TRANSFORMING WATER: THE EMERGING PARADIGM OF WATER JUSTICE ETHICS

BY

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This Essay calls for a critical transformation in humanity's relationship with water, shifting away from the dominant western paradigm of sustainable integrated water resources management (IWRM) to water justice ethics, a life-affirming ethical relationship with water.

The sustainable IWRM paradigm is superior to earlier twentieth century versions of water resources management because it acknowledges water and aquatic ecosystems are intimately connected to human welfare and utilizes a participatory process for water decisions. Nonetheless, the roots of the paradigm are a fundamentally flawed anthropocentric utilitarian ethical perspective, an even more fatally flawed neoliberal economic model, and an unrealistic sense of human abilities to predict and control nature. Further, that paradigm depends on pluralistic consultation processes to provide sustainable outcomes, which is unrealistic in a world of severe wealth inequality and continuing

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marginalization of Indigenous peoples and other minorities. Most significantly, the paradigm has failed miserably; it simply does not provide all life with sufficient, high-quality water.

Instead, we argue that humanity must transform its relationship with water and adopt a life-affirming ethical relationship with water, which we term water justice ethics. We must collectively learn from secular and faith-based formulations of water justice ethics. We must also learn from the Indigenous values and practices of reverence, respect, and protection of water. At the core, water justice ethics seeks to assure that people, fish, wildlife, and plants have the quintessential requirement of life: water to support their populations, communities, and ecosystems.

To embed water justice ethics in our societies, we must make transformative changes in several spheres: individual awareness and conscience; social norms and political expectations; economic incentives; and institutional structure. This Essay suggests strategies in these diverse spheres to accomplish the mission of transforming water.

The Essay ends on a note of hope, suggesting that the ascendance of environmental justice in our society is creating conditions that may allow water justice ethics to emerge as the new paradigm for human relationships with water.

I. INTRODUCTION

A couple of decades ago, a transnational mining company headquartered in Canada sought to develop a large copper mine along the Little North Folk of the North Santiam River in Oregon. The mining company sought to discharge a high volume of various heavy metals into the river, including copper, lead and mercury. However, the state Department of Environmental Quality (DEQ) could not grant the mining company a water pollution permit because the permit violated a protective regulation known as the Three Basin Rule. The rule prohibited anyone from discharging industrial pollution into the waters of three watersheds that provide drinking water for Oregon's three largest cities.[1]

Undeterred, crafty lawyers for the mining company sought changes in the Three Basin Rule to allow mine development and they were able to

[1] OR. ADMIN. R. 340-041-0350 (1976).

convince the DEQ to propose changing the rule to allow a fancy marketable rights scheme that would be difficult to monitor and enforce. However, state law required DEQ provide notice to the public of the proposal, allow written comments, and hear comments at a town hall meeting before changing a rule.[2] DEQ held those town hall meetings in each of the three basins. Usually such administrative meetings draw only a few participants; but these meetings attracted more than 500 people, most of whom vehemently protested against changing the rule due to potential impacts on their drinking water.

One person testifying approached the issue a bit differently. A local Indigenous elder stood up and described the event that prompted him to testify. As he had walked along the river, he had conferred with his brother and sister salmon. They counseled against polluting a river that was home to salmon with copper, because copper is particularly dangerous to them—far more dangerous than other mining pollutants. The elder shared this insight and urged DEQ not to change the Three Basin rule in order to protect the salmon.

This was undoubtedly the most powerful testimony given during the meetings. Ultimately, the State kept the Three Basin Rule intact and applied it faithfully by denying the mining company's water pollution permit.[3] The community then effectively resisted legislation sponsored by the mining company to gut the Three Basin Rule.[4] Without the intervention of the elder who spoke for the salmon, the Three Basin Rule might be gone—and the drinking water of nearly a million people and the home of the salmon would be in constant danger from industrial pollution.

This story vividly illustrates that we must approach water with an appreciation of its fundamental importance to all life, not just human beings. It also demonstrates the power of listening to Indigenous wisdom about water, because in using water to meet human needs, we are confronting issues that human beings have encountered since time immemorial.

This Essay calls for a critical transformation of our relationship with water, one reflecting deep recognition that life is precious and that the totality of life is dependent upon water. It argues that the current normative policy paradigm of integrated water resources management (IWRM) is inadequate to address the water challenges of our day. A

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2 OR. REV. STAT. § 183.335.

3 Kinross Copper Corp. v. State, 988 P.2d 400 (Or. Ct. App. 1999).

4 The 1995 legislature rejected Kinross' special legislation, HB 3427 and SB 791. Statesman Journal, May 25, 1995. The mining company subsequently filed an inverse condemnation claim against the state for denying it an NPDES permit. The Oregon Court of Appeals denied that claim on the basis that the mining company lacked any property right to discharge waste into public waters. *Kinross Copper Corp.*, 988 P.2d at 401. In the book *Sweet Mountain Water,* Frank Mauldin, a civil engineer who was Director of the City of Salem's Public Works Department, provides an account of battles fought to protect the North Santiam watershed that provides water to Oregon's capitol city. Mauldin was profoundly dedicated to protecting the pristine waters of the North Santiam River and its watershed. FRANK MAULDIN, SWEET MOUNTAIN WATER 171–72 (2004).

radically different approach that affirms humanity's proper relationship with water, with God's gift to all creation, must replace the current human-centered, economic paradigm of water resources policy and management.[5] We call that paradigm water justice ethics.[6] Our multidisciplinary critique of IWRM draws upon contemporary literature about IWRM, the history of modern water management, as well as economic history and theory, to expose the severe flaws of IWRM. The IWRM paradigm in its most enlightened incarnation is admittedly superior to earlier twentieth century water resources management because it acknowledges that human welfare is vitally connected to water and aquatic ecosystems, and it at least pays lip service to sustainability.

Nonetheless, IWRM is a flawed way to govern human use of water. First, despite its global ascendance as the dominant water resource management paradigm for the past 30 years, our societies continue to manage water in an unsustainable manner and fail to provide all human beings and other life with sufficient and safe water. Second, the IWRM paradigm fails, even with a sustainability gloss, because it indulges a fundamentally flawed anthropocentric, utilitarian approach to water. This exclusive focus on human needs is not compatible with the more altruistic and eco-centric ethical values held by a vast number of human beings—and fundamentally conveys the wrong ethical message. Rather than strengthening the sustainability of human water use, this approach actually undercuts attempts to implement sustainable water resource management. Third, governing water use by utilizing an even more fatally flawed neoclassical economic model provides the wrong solutions to water resources issues and mobilizes opposition to rational water resources planning and management.[7] Finally, to the extent that the

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[5] For convenience, we refer to the current twenty-first century paradigm as sustainable integrated water resources management (sustainable IWRM). We explain the sustainable IWRM paradigm more fully in Part II.

[6] We actually prefer the moniker of "life-affirming ethical relationship with water" coined by Glenn Schrader and Darleen Sanderson. All life is precious and has intrinsic value. Because we affirm the value of all life, the fact that all life requires water to live should entitle all life to have the water necessary to live. However, we cannot reduce that ethic to a snappy acronym. We opt to call this water justice because it specifies the fundamental ethical principle that should inform distributive justice with respect to water. Like sustainability, IWRM, or any other popularized term, water justice means different things to different people. To be useful as a basis for law and policy, we must first define what we mean by water justice, carefully and precisely. We undertake that task in Part III.

[7] The neoclassical economic model (NCE) is the foundation of "neoliberal economics." Historically, from roughly 1930-1970, economists identifying themselves as "neoliberal" sought to temper failures linked to classical liberal *laissez faire* capitalism (such as price-fixing robber barons and the Great Depression) without sacrificing the benefits of capitalism; in that sense, they were "neo"-liberal capitalists. They favored a strong regulatory state that also employed Keynesian fiscal policy to address macroeconomic failures. However, since the 1980s, many apply the "neoliberal" moniker to those who seek to structure modern society around the chimerical "free market." These neoliberals have used the power of international financial institutions and governments around the world to create minimalist states with lower, less progressive taxes, reduced public spending, privatized public services, restrictive central bank monetary policy, and a deregulated corporate sector.

"sustainable" IWRM paradigm relies on pluralistic consultation processes to make sustainable decisions about human use of water, that approach is doomed to fail. The poor, the marginalized, and the Earth cannot depend upon those processes to make equitable and sustainable decisions about human water use. We live in a world of severe wealth inequality and continued marginalization of Indigenous peoples and other minorities, which impairs their ability to participate effectively in water decision-making processes. With respect to non-human life on Earth, they find it quite difficult to participate in our processes.

Instead of utilizing sustainable IWRM as the paradigm for water decisions, we contend that humanity must adopt water justice ethics, a life-affirming ethical approach to water. We must assure that people, fish, wildlife, and plants have the quintessential requirement of life: water to support their populations, communities, and ecosystems. This Essay's articulation of water justice ethics combines three distinct strands of thought: entreaties by water justice activists, the ethical ponderings of water scholars, and Indigenous water ethics. The first strand finds expression in the demands of water justice movements. The second finds its sources in eco-philosophy, eco-theology and other modern expressions of ethics. The third strand draws together the worldviews, deep ecological understandings, and water norms shared by Indigenous peoples throughout the world.[8] In synthesizing these diverse sources, we find that

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Neoliberal theorists believe this unrestricted "free market" produces allocative efficiency, economic growth, technological progress, and rational income distribution based on marginal productivity. They contend that state intervention to encourage these desirable phenomena is counterproductive because that intervention disturbs naturally occurring market equilibria. DAVID M. KOTZ, THE RISE AND FALL OF NEOLIBERAL CAPITALISM 8, 11–12, 41–42 (2015).

[8] Our specific sources include writings about the wisdom of elders from various First Nations and Native American tribes, the Quechua peoples of South America, native Hawaiians, Aboriginal peoples of Australia, Maori and other southern Pacific peoples, the Mizos of northeastern India, and southern African tribes. We acknowledge our tremendous debt to both the many elders and the authors of those writings. *See, e.g.*, Eleanor Hayman et al., *I yá.axch'age? (Can You Hear It?), or, Héen Aawashaayi Shaawat (Marrying the Water): A Tlingit and Tagish Approach Towards an Ethical Relationship with Water*, *in* GLOBAL WATER ETHICS: TOWARDS A GLOBAL ETHICS CHARTER 217 (Rafael Ziegler & David Groenfeldt eds., 2017); Obadiah Awume et al., *Indigenous Perspectives on Water Security in Saskatchewan, Canada,* WATER, Mar. 2020, at 1, 10; Kate Cave, *Water Song: Indigenous Women and Water,* SOLS. J. (Nov. 7, 2016), https://thesolutionsjournal.com/water-song-indigenous-women-water; Veronica Flachier, *Prophetic Voices Coming from the Pachamama*, *in* THE PILGRIMAGE OF WATER JUSTICE (Susan L. Smith et al. eds., forthcoming 2025) (manuscript at 129–31) (on file with author); Summer Sylva, *Indigenizing Water Law in the 21st Century:* Na Moku Aupuni O Ko'olau Hui*, A Native Hawaiian Case Study*, 16 CORNELL J.L. & PUB. POL'Y 563 (2007); Anne Salmond, *Tears of Rangi: Water, Power, and People in New Zealand*, HAU: J. ETHNOGRAPHIC THEORY, Winter 2014, at 285; Sandy Toussaint et al., *Water Ways in Aboriginal Australia: An Interconnected Analysis*, 15 ANTHROPOLOGICAL F. 61, 61–74 (2005); Marina Ngursangzeli Behera, *The Spirituality of Indigenous Communities and Water Justice: A Mizo Perspective*, *in* THE PILGRIMAGE OF WATER JUSTICE, *supra* (manuscript at 124–25); Kuzipa M.B. Nalwamba, *Engendering Water: An Eco-Feminist Reading from Southern Africa*, *in* THE PILGRIMAGE OF WATER JUSTICE, *supra* (manuscript at 144).

Indigenous peoples articulate common principles, essentially natural laws, to govern the human relationship with water.

There is nothing new under the sun and certainly what we have to say is not entirely new: at its core, our Essay articulates an ancient and deeply ecocentric approach to water that addresses just treatment of all creation, including human beings.[9] This Essay will contribute to the vibrant ongoing discussions about water ethics. Water ethicists, other water scholars, and water professionals have only begun to explore more ecocentric ethical approaches to water resources management. For example, reports on water ethics from the Committee on Ethics in Science and Technology and the UNESCO International Hydrology Programme advocated for consideration of ecocentric approaches for the first time in 2011,[10] but they did not articulate or outline how such an approach would work. This Essay seeks to more fully explain, justify, and solidify the movement towards water justice ethics as an alternative paradigm for water policy and management. Each small step in transforming water policy and management toward a more life-affirming ethical relationship with water has the potential to help reconnect our societies with *pachamama*, Mother Earth, and to restore life-sustaining water for all.[11]

We gratefully acknowledge the incredible efforts already undertaken and the profound sacrifices made by water justice activists around the world.[12] We admit the magnitude of the task that still lies ahead. To

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[9] Most accounts of ecocentric ethics begin with Aldo Leopold. ALDO LEOPOLD, A SAND COUNTY ALMANAC AND SKETCHES HERE AND THERE 202–03 (1949). Some might begin with the Hebrew scriptures, which are a few thousand years older. *See generally* HOLMES ROLSTON, III, ENVIRONMENTAL ETHICS: DUTIES TO AND VALUES IN THE NATURAL WORLD (1988) (offering the most ecocentric ethical account of nature); Luna Leopold, *Ethos, Equity, and the Water Resource: The 1990 Abel Wolman Distinguished Lecture*, 32 ENV'T: SCI. & POL'Y FOR SUSTAINABLE DEV., Mar. 1990, No. 2, at 18–19 (arguing that water should be managed in accordance with two ethical principles: (1) ethos protects the integrity of the whole hydrological continuum, including both biotic and abiotic elements as well as the physical, chemical, and biological processes that affect them, and (2) the principle of equity, or "a dedication to fairness, a desire to consider various interests and treat all with some measure of equality"); Sandra Postel, *The Missing Piece: A Water Ethic*, AM. PROSPECT (May 23, 2008), https://prospect.org/special-report/missing-piece-water-ethic.

[10] JIE LIU ET AL., UNESCO, WATER ETHICS AND WATER RESOURCE MANAGEMENT 1, 7, 19 (2011), https://unesdoc.unesco.org/ark:/48223/pf0000192256.

[11] We remain humbly aware of our interpretational horizon. Ethical truth remains partial and inescapably constrained by perspective and context. *See* Patrick J. Casey, *Ricoeur on Truth in Religious Discourse: A Reclamation*, 46 HORIZONS 24, 26–27 (2019).

[12] *See, e.g.*, *Missing Voices*, GLOB. WITNESS 14–16 (Sept. 10, 2024), https://www.globalwitness.org/en/campaigns/environmental-activists/missing-voices (reporting by Global Witness, a non-governmental organization dedicated to tracking violence against environmental activists, indicating violence against environmental activists is increasing with more killings this year than any other year since reporting began). Governments and militias in Latin America and the Philippines continue to perpetrate the greatest amount of violence and Indigenous peoples are disproportionately targeted. *Defending Tomorrow*, GLOB. WITNESS 6–8, 10 (July 29, 2020), https://www.globalwitness.org/en/campaigns/environmental-activists/defending-tomorrow. One specific example pertaining to water justice activism be seen following attempts to build a hydroelectric dam in Guatemala. *See, e.g.*, Barbara Rose Johnston, *Large-Scale Dam Development and Counter Movements: Water Justice*

embed water justice ethics in our societies, we must make transformative changes. Such fundamental change requires envisioning multidisciplinary strategies to transform humanity's relationship with water. Drawing from both Indigenous knowledge and diverse social science literatures (psychology, sociology, anthropology, economics, public policy, and law), we suggest strategies from four spheres to foster transformation: individual awareness and conscience; social norms and political expectations; economic rewards and sanctions; and institutional structure, policy and law.

Part II of this Essay explains the sustainable IWRM paradigm of water resources policy and management and provides a multivalent critique of that paradigm. Part III articulates a water justice ethical paradigm with attention to providing pragmatic guidance to those involved in water law, policy, and management. Part IV suggests strategies to transform our relationship to water from the current paradigm to a life-affirming ethical approach to water. The Essay concludes on a note of hope inspired by the recent ascendance of environmental justice as a transformative policy force in the United States.

Struggles around Guatemala's Chixoy Dam, *in* WATER JUSTICE 169, 174–75 (Rutgerd Boelens et al. eds., 2018) (providing terse descriptions of the violence (massacres, assassinations, disappearances, and death threats) committed against water justice activists in Guatemala); Alessa Jonas, *Rio Negro Massacres v. Guatemala*, 36 LOY. L.A. INT'L & COMPAR. L. REV. 1699 (2014) (providing a more complete account of the Guatemalan violence and outlining in some detail the 2012 Inter-American Court of Human Rights (IACHR) Judgment against Guatemala). The Loyola Law School database summarizes the IACHR Judgment in this way:

> In 1980 and 1982, the Guatemalan Army and members of the Civil Self-Defense Patrols destroyed the Mayan community of Río Negro, that protested the building of a hydroelectric dam, by means of a series of massacres. The facts of this case fit within a more general context of massacres in Guatemala that were planned by State agents as part of a "scorched earth" policy aimed against the Mayan people, who were characterized as the "internal enemy" in a context of discrimination and racism. Remarkably, the Court found that the State violated almost all provisions of the American Convention on Human Rights, the American Convention on the Prevention, Punishment, and Eradication of Violence Against Women, the American Convention on Forced Disappearances of Persons, and the American Convention to Prevent and Punish Torture.

Río Negro Massacres v. Guatemala, LOY. L. SCH., https://iachr.lls.edu/cases/r%C3%ADo-negro-massacres-v-guatemala (last visited January 20, 2025).

II. A CRITIQUE OF SUSTAINABLE INTEGRATED WATER RESOURCES MANAGEMENT

A. A brief history of how we went astray

1. Traditional understandings of water

Throughout time, Indigenous peoples around the globe have shared distinct commonalities in their understanding of the universe. The universe is complete, thoroughly interconnected, and harmonious in the worldview of Indigenous peoples. They understand the connectedness of all creation and the need for harmony in the relationships between human beings, other creatures, and other parts of creation.

Indigenous peoples do not understand human beings as the agents of improving the universe because there is no need for "progress." To maintain the integrity of the universe and creation, humans only need to stay in the right relationship with each other and the rest of creation and take the right actions to maintain a harmonious relationship with all. However, humans can cause problems, particularly by disrupting the harmony and connectedness of the universe. The remedy for such problems is to restore the harmonious relationship of people to creation.

Water is central to the life of all creation: every living cell requires water. Water is the home of our aquatic brothers and sisters. It is the means by which terrestrial plants obtain nutrients to live. Water is required for human livelihoods, from food gathering, agriculture and fisheries to manufacture of goods and transportation. As a result, Indigenous peoples understand at a fundamental level the enormous cultural and spiritual significance of water; they often regard water as a sacred being.

Given the centrality of water to the existence of life, Indigenous peoples have recognized the need to have a harmonious relationship with water—a relationship of respect and reverence that protects water from waste or pollution. Many Indigenous societies have strong, well-enforced norms about respectful treatment of water. Continuing or extreme disregard of these protective norms can lead to the ultimate penalty of exclusion from the community, which in subsistence societies can be considered tantamount to, or worse than, death.

2. The modern disruption of traditional understandings

The modern era disrupted the traditional understandings of the universe and ushered in a new attitude about the proper human relationship to water and the rest of creation. This new attitude is that individual human beings and human societies are entitled to and should dominate all creation, including each other, all other living things, and especially, water. They attempt domination in the pursuit of ego-driven desires for wealth and power.

Many social forces and ideas played a role in disrupting our relationship with water. The detachment of human life from intimate connection with other creatures and the land led to the myth of human supremacy. Ultimately, this gave rise to societies in which humans intentionally created massive built environments that thoroughly isolated them from other living things and the rest of creation. We call such environments "civilization" and building them, with gaudy displays of wealth and power, became the purpose of life for many.

As human populations grew and devoured resources beyond the land's capacity to provide, the richest, most exploitative societies developed far-flung empires that even further detached human beings from the land. Human beings lost their understanding of natural limitations and their sense of connection to place. As populations became unnaturally dense and dependent on massive production and massive pollution, humanity stretched the natural assimilative capacity of land and water beyond their bounds. In water-abundant regions, clean water became scarce; in drier climes, water of any quality became scarce.

