf.

[215] *See* DEL. CODE ANN. tit. 8, § 365 (2021).

[216] *See, e.g.*, WASH. REV. CODE § 23B.25.050(1)–(3) (2020).

[217] Alicia E. Plerhoples, *Social Enterprise as Commitment: A Roadmap*, 48 WASH. U. J.L. & POL'Y 89, 108 (2015).

[218] *Senator Warren's Accountable Capitalism Act Modeled on the Public Benefit Corporation*, DAVIS POLK (Aug. 20, 2018), https://www.davispolk.com/insights/client-update/senator-warrens-accountable-capitalism-act-modeled-public-benefit.

pecially if the issue is directly or indirectly related to the business's core operations.[219] In his article *Incorporating Social Activism*, Professor Tom C.W. Lin has encouraged businesses to "thoughtfully focus their capital and expertise on efforts where they offer a comparative advantage."[220]

Despite the current strict and prevalent shareholder primacy model, businesses have begun to face both social pressures and financially-based incentives to act sustainably.[221] First, businesses can enhance their brand value while simultaneously solving an environmental or social problem.[222] A 2014 Nielson Global Survey found that about two-thirds of global consumers would choose a sustainable product over an environmentally-irresponsible competitor.[223] Corporations may be driven by a goal to distinguish themselves not only as business leaders, but leaders in sustainable business practices.[224] In addition to corporate image, business corporate responsibility efforts may also be motivated by general notions of altruism and philanthropy.[225]

Second, research shows that employees value sustainable business practices, which enhances corporate value by attracting competitive talent. Current Ford Motor chairman Bill Ford observed in 2017 that "[i]f you don't have a culture that means something, then you're just going to have the experience of a bunch of transient employees who go to the next company . . . and they won't give it a second thought."[226] A 2014 Cone Communications survey found that 78% of millennials reported that corporate social responsibility directly influences where they work.[227]

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[219] Lin, *supra* note 190, at 1546–47.

[220] *Id.* at 1601. Lin lists several examples, such as Airbnb directing resources towards housing or Lyft using their specialized expertise to develop transportation. *Id.* at 1602.

[221] Tritt & Teschner, *supra* note 200, at 16. For example, Bill Gates proposed the concept of "hybrid companies," which would focus on more than profits. *Id.* From this concept came the term "triple bottom line," which refers to a company's profit goals, social goals, and environmental goals. *Id.*

[222] Lin, *supra* note 190, at 1579.

[223] THE SUSTAINABILITY IMPERATIVE: NEW INSIGHTS ON CONSUMER EXPECTATIONS, NIELSEN 6 (Oct. 2015), https://www.nielsen.com/wp-content/uploads/sites/3/2019/04/Global20Sustainability20Report_October202015.pdf.

[224] Tritt & Teschner, *supra* note 200, at 18.

[225] *Ecosystem Services FAQs*, U.S. DEP'T OF AGRIC., https://www.fs.fed.us/ecosystemservices/About_ES/faq.shtml (Oct. 7, 2016).

[226] Julie Bort, *Ford Chairman: Employees Voluntarily Worked with No Pay to Keep Us out of Bankruptcy in 2008*, BUS. INSIDER (Mar. 13, 2017, 2:34 PM), http://www.businessinsider.com/ford-chairman-employees-worked-with-no-pay-to-thwart-bankruptcy-2017-3.

[227] *Perceptions, Millennials and CSR: How to Engage the New Leaders of Tomorrow*, CONE COMMC'NS (May 28, 2014), https://www.conecomm.com/insights-blog/csr-and-millennials. Millennials consist of approximately 50% of the U.S. workforce. *Id.*

A 2015 Project ROI report found that CSR practices can increase employee productivity by up to 13% and reduce employee turnover by up to 50%.[228]

Third, corporate social responsibility can open new markets for a business. By engaging in social activism and considering the interests across a broad variety of stakeholders, businesses can become better attuned to the concerns of non-shareholder constituencies such as employees or customers.[229] Climate change poses a significant risk to the long-term viability of businesses, in the form of supply-chain risks, compliance requirements, and litigation risks.[230] In the World Economic Forum's 2020 Global Risks Report, climate-related issues dominated all of the top five long-term risks in terms of likelihood.[231] Recent research has shown that private investors collectively face a potential loss between $4.2 trillion and $13.8 trillion of the current value of their investments due to the physical risks of climate change.[232] In 2019, the United States established the Climate-Related Market Risk Subcommittee to identify and examine climate-related financial and market risks, indicating that regulators are contemplating the cross-section between climate change and corporate financial risk.[233] This means that corporations should treat climate change as a financial risk, consider sustainability as part of their strategic planning efforts, and treat corporate responsibility as an opportunity for corporate growth.[234]

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[228] STEVE ROCHLIN, RICHARD BLISS, STEPHEN JORDAN & CHERYL YAFFE KISER, DEFINING THE COMPETITIVE AND FINANCIAL ADVANTAGES OF CORPORATE RESPONSIBILITY AND SUSTAINABILITY, PROJECT ROI 19 (2015), https://www.ctphilanthropy.org/sites/default/files/resources/Project-ROI-Report.pdf.

