

# NAVIGATING THE CONFLUENCE: SOURCES OF RECONCILIATION FLOWING BETWEEN THE HUMAN RIGHT TO WATER AND ECONOMIC EFFICIENCY

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## ABSTRACT

*The purpose of this research is to identify the confluence of the law and economics disciplines, using these distinct channels of scholarship not as an empirical vessel to determine the “value” or “valueless” nature of water, but rather as a means to reconcile externalities among interested parties and to identify management strategies that embrace sentiments of economic efficiency throughout the arena of global hydrocommerce. The various perspectives on water, particularly with regards to an increasing global population and demand for freshwater, elicits an intricate mosaic of tensions concerning the availability, accessibility, provision, and protection of this fundamental natural resource.*

*Billions of individuals around the world lack access to basic water and sanitation services. Despite the prevalence of these atrocities, access to water is both an individual human right and necessary for human survival. The legal basis for the human right to water, in terms of availability, quality, and accessibility, was adopted by the U.N. in its General Comment No. 15. Despite recognition by the U.N., more than 1.1 billion people do not have sufficient access to clean water, while 2.6 billion people have no provision for sanitation. Against this tragic and*

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*inexcusable backdrop, the public sector either lacks the financial resources to provide water or continues to operate water distribution schemes with undesirable inefficiency. From a pragmatic standpoint—and to ensure that citizens have access to clean water—there exist circumstances, both in reality and in the text of the General Comment, whereupon governments should be compelled, or at least be encouraged, to solicit capital investment from the private sector in order to construct adequate water infrastructure and manage water distribution services.*

*Researchers estimate that over the next twenty years almost \$22 trillion (USD) will be necessary to fully modernize global water delivery and wastewater systems. Water scarcity, an individual's lack of access to clean water, arises due to economic and physical constraints, while being influenced by managerial, institutional, and political factors. At its core, the primary challenge for nations concerning their respective water distribution schemes is a lack of adequate financial resources. In developing countries, an estimated ninety-seven percent of all water distribution is managed by public-sector suppliers. The inept realities concerning these water distribution systems in developing countries, and the fact that over a billion people still lack access to this essential resource, suggests that governments retain at least some responsibility in the persistence of the global water crisis. Reconciliation is the next step in the human right to water argument—from its theoretical origins to its pragmatic implementation—and may be realized through a law and economics analysis in support of private-sector participation in the delivery of water and funding for the provision of adequate infrastructure. Much like distinct tributaries to a mighty river, the legal and economic disciplines maintain differences in methodology, scientific approach, and objectives; but as these disciplines converge, their tributaries form the river's main stem, with potential to influence an entire watershed of jurisprudence.*

## TABLE OF CONTENTS

I. INTRODUCTION .....	108
II. THE CONFLUENCE OF LAW & ECONOMICS.....	115
A. <i>Law &amp; Economics</i> .....	115
B. <i>The Coase Theorem &amp; Transaction Costs</i> .....	117
C. <i>Principles of Economic Efficiency</i> .....	119
D. <i>Water Law &amp; Economics</i> .....	121
III. THE WORLD’S MOST “FUNDAMENTAL” RESOURCE .....	123
A. <i>Global Water Crisis</i> .....	123
1. <u>Government Failure and Inefficiency in the Delivery of Water</u> .....	124
2. <u>Private-Sector Participation in Water Distribution Regimes</u> .....	126
B. <i>Blue Gold: Investment in the Global Water Industry</i> .....	129
1. <u>Financing Water Infrastructure Projects</u> .....	131
C. <i>Role of Water Infrastructure in Economic Growth</i> .....	135
D. <i>“Water Justice” Movement’s Criticism of Private-Sector Involvement</i> .....	137
IV. LEGAL FOUNDATIONS FOR THE HUMAN RIGHT TO WATER.....	138
A. <i>Dublin Statement on Water and Sustainable Development (1992)</i> .....	140
B. <i>U.N. General Comment No. 15 (2002)</i> .....	141
C. <i>U.N. Human Rights Council Resolution 15/9 (2010)</i> .....	145
D. <i>State Obligations to Integrate Private-Sector Involvement within Water Delivery Regimes</i> .....	146
V. ECONOMIC ANALYSIS OF THE RIGHT TO WATER AS A LEGAL REGIME .....	149
A. <i>Coasean Analysis of the Right to Water &amp; Private-Sector Participation</i> .....	151
1. <u>Transaction Costs</u> .....	152
2. <u>Alternative Comparisons</u> .....	154
B. <i>Does Private-Sector Involvement in the Delivery of the Right to Water Yield an Efficient Economic Outcome?</i> .....	155
1. <u>Efficient Outcome for Individuals: The Indispensable Element for Human Life</u> .....	156
2. <u>Efficient Outcome for Countries: Precondition for Economic Progress</u> .....	158
3. <u>Efficient Outcome for Private-Sector Investors: “Blue Gold” &amp; Wealth Maximization</u> .....	162
VI. SHIFTING PERSPECTIVES: THE WATER JUSTICE MOVEMENT’S CONDEMNATION OF PRIVATE-SECTOR PARTICIPATION .....	163
VII. CONCLUSION .....	168