Enlightenment ideas reified human supremacy by proclaiming the triumph of human reason. The scientific revolution and its progeny, including the industrial revolution, underscored the sense of human supremacy and fostered a notion of progress and a linear conception of time. Technology allowed us to harness science in service of human desires and provided a sense of mastery and control over nature. Economists proclaimed this superiority by treating water, land, animals, and human beings as mere inputs to aggregate financial wealth, and posited individual human preferences and greed as benign drivers of a capitalistic economy, which coincidentally optimized both entrepreneurial freedom and social good.[13] In the end, these social forces and ideas created the twentieth century water resources management paradigm.

3. Twentieth century water resources management: the United States example

The United States, an upstart Euro-American empire, continued its westward expansion across the North American continent throughout the 19th century. There, it encountered two obstacles to settlement: the Indigenous peoples who occupied the vast lands of the western United States and the aridity of those lands, which were incapable of growing food without expensive, capital-intensive irrigation. The Euro-American

[13] Adam Smith used the metaphor of an "invisible hand" to describe the happy coincidence that individuals acting in their own self-interest, through the competition of a free market, unintentionally contribute to the overall benefit of society, as if guided by an unseen hand, even when they don't intend to do so; essentially, the pursuit of personal profit in a market naturally allocates resources efficiently, leading to the best possible outcome for everyone involved without the need for government intervention. 2 ADAM SMITH, AN INQUIRY INTO THE NATURE AND CAUSES OF THE WEALTH OF NATIONS 258 (1776).

settlers successfully and forcibly removed Indigenous peoples from lands they had occupied since time immemorial, by means of violence, fraud, and pestilence. The remaining barrier of aridity required different tactics. Though mighty rivers ran through the land, most of the West would remain unoccupied by settlers if agriculture and industry were limited to use along their banks. Therefore, Euro-American water law in the western United States adapted to this water scarcity by creating a strict priority system proclaiming "first in time, first in right," which allowed non-riparian use of water for agriculture, industry, and other economically beneficial uses.[14]

Utilizing western lands for agriculture required building systems of dams and reservoirs so huge, and irrigation ditches and municipal water canals so extensive, that private capital would not suffice.[15] The U.S. government's civil engineers, the Army Corps of Engineers, extended their waterways work from enhancing navigation in the East to developing water resources throughout the United States.[16] They first built dams, reservoirs, and canals for irrigation under the Federal Reclamation Act of 1902, and then built multiple-purpose dams and reservoirs for flood control, hydropower, and irrigation under the Flood Control Act of 1936.[17] The federal government also began regulating

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[14] BRYAN LEONARD & GARY D. LIBECAP, COLLECTIVE ACTION BY CONTRACT: PRIOR APPROPRIATION AND THE DEVELOPMENT OF IRRIGATION IN THE WESTERN UNITED STATES 2 & n.4 (2017), https://www.nber.org/system/files/working_papers/w22185/w22185.pdf.

[15] François Molle, *River-Basin Planning and Management: The Social Life of a Concept,* 40 GEOFORUM 484, 486–87, 489 (2009) ("[D]uring the latter part of the 19th century, the concept of a river basin was partly superseded by a more concrete interest in water resources development, notably large-scale reservoir, flood control and irrigation infrastructures. . . . [One of the three contributing threads to river-basin development reaching its peak was] the more controversial idea of comprehensive regional development through massive and coordinated public investment.").

[16] Masterful accounts of the history of water resources development in the American West include MARC REISNER, CADILLAC DESERT: THE AMERICAN WEST AND ITS DISAPPEARING WATER 5 (Penguin Books rev. ed. 1993) (introducing the book by stating: "Desert, semidesert, call it what you will. The point is that despite heroic efforts and many billions of dollars, all we have managed to do in the arid West is turn a Missouri-size section green—and that conversion has been wrought mainly with nonrenewable groundwater"); CHARLES F. WILKINSON, CROSSING THE NEXT MERIDIAN: LAND, WATER, AND THE FUTURE OF THE WEST, at xiii (1992) ("This book . . . is my attempt to set out for a general audience some of the core problems facing the American West now and in the years to come."). Two outstanding works focused on California water are *Water and Power: The Conflict over Los Angeles' Water Supply in the Owens Valley* by William L. Kahrl and *The Dreamt Land: Chasing Water and Dust Across California* by Mark Arax. WILLIAM L. KAHRL, WATER AND POWER: THE CONFLICT OVER LOS ANGELES' WATER SUPPLY IN THE OWENS VALLEY 1 (1983) ("The modern prosperity of the state has consequently been founded upon a massive rearrangement of the natural environment through public water development."); MARK ARAX, THE DREAMT LAND: CHASING WATER AND DUST ACROSS CALIFORNIA 9 (2019) (setting the scene of the book in Kern County, where "[a]griculture in the south valley has extended so far beyond the provisions of its one river, the Kern").

[17] DAVID C. MAJOR & EUGENE Z. STAKHIV, THE DEVELOPMENT OF WATER RESOURCES PLANNING IN THE UNITED STATES FROM THE RECLAMATION ACT OF 1902 TO THE PRINCIPLES

private navigational waterway development under the Rivers and Harbors Act of 1899 and facilitating private hydroelectric development under the Federal Water Power Act of 1920.[18]

This golden era of the twentieth century water resources management, extending from roughly the turn of the twentieth century to the mid-1960s, sought to expand water supply to meet demand. It reflected a naïve belief in the power of agency experts to make decisions based on good science and engineering in the public interest. The public interest reflected in their decisions was to maximize overall economic and social welfare, i.e. expand the production possibility frontier through allocative efficiency.[19] The Army COE justified water resources construction projects to Congress by increasingly sophisticated cost-benefit analyses submitted in support of Congressional authorizations.[20] Water resources managers undertook comprehensive watershed or basin planning, seeking to make rational decisions about optimal management of water resources. These planning efforts involved "integrated water resources management" of entire basins or watersheds. At the time, IWRM consisted of integrating management of ground water, surface water, and stored water; integrating management of water quality as well as water allocation; and integrating across all sectors of water use to maximize the society's utility through scientific water management.[21]

At some point in time, the naïve belief in the ability of scientists, engineers, and economists to specify a magic potion that would maximize the social good obtained from water resources began to fade. Bureaucratic decision-making, including that of water resources managers, started to shift its focus from serving the "public interest" through expert decisions to assuming that balancing a variety of "special interests" equates to serving the public interest.[22] This shift from expert management to pluralistic management accompanied a shift in our conception of democracy towards democratic pluralism, in which democracy properly consists of balancing special interests.[23] Not coincidentally, this shift

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AND STANDARDS OF 1973, at 7, 10, 16 (2018); U.S. ARMY CORPS OF ENG'RS, THE U.S. ARMY CORPS OF ENGINEERS: A HISTORY 247 (2008).

18 MAJOR & STAKHIV, *supra* note 17, at 74; U.S. ARMY CORPS OF ENG'RS, *supra* note 17, at 74, 77.

19 MAJOR & STAKHIV, *supra* note 17, at 64–65.

20 U.S. ARMY CORPS OF ENG'RS, *supra* note 17, at 247–49.

21 *Id.* at 60, 244–45.

22 *See* BRUCE A. WILLIAMS & ALBERT R. MATHENEY, DEMOCRACY, DIALOGUE, AND ENVIRONMENTAL DISPUTES: THE CONTESTED LANGUAGES OF SOCIAL REGULATION (1995).

23 Pluralist democratic theory is associated with Robert Dahl, who coined the term "polyarchy" to describe the American political system as an open, inclusive competition among various special interests. *See generally* ROBERT A. DAHL, WHO GOVERNS?: DEMOCRACY AND POWER IN AN AMERICAN CITY (1961); ROBERT A. DAHL, POLYARCHY: PARTICIPATION AND OPPOSITION (1971). Gerald Frug suggests that American models of bureaucratic decision-making shifted over time from the formalist model to the expert model, then to a judicial review model, and finally to the pluralistic model. *See* Gerald E. Frug, *The Ideology of Bureaucracy in American Law*, 97 HARV. L. REV. 1276, 1282–83 (1984). In the environmental and natural resources context, the expert model reigned supreme until the U.S. Supreme

paralleled increasing societal skepticism about the existence of truth and the slide of Euro-American societies from modernism into post-modernism.

Unfortunately, neither mode of bureaucratic decision-making had healthy respect for the importance of aquatic ecosystems. The dams and reservoirs destroyed the natural flow of rivers and the ecosystems they supported. Agricultural diversions left rivers quite literally dry. The combined impact of dams, reservoirs, and diversions caused habitat loss that decimated fish populations, driving many anadromous species and some freshwater species to the edge of extinction.[24]

Toward the end of the twentieth century, we began to recognize the enormous damage inflicted on water and aquatic ecosystems in the name of progress and development. To a certain extent, water policymakers reformulated water resources management practices to include at least a nod to sustainability.[25] Most significantly, they adjusted the IWRM process to require much more stakeholder participation in decision-making.[26] Nonetheless, water resources policy and management retained its emphases on manipulating water for the sake of humans and achieving allocative efficiency.

Court broadened Administrative Procedure Act (APA) judicial review in Citizens to Preserve Overton Park v. Volpe. 401 U.S. 814, 825 (1971) (introducing hard look doctrine). Within just a few years, the Supreme Court narrowed judicial review in environmental cases, forbidding second-guessing of agency decisions. *See* Strycker's Bay Neighborhood Ass'n v. Karlen, 444 U.S. 223, 227–28 (1980) (reducing the "hard look" to a soft glance and giving broad deference to agency interpretations of the statutes they administer); Chevron U.S.A., Inc. v. Nat. Res. Def. Council, 467 U.S. 837, 844–45 (1984) (providing deference to a reasonable agency interpretation). This narrowing of APA judicial review may be traceable to the shift in bureaucratic decision-making from the expert model to the pluralistic model. After all, if somewhat politically accountable administrative agencies are making pluralistic balancing decisions, how can anti-majoritarian federal courts second-guess the balances the agencies strike? The federal courts' humility in second-guessing agency decisions came to an end in 2016 as Supreme Court justices appointed by Donald Trump sought to limit the power of federal agencies through the major question doctrine, West Virginia v. Env't Prot. Agency, 597 U.S. 697, 700 (2016), and in 2024 by eliminating *Chevron* deference, Loper Bright Enters. v. Raimondo, 603 U.S. 369, 412–13 (2024).

[24] *See, e.g.*, Michelle M. McClure et al., *Evolutionary Consequences of Habitat Loss for Pacific Anadromous Salmonids*, 1 EVOLUTIONARY APPLICATIONS 300, 302 (2008) (describing dams constructed for irrigation and hydroelectric power generation as large contributors to habitat loss of anadromous salmonids).

[25] United Nations Environment Programme (UNEP), charged with monitoring implementation of the IWRM sustainable development goal (SDG) subgoal, includes sustainability within the definition of IWRM: "Integrated Water Resources Management (IWRM) promotes the coordinated development and management of water, land and related resources to maximize economic and social welfare in an equitable manner, without compromising the sustainability of vital ecosystems." *Integrated Water Resources Management*, U.N. ENV'T PROGRAMME, https://www.unep.org/topics/fresh-water/water-resources-management/integrated-water-resources-management (last visited Dec. 31, 2024); *see also* Molle, *supra* note 15, at 490–91 (describing IWRM's concern with overconsumption of water resources).

[26] Molle, *supra* note 15, at 490–91.

B. Twenty-first century water resources management

1. Defining the sustainable IWRM paradigm

Although sustainable integrated water resources management is widely regarded by water scholars and professionals as the dominant paradigm for managing human water use,[27] it is not necessarily familiar to those outside the water sector. The essence of sustainable IWRM is an inclusive water resources management or governance process, in which stakeholders and the public participate in the process of planning or making water decisions, typically within a water basin, on a continuing basis. Sustainable IWRM aspires to achieve sustainable water resources management by means of this broad participatory process.

The most frequently cited definition of IWRM, in its sustainability incarnation, is that of the Global Water Partnership (GWP), a collaboration between the United Nations Development Program (UNDP) and the World Bank aimed at fostering global adoption of the sustainable IWRM paradigm. GWP defines IWRM as follows: "IWRM is a process which promotes the coordinated development and management of water, land and related resources, in order to maximize the resultant economic and social welfare in an equitable manner without compromising the sustainability of vital ecosystems."[28] As GWP explains, "[t]he IWRM principles adopted at the International Conference on Water and the Environment in Dublin, Ireland, in 1992, are known as the Dublin Principles."[29] The Dublin Principles are:

(1) Fresh water is a finite and vulnerable resource, essential to sustain life, development and the environment;

(2) Water development and management should be based on a participatory approach, involving users, planners and policy-makers at all levels;

(3) Women play a central part in the provision, management and safeguarding of water;

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[27] *Id.*; P. Jeffrey & M. Gearey, *Integrated Water Resources Management: Lost on the Road from Ambition to Realization?*, WATER SCI. & TECH., Jan. 2006, at 1, 2 ("It is difficult to overstate the extent to which IWRM has become the norm or even, one might say, the orthodoxy in water resources management."). *See generally* OLIVER FRITSCH & DAVID BENSON, GOVERNING INTEGRATED WATER RESOURCES MANAGEMENT: MUTUAL LEARNING AND POLICY TRANSFER (2020) (providing a printed edition of *Water* devoted entirely to IWRM).

[28] *The Need for an Integrated Approach*, GLOB. WATER P'SHIP [hereinafter GLOB. WATER P'SHIP, *The Need for an Integrated Approach*], https://www.gwp.org/en/About/why/the-need-for-an-integrated-approach (May 25, 2020).

[29] *Id.*

(4) Water has an economic value in all its competing uses and should be recognized as an economic good.[30]

Beyond the parsimonious GWP/UNEP definition and the Dublin Principles, scholars have elaborated surprisingly little on the sustainable IWRM paradigm. Pahl-Wostl, Jeffrey and Sendzimir observe:

> At the heart of IWRM lie the four so-called Dublin principles which emphasise the central role played by water in sustaining life, the need to manage the resource through participative interventions, its role as an economic good, and the important role played by women in managing water. As an ambition, IWRM therefore seeks to address (simultaneously!) two highly complicated and complex problem sets: sustainable development and cross-sectoral planning . . . .
>
> IWRM approaches emphasize the need for 'joined-up planning' across natural resource and economic development sectors.[31]

Pahl-Wostl *et al.* suggest "the need to adapt IWRM theory to local contexts makes generic description of strategies and techniques difficult," and simply provide the 2002 list of IWRM practices from the International Water Association.[32] Those IWRM practices are:

(1) fully integrate water and environmental management;
(2) adopt a systems approach to problem structuring and intervention planning;
(3) involve broadly based participation by all stakeholders;
(4) are sensitive to the social dimensions of the local water management challenge;
(5) involve capacity-building measures;
(6) incorporate full-cost pricing, complemented by targeted subsidies;
(7) provide an enabling environment supported by central government;
(8) make use of the best existing technologies and practices;
(9) have access to reliable and sustained financing;
(10) emphasise the equitable allocation of water resources;
(11) recognise water as an economic good;
(12) strengthen the role of women in water management.[33]

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[30] *Id.*

[31] Claudia Pahl-Wostl et al., *Adaptive and Integrated Management of Water Resources*, *in* WATER RESOURCES PLANNING AND MANAGEMENT 292, 297 (R. Quentin Grafton & Karen Hussey eds., 2011) (citation omitted). Their description is drawn from an earlier work, JEFFREY & GEAREY, *supra* note 27, at 2.

[32] Pahl-Wostl et al., *supra* note 31, at 297–98 (citing INT'L WATER ASS'N, WATER MANAGEMENT: INDUSTRY AS A PARTNER FOR SUSTAINABLE DEVELOPMENT 49–51 (2002), https://www.ircwash.org/sites/default/files/IWA-2002-Water.pdf).

[33] *Id.*

Pahl-Wostl et al. acknowledge that any given IWRM scheme adopted by national or local governments may not incorporate all of these practices.[34]

More recent scholarship by Fritsch and Benson identifies the key elements of sustainable IWRM as:

(1) management at the basin or catchment level;
(2) participation of stakeholders and the wider public;
(3) an equitable allocation of water resources;
(4) full-cost pricing; and
(5) an integrated approach to water management.[35]

They fail to explain, however, what "an equitable allocation of water resources" means.[36]

2. The global adoption of the sustainable IWRM paradigm

Sustainable IWRM came to be the dominant paradigm of water resources management around the world during the late twentieth century essentially by neocolonial imposition. The World Bank, other international financial institutions, foreign aid donors, and Euro-American educated economists and economic policymakers imposed their ideal water resources management approach on the developing world.[37]

It began in the United States and Europe as the unadorned 'integrated water resources management,' which was comprehensive rational planning of water resources development and management based on catchment areas or basins.[38] Starting in the 1920s and gathering momentum through the 1950s, the concept of integration expanded. The initial concept was limited to physical and spatial integration, yet over a few decades, the integration concept expanded to include institutional integration, because a plethora of water agencies in most countries created acute coordination issues.[39]

As the relationship between the environment and economic development began to take center stage in the 1990s, the concept of integration in IWRM became even more expansive. IWRM now seeks to achieve at least seven types of integration. It integrates water resources

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[34] *Id.*

[35] FRITSCH & BENSON, *supra* note 27, at 1.

[36] *Id.*

[37] The neocolonial imposition of IWRM on developing countries is widely understood and well documented. *See, e.g.*, Tinashe Lindel Dirwai et al., *Water Resource Management: IWRM Strategies for Improved Water Management. A Systematic Review of Case Studies of East, West and Southern Africa*, PLOS ONE, May 2021, No.e0236903, at 1, 2 (analyzing IWRM strategy model implementation in East, West, and Southern Africa); Asit K. Biswas, *Integrated Water Resources Management: Is It Working?*, 24 INT'L J. WATER RES. DEV. 5, 7, 12, 22 (2008) (discussing shortcomings and history of IWRM). Despite IWRM's neocolonial roots, or perhaps because of them, Euro-American scholars tend to extol and celebrate the IWRM paradigm. *See, e.g.*, FRITSCH & BENSON, *supra* note 27 (explaining IWRM model and its efforts to overcome the complexities posed by water management; celebrating IWRM "policy transfer").

[38] Molle, *supra* note 15, at 484–94.

[39] *Id.* at 488, 491.

spatially across an entire catchment basin. It recognizes the physical or hydrological connection between surface water and groundwater and manages those water resources conjunctively. It coordinates the efforts of the multitude of water management agencies who exercise power over some aspect of water. It regulates water use by various sectors: agriculture, commercial, industrial, and municipal. It seeks to address the whole universe of water issues, from overutilization and allocation to water quality concerns. It seeks to manage water resources in conjunction with land use, which substantially determines human water use in an area. Finally, it integrates water resources development and management into overall social and economic development strategies.[40]

Another more marked transformation also occurred in the early 1990s. The hallmark of the IWRM process became inclusive stakeholder and public participation and IWRM adopted sustainability as its new substantive goal. IWRM evolved from the most effective way to achieve the narrow goal of economic growth to a process by which sustainable development, with its multiple objectives (known as "the three pillars") of economic development, social equity, and ecological sustainability, could be achieved.

At the 1992 Dublin water conference, Koudstaal's keynote speech on IWRM emphasized how nature fits into social and economic development.[41] Koudstaal et al. built from the central tenet of the 1987 Brundtland report: natural ecosystems, and the ecoservices they provide, are critical components of development.[42] Echoing Brundtland, they were self-consciously attempting to change the water resources conversation from posing it as a choice between economic growth and the environment to appreciating the importance of the environment for development. They sought to instill an understanding that the Earth's carrying capacity naturally limits economic growth, if not human development.[43] To sustain economic development over time, it must be ecologically sustainable. Otherwise, succeeding generations are destined to experience a future severely limited by our present unwillingness to live within Earth's

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[40] W.B. SNELLEN & A. SCHREVEL, IWRM: FOR SUSTAINABLE USE OF WATER 23 (2004).

[41] For a discussion of an abridged version of the original report presented as the Dublin Conference keynote address, see Rob Koudstaal et al., *Water and Sustainable Development*, 16 NAT. RES. F. 277, 277–79 (1992). The Dublin Conference was the preparatory conference on water resources development prior to the 1992 United Nations Conference on Environment and Development in Rio de Janeiro, Brazil (the 1992 Earth Summit). *See* International Conference on Water and the Environment, *The Dublin Statement and Report of the Conference*, 71-ICWE92-9739 (Jan. 26–311992) [hereinafter *Dublin Statement*].

[42] *See* WORLD COMM'N ON ENV'T & DEV., OUR COMMON FUTURE 14–15 (1987) (highlighting the broader socio-economic and climate impacts of using these resources for such developments).