[229] Kent Greenfield, *Corporate Citizenship: Goal or Fear?*, 10 U. ST. THOMAS L.J. 960, 970 (2014).

[230] Sansanee Dhanasarnsombat, *Analysis: Climate-Related Risks Add to Director Duties, Exposure*, BLOOMBERG L. ANALYSIS (June 22, 2020, 1:12 PM), https://news.bloomberglaw.com/bloomberg-law-analysis/analysis-4.

[231] THE GLOBAL RISKS REPORT 2020, WORLD ECON. F., at fig.2 (15th ed. 2020), http://www3.weforum.org/docs/WEF_Global_Risk_Report_2020.pdf.

[232] Gregg Gelzinis & Graham Steele, *Climate Change Threatens the Stability of the Financial System*, CTR. FOR AM. PROGRESS (November 21, 2019, 12:01 AM), https://www.americanprogress.org/issues/economy/reports/2019/11/21/477190/climate-change-threatens-stabilityfinancial-system/.

[233] Press Release No. 7963-19, Rostin Behnam, Comm'r, Commodity Futures Trading Comm'n, CFTC Commissioner Behnam Announces the Establishment of the Market Risk Advisory Committee's Climate-Related Market. Risk Subcommittee and Seeks Nominations for Membership (July 10, 2019), https://www.cftc.gov/PressRoom/PressReleases/7963-19.

[234] Dhanasarnsombat, *supra* note 230. By beginning a risk analysis now, corporations will be in a better position to set up monitoring and risk-mitigation activities to protect their long-term business viability. *Id.* Lewis & Clark Law School professor, Lisa Benjamin, has encouraged directors to use their binding fiduciary duties to promote sustainability, beginning with identifying the short and long-term risks climate change poses to their business or industry. *See* Lisa Benjamin, *The Road to Paris Runs Through Delaware: Climate Litigation and Directors' Duties*, 2020 UTAH L. REV. 313.

Finally, research shows that socially responsible businesses generate stronger returns for shareholders.[235] For example, in 2015, Deutsche Asset & Wealth Management and Hamburg University conducted a survey of 2,200 empirical studies and found a positive correlation between environmental, social, and corporate governance (ESG) standards and corporate financial performance.[236] Further, Wall Street investment managers have begun to create and market mutual funds that invest based on ESG factors.[237] Investors have even indicated their interest in ecosystem service markets. The U.S. Department of Agriculture website notes that "[i]nvestors are most attracted to ecosystem service markets that have universally accepted standards . . . legal and financial accountability; an insurance product; and a scalable solution."[238]

A handful of tech giants have already signaled a public commitment to water planning and use, possibly in recognition of their own impact on water usage. In 2019, Intel announced its goal to restore 100% of its global water use by 2025, achieved by funding community-based projects that restore an amount of water equivalent to what Intel consumes.[239] For example, in 2019, Intel built an on-site water reclamation facility at its factory in Hillsboro, Oregon, which resulted in 30% water savings from 2018 to 2019.[240]

Additionally, corporations that adopt data- and technology-based conservation practices are ensuring their long-term operations and profitability in a region. Investing in or making donations to non-profit organizations like The Freshwater Trust helps ensure adequate instream flows which are critical for the environmental services instream flow provides, as well as bolstering the region's viability as a hub for economic activity, recreation, and tourism. Using some corporate resources now to ensure a region's economic and environmental longevity will help businesses avoid potential liability for failing to consider climate-related shareholder profitability risks.[241]

As evidenced by several Freshwater Trust-corporate collaborations, such as those with IBM and Microsoft, The Freshwater Trust has developed several high-tech tools businesses can use for real-time water flow and usage data tracking.[242]

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[235] Shuili Du, C.B. Bhattacharya & Sankar Sen, *Maximizing Business Returns to Corporate Social Responsibility (CSR): The Role of CSR Communication*, 12 INT'L J. MGMT. REVS. 8, 9 (2010).