## I. INTRODUCTION

You can comprehend a piece of river. A whole river . . .  
is a thousand differing and not compatible things in-between . . . .  
It is also an entity, one of the real wholes, but to feel  
the whole is hard because to know it is harder still.<sup>1</sup>

Enriched with notions of cultural, religious, and biological significance, the principles of water flow counter to the theoretical currents of the law and economics analysis.<sup>2</sup> The legal and economic disciplines maintain differences in methodology, scientific approach, and objectives that converge, much like distinct tributaries to a mighty river, with potential to influence an entire watershed of jurisprudence. Despite the seemingly ambitious task of resolving global water issues at the intersection of law and economics, one potential solution is a matter of shifting the baseline perspective—similar to the “change of approach” suggested by R.H. Coase in *The Problem of Social Cost*.<sup>3</sup> Perhaps the economics of water is a matter of perspective, in which a shifting baseline—from economic value to economic efficiency—could be beneficial to various sectors within the global water crisis. The law and economics approach provides a platform to reconcile individual, social, sovereign, and private-sector perspectives through directed efforts at improving efficiency, reducing bargaining costs, and promoting fairness. This approach does not cabin itself into a free-market advocacy position, nor does it exclusively promote a human rights perspective. Objectivity is maintained by exploring issues from a scientific perspective, thereby embracing an ecological approach that seeks interdisciplinary solutions by recognizing these symbiotic contradictions.

During the last several decades, the nexus between economic development, water resources, and human rights has achieved

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1. JOHN GRAVES, *GOODBYE TO A RIVER* 4 (Alfred A. Knopf ed., 1960).

2. “The river of God is full of water.” *Psalm* 65:9 (English Standard). The Qur’an further recognizes the essential nature of water, the following verse being perhaps among the first to predict water-derived conflicts that would affect desert climates: “[a]nd Allah has sent down rain from the sky and given life thereby to the earth after its lifelessness. Indeed in that is a sign for a people who listen.” Qur’an, 16:65 (Sahih International).

3. R.H. Coase, *The Problem of Social Cost*, 3 J. LAW & ECON. 1, 42 (1960) [hereinafter *Social Cost*]. Coase explained, “[i]n devising and choosing between social arrangements we should have regard for the total effect. This, above all, is the change in approach which I am advocating.” *Id.* at 44.

prominence as one of the most compelling issues in the global agenda. Although many distinguished scholars survey these challenges, there exists an inherent presumption that the right to water and private-sector investment are incompatible. The purpose of this Article is to identify the confluence of these distinct channels of scholarship, using law and economics not as an empirical vessel to determine the “value” or “valueless” nature of water, but rather as a means to reconcile externalities among interested parties and to identify management strategies that embrace sentiments of economic efficiency throughout the global hydrocommerce arena.<sup>4</sup> Billions of individuals throughout the world lack access to basic water and sanitation services—the prevalence of which is an unfortunate reality that cannot be understated. To combat this tragedy, the justiciability of the human right to water continues to develop into an enforceable obligation.<sup>5</sup> Countries are obligated to ensure the accessibility and availability of water to its citizens. These concepts are not a matter of law, economics, or science. Access to water is an individual right and necessary for human survival. Against this tragic and inexcusable backdrop, the public sector nevertheless continues to operate water distribution schemes with undesirable inefficiency.<sup>6</sup> From a pragmatic standpoint, to ensure that citizens have access to clean water, there exist circumstances whereupon governments should be compelled, or at least be encouraged, to solicit private-sector capital investment in