[43] *See* Kenneth E. Boulding, *The Economics of the Coming Spaceship Earth*, *in* ENVIRONMENTAL QUALITY IN A GROWING ECONOMY 3, 9 (Henry Jarrett ed., 1966) (describing this phenomenon as the "spaceman economy"); HERMAN E. DALY, STEADY-STATE ECONOMICS 6 (2d ed. 1991) ("Even more impossible is the prospect of an ever growing standard of per-capita consumption for an ever growing world population.").

natural constraints.[44] This concern for intergenerational equity is a key premise of sustainable development communicated through the Rio Declaration and Agenda 21.[45] Although many economists had long recognized this fact, the shift towards sustainability involved a momentous policy change because global development policy had long emphasized economic growth as its sole goal, with consideration of the environment an afterthought at best.[46]

Unfortunately, the Dublin Principles did not fully communicate this shift towards ecological sustainability and social equity.[47] They instead reflected the ongoing tussle between development professionals committed to the old regime with a singular focus on economic growth and those who embraced the emerging tri-partite goals of sustainable development. The principal lesson most countries drew from the Dublin Principles was the neoliberal economic rule of thumb that they should treat water as an economic good. This was no accident. The World Bank at that time was in the midst of promoting neoliberal structural adjustment programs (SAPs) in developing countries. SAPs embraced pricing water to fully recover the costs of water service, which would allow privatization of water service.[48]

Water professionals throughout the world as well as the United Nations and international financial institutions soon began to promote IWRM.[49] The UN Development Program and the World Bank founded the Global Water Partnership (GWP) in 1996 with the specific goal of

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[44] EDITH BROWN WEISS, IN FAIRNESS TO FUTURE GENERATIONS: INTERNATIONAL LAW, COMMON PATRIMONY, AND INTERGENERATIONAL EQUITY 5, 8–9, 47 (1989).

[45] U.N. Conference on Environment and Development, Rio de Janeiro, Braz., June 3–14, 1992, *Report of the United Nations Conference on Environment and Development*, Annex I, *Rio Declaration on Environment and Development*, U.N. Doc. A/CONF.151/26/Rev.1 (Vol. I) (Aug. 12, 1992) [hereinafter *Rio Report*] (discussing intergenerational equity in Principle 3). The second key premise is that any sustainable development must leave no one behind, which is intragenerational equity or social equity. *See id*. princ. 5 (discussing intragenerational equity).

[46] Boulding, *supra* note 43, at 9; BARBARA WARD & RENÉ DUBOS, ONLY ONE EARTH: THE CARE AND MAINTENANCE OF A SMALL PLANET 214–17 (1972) (prepared as the conceptual framework for the 1972 Stockholm Conference on the Human Environment). Barbara Ward was a British economist who founded the International Institute for Environment and Development (IIED) and specialized in international economic development. *IIED's Founder: Barbara Ward*, INT'L INST. FOR ENV'T & DEV. (Aug. 20, 2014), https://www.iied.org/iied-founder-barbara-ward.

[47] *Dublin Statement*, *supra* note 41, at 12.

[48] *See* Susan L. Smith, *The Historical and Intellectual Context of Global Water Ethics*, *in* GLOBAL WATER ETHICS: TOWARDS A GLOBAL ETHICS CHARTER, *supra* note 8, at 19; *see also* Jessica Budds & Gordon McGranahan, *Are the Debates on Water Privatization Missing the Point? Experiences from Africa, Asia and Latin America*, 15 ENV'T & URBANIZATION, Oct 2003, at 87, 95 (explaining the assumption that "privatization is accompanied by full cost-recovery . . ., an interpretation that is consistent with the emphasis given to cost-recovery in many attempts to promote private sector participation, even if it does not coincide with the sort of subsidized privatization many private operators would favour").

[49] Ulrich Küffner, *The World Bank Approach and Experience with Integrated Water Resources Management*, 18 CANADIAN WATER RES. J. 61, 62, 65 (1993).

fostering IWRM.[50] GWP's initial 1999 strategy focused on further development of IWRM concepts and advocacy, but rapidly turned to global adoption of IWRM.[51]

As the GWP articulated the IWRM concept, IWRM took a turn away from ecological sustainability and social equity, and towards more participatory management. As it was institutionalized, IWRM did not assure ecosystem protection to sustain economic development in the long-term nor was it committed to a notion of equitable allocation. Instead, IWRM was being used to install enduring water governance mechanisms. The GWP developed an IWRM toolkit providing regions and countries with guidance on the enabling legal and financial environment, the necessary institutional structures, and the available management instruments for water governance. As GWP explains, "[t]he enabling environment essentially consists of 'rules of the game' that are laid out as to achieve a sustainable balance between the social, economic and environmental needs for water."[52] The GWP prescription for both social equity and ecological sustainability was not substantive laws or policies calculated to achieve those two goals, but simply a participatory process that would balance out "the social, economic and environmental demands for water resources."[53] Perhaps unwittingly, the proponents of IWRM undercut the intergenerational and intragenerational equity embodied in sustainability by failing to embrace ecological sustainability and social equity as substantive constraints that society must respect for economic development to continue.

GWP continued to pursue its goal of embedding IWRM as the governance structure throughout the world. Due to GWP advocacy, the 2002 Johannesburg Plan of Implementation emerging from the World Summit on Sustainable Development called for all countries to establish national IWRM and water efficiency plans.[54] Having established a

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[50] *History*, GLOB. WATER P'SHIP, https://www.gwp.org/en/About/who/History (Apr. 13, 2021).

[51] *See id.* at 14–15 (describing the development of IWRM concepts as a "moral imperative both for national Governments and for the international community'").

[52] *The GWP IWRM ToolBox The Enabling Environment*, U.N. CONVENTION TO COMBAT DESERTIFICATION, https://www.unccd.int/land-and-life/drought/toolbox/the-gwp-iwrm-toolbox-the-enabling-environment (last visited July 7, 2021).

[53] *Id.*

[54] World Summit on Sustainable Development, Johannesburg, S. Afr., Aug. 26–Sept. 4, 2002, *Report of the World Summit on Sustainable Development*, Annex, *Plan of Implementation of the World Summit on Sustainable Development*, ¶ 26, U.N. Doc. A/CONF.199/20 (2002). Section 26 sought to:

> Develop integrated water resources management and water efficiency plans by 2005, with support to developing countries, through actions at all levels to:
>
> (a) Develop and implement national/regional strategies, plans and programmes with regard to integrated river basin, watershed and groundwater management and introduce measures to improve the efficiency of water infrastructure to reduce losses and increase recycling of water;
>
> (b) Employ the full range of policy instruments, including regulation, monitoring, voluntary measures, market and information-based tools, land-use management and

national policy mandate for IWRM, the GWP focused its efforts during the next five years on facilitating IWRM planning programs, GWP has now established country and regional partnerships that bring the IWRM process to over 100 countries.[55] International financial institutions and bilateral donors then link funding to national IWRM and water efficiency plans.[56]

As the world worked to refine the 2000 Millennium Development Goals and extend them to all countries, the GWP continued its advocacy to assure that IWRM would truly become the global basis for water governance. The 2030 Agenda for Sustainable Development, agreed to by 193 countries at the UN General Assembly in September 2015, contains seventeen Sustainable Development Goals and 169 targets.[57] SDG 6 on water and sanitation provides a high-level political commitment to IWRM in Target 6.5, which specifically calls for global adoption of IWRM: "By 2030, implement integrated water resources management at all levels, including through transboundary cooperation as appropriate."[58]

3. Sustainable IWRM in practice

As implementation of sustainable IWRM began, the International Water Management Institute (IWMI) conducted case studies of that implementation in more than a dozen countries during the first full decade of implementation. Their assessment of IWRM as a global template was initially and continues to be quite critical:

> [I]n developing countries, what usually gets passed-off in the name of IWRM at the operational level takes a rather narrow view of the philosophy and has largely tended to include a *blue-print* package including: [1] A national water policy; [2] A water law and regulatory framework; [3] Recognition of River Basin as the appropriate unit of water and land resources planning and management; [4] Treating water as an economic good; and [5] Participatory water resource management.

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cost recovery of water services, without cost recovery objectives becoming a barrier to access to safe water by poor people, and adopt an integrated water basin approach;

(c) Improve the efficient use of water resources and promote their allocation among competing uses in a way that gives priority to the satisfaction of basic human needs and balances the requirement of preserving or restoring ecosystems and their functions, in particular in fragile environments, with human domestic, industrial and agriculture needs, including safeguarding drinking water quality.

Id. Note that this portion of the Plan is largely concerned with efficient allocation and economic policy instruments. The Plan also gives attention to satisfying basic human needs, while balancing the preservation and restoration of ecosystems against human domestic, industrial and agriculture needs. *Id.*

[55] GLOB. WATER P'SHIP, MOBILISING FOR A WATER SECURE WORLD: STRATEGY 2020–2025, at 2, 8 (2019).

[56] *Id.* at 13, 21.

[57] G.A. Res. 70/1, pmbl. Transforming our World: the 2030 Agenda for Sustainable Development (Oct. 21,2015).

[58] *Id.* at 18.

> Several of these mark a significant shift from current paradigms and making this transition is proving to be difficult. Drafting new water laws is easy; enforcing them is not. Renaming regional water departments as basin organizations is easy; but managing water resources at basin level is not. Declaring water an economic good is simple; but using price mechanisms to direct water to high-value uses is proving complex. As a consequence, the *so-called* IWRM initiatives in developing country contexts have proved to be ineffective at best and counterproductive at worst.[59]

The tendency of developing countries to use the blueprint package approach IWMI criticizes is quite unsurprising since GWP provides that package in an IWRM toolkit.[60] Perhaps developing countries have tended to regard IWRM more as a hoop to jump through, a requirement imposed by international donors financing water development projects, instead of a valuable way to achieve sustainability.

Other commentators are more flattering, perhaps because they examined IWRM in developed countries. For example, the American Water Resources Association policy committee conducted seven case studies on implementation of IWRM in the United States. It determined that the IWRM processes studied were leading to planning that seeks to balance economic development, ecological sustainability and social equity. Moreover,

> In all of the instances where diverse stakeholders and the public were a part of the process, plans and studies not only considered a broad array of interests and management options, but also had broad-based support. As shown in the Yakima River Basin, development of an inclusive and holistic plan can result in advances that had not been possible in the past under more narrowly focused planning efforts.[61]

AWRA concluded that "[i]n sum, IWRM is facilitating collaborative, coordinated, multi-objective planning that satisfies a diverse set of interests. This leads to reduced conflicts and tensions,"[62] even in the context of competing consumptive and instream uses.

Unfortunately, AWRA only reviewed planning processes, not implementation of the plans, and implementation funding was still in question.[63] The AWRA built its optimism with respect to IWRM implementation on its enthusiasm for an idea and at best partial analysis. A decade has passed since these case studies were completed. No research has emerged actually evaluating whether the adopted plans were likely

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[59] INT'L WATER MGMT. INST., WATER POLICY BRIEFING, IWRM CHALLENGES IN DEVELOPING COUNTRIES: LESSONS FROM INDIA AND ELSEWHERE 2 (2007), https://www.iwmi.cgiar.org/Publications/Water_Policy_Briefs/PDF/WPB24.pdf.

[60] *IWRM Toolbox*, IWRM ACTION HUB, https://iwrmactionhub.org/learn/iwrm-tools (last visited Jan. 18, 2025).

[61] AM. WATER RES. ASS'N POL'Y COMM., CASE STUDIES IN INTEGRATED WATER RESOURCES MANAGEMENT: FROM LOCAL STEWARDSHIP TO NATIONAL VISION (2012).

[62] *Id.* at 55.

[63] *Id.* at 54, 57.

to achieve an objective measure of ecological sustainability and social equity, whether governments have faithfully implemented the adopted plans, and whether water reality resembles the planned outcomes.

A brief review of the global IWRM support program (UNEP and GWP) suggests that IWRM has limited success in moving beyond planning. Through that program, fifteen countries have produced action plans, two countries have some planned action items underway, and only one country has implemented a planned action item: Grenada's stakeholder outreach and education program.[64]

4. Distinctive features of sustainable IWRM

Looking at sustainable IWRM through an ethical lens, two features are striking: its economic orientation to water management and its anthropocentric utilitarianism. Sustainable IWRM has an economic orientation to water resources management. From its inception at the 1992 Dublin Conference until now, it has treated water as an economic good or commodity, sought to attain allocative efficiency in maximizing human utility (welfare), and advocated use of neoliberal policies and economic instruments for that purpose in managing water.

The ethical underpinning of sustainable IWRM is anthropocentric utilitarianism. It conceives of Earth's carrying capacity as logical starting point of development and views protecting that carrying capacity as essential for human development. However, sustainable IWRM does not seek to protect natural ecosystems except for their utility for human development. Natural ecosystems are simply simultaneously enablers of, and therefore constraints on, human development. Although sustainable IWRM acknowledges that we can no longer pursue water development and management without regard for the impact on natural ecosystems, it also strongly suggests those natural ecosystems do not have any inherent, intrinsic, independent value.

This is not just the ethical underpinning of sustainable IWRM; it is the ethical underpinning of sustainability.[65] Global society has understood protection of ecosystems and the life within them, as simply a means to foster human social and economic development, rather than

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64 *IWRM Action Searcher*, GLOB. WATER P'SHIP, https://www.gwp.org/en/sdg6support/iwrm-actions/actionsearch/?BaseTargetPageId=272646&Region=&Country=&IWRMDimensions=&SDGQuestions=&Level=&Status=&RelatedSDGGoals= (last visited Jan. 21, 2025).

65 *See* Susan L. Smith, *Ecologically Sustainable Development: Integrating Economics, Ecology, and Law*, 31 WILLAMETTE L. REV. 261, 262–63 (1995) [hereinafter Smith, *Ecologically Sustainable Development*] ("[T]he core concept of sustainable development is to direct global economic efforts toward increasing the present generation's quality of life while recognizing two principles: the Earth's finite capacity to accommodate people and industrial development, and a moral imperative not to deprive future generations of natural resources essential to the well-being and quality of environment."). Smith, a co-author of this Essay, no longer believes that the anthropocentric orientation of sustainability is immaterial to environmental outcomes; the experience with sustainability since 1995 suggests otherwise.

as valuable or ends in themselves. Agenda 21 clearly reflected the instrumental value of water in its discussion of sustainable IWRM. It stated:

> Integrated water resources management is based on the perception of water as an integral part of the ecosystem, a natural resource, and a social and economic good, whose quantity and quality determine the nature of its utilisation. To this end, water resources have to be protected, taking into account the functioning of aquatic ecosystems and the perenniality of the resource, in order to satisfy and reconcile needs for water in *human* activities.[66]

This reduction of water, aquatic ecosystems, and all other life to an instrument for satisfying human desires (albeit over the long term) persists in current definitions and discussions of sustainable IWRM. Recall the GWP definition: "IWRM is a process which promotes the coordinated development and management of water, land and related resources, *in order to maximise the resultant economic and social welfare* in an equitable manner without compromising the sustainability of *vital* ecosystems."[67] IWRM does not even consider all ecosystems to be worthy of protection. IWRM seeks to maximize human economic and social welfare, and embraces sustaining ecosystems only if, and to the extent that, ecosystem protection is *vital* to that goal.

5. The role of ecological sustainability and social equity in sustainable IWRM

Organizations promoting or practicing sustainable IWRM differ in how they envision the relationship among the three pillars of sustainability. We classify their views into four categories in order of increasing commitment to ecological sustainability and social equity:

(1) No substantive commitment to sustainability, just achieve whatever goals are agreed to by the stakeholders or set by the decision-makers (sustainability-free IWRM).
(2) Primacy of economic growth, while still providing political cover for decision-makers with respect to social equity and ecological sustainability (Trojan horse IWRM).
(3) "Balancing" social, economic, and ecological goals (balancing IWRM).
(4) Maximize economic and social development, but only to the extent possible with social equity and ecological sustainability serve as constraints (constrained economic development IWRM).

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[66] *Rio Report*, *supra* note 45, Annex II, *Agenda 21*, U.N. Conference on Environment & Development, *AGENDA 21*, ¶ 18.8. (1992) (emphasis added).

[67] GLOB. WATER P'SHIP, *The Need for an Integrated Approach*, *supra* note 28 (emphasis added).

Sustainability free

The first notion of "sustainable IWRM" is actually free from substantive goals with respect to ecological sustainability and social equity. The U.S. Army Corps of Engineers, the agency responsible for a considerable amount of water development and management in the United States, embraces this sustainability-free IWRM concept. The Corps acknowledges the sustainable use of water resources, but does not embrace protection of aquatic ecosystems or promotion of social equity as a significant aspect of IWRM. The Corps instead regards IWRM as a process to consider multiple viewpoints on water management as it neutrally balances "stakeholder interests, objectives, and desired outcomes":

> IWRM aims to develop and manage water, land, and related resources, while considering multiple viewpoints of how water should be managed (i.e. planned, designed and constructed, managed, evaluated, and regulated). It is a goal-directed process for controlling the development and use of river, lake, ocean, wetland, and other water assets in ways that integrate and balance stakeholder interests, objectives, and desired outcomes across levels of governance and water sectors for the sustainable use of the earth's resources.[68]

The Corps' sustainability-free IWRM approach essentially commits the Corps to continuing to play the traditional pluralistic management role that administrative agencies commissioned earlier in the twentieth century under "public interest" statutes sought to play.

Economic development Trojan horse

The Trojan horse approach to sustainable IWRM appears less in rhetoric and more in practice. With respect to Clean Water Act (CWA) § 404 dredge and fill permitting, the Corps has long appeared to favor economic development over protecting water quality and ecosystems.[69] Many development projects require a CWA 404 permit because they involve some degree of dredging and filling. Under the Corps' permitting regulations, it only issues a permit to a project if it is in the public interest.[70] However, the Corps also conveniently avoids giving teeth to that determination since it *presumes* that development projects are in the

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[68] AM. WATER RES. ASS'N POL'Y COMM., *supra* note 61, at 6 (quoting U.S. ARMY CORPS OF ENG'RS, RESPONDING TO NATIONAL WATER RESOURCES CHALLENGES 28 (2010)).

[69] *See*, *e.g.*, AM. RIVERS & NAT'L WILDLIFE FED'N, A CITIZEN'S GUIDE TO THE CORPS OF ENGINEERS 24 (2009), https://biotech.law.lsu.edu/blog/A-Citizens-Guide-to-the-Corps-of-Engineers-Permitting-D.pdf (explaining the economic benefits and environmental harms attributable to the Corps).

[70] 33 C.F.R. § 320.4(a)(1) (2024); AM. RIVERS & NAT'L WILDLIFE FED'N, *supra* note 69, at 67, 85, 87.

public interest.[71] Likewise, the Corps uses its nationwide permitting authority to permit a vast array of development projects and activities based on simply filing a notice, rather than requiring the project applicant to file an individual permit application. The Portland District guide lists fifty nine nation-wide permits in 2021.[72]

The Corps record on water development projects is less clear. The Corps is seldom the project proponent; the Corps studies the feasibility of water projects proposed by other federal agencies and non-federal sponsors and makes recommendations about priorities for Congressional funding.[73] Although evaluation of the Corps project review process indicates that the Corps analyzes economic costs and benefits more rigorously than ecosystem costs and benefits, that fact is probably more indicative of relative difficulty of estimating ecosystem service costs and benefits, rather than a revealed bias of the Corps in favor of constructing projects.[74]

The mixed record of the Corps on these two aspects of its mission more likely reflects the professional discomfort of the Corps with its regulatory mission as opposed to a true Trojan Horse attitude towards sustainable IWRM.

Although we believe that it is likely that Trojan horse approaches to IWRM rear their ugly heads in some contexts, the scholarly literature has not examined closely either the rhetoric or implementation in practice of the various notions of sustainable IWRM.

Balancing economic, social, and environmental goals

Organizations promoting sustainable IWRM often embrace a third notion of sustainable IWRM. They seek to balance economic and social welfare with social equity and ecological concerns. Many global actors, including the UN Development Programme (UNDP)[75] and the Stockholm

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[71] 33 C.F.R. § 320.4(a)(1). The Corps is required to deny dredge and fill permits that violate EPA's CWA 404(b) guidelines but otherwise calls for permits to be granted unless the district engineer determines that it would be contrary to the public interest. *Id.*

[72] U.S. ARMY CORPS OF ENG'RS, PORTLAND DIST., USER'S GUIDE FOR 2021 NATIONWIDE PERMITS IN THE STATE OF OREGON 20–83 (2022), https://www.nwp.usace.army.mil/Portals/24/docs/regulatory/nationwide/20220225%202021%20Nationwide%20Permit%20User%20Guide.pdf.

[73] U.S. GOV'T ACCOUNTABILITY OFF., GAO-20-113R, U.S. ARMY CORPS OF ENGINEERS: INFORMATION ON EVALUATIONS OF BENEFITS AND COSTS FOR WATER RESOURCES DEVELOPMENT PROJECTS AND OMB'S REVIEW 4 (2019).