[236] Gunnar Friede, Timo Busch & Alexander Bassen, *ESG and Financial Performance: Aggregated Evidence from More than 2000 Empirical Studies*, 5 J. SUSTAINABLE FIN. & INV. 210, 211–212 (2015).

[237] Lin, *supra* note 190, at 1581.

[238] *Ecosystem Services FAQs*, *supra* note 225.

[239] INTEL, *supra* note 94, at 40.

[240] *Id.* at 41.

[241] *See supra* text accompanying notes 229–34.

[242] Danielle Dumont, *TFT Works with Microsoft to Help Meet Water Sustainability Goals in California*, FRESHWATER TR. (Nov. 11, 2020), https://www.thefreshwatertrust.org/tft-works-

These tools allow corporations to gain a detailed awareness of their water consumption and identify opportunities for cost-savings. In September 2020, Microsoft announced its plan to be water positive by 2030 by reducing its water usage for operations and by replenishing water in the water-stressed regions it operates.[243] Microsoft partnered with The Freshwater Trust to use its "BasinScout Platform," which utilizes machine learning and current satellite-collected data to identify opportunities for water replenishment and reduced irrigation demand.[244] The Freshwater Trust has developed other data-based technologies that corporations have utilized to track and mitigate their environmental impact. In 2020, California-based IBM partnered with The Freshwater Trust to investigate how blockchain and Internet of Things technologies can be used to provide real-time measurements of groundwater usage.[245]

Finally, corporations that publicly signal their commitment to Oregon instream flows or that voluntarily disclose information on their water consumption and water conservation technology will create new corporate opportunities for profit by responding to the current public demand for corporate social responsibility. Because data centers and semiconductor facilities are notorious for their disproportionately large water needs, technology companies in particular may benefit by publicly signaling their commitment to water conservation and instream protections.[246]

B. Mandating Water Use Disclosures

A potential legislative-based solution is for Oregon to adopt state-level mandatory disclosure requirements for corporate water usage and conservation practices. Such a disclosure would contain detailed information on how much water is used for various categories of corporate activities, such as manufacturing, building operations, or for cooling hardware. It would also ask the company for detailed information on its water conservation efforts, technology, and an explanation of any significant increases or decreases in consumption. This solution is attractive because it responds to the recent public push for corporate sustainability disclosures, and therefore aligns with adaptive governance principles.

Currently, a public corporation retains discretion on whether its impacts on climate change rise to the level of mandatory disclosure in their SEC filings.[247] However, a 2018 Government Accountability Office report found that although climate

with-microsoft-to-help-meet-water-sustainability-goals-in-california/.

[243] *Id.*

[244] *Id.*

[245] *Id.*

[246] *See supra* text accompanying notes 221–25.

[247] U.S. GOV'T ACCOUNTABILITY OFF., GAO-18-188, SEC. AND EXCH. COMM'N: SEC HAS TAKEN STEPS TO CLARIFY DISCLOSURE REQUIREMENTS 17 (2018), https://www.gao.gov/assets/700/690197.pdf.

change poses a serious threat to many economic sectors, "SEC reviewers may not have access to the detailed information that companies use to arrive at their determination of whether risks, including climate-related risks, must be disclosed in their SEC filings."[248]

Certain legislators, politicians, and business leaders have pushed for corporations to have mandatory CSR disclosure obligations. Former SEC Commissioner Allison Herren Lee has stated that "investors are overwhelmingly telling us . . . that they need consistent, reliable, and comparable disclosures of the risks and opportunities related to sustainability measures, particularly climate risk."[249] BlackRock's Larry Fink has stated that without "robust" CSR disclosures, investors "will increasingly conclude that companies are not adequately managing risk."[250] Senator Elizabeth Warren's Climate Risk Disclosure Act proposes that companies should be bound by standard climate risk disclosures "so that investors and the public can accurately assess and address climate-related environmental and financial threats."[251] Among other suggestions, Senator Warren asked the SEC to "[i]ssue rules mandating corporate climate risk disclosure, building on the framework established by the Financial Stability Board's Task Force on Climate-related Financial Disclosures."[252]

There are several benefits of implementing mandatory disclosures for corporate water consumption. First, mandatory disclosures may operate as "naming and shaming" incentives to conserve water resources.[253] Although several technology companies are voluntarily disclosing their water usage data, the information is hard to interpret without the ability to compare usage with similar industry actors. Since sustainable corporate practices have been shown to influence consumer decisions, wasteful actors may find mandatory disclosure a motivating factor to monitor and improve water usage for their business operations. Second, if a business has undertaken water conservation practices, public disclosure of that information may make

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[248] *Id.*

[249] Public Statement, Allison Herren Lee, Comm'r, U.S. Sec. & Exch. Comm'n, "Modernizing" Regulation S-K: Ignoring the Elephant in the Room (Jan. 30, 2020), https://www.sec.gov/news/public-statement/lee-mda-2020-01-30.