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4. Summit Global Management, an investment firm that specializes in “global hydrocommerce,” describes the sector as follows: “Water—is the most . . . critical industrial input to the world’s economy . . . water remains absurdly undervalued.” Summit Global Management, *Introduction to Water Investing 2010 2* (2010). On the different values of water: “But exactly how valuable is water? A truer account would reflect several underlying realities. First, water has no economic substitute . . . . Second, we can neither create nor destroy water . . . . Third, while we obviously use more water as the world population grows, we also use more water on a per capita basis as industrialization, urbanization, and standards of living advance.” *Id.*

5. See, e.g., Erik B. Bluemel, *The Implications of Formulating a Human Right to Water*, 31 *ECOLOGICAL L.Q.* 957 (2004) (asserting that “[t]he recognition of a singular right which could satisfy the entirety of States’ obligations under international law should provide greater clarity and consistency in interpretation”); Amy Hardberger, *Life, Liberty, and the Pursuit of Water: Evaluating Water as a Human Right and the Duties and Obligations It Creates*, 4 *NW. J. INT’L HUM. RTS.* 331 (2005) (discussing implications of customary law in the international arena).

6. “In many [developing] countries, a the majority of people still lack access to safe [and clean] drinking water.” See Hugo Tremblay, *A Clash of Paradigms in the Water Sector? Tensions and Synergies between Integrated Water Resources Management and the Human Rights-Based Approach to Development*, 51 *NAT. RESOURCES J.* 307, 319 (2011) (discussing that “[i]n many countries, the majority of people still lack access to safe drinking water”); see also WORLD HEALTH ORG. & U.N. CHILDREN’S FUND, *PROGRESS ON SANITATION AND DRINKING WATER: 2010 UPDATE 7* (2010) (reporting that “884 million people in the world still do not get their drinking-water from improved sources”).

order to construct adequate water infrastructure and manage water distribution services.<sup>7</sup>

The provision of water presents numerous challenges to all parties involved in any particular transaction. When examined through the lens of law and economics—such as the Coase Theorem and its transaction cost analysis, or various concepts of economic efficiency and externalities—this approach maintains an avenue that facilitates the reconciliation of competing water industry regimes, while providing individuals with access to these fundamental resources, and simultaneously creating investment opportunities for the private sector. This Article does not propose an argument in favor of outright privatization; rather, it argues that countries should be encouraged to seek capital investments for water distribution systems and infrastructure. As a practical matter, this could prove to be the most efficient way that many countries can even begin to fulfill their obligations to ensure delivery of the right to water.

In the arena of international law, recognition by the United Nations (“U.N.”) in 2002 and 2010 of the human right to safe drinking water and sanitation has propelled the global water crisis to the forefront of legal scholarship.<sup>8</sup> The human right to water leaves states

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7. Even in highly developed regions (i.e., United States & Western Europe), governments, citizens, and private-sector investors benefit from massive investments in water infrastructure, the total dollar value being in the trillions (USD). See Richard Ashley & Adrian Cashman, *The Impacts of Change on the Long-Term Future Demand for Water Sector Infrastructure*, in INFRASTRUCTURE TO 2030: TELECOM, LAND TRANSPORT, WATER AND ELECTRICITY, ORG. FOR ECON. CO-OPERATION & DEV. 28,29 (2005); see also WORLD WATER ASSESSMENT PROGRAMME, WATER IN A CHANGING WORLD: THE UNITED NATIONS WORLD WATER DEVELOPMENT REPORT 3, UNESCO 58 (2009). There are various examples of public-sector and private-sector management of water utilities, each with successes and failures, throughout the developed world.