[74] *See* CTR. FOR PORTS & WATERWAYS & TEX. A&M TRANSP. INST., HOW PROJECT SELECTION IN THE CORPS OF ENGINEERS IS AFFECTED BY BENEFIT-COST RATIO (BCR) ANALYSIS 25–26 (2018), https://nationalwaterwaysfoundation.org/file/29/TTI%20BCR%20FINAL%20STUDY.pdf (discussing how costs and benefits which are difficult to express in monetary units should be addressed).

[75] The UNDP is the United Nations lead agency on international development. Though UNDP once worked primarily to increase economic growth in developing countries, it now works in 170 countries and territories to eradicate poverty and reduce inequality by assisting countries to achieve the Sustainable Development Goals, realize democratic governance

International Water Institute (SIWI)[76] adopt the balancing view. Other major water resources players, such as the American Water Resources Association, also endorse balancing.[77]

Constrained economic development

Although GWP adheres to a balancing notion of sustainability, its own definition contains a glimpse of a fourth view of how to reconcile the three pillars of sustainability. The fourth approach would actually constrain or limit the extent of economic development based on social equity and ecological sustainability. Though acknowledging that the central goal is maximizing economic development, this notion would actually give social equity and ecological sustainability more weight than mere indeterminate balancing.[78]

C. The critique

1. The fruits of sustainable IWRM have not been sustainable management of water

Water around the world endures many insults. Energy corporations and governments dam flowing rivers to make power while constraining the ability of resident fish to pass. Corporate agriculture and other farmers divert water from rivers to the point that they are bone dry and destroy once aquatic ecosystems. When the rivers run short of water for irrigation, farmers pump groundwater, which deplete the aquifers that people rely upon for drinking water. Farmers use fertilizers and allow them to runoff into lakes, rivers, and ultimately oceans, causing toxic algae blooms as well as dead zones where no life can exist. Excess water from diversions seeps into groundwater, causing nitrate contamination

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and peaceful conflict resolution, and build climate and disaster resilience. *About Us*: *Our Mission, Our Goals, Our Mandate*, U.N. DEV. PROGRAMME, https://www.undp.org/about-us (last visited Feb. 13, 2025).

76 Among other research activities, SIWI organizes the annual World Water Week, which is the foremost global water resources policy and management event. *About*, WORLD WATER WEEK, https://www.worldwaterweek.org (last visited Feb. 13, 2025).

77 The AWRA describes the goal of IWRM in this way: "The goal of IWRM is to manage water sustainably. Water management must balance the multiple objectives of different interests with consideration for economic development, social equity and the environment as well as current and future generations." AM. WATER RES. ASS'N POL'Y COMM., *supra* note 61, at 6–7. The 2011 AWRA position statement identifies IWRM as "[t]he coordinated planning, development, protection, and management of water, land, and related resources in a manner that fosters sustainable economic activity, improves or sustains environmental quality, ensures public health and safety, and provides for the sustainability of communities and ecosystems." AM. WATER RES. ASS'N, INTEGRATED WATER RESOURCES MANAGEMENT IN THE US 1 (2011). Although the statement identifies the multiple objectives a bit differently, the notion of balancing among those objectives appears to be maintained.

78 Smith, *Ecologically Sustainable Development*, *supra* note 65, at 298–99.

that is hazardous to human health. Cities occasionally or routinely dump raw, untreated sewage into rivers and oceans. Industrial operations contaminate water by dumping heavy metals or worse into water or disposing of them in unlined landfills that leach toxic pollutants into groundwater.

These abuses of water continue thirty years after sustainable IWRM became the global paradigm for water resources management. When a governance system routinely produces bad results, one must question whether that system is capable of producing the results that we desire. When humans treat water so badly, in such an unsustainable manner, one must wonder whether the water governance system we have embraced is capable of achieving sustainable management of water.

Some may provide easy answers to avoid this apparent paradox. Perhaps confusion about which version of IWRM to use makes implementation difficult. To the extent that a planning effort adopts a Trojan horse version of IWRM, it would be surprising if IWRM did produce sustainable management of water. Maybe the failure to adopt a constraint-oriented version of sustainable IWRM **is** the problem. Perhaps even if we have adopted the best version of sustainable IWRM possible, our societies would still manage water poorly because they lack the financial capacity to build fish passage ladders, sewers, or wastewater treatment plants. Certainly, the water sector remains underfunded in many countries. However, in most countries, underfunding of water infrastructure reflects competing political priorities, indifference to providing marginalized groups with services, or weak government, not necessarily an absolute dearth of financial capacity.[79] Perhaps change just takes time and sustainable IWRM has not had enough time to take hold and fulfill its promise. Certainly, building a sustainable IWRM governance system takes time for developing countries (and developed countries) that struggle to create basic democratic institutions. Yet, if time is the answer, why do we continue to see continued abuse of water in the United States and Canada, countries that embraced sustainable IWRM relatively early on and now successfully use collaborative IWRM planning processes? Looking at their performance with respect to water, we may become less confident that time is the answer.

Perhaps something more fundamental prevents sustainable water resources management from achieving sustainability. If so, a different

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[79] *See, e.g.*, Joe Brown et al., *The Effects of Racism, Social Exclusion, and Discrimination on Achieving Universal Safe Water and Sanitation in High-Income Countries*, 11 LANCET GLOB. HEALTH e606–e607 (2023) (discussing the effects of gaps in safe water and sanitation as essential public health infrastructure and attributing such gaps to perpetuation of social exclusion); GEORGE JOSEPH ET AL., WORLD BANK GROUP, FUNDING A WATER-SECURE FUTURE: AN ASSESSMENT OF GLOBAL PUBLIC SPENDING 242–45 (2024) (identifying inadequate revenue due to low tariffs and leaks, technical and cost inefficiencies, and low budget execution as issues).

answer is required, one that suggests the need for a new approach to human activities affecting water.[80]

2. Sustainable IWRM is a flawed utilitarian anthropocentric approach to water

Engineers, lawyers and economists who consider themselves hardheaded realists may instinctively sneer as the idea of an ethical approach to water. However, we must realize that as a descriptive matter, any coherent approach to dealing with water has one or more ethical underpinnings.

To tease out the ethical underpinnings of sustainable IWRM, recall the GWP definition of IWRM: "IWRM is a process which promotes the coordinated development and management of water, land and related resources, in order *to maximize the resultant economic and social welfare* in an equitable manner without compromising the sustainability of vital ecosystems."[81] Obviously, sustainable IWRM takes a distinctly utilitarian, instrumental approach to water and human activities. It is instrumental since water has become simply a means to achieve particular human ends. It is utilitarian because it ideally seeks to maximize social good, termed "resultant economic and social welfare" in the GWP definition.[82] It is also utilitarian because it protects only "vital" ecosystems, those necessary to enable current and future generations to maximize *their* long-term economic and social welfare.[83]

While the ethical underpinnings of sustainable IWRM may be generally utilitarian, what are we to make of the intra-generational equity aspect of sustainable IWRM?[84] Here, two divergent ethical approaches could justify intra-generational equity. First, we might base intra-generational equity on a natural law approach, termed either as

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[80] Many water justice activists argue that the roots of our abuse of water lie deep in neoliberal economies, political and social structures that systemically repress women, poor people, Indigenous peoples, and people of color, and cultures manipulated by economic and political elites manipulate, who intentionally instill racist, classist, and misogynistic beliefs to protect their wealth and power. *See, e.g.*, Rajendra K. Sail*, Foretaste of Water Justice: Stories from the Marginalized Communities*, *in* THE PILGRIMAGE OF WATER JUSTICE, *supra* note 8, at 147, 147–59. Water justice activists often believe that fundamental change in our political and economic systems is necessary to reform our abuse of water in enduring ways. They may be correct, but change that sweeping and fundamental is even more difficult than trying to improve our relationship with water. We choose to confine ourselves to this 'simple' task.

[81] GLOB. WATER P'SHIP, *The Need for an Integrated Approach*, *supra* note 28 (emphasis added).

[82] *Id.*

[83] *Id.*

[84] The intergenerational equity aspect of sustainability is easily justified from a utilitarian perspective and is conductive to economic management of water based on sustainability economics or ecological economics. The intra-generational equity aspect is somewhat less easy to justify in utilitarian terms, unless you allow interpersonal comparisons of utility. Even neoclassical economic theory, however, does admit to some interpersonal comparison of utility because it acknowledges the law of diminishing returns.

"social justice" or as "human rights." Second, we might base it on a utilitarian perspective that admits to some ability to compare interpersonal utility as to basic human needs. The difference between these ethical approaches is deeply significant. The first appeals to those motivated by faith or deeply held moral beliefs to regard certain actions as right or wrong; such motivations are apt to create more impassioned advocacy. The second integrates more easily with the economic orientation of sustainable IWRM, frames its analysis in secular terms, and admits more readily of compromise. Understandably, the water resources professionals involved in sustainable IWRM are much more likely to consider intra-generational equity from the utilitarian perspective, which perhaps appears more "rational" than the natural law approaches.[85] Do advocates who have fought for decades to ingrain social justice into our society's vision base their work on the milk utilitarian perspective? Is that perspective best suited to achieve social justice? Our sense is that moral conviction motivates social justice advocates and that our societies need this sense of moral conviction as motivation to achieve social equity.

We also suggest that the current utilitarian perspective on ecosystem protection embodied in sustainable IWRM has a natural law fraternal twin. Destroying aquatic ecosystems not only reduces our ability to maximize social welfare, it is also wrong from a natural law or water justice perspective. Incorporating that fierce deeply affective natural law or deontological perspective, along with the more mild utilitarian perspective, is critical to motivating activists as well as the bulk of our society to change their behavior towards water. Human beings are frequently motivated to change by *pathos*, emotion or passion, not *logos* or reason.[86]

3. Sustainable IWRM does not fully reflect human nature or deeply held human values

Humans are not inevitably and intrinsically egocentric and without compassion. The teachings of all faiths about compassion[87] and the

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[85] Unbounded utilitarianism is not more 'rational' (and not even more secular than the Kantian categorical imperative) than constraining our choices. Herbert Simon taught us that decision-makers are smart: they are more apt to use bounded rationality than unbounded rationality. *See* HERBERT A. SIMON, ADMINISTRATIVE BEHAVIOR: A STUDY OF DECISION-MAKING PROCESSES IN ADMINISTRATIVE ORGANIZATION 61–78 (1947). Bounding our utilitarian calculations is both useful as a decision-making shortcut and good. We know that we must place ethical limits on our actions undertaken to maximize social good. Some acts or omissions are bad, even if they might lead to a greater good. They violate natural law norms and committing those acts creates a character inconsistent with virtue ethics.

[86] Populist politicians often seek to mobilize anger and fear. Empirical work suggests that anger successfully motivates populist views while fear does not. Guillem Rico et al., *The Emotional Underpinnings of Populism: How Anger and Fear Affect Populist Attitudes*, 23 SWISS POL. SCI. REV. 444, 449 (2017).

[87] *See, e.g.*, Desmond Tutu & Karen Armstrong, *Heed the Call of Compassion*, GUARDIAN (Sept. 25, 2009, 6:00 AM), https://www.theguardian.com/commentisfree/belief/2009/sep/25

scientific literature on compassion and altruism prove that.[88] We should not adopt either water management approaches or transformative strategies simply assuming the worst of human nature.

Most human beings rapidly advance past the egocentric stage of emotional, ethical, and spiritual development in which everything belongs to them and they are unwilling to share. Given the centrality of water to all life, it is natural to share water to preserve human and other life on Earth. Frequently, people only adopt an unenlightened anthropocentric worldview or stance because someone has taught them that it is unrealistic to sacrifice anything for the sake of other life.[89]

Relying on an ethical underpinning for water management that does not value other life fundamentally sends the wrong message. Our policies, laws, and institutional structures send powerful messages to people about values and social norms. If we continually tell people that only human beings matter, they just might believe it.

/charter-compassion-tutu-armstrong (arguing that the Golden Rule or compassion are fundamental tenets of religions, such as Christianity, Judaism, Islam, Buddhism, and Confucianism, and lie at the heart of all "truly religious and ethical systems").

[88] See, e.g., Jennifer L. Goetz et al., *Compassion: An Evolutionary Analysis and Empirical Review*, 136 PSYCH. BULL. 351 (2010) (discussing the evolution of compassion). For a recent review summarizing the vast and rapidly growing literature on compassion, see Jennifer S. Mascaro et al., *Ways of Knowing Compassion: How Do We Come to Know, Understand, and Measure Compassion When We See It?*, FRONTIERS PSYCH., Oct. 2020, No. 547241. Scientists studying compassion also make their results available in popular form. See generally Dacher Keltner et al., THE COMPASSIONATE INSTINCT: THE SCIENCE OF HUMAN GOODNESS (Dacher Keltner et al. eds., 2010) (presenting a number of essay as "the fruits of radical new developments in science"). Empathy and compassion are biologically different: empathy triggers the portions of the brain associated with pain while compassion generates activity in the brain region associated with regulating emotions and prosocial reward response. Tania Singer & Olga M. Klimecki, *Empathy and Compassion*, 24 CURRENT BIOLOGY R875, R875–R876 (2014). "When we feel compassion, our heart rate slows down, we secrete the bonding hormone oxytocin, and regions of the brain linked to empathy, caregiving, and feelings of pleasure light up." *What Is Compassion?*, GREATER GOOD MAG., https://greatergood.berkeley.edu/topic/compassion/definition (last visited Feb. 15, 2025). Altruism is performing self-sacrificing behaviors in order to benefit someone or something other than oneself, regardless of the personal, material or social outcomes that might follow. Scholars studying sustainability distinguish between prosocial altruism and pro-environmental altruism. Although distinguishable when put in direct competition, the two forms of altruistic behavior are strongly correlated. Beatrice Conte et al., *The Dynamics of Humanistic and Biospheric Altruism in Conflicting Choice Environments*, PERSONALITY & INDIVIDUAL DIFFERENCES, Jan. 2021, at 1–3. It turns out that having a sense of connectedness to nature not only increases pro-environmental altruism; it also increases prosocial altruism. Fernanda Inéz García Vázquez et al., *Conectividad con la Naturaleza y Conducta Sustentable: Una Vía Hacia las Conductas Pro-Sociales y Pro-Ambientales*, 6 PSICUMEX 81, 82–83, 92–93 (2016). Both types of altruistic behavior are also associated with positive physical and mental health benefits, such as reduced depression. See, e.g., Stephen G. Post, *Altruism, Happiness, and Health: It's Good to Be Good*, 12 INT'L J. BEHAV. MED. 66, 68–70 (2005).

[89] We do not argue for absolutist ecocentric ethics; enlightened anthropocentrism is quite adequate to allow concern for other life. ANGELIKA KREBS, ETHICS OF NATURE 137–38 (1999).

Explicitly shifting towards a paradigm that values all life does not imply that we cannot articulate anthropocentric utilitarian arguments in favor of using water to protect other life. It just means that those will not be the only arguments made.[90]

4. Sustainable IWRM is fundamentally flawed because it is premised on economic management of water

As our societies have embraced neoliberal market capitalism, economists and wealthy interests have successfully convinced our governments that economic management of water is superior. Economic management recommends allowing private water right holders, who generally obtain such a right from the government without paying for it, to transfer and market that water for profit and efficient allocation.[91] Economic management assumes individuals and corporations ought to pollute water until it reaches the economically optimal level of pollution even if that level harms fish, aquatic ecosystems, and even human beings.[92] Economic management allows privatization of water service, even though poorly regulated private providers may price publicly owned water at whatever the traffic will bear, or the government may guarantee them rates that cover all their capital and operating costs and add to those costs an extremely lucrative profit.[93] Economic management uses marginal cost-benefit analysis, not fairness or equity, to decide where and how to make investments in water infrastructure, seeking to mimic the purported allocative efficiency of competitive markets.[94] These are strategies straight out of the neoclassical economic playbook.

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[90] We know, for instance, that studying economics reduces the value undergraduate students place on all life (universalism). It also increases the value they place on hedonism and power, and reduces their sense of being in charge of their own lives (self-direction). Racko Girts, *The Values of Economics*, 154 J. BUS. ETHICS 35 (2019).

[91] Sarah Ann Wheeler & Ying Xu, *Introduction to Water Markets: An Overview and Systematic Literature*
Review, *in* WATER MARKETS 1, 2–4 (Sarah Anne Wheeler ed., 2021).

[92] Amy Farmer et al., *Rethinking the Optimal Level of Environmental Quality: Justifications for Strict Environmental Policy*, 36 ECOLOGICAL ECON. 461, 462, 472 (2001).

[93] For example, the municipal water contracts for Jakarta, Indonesia guaranteed private providers a 22% profit on all capital as well as a management fee in excess of 20%. Interview with anonymous Jakarta city official (2013); EMANUELE LOBINA & DAVID HALLIN, WATER PRIVATIZATION AND REMUNICIPALISATION: INTERNATIONAL LESSONS FOR JAKARTA 9 (2013). Activists fought a two-decade long battle against privatization. In 2012, the Coalition of Jakarta Residents Opposing Water Privatization (KMMSAJ) filed a lawsuit to nullify the privatization concession contracts with Thames Water and Suez. In 2017, the Indonesian Supreme Court ordered the provincial and central governments to end the contracts and return the water services to the public water utility. *See generally* Okke Braadbaart, *Privatizing Water: The Jakarta Concession and the Limits of Contract*, *in* A WORLD OF WATER: RAIN, RIVERS AND SEAS OF SOUTHEAST ASIAN HISTORIES 297 (Peter Boomgaard ed., 2007) (discussing the Jakarta concession).

[94] The Corps of Engineers explicitly relies on benefit-cost analysis to determine which water resources development projects to recommend to Congress. *See, e.g.*, CTR. FOR PORTS

Economic management of water relies on the implausible axioms of neoclassical economics

Those of us raised in the past two or three generations have so internalized neoclassical economics (NCE) that its influence is almost invisible to us. We are like fish swimming in the waters of neoclassical economics; we do not see the water. Neoclassical economics provides us with comforting notions about how free markets work, including how consumer households, workers, and businesses make market decisions:

(1) Market prices set by supply and demand for various goods and services are market-clearing equilibria that precisely balance supply and demand of various goods and services.
(2) These equilibria are *Pareto*-optimal, i.e. no other allocation could make any given person better off without making some other person worse off. This perfectly efficient allocation of resources optimizes the social welfare of the society—assuming no interpersonal comparison of utility is possible.[95]
(3) Businesses supply goods and services at a price that maximizes profit, incidentally covering their costs of production and supplying a reasonable return on invested capital, achieving allocative efficiency with respect to resources used in products as well as the overall level of production of each good and service.
(4) Workers supply their labor at prices set by supply and demand for labor, which optimally allocates between labor and capital in producing goods and services—and provides workers with a fair wage reflecting their marginal productivity, their utility in the production process.
(5) Given their household budget, consumers buy various goods and services (demand) in a manner that maximizes their happiness, i.e. maximizing individual utility based on personal preferences, again achieving allocative efficiency.

Our society has taught us these neoclassical economic ideas as if they were truths both descriptive of reality and representative of an idyllic society: they are the way the world works as well as how it should work. Unfortunately, neoclassical economic theory does not depict reality about how the economy works nor does it provide us with sound guidance about how to create a desirable world. While many economists have moved

& WATERWAYS & TEX. A&M TRANSP. INST., *supra* note 74 (analyzing the Corps' benefit-cost analysis and assessing differences in current methodology for general benefit-cost analysis).

95 "Pareto efficiency is defined informally as an allocation of resources where someone cannot be made better off without making someone else worse off. Conditions for achieving such an efficiency include having exchange efficiency, where no further trade can be mutually beneficial, and production efficiency, where the reallocation of factors of production (like land or machinery) to make goods cannot be improved." Ally Mintzer, *Rethinking Pareto Efficiency*, BERKELEY ECON. REV. (Dec 3, 2020), https://econreview.studentorg.berkeley.edu/rethinking-pareto-efficiency.

beyond the oversimplifications of neoclassical economics thinking,[96] many whose dominant exposure has been to undergraduate and graduate microeconomics remained tethered to this oversimplified neoclassical economic worldview.