[250] Fink, *supra* note 191. Fink also signaled BlackRock's intention to "increasingly . . . vote against management and board directors when companies are not making sufficient progress on sustainability-related disclosures and the business practices and plans underlying them." *Id.*

[251] Letter from Elizabeth Warren, Sen., to Walter Joseph "Jay" Clayton III, U.S. Sec. & Exch. Chairman 1 (Aug. 12, 2020) (citing *About the SEC*, U.S. SEC. & EXCH. COMM'N (Nov. 22, 2016), https://www.sec.gov/about.shtml).

[252] *Id.* at 4.

[253] *See* Sophie Peel, *Most of Portland Is Parched. But These 20 Hydro Hogs Are Making It Rain.*, WILLAMETTE WEEK (Aug. 25, 2021, 5:30 AM), https://www.wweek.com/news/city/2021/08/25/most-of-portland-is-parched-but-these-20-hydro-hogs-are-making-it-rain/ (listing the top residential water users in Portland, Oregon based on 2020 municipal water usage records and noting which residents undertook new water conservation measures after being named as "hydro hogs" in prior editions of the annual article).

the corporation more attractive to investors. For example, investors may see the sustainable practices as an indicator of the company's long-term longevity and flexibility, or the company may become eligible for inclusion in "green" investment portfolios.[254] Finally, depending on what information the disclosure requires, it may raise industry awareness of new water conservation technologies developed or adopted by industry actors.

Despite the current gaps in SEC authority to mandate certain climate change impact disclosures, businesses should also consider the financial advantage that *voluntary* CSR disclosures could provide. Investors have begun to pressure hedge fund managers to make CSR-based investment choices in an investment portfolio.[255] Some research posits that this pressure increases the number of institutional investors in a corporation by simply providing detailed CSR disclosure reports.[256]

C. Generating Tax Revenue to Acquire Instream Rights

Finally, instead of the state relying on voluntary charitable giving to support the acquisition of water rights, policymakers may also consider taxation to generate revenue for instream rights transactions. Although new proposed taxes are generally politically unpopular, economists and legal scholars argue that taxes should be the preferred legal instrument for promoting environmental protection.[257] Because natural resource users often do not *directly* feel the negative externalities of resource over-appropriation, taxes operate as a regulatory externality to deter these actors from excessive and avoidable resource consumption.[258] Carbon taxes—the idea that entities should pay taxes based on their volume of greenhouse gas emissions—are a classic example of taxation intended to prevent environmental harms.[259] Water use is similarly sensitive to economic incentives,[260] therefore taxation is a viable option for not only improving water allocation patterns in a region, but generating revenue for things like improved infrastructure or facilitating instream rights transfers.[261]

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[254] *See supra* text accompanying notes 229–34.

[255] *See* Susan A. Berson, *Green Grows the Portfolio*, 95 ABA J., Nov. 2009, at 25.

[256] *See id.*

[257] *See, e.g.*, Jonathan S. Masur & Eric A. Posner, *Toward a Pigouvian State*, 164 U. PA. L. REV. 93, 96 (2015); Dave Owen, *Water and Taxes*, 50 U.C. DAVIS L. REV. 1559, 1562–64 (2017).

[258] Owen, *supra* note 257, at 1563.

[259] *Id.; see also* Masur & Posner, *supra* note 257, at 104.

[260] *See* Sheila M. Olmstead & Robert N. Stavins, *Comparing Price and Nonprice Approaches to Urban Water Conservation*, 45 WATER RES. RSCH., Apr. 25, 2009, at 1, 3–4.

[261] Owen, *supra* note 257, at 1564–65.

Currently, there are few federal tax code provisions relating to water conservation,[262] and only a handful of states with tax codes addressing water consumption.[263] Water rights holders who make permanent instream water right donations through organizations like The Freshwater Trust can possibly enjoy charitable tax deductions under federal tax law.[264] However, charitable deductions in these transactions appear to be rarely pursued,[265] likely due in part to the fact that most water trust transactions are instream leases.[266] Further, income tax incentives are generally not a motivating factor for rights holders to make permanent instream transfers.[267] This shows that a tax proposal intended to influence water consumption should not focus on the instream transfer process, but instead should more broadly aim to influence water consumption.