8. Both the U.N. General Assembly and the U.N. Human Rights Council recognized the human right to safe drinking water and sanitation. See Econ. & Soc. Council, Comm. on Econ., Soc., & Cultural Rights, *Substantive Issues Arising in the Implementation of the International Covenant on Economic, Social and Cultural Rights, General Comment No. 15 (2002): The Right to Water (Arts. 11 and 12 of the International Covenant on Economic, Social, and Cultural Rights)*, U.N. Doc. E/C.12/2002.11 (Jan. 20, 2003) [hereinafter General Comment No. 15]; G.A. Res. 64/292 (Aug. 3, 2010); G.A. Res 64/PV.108 (July 28, 2010); Press Release, General Assembly, General Assembly Adopts Resolution Recognizing Access to Clean Water, Sanitation as Human Right, By Recorded Vote of 122 in Favour, None Against, 41 Abstentions, U.N. Press Release GA/10967 (Jul. 28 2010). Enforceability of these rights, on the other hand, remains an important development in legal scholarship, as discussed *infra*, Section IV.B. See also Sharmila L. Murthy, *The Human Right(s) to Water and Sanitation: History, Meaning, and the Controversy Over-Privatization*, 31 BERKELEY J. INT’L L. 89, 89 (2013); M. Belén Olmos Giupponi and Martha C. Paz, *The Implementation of the Human Right to Water in Argentina and Colombia*, XV ANUARIO MEXICANO DE DER. INTERNACIONAL 323, 326 (2015) (“The enforceability of the right to water and, in general, of Economic, Cultural and Social Rights is a transnational issue which has been

with an obligation to ensure its citizens have access to water. Simultaneously, states that lack the necessary capital are constrained in providing this right, which is predicated upon maintaining adequate water distribution systems and infrastructure.<sup>9</sup> The lack of sufficient funding is brutally apparent when considering the billions of people that lack access to safe drinking water and sanitation.<sup>10</sup> Given the vast funding gap for water infrastructure, public funds alone are likely not sufficient even in developed countries.<sup>11</sup>

On the other hand, the markets for global hydrocommerce continue to suffer from “chronic under-investment” according to financial institutions.<sup>12</sup> Estimates indicate that over the next twenty years, almost \$22 trillion (USD) will be necessary to fully modernize global water delivery and wastewater systems.<sup>13</sup> Currents of economic efficiency present a unique perspective, however, particularly with regards to private investment within the project-based realm of the global water infrastructure industry: a scenario that maintains a system of efficiency at all levels benefitting governments, individuals, and third-party investors. Efficiency extends to individuals who otherwise would not be able to access their right, while also benefitting state governments, who otherwise could not provide the necessary water infrastructure, but would then enjoy the indirect economic benefits of a healthier country over the long-term. In effect, by embracing these symbiotic contradictions through the lens of law and economics, we may be in a better position to resolve global water resource challenges.

These paradigms are compatible on a pragmatic level. Based on the foundation that water is a legal right, an economic approach to water management becomes essential to the development of legal

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raised by prominent scholarship over the past years.”).

9. For sovereign nations, the legal basis for the human right to water is derived from U.N. state membership and its Covenants, which provide the legal basis for many other human rights. As of 2016, there are currently 193 U.N. member states, which “[d]ue to the powers vested in its Charter and its unique international character, the United Nations can take action on the issues confronting humanity in the 21<sup>st</sup> century, such as peace and security, climate change, sustainable development, [and] human rights.” See *About the U.N.*, UNITED NATIONS <http://www.un.org/en/sections/about-un/overview/index.html> (last visited Mar. 15, 2016).

10. The externalities surrounding the global water crisis are discussed *infra*, section III.A.

11. *The US Water Sector on the Verge of Transformation* 7, ERNST & YOUNG [http://www.ey.com/Publication/vwLUAssets/Cleantech\\_Water\\_Whitepaper/\\$FILE/Cleantech-Water-Whitepaper.pdf](http://www.ey.com/Publication/vwLUAssets/Cleantech_Water_Whitepaper/$FILE/Cleantech-Water-Whitepaper.pdf) (last visited Mar. 15, 2016) [hereinafter *US Water Sector Transformation*].