NCE makes a vast array of unrealistic, unwarranted assumptions about the nature of markets and society. The first assumption is that allocative efficiency is and should be *the exclusive social goal* because any deviation from allocative efficiency by definition reduces social welfare. The second assumption is that all markets inevitably have large numbers of businesses engaging in competitive behavior, so that they "take" prices rather than setting prices. Reality is far more complicated. In the real world, businesses engage in price-setting and other anti-competitive behavior to extract excess profits. The markets are frequently infected with such behavior and clearly do not achieve allocative efficiency by virtue of market prices.[97] A third assumption is that free markets deliver a tolerable level of income inequality and consequent wealth distribution since wages are based on the marginal productivity of workers and are *ipso facto* fair. Nothing could be further from the truth. The amazing discrepancy between corporate CEOs and workers has little to do with marginal productivity and everything to do with power. It leads to rapidly increasing income inequality that suppresses effective demand, causes unemployment, and exacerbates economic contraction and political instability.[98] A fourth assumption is that the economy provides

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[96] *See, e.g.*, Robert Costanza, *What Is Ecological Economics?*, 1 ECOLOGICAL ECON. 1, 1 (1989) (explaining that ecological economics "will include neoclassical environmental economics and ecological impact studies as subsets, but will also encourage new ways of thinking about the linkages between ecological and economic systems"). Pearce and Turner lay out the fundamentals of the ecological economic approach in an accessible text for non-economists. *See generally* DAVID W. PEARCE & R. KERRY TURNER, ECONOMICS OF NATURAL RESOURCES AND THE ENVIRONMENT (1990). They recount the history of environmental and natural resources economics, provide a convincing argument that neoclassical economics cannot assure sustainability, and articulate the ethical bases for intergenerational justice and an ecocentric perspective. *Id.* at 3–26, 232, 236, 319.

[97] One of the least competitive industries until recently was the aerospace industry, which was dominated by two or three major companies, such as Boeing. Ramish Cheema, *10 Least Competitive Industries in the World*, YAHOO! FIN. (June 22, 2023), https://finance.yahoo.com/news/10-least-competitive-industries-world-103513760.html. Elon Musk's SpaceX has broken this near monopoly in aerospace. *Id.*

[98] The World Bank Group includes among its key global objectives for development the eradication of extreme poverty and boosting the incomes of the bottom 40% of developing countries. *The World Bank Group Goals: End Extreme Poverty and Promote Shared Prosperity* 7 (World Bank Grp., Working Paper No. 89925, 2013), https://www.worldbank.org/content/dam/Worldbank/document/WB-goals2013.pdf. The International Monetary Fund (IMF) has weighed in with a discussion on the role of income distribution as a cause and consequence of economic growth. On average,

> [A] 1 percentage point increase in the Gini coefficient reduces GDP per capita by around 1.1% over a five-year period; the long-run (cumulative) effect is larger and amounts to about -4.5%.

everything essential to provisioning human life, despite the fact that the most family caretaking and most ecosystem services are not reflected in markets.[99] The final, most damning and blatantly false assumption of neoclassical theory, however, is that economic growth—production and consumption of material goods and transformation of nature (reduced to "natural capital") into waste—is simply unlimited.[100] Neoclassical economists suggest that we can continue to destroy the Earth's natural ecosystems in pursuit of economic growth.[101] Like the magic of the invisible hand, technological innovation naturally generated by the market will miraculously save us from ecological destruction. As we have already seen in the already destructive effects of global warming, technological innovation can come too late.

Neoclassical theory also relies on an economically ideal actor (*Homo economicus*) who does not resemble any living human being and is not a person that most people would care to emulate.[102] First, *Homo economicus*

> To be clear, this finding implies that, on average, increases in the level of income inequality lead to lower transitional GDP per capita growth. Increases in the level of income inequality have a negative long-run effect on the level of GDP per capita.

How Does Income Inequality Affect Economic Growth?, WORLD ECON. F. (July 9, 2015), https://www.weforum.org/stories/2015/07/how-does-income-inequality-affect-economic-growth. However, in poor countries, increases in income inequality raise GDP per capita (while the opposite is the case in high- and middle-income countries), because they raise income of some to the point they can save and invest. *Id.* ("[A]t the 25th percentile of initial national income[,] the predicted effect of a 1 percentage point increase in the Gini coefficient on GDP per capita is 2.3% . . . ; at the 75th percentile of initial national income[,] the effect is -5.3% . . . .").

[99] *See, e.g.,* Catherine Powell, *The Social and Economic Costs of Unpaid Caregiving*, COUNCIL ON FOREIGN RELS. (July 27, 2017, 4:21 PM), https://www.cfr.org/blog/social-and-economic-costs-unpaid-caregiving; Irene Lauro, *Beyond GDP Growth: Why Natural Capital Matters*, SCHRODERS (Oct. 12, 2021), https://www.schroders.com/en/global/individual/insights/beyond-gdp-why-natural-capital-matters.

[100] This problem is identified by ecological economists such as Herman Daly, who initiated the notion of a steady-state economy. *See generally* HERMAN E. DALY, STEADY-STATE ECONOMICS (2d ed. 1991). Spash and Schandl note that even heterodox Post Keynesian economists fail to comprehend the impossibility of sustaining long-term economic growth. *See, e.g.*, Clive L. Spash, C. & Heinz Schandl, *Challenges for Post Keynesian Growth Theory: Utopia Meets Environmental and Social Reality*, *in* POST KEYNESIAN AND ECOLOGICAL ECONOMICS 47, 55 (Richard P.F. Holt et al. eds., 2009).

[101] *See* Luca Coscieme et al., *Overcoming the Myths of Mainstream Economics to Enable a New Wellbeing Economy*, SUSTAINABILITY, Aug. 2019, No. 4374, at 1–2 (discussing mainstream beliefs in infinite growth).

[102] *Homo economicus*, or "economic man," is the characterization of human beings as perfectly rational creatures who pursue solely economic gain for their own self-interest. Although conceptually present in the writings of Adam Smith and John Stuart Mill, the term was first used by Francis A. Walker and Claudio Jannet in the late 19th century. Michele Bee & Maxime Desmarais-Tremblay, *The Birth of* Homo Œconomicus*: The Methodological Debate on the Economic Agent from J. S. Mill to V. Pareto*, 45 J. HIST. ECON. THOUGHT 1, 2, 8–9 (2023). This solidified the "economic man" as a foundational, albeit reductionist, element of neoclassical economics. It has been severely questioned as an unrealistic portrayal of human behavior by political scientists, psychologists, and behavioral economists. *See, e.g.*, Richard H. Thaler, *The Evolution of Economics and Homo Economicus*, CHI. BOOTH REV.

maximizes his individual utility/happiness to the exclusion of any other goal, ideal, or God. There is no goal grand enough to survive the penultimate individual economic motivation to consume economic goods and services. Second, this economic actor has a robotic personality with supercomputer computational capacity. This economic actor makes completely rational calculations that seek to maximize individual utility, rather than decisions that reflect bounded rationality, framing, satisficing, heuristic devices to reduce decision costs, and other "irrational" aspects of human decision-making.[103] Third, *Homo economicus* operates in an economy that consists of a mass of isolated, atomistic individuals, each carefully calculating how to maximize their utility based on thoroughly personal, endogenous preferences. Such economic actors are obviously immune to cultural or social influences like peer pressure or advertising in deciding which shoes or jeans to wear. Fourth, *Homo economicus* is thoroughly self-interested, not bothered by pernicious tendencies toward compassion, altruism or bounded self-interest. Finally, *Homo economicus* has the amazing superpower of infinite self-control; such economic actors are never subject to the compulsions of addiction or mere mortal lapses in willpower.

This set of unrealistic assumptions about human behavior undercut predictions made by neoclassical economists about reality and real-world human behavior. In a world of perfect competition, perfect knowledge, zero transaction costs, infinite natural capital, and *Homo economicus*-beings devoted heart and soul to acquisitive materialism, neoclassical economic theory might provide an adequate descriptive account of our economy and our resulting society. Thank God, such a world lives only in the pitiful imagination of those fascinated by the self-referential, reality-free econometric equations produced by self-hypnotized neoclassical economists. Even less do these assumptions provide confidence in the normative prescription of "free markets;" a confidence so great that some believe we should strictly minimize or wholly abandon government and other institutions.[104]

(June 17, 2015), https://www.chicagobooth.edu/review/the-evolution-of-economics-and-homo-economicus.

103 Daniel Kahneman, a psychologist whose work in prospect theory with Amos Tversky prompted creation of behavioral economics, won the Nobel Prize in Economics in 2002 for their joint work. Then, later in 2017, economist Richard Thaler received the Nobel Prize in Economics for his contributions to behavioral economics. The work of these three creative thinkers built upon the foundations of decision-making theory laid by luminaries such as economist Herbert Simon and mathematician Howard Raiffa. One of Raiffa's many contributions was a theory for making wise choices under conditions of uncertainty. *See generally* HOWARD RAIFFA, DECISION ANALYSIS: INTRODUCTORY LECTURES ON CHOICES UNDER UNCERTAINTY (1968).

104 We believe that the democratic state and other institutions of civil society remain key mechanisms to construct a good society. The good society deeply values life, empowers every being to participate in its fruits, involves each person in democratic decision-making on decisions that affect them, draws people together in community and creates reciprocal rights and responsibilities, and pursues a greater notion of the public interest, the common good, or collective happiness than the mere maximization of material consumption.

Unfortunately, recognition of these problems with neoliberal capitalism, neoclassical economics, and economic management of water based on them, has created severe distrust of economic analysis by communities subjected to water injustices.[105] That distrust is a contagion that ends up infecting public reaction to any proposal making use of economic incentives to shape water use, even modest conservation measures such as reverse tiered pricing.

The false lessons of neoclassical economics and neoliberal capitalism are pernicious social norms preventing sustainable water management in times of scarcity

Neoliberal market capitalism and its theoretical progeny, neoclassical economics, have taught our societies three particularly powerful moral lessons over the last four decades: greed is good, more is better, and government is the enemy. Greed is good because the invisible hand of the market turns personal choices based on utterly self-interested individualism into the best possible material life for all. The money thus accumulated throughout selfish greed satisfies everyone because, after all, money buys happiness. More is better because economic growth distributes the gains of capitalism throughout the society as material wealth trickles down, even to the poor. Government is the enemy because it interferes with the invisible hand and does so in ways that manifest "government failure."

These lessons are particularly pernicious as social norms for water management. Greed is good is a terrible lesson. It elevates materialism, creating greater pressure on limited water resources. It also elevates selfishness at a time when physical and economic water scarcity make equitable sharing of water more and more critical. The lie of "more is better," that our societies must have ever-expanding economic growth so that everyone can have enough and that the resulting material wealth will trickle down to the poor is demonstrably wrong and dramatically increases the pressure on both the quantity and quality of water resources. Citizens assuming that "The government is the enemy" prevents essential government regulatory action, such as water conservation measures during times of water stress or drought. We need to unlearn these lessons to survive the difficult times that lay ahead in the twenty-first century.

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105 *See generally* Sharmila L. Murthy, *Disrupting Utility Law for Water Justice*, 76 STAN. L. REV. 597, 632 (2024).

Marginal cost-benefit analysis as a means of analyzing water management alternatives is another flawed aspect of economic management of water

Cost-benefit analyses using marginal analysis in pursuit of allocative efficiency has a remarkable number of flaws. First, it is virtually impossible to shadow-price the intangible, non-economic values of water. Water has extraordinarily high and profound aesthetic, cultural, and spiritual values. Because water also has a high economic value and economic actors dominate sustainable IWRM decisions, sustainable IWRM is unlikely to treat water in a manner consistent with these aesthetic, cultural, and spiritual values. Making water decisions based on water justice ethics is better calculated to protect these human values.

Second, even if various tangible ecosystem services provided by water are shadow priced, these shadow prices will be imprecise and truly uncertain. If we rely on cost-benefit analysis that uses these shadow prices to choose how to develop, allocate, and treat water, those analyses are unlikely to provide useful guidance. As William Ruckelshaus, the first Administrator of the U.S. Environmental Protection Agency, observed, sensitivity analysis in the face of uncertainty only goes so far.[106] The range of estimates is often so great that cost-benefit or risk analysis cannot provide an answer.[107] Given the wide range of shadow prices generated and the true uncertainty about economic value of ecosystem services provided by water, we are more apt to protect those ecosystem services and reap their benefits by adopting an ethical paradigm that is less dependent on mushy economics.

Finally, humanity may be virtually omnipresent, but human omniscience and omnipotence are myths. We do not have the scientific knowledge or technological power to know definitively how to manage water and to be able to do so successfully. Life is too interwoven. It has required decades of massive research by substantial portions of the scientific community to confidently and accurately evaluate and with confidence the risks posed by climate change. We should not presume an ability to calibrate our interactions with water so finely that we can maximize human utility from water use. Instead, we may simply destroy both humanity and the remainder of life on earth. As Peter Brown and Jeremy Schmidt have argued, we need humility.[108]

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106 William D. Ruckelshaus, *Risk in a Free Society: A Reservoir of Trust*, L. VITAL SPEECHES DAY 354, 357 (1984).

107 *Id.*

108 Peter G. Brown & Jeremy J. Schmidt, *An Ethic of Compassionate Retreat*, *in* WATER ETHICS: FOUNDATIONAL READINGS FOR STUDENTS AND PROFESSIONALS 265, 281 (Peter G. Brown & Jeremy J. Schmidt eds., 2010).

Staggering income and wealth inequality fundamentally distort the results of economic analyses

The staggering degree of global income and wealth inequality distorts economic analyses performed based on neoclassical economics because income and wealth inequality depress aggregate demand. Particularly the demand of those at the bottom of the income and wealth distributions is depressed. This situation prevents economic management of water from realizing even the limited goal of allocative efficiency.

5. The Failures of Pluralistic Sustainable IWRM Decision-Making Mechanisms

Sustainable IWRM in its pluralistic or "collaborative" incarnation ultimately relies upon well executed planning and decision-making that are truly democratic to provide results that legitimately "balance" various stakeholder interests. There are three major obstacles to achieving that aspiration. First, wealth and income are so incredibly unequal that political power and the capacity to participate are poorly distributed.[109] Under such circumstances, water decisions derived through a sustainable IWRM process are unlikely to provide equitable results for all the people affected by the decisions. Second, given the inability of fish and other aquatic life to sit at the table as well as the inherent principal-agent conflicts of environmental organizations,[110] the collaborative outcomes are unlikely to adequately address the concerns of non-human life — and the collaborative discussions using water justice ethics are more likely to do so. Finally, even the best-laid water plans and policies fail when imperfectly implemented; even outstanding collaborative processes can falter in implementation.[111] Thus, making water decisions based on

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[109] LARRY M. BARTELS, UNEQUAL DEMOCRACY: THE POLITICAL ECONOMY OF THE NEW GILDED AGE 342–343 (2d ed. 2016).

[110] Ingolfur Blühdorn & Michael Deflorian, *The Collaborative Management of Sustained Unsustainability: On the Performance of Participatory Forms of Environmental Governance*, SUSTAINABILITY, No. 1189, Feb. 2019, at 2.

[111] *See* JEFFREY L. PRESSMAN & AARON WILDAVSKI, IMPLEMENTATION: HOW GREAT EXPECTATIONS IN WASHINGTON ARE DASHED IN OAKLAND; OR, WHY IT'S AMAZING THAT FEDERAL PROGRAMS WORK AT ALL THIS BEING A SAGA OF THE ECONOMIC DEVELOPMENT ADMINISTRATION AS TOLD BY TWO SYMPATHETIC OBSERVERS WHO SEEK TO BUILD MORALS ON A FOUNDATION OF RUINED HOPES 173–74 (3rd ed. 1984); *see also* DEAN FIXSON ET AL., IMPLEMENTATION RESEARCH: A SYNTHESIS OF THE LITERATURE 18 (2005), https://www.researchgate.net/publication/242511155. One does not need to look beyond the failure of the landmark Klamath Basin collaborative agreements. These hard-won agreements floundered on the unwillingness of strangers, Republican congressional representatives from other states, to endorse the community's decision to remove four virtually useless dams, to see the dangers that lurk in relying on process alone to produce good outcomes. Ironically, the agricultural community, a stout Republican constituency lost the benefit of water allocation agreement that had important concessions by the Klamath Tribes, yet dam removal is proceeding under the dam removal agreement, which is being implemented by the power company's restoration surrogate with FERC approval and the support of both California and Oregon.

whatever may be the pluralistic outcome seems like is a very slender reed upon which to rely to protect humans and all other life on earth.

III. TRANSFORMING WATER: A LIFE-AFFIRMING ETHICAL APPROACH TO WATER

We call for a critical transformation in humanity's relationship with water, a shift away from the current dominant paradigm of sustainable IWRM to embrace the radically different paradigm of water justice ethics, a life-affirming ethical relationship with water. At the core, water justice ethics seeks to assure that people, fish, wildlife, and plants all have the quintessential requirement of life: ample, high-quality water to support individuals, communities, and ecosystems.

We must learn from the Indigenous values and practices of reverence, respect, and protection of water. We must collectively learn from water justice movements. We must also learn from secular and faith-based formulations of water justice that have emerged largely as a result of those movements. As such, this Part introduces three strands of thought. The first strand draws together the worldviews, deep ecological understandings, and water norms shared by Indigenous peoples throughout the world. In synthesizing diverse Indigenous voices, we find that Indigenous peoples articulate a number of common principles, essentially natural laws, to govern the human relationship with water. The second strand finds its sources in the struggles of people around the world for just treatment with respect to water. The third strand has its sources in ecological ethics, philosophy, and theology that underlie those movements.

Based on those three strands, this Part draws together ethical principles concerning water justice in as precise and concrete a manner possible with the aim of facilitating formulation of water law and policy based on these principles.[112]

Although stated as a set of universal ethical norms, these principles are not a definitive set of non-negotiable normative demands, but rather they are a starting point for ongoing discussions about the kind of relationship that humanity should have with water. Many argue against stating universal principles because local communities must make water decisions a specific social, cultural, and political context in mind[113] and those communities must ultimately decide what water justice requires in

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[112] Three major ethical schemes are utilitarianism (which evaluates consequences), deontology (duty-based ethics), and virtue ethics (which stress moral character and moral wisdom). "One way to organize these different moral frameworks is to consider the part of the ethical act they emphasize. Virtue ethicists emphasize the character of the actor, deontologists emphasize the act itself, . . . and utilitarians emphasize the consequences of the act." Daniel J. Rozell, *The Ethical Foundations of Risk Analysis*, 38 RISK ANALYSIS 1529, 1529 (2018).

[113] Rutgerd Boelens et al., *Introduction: The Multiple Challenges and Layers of Water Justice Struggles*, *in* WATER JUSTICE 1, 1–6 (Rutgerd Boelens et al. eds., 2018).

their own context.[114] We suggest these universal water justice principles in order to give readers a sense of what water justice ethics involves, provide policymakers with a concrete sense of the ethical issues that water legislation ought to address, and offer decision makers and communities with a starting point for collaborative discussion of water decisions using water justice principles.

A. Lessons from Indigenous teachings about water

The lifeway of Indigenous peoples includes their worldview, values, laws, traditions, practices, understandings of reality, and insights. Elders communicate them through the telling of ancient stories in their first Indigenous language, rituals, and examples from their own lives. Their lessons using the first language are critical because the Indigenous laws or 'Original Instructions' are embodied in the concepts held within the languages and conveyed through the ancient stories and rituals. They are a reflection of observations of the natural world over millennia.

Indigenous peoples live in community. Compared with Euro-Americans who extol individualism, their lives are communitarian. Parents and elders sometimes use what Euro-American ethicists might think of as virtue ethics to communicate how to live the "good life," "*ubuntu*" in Swahili, *sumak kawsay* in Quechua, and *tlawmngaihna* in Mizo. Indigenous peoples do not live in accord with their lifeway through coercion or as a matter of personal choice; it is simply unimaginable to them to live any other way. Behera explains the all-encompassing nature of her people's lifeway:

> *Tlawmngaihna* is the underlying principle of life or philosophy that provides the basis for the communitarian lives of Mizos even today. There is no equivalent word in English to translate the term *tlawmngaihna*. It can be considered as the vital principle that binds Mizo society together as a community. It can be understood as a code of conduct of life and goodness. For the Mizos, every good deed, the virtue of selflessness, kindness and love is based on *tlawmngaihna.* This code of life that is *tlawmngaihna* is not necessarily considered to be, and indeed transcends, religious values. This code lies at the very centre of the Mizos' understanding of their being, as the core essence of their lives and thoughts. To not have this code embedded in one's being or living is considered as alien or un-Mizo-like.[115]

Indigenous peoples' worldviews, values, insights, laws, traditions, practices, and insight with respect to Water are best summarized as the Indigenous relationship with Water.[116] Many Indigenous elders have

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[114] While we embrace the subsidiarity principle, we do not agree that global efforts to formulate universal ethical principles are futile. We concede, however, that application of ethical principles requires sensitivity, translation, and adjustments in local contexts.

[115] Behera, *supra* note 8.