The simplest and possibly most effective tax scheme would be a blanket water tax for all users, including consumers, irrigators, and businesses. The advantage of using this relatively simple tax scheme is that it achieves efficient environmental protection results by allowing rational, private actors to decide their own water use and allocation practices.[268] For example, farmers will have an increased motivation to adopt water conservation technology, and consumers will be more likely to avoid wasteful water consumption practices such as ornamental lawns or inefficient appliances.[269] In the corporate context, this would help overcome the current state of affairs where, although high profile technology companies like Intel are adopting efficient water practices, the majority of smaller industry actors do not see water

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[262] "One of the few federal tax code provisions to directly target water use is Internal Revenue Code section 175," which allows farmers to deduct expenditures on soil or water conservation efforts consistent with a governmentally-approved soil or water conservation plan. *Id.* at 1576; 26 U.S.C. § 175(a). However, the absence of IRS data on section 175 deductions suggests the provision is not a significant incentive for influencing water consumption. Owen, *supra* note 257, at 1576–77.

[263] The few states with water use tax provisions are western states, such as Colorado's tax credit for instream flow donations. Owen, *supra* note 257, at 1572 & n.82; COLO. REV. STAT. § 39-22-533 (2017).

[264] 26 U.S.C. § 170(h)(1).

[265] King, *supra* note 12, at 512.

[266] *Id.* at 512–13.

[267] For example, Oregon ranchers have not been incentivized to pursue income tax deductions when they see any tax break on their low incomes will be nominal. *Id.* at 513. Rather, the two primary motivations for making instream transfers are non-tax related. First, landowners see an instream lease as an attractive option to protect their water right from forfeiture. *Id.* Second, water trusts provide market-based compensation to rights holders who enter into an instream rights transfer. *Id.* In practice, the rights holder may be able to enjoy both benefits: financial compensation and protection from forfeiture. *Id.*

[268] Owen, *supra* note 257, at 1598.

[269] *Id.*

conservation as a priority or even track their water consumption.[270] This scheme would also democratize the water allocation process; instead of relying solely on the allocation decisions of water rights holders, a blanket tax scheme promotes the basic principle that water users have some level of public duty to avoid environmental harms.[271] Even such a wide-sweeping tax scheme could be finetuned to account for equity and environmental justice reasons; for example, lower-income consumers could receive an annual rebate stemming from tax payments of wealthy individuals and large corporate taxpayers who—on principles of proportionality—are much less likely to face financial strain.

CONCLUSION

Oregon state agencies face increasing pressure to adopt efficient water rights allocation processes and respond to competing demands between the agricultural community, municipal water needs, and business water consumption. To avoid "destruction of the commons," water rights should be allocated using a combination of regulatory tools and principles of private property rights. Oregon's patchwork of public and private tools for water rights enforcement and instream protection should be praised for its attention to environmental concerns. By adopting the In-Stream Water Rights Act in 1987, the state signaled its commitment to ecological resilience and raised public awareness of a utilitarian rationale for protecting ecosystem services. Instream flows promote pollution abatement, enhance habitat conditions for wildlife, and provide the public with recreation opportunities. If corporations, too, signal their commitment or support for ecosystem service markets, the public may further recognize that conservation practices provide quantifiable benefits for human activity. Private organizations, such as The Freshwater Trust, have been an integral part of creating instream rights in Oregon. These private actors complement government framework by fundraising for acquiring instream rights, facilitating additional instream transfer transactions, and assisting enforcement efforts.

Oregon stakeholders and water rights holders have much to gain from a continued commitment to public–private collaboration and can do so by encouraging businesses and corporations to partner with and donate to water trusts. Oregon legislators may also consider introducing a water tax to generate state revenue for instream transfer acquisitions. Increased capital for financing instream rights agreements creates opportunities for landowners to receive compensation for instream transfers, even if the transfer is a temporary lease used as protection against forfeiture. Rather than subject water rights holders to the complex permitting, transfer, and beneficial use regulations, water trusts foster a culture of self-determination and equity between rights holders and the state.

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[270] Rosen, *supra* note 85.

[271] Owen, *supra* note 257, at 1603.

Aside from raising additional capital for instream rights acquisitions, mandatory corporate water use disclosures could also lead to enhanced water conservation and instream flow in Oregon. This would enable consumers to make environmentally-conscious purchasing decisions, share new conservation practices across an industry, and could help encourage investment in socially responsible corporations.

Public–private collaboration leverages the recent global push for corporate social responsibility, which creates tangible benefits for both the corporate entity and the public good. Even if Oregon does not adopt new regulations that encourage or require sustainable corporate water consumption, businesses should consider the economic benefits of partnering with a water trust to identify new water conservation technologies, donating to a water trust to ensure local instream protections, or voluntarily reporting their water consumption data and conservation practices.