12. 2030 WATER RESOURCES GROUP, CHARTING OUR WATER FUTURE: ECONOMIC FRAMEWORKS TO INFORM DECISION-MAKING at 19 (Mike D. Young and Christine Esau, 2009).

13. Leila Boulton, *Investing in Blue Gold*, FIN. ADVISOR (Jan. 7, 2014), available at <http://www.fa-mag.com/news/investing-in-blue-gold-16511.html>.

regimes that will ensure the accessibility and availability of water.<sup>14</sup> Although human rights advocates suggest that water is a social need and basic necessity of life, managing water from an economics perspective provides a more comprehensive approach. For example, an approach that incorporates economics has the capacity to recognize important variables, such as supply and demand, efficiency of use, avoiding waste, ecological considerations, and perhaps most importantly, transaction costs.<sup>15</sup> Nevertheless, the following dilemma represents the riptide between the two competing paradigms, embracing the challenges that permeate the global water crisis: “While proponents of participation of the private sector argue that only the private sector can bring the desperately needed resources to the water sector, legitimate questions have been raised about the inevitable increases in tariffs that poor people cannot afford, and that, in turn, would threaten the concept of the human right to water.”<sup>16</sup>

“The framing of water and sanitation as a human right can be understood as an affirmation of the fundamental importance of water and sanitation for human dignity,” as one scholar describes the dichotomy, and “as a response to global water service trends that have increasingly emphasized efficiency, financial sustainability, and privatization.”<sup>17</sup> Although certainly reasonable, this sentiment is a

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14. Discussing the water policy relationship between the human rights based approach and economic management, one scholar described the various perspectives: “[t]his conflict as to whether water should be viewed as an economic good is not ineluctable but depends on the context and characteristics of local governance frameworks.” Tremblay, 51 NAT. RES. J. at 330, *supra* note 6; see also SALMAN M. A. SALMAN & SIOBHÁN MCINERNEY-LANKFORD, WORLD BANK, THE HUMAN RIGHT TO WATER: LEGAL AND POLICY DIMENSIONS 3 (2004), <http://www.ais.unwater.org/ais/pluginfile.php/44/course/section/18/302290PAPER0Human0right0to0H20.pdf> (noting that “the current thinking is that water should not be viewed only as a social good and a human need, but also as a commodity”).

15. See SALMAN & MCINERNEY-LANKFORD at 3–4, *supra* note 14 (“Striking a balance between the two considerations, particularly in light of the expanding role of the private sector in water resources management on the one hand, and the increasing recognition of the rights of the poor and vulnerable groups to water on the other, presents a major challenge.”). There are several distinct economic approaches to water management. For purposes of this discussion, the most fundamental economic approach “relies on the belief that the efficient allocation of water resources, measured in economic value, is maximized by markets,” where economic value is an “apportionment mechanism among different types of utilization and various users based on marginal costs and benefits.” Tremblay, *supra* note 6, at 330–31. Another example, which is often a source of criticism when discussing economics and water, involves the “tarification of water” and is “based on accounting principles for costs recovery...to ensure sustainability.” *Id.* (citing AM. WATER WORKS ASS’N, PRINCIPLES OF WATER RATES, FEES, AND CHARGES (5<sup>th</sup> ed., 2000)).

16. SALMAN & MCINERNEY-LANKFORD, *supra* note 14, at 72–73; see also WORLD PANEL ON FIN. WATER INFRASTRUCTURE, FIN. WATER FOR ALL 3, WORLD WATER COUNCIL (2003).

17. Sharmila L. Murthy, *The Human Right(s) to Water and Sanitation: History, Meaning, and the Controversy Over-Privatization*, 31 BERKELEY J. INT’L L. 89, 90 (2013).

matter of perception, one that does not explicitly analyze the global water challenge from an economic efficiency perspective, where neither party is made worse-off by the allocation of resources. By decoupling the broad strokes of “privatization” from a purely economic efficiency analysis, it becomes evident that private capital investment will help fulfill the human right to water while promoting scenarios where neither bargain party is harmed. In particular, an efficient outcome may be achieved through the development of infrastructure projects that ensure actual delivery of the water.<sup>18</sup> Perhaps the issue is not a comparison between “bad” and “good.” Instead, as water economist David Zetland describes, “[p]ublic or private water service providers fail because they are monopolies, not because of their profit structure.”<sup>19</sup>