[116] When Indigenous peoples use a colonial language such as English, Spanish, and French to express themselves with respect to their relationship with water, especially in

shared their spiritual belief that Water has its own life force, that rivers and streams are the arteries and veins of Mother Earth, and that the oceans are the sacred mat that connects all of Life. Indigenous peoples understand that Water is fundamental to the health of all people, plants, and animals. Throughout Indigenous lands and territories, Indigenous peoples consider Water to be a sacred being.

Indigenous peoples use Water for all aspects of their life, drinking, sanitation, transportation, cooking, cleansing and tribal livestock and agriculture, and Indigenous ceremonies and prayer. Water connects all of life. In their daily lives, Indigenous peoples treat Water with the respect it is due. As original caretakers and guardians of Mother Earth, are also guardians of Water responsible for taking care of water and protecting it from abuse.

Indigenous peoples are diverse, but they share common understandings and norms that can serve as lessons in water justice for non-Indigenous peoples. These include:

- Water is a sacred being. It is as part of the interconnected divine and non-divine reality of the universe and the Earth, called by various names, with whom humans have an enduring relationship and a responsibility to nurture. Water has a natural way of being, which all must respect.
- All life is precious. All lives, human and non-human, are brothers and sisters with whom Indigenous peoples have an enduring relationship and a responsibility to protect as their relatives.
- Humans have a responsibility to share water with all life, to minimize water consumption, and to return water that has been used to natural waterbodies undiminished in quality.[117]

Some Indigenous peoples have quite specific prohibitions or taboos associated with water. For example, the Mizo people from the hills of northeast India observe many *thianglo,* proscriptions about water. Not observing these *thianglo* leads to death in the family and all sorts of misfortunes. The *thianglo* about water include:

- It is *thianglo* for an individual or a family who have discovered a water source to refuse to share it with the other members of the community.
- To block the roads or paths used by the public is *thianglo*. These paths could be the paths or roads leading to fields or water springs.
- To dirty or pollute the water in the wells is *thianglo*.

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political and academic contexts, something is lost in the translation. They cannot fully communicate their relationship with water in other than their Indigenous language. Western languages often lack the words to translate the concepts embedded in Indigenous languages. *See, e.g.*, *10 Words That Don't Exist in English*, INT'L HOUSE WORLD ORG. (July 11, 2018), https://ihworld.com/news-blog/ih-blog/10-words-that-don-t-exist-in-english.

117 *See, e.g.*, Allyson K. Menzies et al., *Sharing Indigenous Values, Practices and Priorities as Guidance for Transforming Human–Environment Relationships*, 6 PEOPLE & NATURE 21095 (2024) (discussing various Indigenous values regarding human-environment relationships in environmental caretaking, including responsibility, respect, and mindfulness).

- To dirty or pollute the water running through the streams, which serve as drinking water for everyone is *thianglo*.
- Cultivating over a water spring is *thianglo*, as the spring water should be made available and accessible for the whole community.[118]

To the extent that the just treatment of water becomes the water in which our communities swim—we adopt constructive norms towards water, and we observe similar proscriptive norms against abuse of water—we will be living lives of water justice. Then, all people, fish, wildlife, and plants will have the ample, high- quality water to support the lives of individuals, communities, and ecosystems. Ultimately, the shift to the water justice paradigm will be complete when all of us live consistently with water justice because any other way of living is unimaginable.

B. Lessons from the water justice movement

The struggles of local water justice movements provide an opportunity to understand water justice inductively, as told by those who have had their boots on the ground.[119] Local water justice activists who battle on behalf of their communities have a keen sense of water injustice and teach important lessons for how we should manage water. Those lessons include:

- Water is not a commodity that private parties should buy and sell to make private profits. We must manage water as a common good for the benefit of all. Corporations should not make profits from the privatization of water services or from wasting water for unnecessary products such as bottled water.
- Every person has a human right to water. They must have access to sufficient safe and affordable water to meet their household or personal needs, including the poor and those who belong to otherwise marginalized groups. Small-scale farmers and subsistence farmers must also have sufficient water to irrigate their crops and grow food for their families to survive.
- Water is life! Water is life not just for human beings; it is life for all living things. We must manage water to assure that aquatic habitat and ecosystems remain healthy.
- Corporate agriculture, industry, and cities should not pollute water. No one has the right to pollute natural waterbodies.

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118 Behera, *supra* note 8.

119 *See* Dorothea Härlin, *The Berlin Water Charter: Water Ethics from an Activist's Viewpoint*, *in* GLOBAL WATER ETHICS: TOWARDS A GLOBAL ETHICS CHARTER, *supra* note 8, at 267, 267–69, 277–78 (highlighting the work of Dorothea Härlin, a water activist in Berlin, as she campaigned successfully to recapture Berlin's water service from the private providers who had purchased it). Härlin contends that there is no need for a formalized water ethic: everyone instinctively understands the unspoken ethic that water is a condition of life that must be accessible equally to all. *Id.* at 269.

- No community or group is dispensable in the effort to develop or manage water. Damming rivers to produce hydroelectric power displaces thousands of communities and millions of people. Widespread marketing of agricultural water rights for municipal use destroys rural communities. Governments should not permit such actions without consent of the communities and adequate compensation to those affected.[120]

Water justice activists may use diverse ethical arguments to rationalize their positions: human rights, the rights of nature, water justice or just common sense. Their rhetorical rationales are insignificant compared to their shared understanding that these principles are moral imperatives that governments must satisfy with respect to water. Water justice activists have a shared understanding of the political source of water injustice: national, provincial, and state governments captured by economic elites are subject to economic colonial forces such as globalization and international financial institutions imposing neoliberal policies.[121]

C. INSIGHTS FROM WATER ETHICISTS

Several global water ethics frameworks developed collaboratively provide grist for a water justice paradigm. Two notable secular group efforts are the Water-Culture Institute's draft of its *Water Ethics Charter* (2015) and the Globethics *Water Ethics: Principles and Guidelines* (2019).[122] A faith-based framework prepared by the World Council of Churches-Ecumenical Water Network (WCC-EWN), titled *Pilgrimage of Water Justice: Theological Foundation and Reflections*, focuses directly on water justice.[123]

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120 *See, e.g.*, Sail, *supra* note 80, at 151–53 (discussing harm caused by privatization of water resources in villages in India); Rajendra K. Sail, *Carrying Our Cross for Water Justice: Stories from the Subaltern Communities - Indian Context*, WORLD COUNCIL OF CHURCHES (Mar. 2, 2015) [hereinafter Sail, *Carrying Our Cross for Water Justice*], https://www.oikoumene.org/resources/documents/seven-weeks-for-water-2015-week-2-carrying-our-cross-for-water-justice-stories-from-the-subaltern-communities-indian-context-by-rajendra-sail (commenting on water justice and spiritual connection involved in water management).

121 *See, e.g.*, Sail, *supra* note 80; Sail, *Carrying Our Cross for Water Justice*, *supra* note 120.

122 WATER-CULTURE INSTITUTE, GLOBAL WATER ETHICS CHARTER (2015), https://www.waterculture.org/_files/ugd/9ed7ca_4c30601807d3479081aa0b547f303c02.docx?dn=Global%20Water%20Ethics%20Charter.docx; BENOIT GIRARDIN ET AL., GLOBETHICS.NET, WATER ETHICS: PRINCIPLES AND GUIDELINES 7 (2019), https://repository.globethics.net/bitstream/handle/20.500.12424/237/GE_Texts_6_isbn9782889313129_DOI.pdf.

123 Susan L. Smith, *Continuing the Pilgrimage of Water Justice: Lessons Learned in the Field*, *in* THE PILGRIMAGE OF WATER JUSTICE, *supra* note 8, at 159, 159–60.

1. Water Ethics Charter

The Water Ethics Charter, developed by the American Water-Culture Institute with international participation, remains in draft form. The Charter is a continuation of the long-term work of experts connected with UNESCO and the Botin Foundation to articulate water ethics.

The Charter's substance emphasizes inclusivity as opposed to consistency, which results in a document with unresolved tensions in the extent to which stated principles are anthropocentric and oriented towards utilitarian economic management of water as compared with more ecocentric justice-oriented management. It contains general principles as well as five dimensions of water: environmental, economic, social, cultural and spiritual, and governance. For each individual dimension, the Charter states general concepts and operative principles.

The Charter's general principles are the precautionary principle, water as a commons, intergenerational justice, and education. The environmental concepts include both the inherent rights of nature and the recognition of ecosystem services provided by the environment. The Charter offers two alternative formations of the operative principle, maintaining aquatic habitat and ecosystems intact or maintaining and restoring those habitats and ecosystems.

The Charter is more sympathetic to, and more sanguine about, economic management of water than most water justice ethicists are. The Charter suggests that economic thinking "applies equally (though with far less precision) in considering tradeoffs and opportunities related to non-economic values (e.g., social and environmental)."[124] It suggests frugal use and re-use of water and using lakes and aquifers sustainably.[125] It suggests that water for basic human needs should be free while water used in economic activities should be priced at its market value.[126] The latter suggestion does not appreciate the injustice of pricing subsistence and small-scale farmers out of the market. It also adopts several economic principles for water management, including polluter pays and user pays, as well as full cost-recovery for water services.[127]

In discussing the social dimension of water, the Charter takes a turn towards a limited form of anthropocentric water justice. It reasons that because water is a common good belonging to everyone in accordance with "the principles of fairness, equity, solidarity, and social justice," everyone has a right to water for basic needs and sanitation, and to access water and ecologically healthy ecosystems to meet economic and livelihood need and to meet aesthetic, spiritual, and psychological needs.[128]

The Charter addresses the cultural dimension of water primarily with respect to Indigenous peoples. It notes that Indigenous peoples have

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124 WATER-CULTURE INSTITUTE, *supra* note 122, pt. 3.
125 *Id.* § 3.A.
126 *Id.* § 3.B.
127 *Id.*
128 *Id.* § 4.A.

a fundamental right to live according to their cultural traditions. These cultural traditions include livelihood strategies such as fishing and religious ceremonies that concern water bodies or particular forms of water use. The Charter calls for protection of cultural uses of water, and the rights of local communities to engage in traditional water-related practices. The Charter seeks to operationalize this concept by requiring projects to avoid interference with traditional cultural values and practices and to secure "free prior and informed consent" before any interference takes place.[129]

With respect to governance, the Charter urges a broad ecological frame (i.e. integrated analyses), stakeholder participation, "with particular emphasis on those groups who have the least political power" and adherence to the subsidiarity principle.[130]

2. Water Ethics: Principles and Guidelines

The Globethics *Water Ethics: Principles and Guidelines* (2019) (GE Principles) is an effort of primarily European water academics and advocates led by Dr. Benoit Girardin to state ethical principles concerning water.[131] The GE principles state that water should be managed according to general ethical principles, such as equity (e.g. providing water as a basic need in a fair, impartial and inclusive way), equality (of affordable access to water), freedom (of access), responsibility (e.g. in use and recycling), peace (e.g. in distribution mechanisms), respect, inclusiveness and community (in the sharing of limited water resources), solidarity and sustainability. It proceeds to articulate certain specific ethical principles respecting water such as universal access to the vital minimum amount of drinking water, sustainable use, and frugal consumption of water. The framework then examines several discrete issues including innovation, economics, peace, governance, and religion. The GE principles have a distinctive European flavor, maintaining both an anthropocentric orientation to water and an embrace of economic water management.[132]

3. WCC-EWN Fundamental Principles of Water Justice

The origin of WCC-EWN *Water Justice Principles* is a bit different from those of the prior two collective efforts. The WCC International Reference Group on Water developed and adopted the Water Justice Principles to satisfy the WCC requirement that the Ecumenical Water Network, the WCC water justice initiative, ground its advocacy on a

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129 *Id.* § 5.B.

130 *Id.* § 6.A (defining "subsidiarity" as management at the lowest practical level).

131 BENOIT GIRARDIN ET AL., *supra* note 122. These principles and guidelines were prepared by the Workshop for Water guided by Dr. Benoit Girardin and approved for publication in 2019. *Id.* at 5.

132 *Id.*

sound theological foundation.[133] The WCC International Reference Group on Water consisted of ecumenical representatives of churches on every continent, including several who are water justice activists.[134] The Water Justice Principles thus are highly reflective of the battles fought on the ground by water justice movements and are perhaps more of a view from below.

Ten ethical principles, or "the Ten Commandments" of water, set forth ethical imperatives to deal in a just manner with God's gift of water from the viewpoint of Christian faith.[135] The first principle requires ethical management of water as contrasted with economic management of water. The second principle is that intergenerational equity requires sustainable management of all waters, including groundwater. The third principle calls for the preservation of biodiversity and aquatic ecosystems. The next three principles establish rank-order water priorities: (4) human drinking water, domestic use, and sanitation, (5) water needed by subsistence and small-scale farmers, herders, and fishers, and (6) water to protect biodiversity and healthy, resilient aquatic ecosystems. The seventh principle requires democratic governance, with transparent and accountable decision-making at a level as close to the community level as possible, with effective and equitable participation of all interested parties, especially the poor and the marginalized. The eighth principle specifies that water is a common good and government should not create compensable private water rights. The ninth principle requires strict regulation of water use for commercial purposes and forbids economic exploitation of water. The commentary identifies practices regarded as economic exploitation, including: the water marketing of water allocated to priority uses; the private provisioning of water and sanitation services, commercial water bottling, charging other than affordable rates for water necessary to meet the human rights to water and sanitation, and the human right to food; and water speculation, including land and water grabbing. The tenth and final principle imposes human stewardship responsibilities not to waste or pollute water, not to significantly disturb

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[133] WCC-EWN first organized a theological consultation that brought together theologians from diverse backgrounds to articulate the theological foundation for water justice, using the process of theological reflection. This process guides faithful action (orthopraxy) through reflection by those steeped in the realities of the world and their activist experiences on their faith tradition (orthodoxy). From those reflections, EWN drafted a theological foundation to guide its advocacy. Although presented in terms of deducing what compassion and love require of Christians, that foundation was derived in large part from theological reflections on the lived experiences discussed during the theological consultation. Thus, the principles reflect both an intuitive inductive, bottom-up approach to ethics and a deductive approach deriving principles from the essential axioms of Christian faith.

[134] The theologians participating in the theological consultation and the IRG members who reviewed the theological foundation represented at least 14 countries, primarily outside of Europe and North America.

[135] Susan Lea Smith, *Developing an Ecumenical Framework for Water Justice, in* GLOBAL WATER ETHICS: TOWARDS A GLOBAL ETHICS CHARTER *supra* note 8, at 243, 247–253.

its natural flow, and not to significantly alter its fundamental composition.[136]

D. A water justice paradigm

Our sketch of a water justice paradigm consists of twelve norms or principles drawn from the three strands of lessons described above. For the sake of analytic clarity, we divide water justice principles or norms into the three categories: distributive, procedural, and corrective (or restorative) justice.[137]

We articulate water justice principles as norms, as opposed to identifying virtues or simply inviting unspecified action, to assure that people, fish, wildlife, and plants all have the water necessary to support individuals, communities, and ecosystems. This not a reflection of our philosophical commitment to deontological ethics over consequentialist ethics or virtue ethics.[138] We opt for deontological ethics over virtues ethics simply because of the difficulty of reliably translating virtues into law and policy. We opt for deontological rules over consequentialist ethics for three reasons. First, obviously a utilitarian or consequentialist ethic that only considers the consequences for humans is inconsistent with our purpose. Second, deontological statements of right and wrong sometimes appeal to those with more intuitive, instinctual ethical responses, so stating rules or norms may appeal to a broader segment of society, perhaps increasing the speed and breadth of paradigm shift.[139] Third, governments can more readily translate rules or norms into law and policy. Those deeply committed to deliberative consequentialist ethics will agree on similar principles after due deliberation on how to maximize the benefit of water for all life on Earth.

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136 *Id.*

137 *See, e.g.*, Robert R. Kuehn, *A Taxonomy of Environmental Justice*, 30 ENV'T. L. REP. (Envtl. Law Inst.) 10681, 10681 (2000) (proposing categories of environmental justice issues, including distributive, procedural, and corrective justice). Rutgerd Boelens et al. use a similar taxonomy to describe water justice. Boelens et al., *supra* note 113, at 4–6. Their water justice taxonomy includes recognition, but not corrective or restorative justice. *Id.* We consider recognizing the personhood of every human being, treating them with respect, seeing them and hearing their voice to be an aspect of procedural justice, although others treat it as a separate category of justice. Restorative justice is particularly important since humans have dammed, channelized, diverted, and otherwise manipulated waters and aquatic ecosystems. In such cases, justice may require restoration of natural-flowing rivers and aquatic ecosystems as contemplated by both the Water Ethics Charter and the WCC Water Justice Principles. Boelens, Perreault, and Vos add another "socio-ecological" category to their taxonomy, which appears to entail justice to non-human life. To the extent that justice involves current water allocations and water quality, we consider that part of distributive justice. To the extent that it involves correcting infrastructure or past destruction, we consider that part of restorative justice.

138 For an explanation of these approaches to ethics, see Rozell, *supra* note 112.

139 CASS R. SUNSTEIN, HOW CHANGE HAPPENS 253 (2019).

1. Distributive Justice Principles

Principle 1 – Water as a common good to benefit all life

Water is a common good. Governments own and control water for the benefit of all life, both current and future generations. Governments should manage water equitably based on ethical principles grounded in compassion and justice, rather than on economic interests, wealth, profit, or allocative efficiency.[140]

Principle 2 – Water allocation

Governments should allocate water by sharing water to meet critically important water uses before allowing any other water use.[141] Those uses, in rank order, are:

(1) Consumptive use to provide every human being with sufficient safe and affordable water to live with dignity.
(2) Consumptive use to provide subsistence and small-scale farmers, herders, and fishers with sufficient water to provide food for their families and communities.
(3) Instream use to assure aquatic life and ecosystems have water of a sufficient quantity and amount to allow all aquatic life to survive and to maintain healthy, resilient aquatic ecosystems.

In addition to these important priorities, water allocation must not discriminate against individuals or communities based on race, color, culture, language, national origin, religion, political affiliation, or any

[140] An alternative formulation would require that, apart from water required for non-human life, the benefits of water be shared equally among all peoples. Such a formulation might be most consistent with an environmental justice approach to water. However, this more limited distributive justice approach captures the most important benefits of water for all people, leaving the community to equitably distribute the remainder of water.

[141] Although our allocation principle differs slightly from the hierarchy of water uses suggested by Feitelson, it is generally consistent with that prioritization. He approaches allocation by rank ordering all water uses in a hierarchy of needs akin to Maslow's hierarchy of needs. He argues that water for most urgent uses of (1) human needs for drinking water and other domestic uses, (2) ecosystem survival needs, and (3) human spiritual/cultural needs should be determined by normative ethics and should not be politically determined or determined by the market. As to other more contested water uses, allocating water to preserve rural communities, for other life beyond ecosystem survival, for small scale farming and for food production, he suggests that political processes be used to determine these allocations. Finally, after all other water uses are met, the market should be allocating remaining water available, using price to allocate commodity or luxury good uses. Eran Feitelson, *A Hierarchy of Water Needs and Their Implications for Allocation Mechanisms*, *in* GLOBAL WATER ETHICS: TOWARDS A GLOBAL ETHICS CHARTER, *supra* note 8, at 149, 155–56. We differ slightly, considering water use for the benefit of (1) non-human life and ecosystems beyond bare survival and (2) subsistence users and small-scale farmers, as critically important uses. We would not leave these two water uses to the tender mercies of politics because political systems in many countries are skewed against non-human uses as well as subsistence and small-scale farmers.

other irrelevant factor. Water decisions should take the differentiated needs of the poor, women, children, the elderly, and the disabled into account.

Principle 3 – Avoidance of economic exploitation

No one has a right to exploit water for economic profit. Governments should strictly regulate the use of water for commercial purposes and prevent economic exploitation of water.

Principle 4 – Water quality

No one has a right to pollute water. We should assure that water quality remains suitable for all water uses, including human health, the health of other life, and healthy aquatic ecosystems by employing necessary treatment before and after human use. Government should provide priority water users with subsidies necessary to assure water and wastewater treatment to water quality standards. Other water users should provide water and wastewater treatment at their own cost.

Principle 5 – Water conservation

No one has a right to waste water. All users should employ sound water conservation, recycling, and reuse practices. Government should provide priority water users with the subsidies necessary to assure use of sound water conservation, recycling, and reuse practices.

2. Procedural justice – democratic water governance[142]

Principle 6 – Subsidiarity

Water decisions should be made at the community level where possible, and at the lowest appropriate level (whether community, local government, state or provincial government, national government) consistent with the geographic scope of the effects of the decision.

Principle 7 – Public participation

Governments should make water decisions transparently, making all information relevant to the decision freely available to the public and all

142 The best sustainable IWRM processes meet the principles of procedural justice specified in this section. We do not seek abandonment of sustainable IWRM processes but rather contend that water decisions must also include distributive and restorative justice.

affected stakeholder groups. Governments must recognize every individual or group affected by water decisions as having an interest in and a right to participate in those decisions. Water decisions should be made with the broadest possible public participation beginning at the earliest feasible time. When feasible, governments should utilize collaborative processes for water decisions, allowing affected stakeholders to shape water decisions directly. Governments should subsidize participation by affected stakeholders when necessary to assure participation of groups that otherwise lack financial means to participate as well as underrepresented, marginalized groups. Participation subsidies should include reimbursement for stakeholder time, expenses, and access to experts.[143]

Principle 8 – Environmental assessment

Governments should thoroughly assess all public and private projects affecting the availability or quality of water with respect to their environmental, social, and economic impacts, with the project proponent responsible for assessment costs. Environmental assessments should compare the impacts of all feasible alternatives, including those proposed by stakeholders. Governments should assure that environmental assessments utilize traditional Indigenous knowledge as well as western science.

Principle 9 – Precautionary approach

Water decisions should be made using the best available scientific evidence, including traditional ecological knowledge. To the extent that uncertainty remains, decisions should reflect a precautionary approach to protect priority water uses.

Principle 10 – Judicial review

Water decisions, whether made by the government or through a collaborative process, should be subject to judicial review for their compliance with water justice principles. Any affected stakeholder has a right to seek judicial review without regard to landowner status or whether they were able to participate in the decision-making process.

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143 There are obviously equity issues if poor stakeholders must bear the burden of participating in water governance. However, aside from equity, even neoclassical economics suggest they should not bear that burden on allocative efficiency grounds.

Principle 11 – Enforcement

Governments should enforce water decisions to assure compliance with water justice principles. Those persons affected by non-compliance have a right to sue the government to take enforcement action and to bring a direct judicial enforcement action on their own behalf.

3. Restorative Justice

Principle 12 – Restoration

Governments should undertake immediate and ongoing, carefully prioritized efforts to restore all degraded water bodies, aquatic habitat and ecosystems to a healthy resilient condition. Citizens have the right to petition government for restoration. Those affected by a proposed restoration effort have a right to seek judicial review, and to seek judicial enforcement, of restoration decisions.

These principles sketch a picture of how we can transform our current approach to water in a way that affirms all life. While preliminary and at best incomplete, they nonetheless lay the groundwork for a water justice paradigm that embraces a life-affirming relationship with water.

E. Overcoming Objections

We anticipate three likely objections to a paradigm that seeks to respect water and use it for the benefit of all life.

1. All life is not equally precious.

We put a higher value on human life than other life. Principle 2 on water allocation ranks critical priority uses of water, putting human use for drinking water, domestic uses, and water-dependent small-scale and subsistence livelihoods ahead of aquatic life and ecosystems. That essentially chooses short-term threats to human life over the longer-term threats to human life posed by destruction of aquatic life and ecosystems.

However, even though all life may not be equally precious to us compared to human life, that does not imply that a water policy and management paradigm that places no value on other life is appropriate. The current anthropocentric approach places no value on other life, except to the extent that it benefits humans. We should make water decisions with the moral awareness that all life is valuable—and that humans may need to bear some burden for the sake of other life. We may need to forego long showers, give up grassy front lawns, bear increased food costs, abandon planting rice and almonds in deserts, and accept lower profits and dividends on stock investments to avoid wiping salmon off the face of the Earth. If the

tradeoff actually created an increased risk to human health for the sake of a more vibrant salmon population, then we could confront and confess our bias towards human life. For example, if it were true that we could only save salmon by abandoning flush toilets, then we would need to decide what human health risk that posed and whether eco-sanitation toilets are a viable option.

2. The water justice ethics paradigm does not accommodate value pluralism. Many believe that only human life is valuable. Government should be neutral on contested moral issues.

This argument confuses existing diversity of moral beliefs with the question of what is true. If we believe that all life is valuable, then we should try to convince people of that. We should create water policies based on that moral conviction. For example, many white Americans are white supremacists who do not believe that all human beings are equally valuable. Government should not decline to make policy that contradicts that moral stance, nor should it decline to make policy that embraces all life as valuable.

This argument also confuses process with substance. A process can be fair and encourage expression of diverse values and beliefs without being value free. Government policy always reflects values. The process for making water decisions should be fair—and allow expression and consider beliefs that only human life is valuable, without committing the government to ignore the value of all Creation.

3. The public will not even act sustainably for the benefit of themselves and others. Why would they go the extra mile to protect other life?

This sad fact results from policies that have promoted neoliberal capitalism, where we know the price of everything and the value of nothing. Our society has deified money, power and individualistic hedonism instead of loving our neighbor. We need to dethrone those false values.

IV. STRATEGIES FOR ADOPTING A LIFE-AFFIRMING RELATIONSHIP WITH WATER

Part IV describes strategies to transform our values and adopt a life-affirming relationship with water.

A. Transformative forces already unleashed

An incredibly diverse set of transformative forces has already been unleashed that makes our societies more open to adopting a new life-affirming relationship with water. These forces include an evolving

scientific understanding of the connectedness of creation, international recognition of water as a human right, the nearly universal acceptance of the UN Declaration of the Rights of Indigenous Peoples (UNDRIP),[144] and the movement to reclaim traditional Indigenous knowledge. In addition to these important influences on how humanity increasingly understands the world, we can now add another profoundly transformative force, the policy ascendance of environmental justice, detailed more fully in Part V.

1. Evolving Western Scientific Understanding of the Connectedness of Creation

Western science increasingly understands that what appears to be discrete parts of the Earth, and indeed the Universe, connect together in sometimes strange and unexpected ways. Ecology is one of the first scientific disciplines to recognize these connections, with its devotion to systematically exploring the interconnectedness of living things and their habitats. Ecologists have made startling discoveries. Scientists have known for several decades that fungi have symbiotic relationship with various trees whereby plants provide carbohydrates to fungi, and the fungi, through strands that resemble fungal roots (mycorrhiza) absorb water and nutrients like phosphorus and nitrogen for the plants. The fungi also provoke immune responses that increase the resistance of plants to disease. The startling discovery that has been the focus of research for the last decade is that the connections between fungal strands and plants do not just benefit individual plants; they create a mycorrhizal network among different, relatively distant plants, allowing the plants to communicate needs and warnings, and exchange nutrients.[145] Scientists now think these networks are essential to forest health.[146] These mycorrhizal networks transform our notion of a forest from a collection of individual competing trees and plants to a talkative, interactive cooperative endeavor to survive. [147]

The perplexing phenomenon of quantum entanglement also suggests there are connections that we do not understand and may never

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144 G.A. Res. 61/295, United Nations Declaration on the Rights of Indigenous Peoples (Sept. 13, 2007).

145 Monika A. Gorzelak et al., *Inter-Plant Communication through Mycorrhizal Networks Mediates Complex Adaptive Behaviour in Plant Communities*, AOB PLANTS, May 2015, No. plv050, at 2-3 ("How the [mycorrhizal network] affects the member plants and fungi is increasingly understood to involve plant–fungal–plant communication, and may involve biochemical signaling, resource transfers, or action-potential-driven electrical signals.").

146 *Id.* at 9 ("Underground 'tree talk' is a foundational process in the complex adaptive nature of forest ecosystems.").

147 *Id.* at 1 (highlighting that the connection can link "two or more plants of the same or different species. The [mycorrhizal network] can thus integrate multiple plant species and multiple fungal species that interact, provide feedbacks and adapt, which comprise a complex adaptive social network"); Min Chen et al., *Beneficial Services of Arbuscular Mycorrhizal Fungi – From Ecology to Application*, FRONTIERS PLANT SCI., Sept. 2018, No. 1270, at 3; Paola Bonfante & Iulia-Andra Anca, *Plants, Mycorrhizal Fungi, and Bacteria: A Network of Interactions*, 63 ANNU. REV. MICROBIOLOGY 363, 365 (2009).

understand.[148] Physicists have repeatedly demonstrated that sub-atomic quantum particles can be "entangled" and influence each other regardless of distance. This entanglement appears instantaneous: if you know the quantum state of any particle, then you automatically know the quantum state of its entangled particles. In principle, you could place two entangled particles on opposite ends of the galaxy and still have this instantaneous knowledge, which appears to violate the limit of the speed of light.[149] Nuclear decay, splitting photons, or mixing pairs of photons in a fiber optic cable can entangle quantum particles. Quantum mechanics makes modern technology possible: transistors, modern computers, MRI scanners, lasers, solar cells, electron microscopes and GPS systems. As we gain more control over the quantum state of particles, using quantum technology in fields as diverse as computing, sensors, information security, materials, and communication is becoming a reality due to the peculiar interconnectedness of the world.

Such scientific and technological breakthroughs increasingly change our understanding of the universe. They provide a Western scientific basis for believing as Indigenous peoples do that the entire Earth is interconnected and that one must exercise profound care in relating to it. Thus, the science of connectedness eases the way for water policy and management based on this understanding.

2. International Recognition of Water as a Human Right

Global recognition of water as a human right advances us past utilitarian ethics and in the direction of a life-affirming relationship with water. Beyond facilitating that shift in ethical paradigms, international law provides a political and legal basis for water justice ethics that place priority on water uses essential to human and other life.

The Universal Declaration of Human Rights, the International Covenant on Civil and Political Rights (ICCPR) and the International Covenant on Economic Social and Cultural Rights (ICESCR) do not explicitly include the human rights to water and sanitation. However, those international instruments implicitly recognize that water is essential to the right to life,[150] as well as the right to an adequate standard of living and the right to health.[151] The right held in common

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148 Davide Castelvecchi, *The 'Spookiness' of Quantum Physics Could Be Incalculable*, 557 NATURE 416, 416 (2020).

149 Ryszard Horodecki et al., *Quantum Entanglement*, 81 REV. MOD. PHYSICS, June 2007, at 1, 4, 52 (a review of quantum entanglement); *see* Frank Wilczek, *Entanglement Made Simple*, QUANTA MAG. (Apr. 28, 2016), https://www.quantamagazine.org/entanglement-made-simple-20160428 (a somewhat more accessible, but still challenging account).

150 G.A. Res. 217 (III) A, Universal Declaration of Human Rights arts. 3 25 (Dec. 10, 1948); International Covenant on Civil and Political Rights art. 6, Dec. 16, 1966, 999 U.N.T.S. 171.

151 International Covenant on Economic, Social and Cultural Rights arts. 11–12, Dec. 16, 1966, 993 U.N.T.S. 3 [hereinafter ICESCR]; *see also* Econ. & Soc. Council, Comm'n on Econ., Soc. and Cultural Rts., Rep. on the Twenty-Eight and Twenty-Ninth Sessions, Annex IV,

with all peoples is to have sufficient, safe, acceptable, physically accessible, and affordable water for personal and domestic uses.

The human right to water obligates national, state and provincial governments to "take steps . . . to the maximum of its available resources, with a view to achieving progressively the full realization of the rights recognized in the present Covenant by all appropriate means, including particularly the adoption of legislative measures."[152] This also obligates governments to respect, protect, and fulfill that right. The obligation to respect requires governments to abstain from interfering with the enjoyment of that right. The obligation to protect requires governments to prevent third parties from interfering with the enjoyment of that right. The obligation to fulfill requires governments to adopt measures necessary to ensure that each person has the opportunity to realize their right.[153] In undertaking their obligations, the national, state, and provincial governments must consult with and allow citizen participation, especially participation by marginalized groups such as the poor, Indigenous peoples, Dalits, and Roma.

The year 2010 marked the widening of formal recognition of the human rights to water and sanitation. The UN General Assembly and the UN Human Rights Council both adopted resolutions recognizing and connecting those rights to the Universal Declaration of Human Rights as well as the ICCPR and the ICESCR, the two broad multi-lateral human rights treaties.[154] These resolutions attracted global attention and accelerated calls for the realization of these rights, ultimately reflected in the 2030 Sustainable Development Goals.[155]

In addition to the universal human right to water for drinking and household uses, Indigenous peoples have additional rights to water under international law. Their rights include sufficient water for them (and other subsistence farmers) to irrigate their farms where necessary to meet their subsistence needs.[156] Similarly, and for the same reasons, the

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General Comment No. 15 (2002): The Right to Water (arts. 11 and 12 of the Covenant), ¶ 3, 16(d), U.N. Doc. E/C.12/2002/13 (2002) [hereinafter Comm'n on Econ., Soc. and Cultural Rts., *Rep*., Annex IV] (determining that Article 11.1 (adequate standard of living) and Article 12 (health) implicitly include the right to water and finding that reading with a lens focused on Indigenous rights to water reveals that Indigenous people share that right in common with all people, but they are also entitled to extraordinary protection of their rights and have the additional right to sufficient water to meet their subsistence and cultural needs).

152 ICESCR, *supra* note 151, art. 2. (providing language that would later be linked specifically to the human right to water).

153 INGA T. WINKLER, THE HUMAN RIGHT TO WATER: SIGNIFICANCE, LEGAL STATUS AND IMPLICATIONS FOR WATER ALLOCATION 107–11 (2012).

154 *See generally* G.A. Res. 64/292, (July 28, 2010); Human Rights Council Res. 15/9, U.N. Doc A/HRC/RES/15/9, (Sept. 30, 2010).

155 *See generally* UNITED NATIONS, THE SUSTAINABLE DEVELOPMENT GOALS REPORT 2022 38–39 (2022), https://unstats.un.org/sdgs/report/2022 (discussing the criticality of access to clean water and sanitation).

156 Comm'n on Econ., Soc. and Cultural Rts., *Rep*., Annex IV, *supra* note 151, ¶ 7 (stating that this right is part and parcel of the right to water, deriving from the right to food and

right of Indigenous peoples to water extends beyond subsistence agriculture to other subsistence activities such as hunting and fishing. Many Indigenous peoples are traditionally hunters and fishers rather than farmers. Sufficient water for fish and wildlife is critical to realizing the rights of Indigenous peoples to life, to health, to have adequate food, to have an adequate standard of living, to preserve their culture, and to self-determination.

Implementing subsistence fishing rights is quite different, however, from realizing the universal right to water for drinking and domestic uses or for subsistence agriculture. Drinking and domestic uses consume relatively little water and seldom compete with other water uses; municipal diversions, however, involve substantial consumptive use for residential landscaping and industrial purposes. Irrigation requires huge consumptive diversion in competition with other irrigators and municipal users. Fishing, on the other hand, requires avoiding diversions that interfere maintaining ample high-quality water instream to protect fish habitat and the integrity of aquatic ecosystems. To vindicate Indigenous subsistence fishing rights, governments must protect aquatic ecosystems to sustain fish populations by maintaining more natural river hydrographs and excellent water quality. Thus, international recognition of the human right to water promises to shift water decisions in the direction of prioritizing drinking and other household uses, protecting subsistence farmers, grazers, fishers and hunters, and protecting fish, wildlife, and their habitats.

3. The Movement to Reclaim Traditional Knowledge

Over the course of the past three decades, Indigenous peoples have been reclaiming traditional Indigenous knowledge and education.[157] As they communicate that knowledge with respect to pressing ecological concerns, those trained in modern scientific methods have begun to appreciate the depth of traditional Indigenous knowledge with respect to biodiversity, threatened species, aquatic ecosystems, fire, invasive species, and climate change.[158]

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the right to be free from hunger); *see also* ICESCR, *supra* note 151, art. 1 (stating that Indigenous peoples have collective rights to self-determination established by Article 1.1, which entitles them to "freely pursue their economic, social and cultural development" and specifying in Article 1.2 that "[i]n no case may a people be deprived of its own means of subsistence"). Thus, where water is necessary for an Indigenous people to meet their subsistence needs, governments must provide that quantum of water necessary without regard to the conflicting economic development desires of others in society.

157 *See generally* Miye Nadya Tom et al., *Indigenous Knowledges as Vital Contributions to Sustainability*, 65 INT'L REV. EDUC. 1, 12 (2019).

158 *See, e.g.*, Emilie J. Ens et al., *Indigenous Biocultural Knowledge in Ecosystem Science and Management: Review and Insight from Australia*, BIOLOGICAL CONSERVATION, Jan. 2015 at 133, 139–44 (discussing the contributions of Indigenous knowledge to Australia's biological conservation priorities).

The water sector has noted the importance of traditional Indigenous knowledge, sometimes called "traditional ecological knowledge." In implementing participatory planning processes, water resources managers also find that respecting the interests of Indigenous stakeholders requires understanding the role of traditional Indigenous knowledge in their thinking.[159] The water resources literature has expanded to include best practices with respect to participation by Indigenous peoples in water planning.[160]

As water resources professionals incorporate traditional Indigenous knowledge in planning and management efforts, they may start to understand the close, nested relationships between that knowledge and Indigenous worldviews, values, practices and traditions. Some call this constellation of knowledge, attitudes and behaviors "Indigenous lifeways." As water professionals come to understand Indigenous lifeways, they may find the life-affirming nature of the Indigenous relationship with water far more attractive than the modern Euro-American "death project" with its embedded colonialist, racist, patriarchal, individualistic, materialistic, and capitalistic roots and consequences.[161]

Indigenous peoples have expended decades of effort to communicate the essence of traditional Indigenous knowledge, creating collective Indigenous proclamations containing this wisdom and advocating for its use as the basis for water policy and management.[162] This international effort has heightened awareness of the Indigenous perspective on water.

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159 *See, e.g.*, Margaret Ayre & John Mackenzie, "*Unwritten, Unsaid, Just Known": The Role of Indigenous Knowledge(s) in Water Planning in Australia*, 18 LOCAL ENV'T 753, 764 (2013) (explaining how water planning processes in Australia have struggled to account for Indigenous perspectives).

160 *See, e.g.*, Sue Jackson et al., *Principles and Guidelines for Good Practice in Indigenous Engagement in Water Planning*, 474 J. HYDROLOGY 57, 61 (2012) (describing Australian case studies that prioritize Indigenous perspectives on water planning).

161 Tom et al., *supra* note 157, at 13–14.

162 Indigenous leaders from across regions of Mother Earth are unifying to address the imbalance in humanity's relationship with water. To provide some sense of the long-standing commitment of Indigenous peoples to protection of water through Indigenous principles, we can look to recent history of Indigenous involvement in the World Water Forum and other international water fora. In 1999, at the World Indigenous Peoples Conference on Education in Hilo, Hawai'i, Indigenous peoples issued a call to address water issues by organizing an Indigenous-led conference on water. *Our Story,* INDIGENOUS MESSAGE ON WATER, https://indigenous-message.org/our-story-old (last visited Aug. 27, 2025). Their aspiration in proposing an Indigenous World Forum on Water and Peace (IWFWP) was to elevate the contributions of Indigenous peoples to water protection globally. Since then, they made similar calls at the 3rd, 4th, 5th, 6th, 7th and the 8th World Water Fora (Kyoto, Japan, 2003; Mexico City, 2006; and Istanbul, Turkey 2009, Marseille, France, 2012, Daegu, South Korea, 2015, Brasilia, Brazil, 2018), in respective international Indigenous Declarations. Interventions were submitted at the United Nations Permanent Forum (UNPFII) in New York (2007, 2008, 2009, and 2011), urging all nation states and all UN agencies concerned with water, to support a World Indigenous Forum on Water and Peace (WIFWP). The Secretariat of the 2007 UNPFII included this recommendation in its final report. We have continued this work at the national level with the Canadian Commission for UNESCO and at the international level with WAMU-NET, an international coalition of water museums.

4. Rights of Water and Indigenous Rights with Respect to Water

Perhaps the most dramatic development in water rights has been the recognition of the rights of water. This establishes in law an approximation of Indigenous peoples' belief that Water is a living being. The local Māori tribe of Whanganui on New Zealand's North Island fought for 140 years for the recognition that their river *Te Awa Tupua*—the third largest river in New Zealand—was an ancestor. In 2017, the New Zealand government finally settled the longest-running litigation in New Zealand by recognizing the *Te Awa Tupua* (Whanganui River) as if it were a person connected to the tribe. The chief negotiator for the tribe, Gerrard Albert, explained: "We have fought to find an approximation in law so that all others can understand that from our perspective treating the river as a living entity is the correct way to approach it, as in indivisible whole, instead of the traditional model for the last 100 years of treating it from a perspective of ownership and management."[163]

Three similar, but separate, growing forces with respect to the rights of Indigenous peoples are likely to enhance the influence of Indigenous peoples and help transform our understanding of how humanity should relate to water. First, the universal global acceptance of the UN Declaration of Rights of Indigenous Peoples (UNDRIP) as international law recognizes a host of Indigenous rights that make adoption of a water resources paradigm consistent with Indigenous perspectives on water more likely.[164] The Declaration recognizes the collective rights of self-

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[163] Eleanor Ainge Roy, *New Zealand River Granted Same Legal Rights as Human Being*, GUARDIAN (Mar. 16, 2017), https://www.theguardian.com/world/2017/mar/16/new-zealand-river-granted-same-legal-rights-as-human-being (quoting Gerrard Albert, lead negotiator for the Whanganui iwi).