The distinctions between water, law, and economics are most apparent in the numerous attempts to reconcile the value of water. In *The Wealth of Nations*, Adam Smith famously illustrated the different meanings of value: “The things which have the greatest *value in use* have frequently little or no *value in exchange*; and, on the contrary, those which have the greatest value in exchange have frequently little or no value in use. Nothing is more useful than water; but it will purchase scarce anything; scarce anything can be had in exchange for it. A diamond, on the contrary, has scarce any value in use . . . .”<sup>20</sup> In contrast, water law scholars incorporate another distinction, and “categoriz[e] the intrinsic value of water as priceless or even

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18. This Article also assumes that distinctions can be drawn in uses of the term “efficiency,” such that efficient use of water does not mean economic efficiency for purposes of this Article. That would be too easy to argue that point, but my thoughts are the words have similarities, but for vastly different reasons, which will be examined in the Article.

19. DAVID ZETLAND, *THE END OF ABUNDANCE: ECONOMIC SOLUTIONS TO WATER SCARCITY* 81 (2011). David Zetland is an assistant professor at Leiden University, Netherlands, where he teaches various classes on economics. He received his PhD in Agricultural and Resource Economics from University of California-Davis in 2008. He was a S.v. Ciriacy-Wantrup Postdoctoral Fellow in Natural Resource Economics and Political Economy at University of California-Berkeley (2008–2010).

20. ADAM SMITH, *Of the Origin and Use of Money*, in *AN INQUIRY INTO THE NATURE AND CAUSES OF THE WEALTH OF* 26, [http://www.ibiblio.org/ml/libri/s/NATIONS\\_SmithA\\_WealthNations\\_p.pdf](http://www.ibiblio.org/ml/libri/s/NATIONS_SmithA_WealthNations_p.pdf) (emphasis added); see also W.M. Hanemann, *The Economic Conception of Water* 62–63 in *WATER CRISIS: MYTH OR REALITY?* (Peter P. Rogers et al. eds., 2006) (quoting Smith’s “famous[ ] . . . paradox of water and diamonds”).

incalculable.”<sup>21</sup> Whether examined from anthropocentric or ecocentric perspectives, the inherent value of water remains undeniable.

By navigating around the traditional arguments concerning the economic “value” of water,<sup>22</sup> the course of this Article—through the braided channels of law and economics<sup>23</sup>—seeks to harmonize concepts of the human right to water, as adopted in General Comment No. 15 by the U.N. Committee on Economic, Social and Cultural Rights, with opportunities for private investment in global hydrocommerce. In the study of ecology, the confluence of two rivers provides an apparent depiction of conflicting watercourses, much like the competing concepts of the human right to water and the economics of water. At least in a hydrological sense, these distinctions are recognizable, quantifiable, and often pastoral. This new watercourse, now incorporating the strength of both tributaries within its banks, is stronger and more productive than its respective tributaries. Here, through a perspective that integrates analyses rooted in law and economics, this Article seeks to take the first steps towards reconciling the human right to water and investment in global hydrocommerce. An economic analysis of the law provides a platform to use the economists’ approach to analyze functions of a particular legal system.<sup>24</sup> On the premise that there exists a legal and moral obligation to deliver the human right to water, this discussion builds on legal scholarship,

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21. Gabriel Eckstein, *Precious, Worthless, or Immeasurable: The Value and Ethic of Water*, 38 TEX. TECH. L. REV. 963, 963 (2006). Because water is fundamental to human life, as Professor Eckstein argues, perhaps recognizing the “ethic of water” in relation to the “value of water” will facilitate cooperation among the multiple of perspectives:

Water ethics reflect the relative importance water plays in people’s lives and provide guidance in decision making related to the use, management, allocation, and protection of freshwater resources . . . . One starting point in seeking universal water ethics, however, may be in the fact that all individuals, communities, nations, and societies value water.

*Id.* at 968.