[164] In 2007, the UN adopted a comprehensive Declaration on the Rights of Indigenous Peoples. G.A. Res. 61/295, annex, Declaration on the Rights of Indigenous Peoples (Sept. 13, 2007). As a soft law document, it is not legally binding, but it recognizes rights that many scholars increasingly interpret to be binding customary international law. Indeed, the universality of acceptance of UNDRIP underscores this. The vote adopting UNDRIP was 143-4 with 11 countries abstaining. *United Nations Declaration on the Rights of Indigenous Peoples*, U.N. DEP'T OF ECON. & SOC. AFFS., https://social.desa.un.org/issues/indigenous-peoples/united-nations-declaration-on-the-rights-of-indigenous-peoples (last visited Aug. 29, 2025). Each of the four countries (Canada, US, NZ, and AU) who voted against UNDRIP have subsequently expressed their support for it and two of the 11 abstainers have announced their support as well. Canada announced its unqualified support in May 2016, created a ministerial working group in February 2017 to review laws and policies related to Indigenous peoples. In November 2017, the Canadian Minister of Justice and the Attorney General of Canada announced their country's support of Private Member's Bill C-262. John Paul Tasker, *Liberal Government Backs Bill that Demands Full Implementation of UN Indigenous Rights Declaration*, CBC NEWS (Nov. 21, 2017), https://www.cbc.ca/news/politics/wilson-raybould-backs-undrip-bill-1.4412037. This bill ensures that all laws in Canada are consistent with the Declaration and establishes a "national action plan" to ensure implementation across jurisdictions. *Id.*

British Columbia is the Canadian province with the most unresolved issues with First Nations, including provincial allocation of water. The provincial government passed the Declaration on the Rights of Indigenous Peoples Act (Declaration Act) into law in November 2019. The Declaration Act establishes UNDRIP as the Province's framework for

determination, freedom from adverse discrimination; rights to land and associated resources, rights to culture, spirituality, education, and language; as well as participatory rights to development and other economic and social rights.[165] Most significantly for protecting both Indigenous water rights and water quality, UNDRIP requires that national, state, and provincial governments obtain the free, prior, and informed consent of Indigenous peoples before moving forward with projects affecting their lands. Moreover, UNDRIP requires governments to recognize that Indigenous rights to water go beyond quantities used for drinking and domestic purposes. These rights also cover the quantum of water necessary to promote the economic development of Indigenous communities, to protect water use necessary to allow subsistence livelihoods, and to ensure the welfare of fish, wildlife, aquatic habitats, and other aspects of the environment.

Second, Indigenous peoples have direct governance responsibility over water in parts of North America and elsewhere. In both Canada and the United States, Indigenous nations are entitled to make water decisions on reserves and unceded lands, and they do so based on Indigenous water laws. In other areas, such as the Yukon Territory and Nunavut, Indigenous nations have co-governance or governance responsibilities over water. Indigenous water laws not only affect large swaths of land and water in western North America and beyond; those Indigenous water laws and Indigenous practices following those laws provide a critically important example of how humanity ought to relate to water.[166]

Third, in areas where state and provincial governments base water allocation on prior appropriation, Indigenous peoples hold increasing power to control non-Indigenous use of water in a manner consistent with Indigenous worldviews and conceptions about water. Where prior appropriation reigns, Indigenous nations often rightfully hold the most senior water rights dating either from time immemorial or from 19th century treaty dates establishing reserves and fishing rights. As they enforce and exercise their rights in accordance with their understanding of stewardship responsibilities toward water, Indigenous nations protect

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reconciliation and sets forth a process to align B.C.'s laws with the UNDRIP. The legislation allows the Province to enter into agreements with a broader range of Indigenous governments. It also provides a framework for decision-making between Indigenous governments and the Province on matters that affect citizens of First Nations. Declaration on the Rights of Indigenous Peoples Act, S.B.C. 2019, c 44 (Can.).

The United States announced its support for UNDRIP in January 2011 and identified federal programs implementing UNDRIP rights. The US fell short of Canada's commitment to harmonize domestic law with UNDRIP. Despite the change of administration in 2016 to a President who was less supportive of Indigenous rights, the U.S. Department of State continued to support the inclusion of Indigenous government representatives in the UN.

165 G.A. Res. 61/295, annex, arts. 2, 10–12, 14, 20, Declaration on the Rights of Indigenous Peoples (Sept. 13, 2007).

166 *See* U.N. Convention on the Law of the Sea, Dec. 10, 1982, 1833 U.N.T.S. 397 (outlining the laws and practices that guide the current state of humanity's relationship with water).

water, fish, and aquatic ecosystems. Non-Indigenous water users with more anthropocentric understandings of water are in the process of coming to terms with these different Indigenous notions. Because Indigenous peoples legally have priority over water use, non-Indigenous water users must adjust their agricultural and grazing practices as well as practicing municipal water conservation to reduce consumptive water use.

In sum, many transformative forces are already advancing water resources policy and management in the direction of water justice ethics. However, given the task of transforming the fundamental water resources paradigm of global society, we must also devise and execute a variety of strategies to hasten adoption of this new way of looking at water.

B. Collective wisdom about transforming behavior

We begin our search for strategies for transforming water by gathering the current collective wisdom about transforming behavior. In synthesizing the scholarly literature from various disciplines about the power of law to define and shape social and economic behavior, Friedman identifies three distinct ways in which law affects human behavior. First, law and legal systems provide rewards that incentivize individuals to perform desired behavior, and sanctions that deter undesired behavior.[167] Second, it expresses and creates or changes the social norms by which individuals receive approbation or disapproval from their peers based on the extent to which they comply with those norms.[168] Third, it helps form individual judgements, an inner voice or conscience, about the appropriateness of one's own behavior.[169] To Friedman's list, we must add at least one other distinctive function of law: structuring institutions.

The law structures the governmental, corporate, and social institutions that bureaucratically require or constrain choices by individuals, even absent rewards and sanctions. Unless there is a box, you cannot check it. These institutional structures create Weber's "iron cage,"[170] which circumscribes the universe of available choices. What's more, we find that even the way an institution constructs the available choices dramatically affects behavior. As behavioral economists teach us, if an institution has structured our choice with a default and an option that requires us to check a box to avoid the default, that choice structure

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167 LAWRENCE M. FRIEDMAN, IMPACT: HOW LAW AFFECTS BEHAVIOR 5 (2016).

168 *Id.*; SUNSTEIN, *supra* note 139, at 6–7 (explaining that when social norms are challenged, changes can take place).

169 FRIEDMAN, *supra* note 167.

170 LAWRENCE A. SCAFF, FLEEING THE IRON CAGE: CULTURE, POLITICS, AND MODERNITY IN THE THOUGHT OF MAX WEBER 88 (1989) (describing how people used to voluntarily become a part of working society, but now are born into an iron cage of capitalism).

powerfully nudges us into accepting the default. Often we will not even exert the tiny effort of checking a box.[171]

C. Individual awareness, consciousness, and conscience

To transform individual awareness, we must start by remembering the spirituality of water in all faith traditions, including those of Indigenous peoples. We must lift up the spiritual value of water and underscore the significance of water rituals in all faiths. This is the most profound change that individuals can make.

An obvious, but critically important step towards transforming individual awareness, consciousness, and conscience with respect to water is to educate children, youth, adults, and water professionals about all aspects of water as well as humanity's life-affirming ethical responsibilities. That water education necessarily includes related concepts such as the connectedness of creation, loving all creatures large and small, the unique value of a given land and water ("place"),[172] and the wisdom of the elders. That education may be more effective and memorable when it explicitly includes exposure to Indigenous lifeways and Indigenous peoples' relationship with water.

The experiential aspect of water education must reconnect people with water and the natural world. Strategies include simply moving people outdoors whether that is through teaching people under the mango tree, publicity campaigns such as "Out is IN," and the "burn the building" movement to move the church out of the cathedral and into the community. Other experiential strategies are to build secular water celebrations and to restore the significance of water rituals in various spiritual and faith traditions. For example, to build appreciation of water among citizens, we might focus community celebrations on water by gathering water collected from each person's most beloved river, lake, or ocean place. Local governments could sponsor festivals celebrating their special waters. To build appreciation of water among the faithful, we might return to baptizing them in those special places or otherwise lifting up water rituals in various faith traditions.

A critical aspect of transforming individual awareness and consciousness with respect to water is overcoming the inertia associated with the belief that change, however desirable, is not possible and that

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171 RICHARD H. THALER & CASS R. SUNSTEIN, NUDGE: IMPROVING DECISIONS ABOUT HEALTH, WEALTH, AND HAPPINESS 83 (2008).

172 Place is one of the most powerful environmental values based on a sense of relationship. It is as powerful as a sense of home to which we always seek to return. *See* Marc Tadaki et al., *Making Sense of Environmental Values: A Typology of Concepts*, ECOLOGY & SOC'Y, Mar. 2017, No. 1, at 1 (discussing the various types of valuation regarding environmental values); Bryan G. Norton & Bruce Hannon, *Environmental Values: A Place-Based Theory*, 19 ENV'T ETHICS 227 (1997) (describing the role of "sense of place" in environmental policy evaluation and proposing a triscalar, place-oriented system to analyze environmental values).

current structures and ways of thinking are eternal. Koger suggests four strategies for overcoming inertia:

(1) small steps feel empowering and inspire further action through a positive feedback loop;
(2) structuring action so that it allows connection with other like-minded individuals provides highly reinforcing social support for action;
(3) appeals should address morality and deep-seated values because people like to act with integrity, in ways consistent with their values; and
(4) seek public commitments because people are more likely to act if they have made such a commitment.[173]

D. Social norms and political expectations

Two efforts are necessary to adjust social norms and political expectations regarding water. First, at both the global and local levels, intentional efforts to adjust water norms and expectations are necessary. For example, at the global level, the Alliance for Water Stewardship Standard, the WCC-EWN water justice principles, and the Council of Canadians Blue Community project seek to change global norms.[174] At the local level, communities create their own water norms and expectations in efforts like the Berlin Water Charter and the Santa Fe Water Charter, or by becoming a Blue Community.[175] Second, water professionals need to incorporate ethics into discussions of water. The Global Water Charter is one such effort. Other notable work includes the American Water Resources Association efforts to mainstream discussion of water ethics among water professionals.

E. Economic incentives and sanctions

While managing water for the primary purpose of economic interests, gain, or allocative efficiency is inconsistent with water justice ethics, using economic instruments to achieve water justice can be legitimate. Indeed, economic incentives and sanctions are powerful means to change behavior. Placing a price on water and water services for other than

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[173] *See, e.g.*, Britain A. Scott, *Getting Psyched for Sustainability*, PSYCH. FOR SUSTAINABILITY 311 (2021) (discussing methods for more effective engagement in ecological activism).

[174] ALL. FOR WATER STEWARDSHIP, INTERNATIONAL WATER STEWARDSHIP STANDARD: VERSION 2.0 (2019), https://a4ws.org/wp-content/uploads/2019/03/AWS_Standard_2.0_2019_Final.pdf; Smith, *supra* note 123 (describing WCC-EWN water justice principles); *Blue Communities*, COUNCIL OF CANADIANS, https://canadians.org/bluecommunities (last visited Aug. 26, 2025).

[175] BERLINER WASSERTISCH, BERLIN WATER CHARTER (2015), https://berliner-wassertisch.net/wp-content/uploads/2022/07/Berlin_Water_Charter2015.pdf; *Water Ethics Charters*, WATER-CULTURE INST., https://www.waterculture.org/water-ethics-charters (last visited Aug. 26, 2025) (describing efforts to develop Santa Fe Water Charter).

critically important uses could provide a powerful signal about water priorities, help balance demand with available demand, and secure financing for infrastructure projects. Admittedly, there is danger that the public will struggle to distinguish between economic management of water as a goal and use of economic incentives and sanctions as a means. There is also the danger that economic interests will exploit public confusion in order to resist changes that affect profits made from free water and cheap water service. However, so long as government insulates priority water uses from the price mechanism, such means should not be taken off the table.

F. Structuring institutions, law, and policy

We need to restructure institutions, policy, and law to facilitate water justice. A myriad of possibilities come to mind. The most promising approach to structuring institutions, law, and policy is to assure Indigenous governance or co-governance in making water decisions. This would ensure that water management and policy contain the Indigenous worldview and perspective on water, such as incorporating Indigenous knowledge, law, traditions and practices with respect to water.

Within non-Indigenous water governance institutions, we must assure adequate ecosystem protection. Governments could directly protect environmental flows; recognize priority instream water rights or purchase them; enforce public trust duties with respect to water, fish, and wildlife; recognize customary public rights in water; provide regulatory protection of wetlands and other riparian habitat; and acquire and protect aquatic and riparian habitat as public lands. Governments could encourage citizen enforcement of priority use allocations, water quality standards, and water conservation requirements. Governments could signal the importance of priority water uses by recognizing constitutional rights and providing the means for citizen enforcement of those rights. Governments could invest in the infrastructure necessary to provide water for domestic uses and subsistence and small-scale farming. The possibilities are endless once our paradigm starts to shift towards water justice.

V. ANOTHER REASON TO HOPE: THE ASCENDANCE OF ENVIRONMENTAL JUSTICE IN US DOMESTIC POLICY

When the first Trump Administration controlled the federal government in the United States, seeking to repress democratic governance and even maintain power through insurrection if necessary—in furtherance of values that do not affirm the value of human life nor any other life—the future seemed dim. Transforming our water policy and management in favor of a life-affirming relationship with water seemed little more than a pipedream. Yet, through the democratic process, the United States returned federal policy in 2020 to a more progressive path.

With respect to environmental issues, however, the Biden Administration had a level of ambition that was an order of magnitude greater than any preceding Presidential administration. These changes are manifest in the Biden Administration's dramatic moves to make environmental justice a central mission of all federal agencies and policy. The Biden Administration's commitment to environmental justice was most visible in its cabinet and subcabinet appointments. The Biden Administration was more diverse than any prior Presidential administration, including that of Barack Obama. It had more women as well as more non-white appointees than any prior administration.[176] More important is that both cabinet and subcabinet appointees have an unprecedented amount of high-level government experience as well as substantial prior environmental justice experience.[177] President Biden equipped the federal government with political policymakers and managers who know how to do their jobs and have a deep personal commitment to environmental justice.

President Biden made another easily visualized and important move by centralizing environmental justice policy in the White House. He assigned responsibility for environmental justice to the Chair of the Council on Environmental Quality, making it a significant portion of her portfolio.[178] He moved the national environmental justice coordination from EPA, which gave environmental justice a marginal role at best, to the White House.[179] The White House Environmental Justice Advisory Council reported to the White House Environmental Justice Interagency Council**,** which allowed environmental justice advocates from around the country to connect directly with the White House and allowed the White House to lead environmental justice work throughout the federal government.[180]

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[176] Kathryn Dunn Tenpas, *President Biden's Commitment to Diversity in the First 100 Days*, BROOKINGS INST. (May 3, 2021), https://www.brookings.edu/articles/president-bidens-commitment-to-diversity-in-the-first-100-days.

[177] Many commentators noted the environmental justice credentials of Biden appointees. *See, e.g.*, Derrick Z. Jackson, *The Environmental Justice Movement Moves Front and Center in the Biden Administration*, UNION OF CONCERNED SCIENTISTS: THE EQUATION (Jan. 22, 2021), https://blog.ucs.org/derrick-jackson/the-environmental-justice-movement-moves-front-and-center-in-the-biden-administration; Gwendolyn Keyes, *Environmental Justice Takes a Permanent Place at the Department of Justice*, DLA PIPER (May 11, 2022), https://www.dlapiper.com/es-pr/insights/publications/2022/05/environmental-justice-takes-a-permanent-place-at-the-department-of-justice; Peggy Otum & Caroline McHugh, *Environmental Justice in the Biden Administration,* WILMERHALE (Feb. 3, 2021), https://www.wilmerhale.com/en/insights/client-alerts/20210203-environmental-justice-in-the-biden-administration; Renée Cho, *A Guide to the Biden Administration's All-of-Government Approach to Environmental Justice*, COLUM. CLIMATE SCH.: STATE OF THE PLANET (Mar. 4, 2021), https://news.climate.columbia.edu/2021/03/04/biden-administration-environmental-justice.

[178] Tackling the Climate Crisis at Home and Abroad, Exec. Order. No. 14,008, 86 Fed. Reg. 7619, 7629–30 (Feb. 1, 2021).

[179] *Id.* at 7629.

[180] *Id.* at 7629–30.

Environmental justice is an important focal point of President Biden's Executive Order on climate. Beyond altering the government's administrative structure regarding environmental justice, the Order formalized the commitment to make environmental justice a part of the mission of every agency. It did so by directing federal agencies to develop "programs, policies, and activities to address the disproportionately high and adverse human health, environmental, climate-related and other cumulative impacts on disadvantaged communities."[181] The Order also assured that the substantially increased level of federal spending on infrastructure and services would foster environmental justice. It created the government-wide Justice40 Initiative, which has the goal of delivering 40% of the benefits of federal spending to disadvantaged communities and it created a screening mechanism to both discern which communities are disadvantaged and track performance toward that goal.[182]

President Biden's budgets also focused on new spending that directly benefitted EJ communities including lead pipe and service line replacement, upgrading affordable housing, improving public transportation, and reconnecting communities divided by highways.[183] They also increased funding for environmental justice and civil rights enforcement.

The commitment to environmental justice did not neglect water justice. The lead pipe and service replacement program was just one of many programs designed to foster water justice. The FY22 budget included more funding for the Clean Water and Drinking Water State Revolving Funds, of WIFIA/SWIFIA (water loan interest subsidies), rural plumbing upgrades and septic systems, and grant assistance to communities to enhance flood, drought, and other water resilience.[184] Congress also extended the program that assisted low-income households with water and sewer payments, which was initially instituted during the pandemic and operated through July 2024.[185] In addition, Indigenous nations received generous funding for water infrastructure projects intended to bring drinking water to previously unserved Indigenous populations.[186] Congressional enthusiasm for increasing water spending

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181 *Id.* at 7629.

182 *Id.* at 7631–32.

183 *See*, *e.g.,* OFF. OF MGMT. & BUDGET, BUDGET OF THE U.S. GOVERNMENT: FISCAL YEAR 2024, at 33, 36, 109–10 (2023) (discussing lead pipe and service line replacement, affordable housing, and public transportation). The Reconnecting Communities Pilot Program provided grants for fiscal years 2022–24. *Reconnecting Communities Pilot (RCP) Grant Program*, U.S. DEP'T OF TRANSP., https://www.transportation.gov/reconnecting (last visited Aug. 26, 2025).

184 *See* OFF. OF MGMT. & BUDGET, BUDGET OF THE U.S. GOVERNMENT: FISCAL YEAR 2022, at 21, 43–44 (2021).

185 *The Low Income Household Water Assistance Program Data Dashboard*, U.S. DEP'T OF HEALTH & HUM. SERVS.: OFF. OF CMTY. SERVS., https://lihwap-hhs-acf.opendata.arcgis.com (last visited Feb. 1, 2025).

186 *Take Action Now to Support Tribal Water Sovereignty*, NATIVE AM. RTS. FUND (Dec. 6, 2024), https://narf.org/support-2024-tribal-water-settlements; (showing that as of December

that benefits poor and marginalized communities appears bi-partisan and considerably greater than it has been in the past.

The backlash among certain extremely conservative elements of the Republican Party against the Biden Administration's progressive policies, particularly with respect to diversity and environmental and socially aware investment (ESG), along with the election of former President Trump and Republican control of Congress in 2024, clearly spells the short-term end to federal progress on environmental justice. However, environmental justice has now entered the mainstream of American politics and will continue to make its mark on national consciousness and global policy.

VI. CONCLUSION

As we have shown, the current paradigm for water policy and management places insufficient emphasis on social equity and ecological sustainability—and is not likely to realize sustainable water resources management. Adopting a life-affirming relationship with water such as the water justice paradigm will not only provide superior results in terms of sustainability, it also recognizes that all life is precious. Providing ample high-quality water for the benefit of all life is a moral imperative that should transcend human ambitions for wealth and power. We can develop successful strategies to change our paradigm for water policy and management. All that remains is the will to change—and the stunning ascendance of environmental justice in the US policy agenda during the Biden Administration suggests that at least many Americans have that will.

2024, twelve tribal water settlement bills were pending in Congress). While the political leaders in national government have changed, the bipartisan support for these settlements may allow passage in the next Congress.