22. Water invokes robust feelings, both practically, emotionally, and intellectually, among all classes of people from across the world. Further complicating the debate, renowned water scholar Peter Gleick suggests that water is characteristic of both renewable and non-renewable resources: “[w]ater is largely a renewable resource with rapid flows from one stock and form to another, and the human use of water typically has no effect on natural recharge rates. But there are also fixed or isolated stocks of local water resources that are being consumed at rates far faster than natural rates of renewal.” Peter H. Gleick & Meena Palaniappan, *Peak Water Limits to Freshwater Withdrawal and Use*, 107 PROC. NAT’L ACAD. SCI. 11155, 11157 (2010).

23. Some rivers have many small channels that continuously split and join, depending on different hydrological features, these are called “braided” channels. Similarly, the multidisciplinary approach utilized in this Article is similar to “braided” rivers, both in form, function, and interconnectivity.

24. See R. H. Coase, *Law and Economics and A.W. Brian Simpson*, 25 J. LEGAL STUD. 103, 103 (1996) (discussing the two separate, but overlapping, parts that comprise law and economics).

economic research, and basic common sense. Examining these global water challenges through the lens of economic efficiency and transaction costs promotes an avenue for reconciliation among all parties involved. First, by eroding the misperceptions that surround the alleged moral deficiencies, and second, by identifying an efficient equilibrium at the confluence of the apparently distinct tributaries of human rights and economic motivations.

Reconciliation is the next step in arguing for the human right to water. From its theoretical origins to its pragmatic implementation, presenting a law and economics analysis supports private-sector participation in the delivery of water and funding necessary for adequate infrastructure. Section II details the law and economics discipline. Section III examines the global water crisis, while Section IV highlights the legal foundations of the human right to water. Section V addresses Coasean solutions and explores efficient outcomes. Finally, Section VI explores potential compatibility between the water justice movement and private-sector involvement..

## II. THE CONFLUENCE OF LAW & ECONOMICS

### A. *Law & Economics*

The field of law and economics, arising from the logical coherence between these two doctrines, has evolved into an influential discipline throughout the United States.<sup>25</sup> Legal scholarship no longer considers whether law and economics should be joined—this has already occurred—but rather, scholars now contemplate the breadth of the application of economics to the law and legal systems.<sup>26</sup> The field of law and economics provides a platform for the application of economic analysis to legal issues. The Coase Theorem, recognizing the integral nature of transaction costs in an economic system, retains seminal importance within the discipline of law and economics.<sup>27</sup> In addition, concepts of efficiency are employed, as well as an evaluation of the positive and negative externalities that are present in a given situation.<sup>28</sup>

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25. See Nuno Garoupa and Thomas S. Ulen, *The Market for Legal Innovation: Law and Economics in Europe and the United States*, 59 ALA. L. REV. 1555, 1556 (2008) (noting that “[t]he U.S. legal academy has generously embraced law and economics”). Other “law and” movements include developments in the fields of law and philosophy, law and sociology, law and science, empirical legal studies, and feminist jurisprudence, among others. *See id.* at 1564–65.

26. JEFFREY L. HARRISON & JULES THEEUWES, LAW AND ECONOMICS 5–6 (2008).

27. *See generally id.* at 81–97.

28. *Id.* at 59 (incorporating a narrow definition, “an externality occurs when one is harmed

Within the arena of legal scholarship in the United States, law and economics is among the fastest growing fields of study.<sup>29</sup> From a global perspective, there is an increasing recognition of the importance of law and economics, yet this convergence has been at a much slower and more reserved pace than in the United States.<sup>30</sup> Although the discipline has been accepted in Europe, Asia, and Latin America, legal scholars suggest that for various reasons, at least internationally, the influence of law and economics on legal policy and scholarship has been “overwhelmingly disappointing.”<sup>31</sup> Scholars have put forward a myriad of hypotheses to explain the lack of success for law and economics outside the United States, including: legal tradition (e.g., civil law vs. common law);<sup>32</sup> language barriers; misperceived influence of ideology (liberal or conservative) on legal philosophy within foreign legal scholarship;<sup>33</sup> and perhaps the most comprehensive of all reasons, legal parochialism.<sup>34</sup>

Hesitation throughout the international legal community to incorporate the field of law and economics simultaneously presents a

or benefitted by the actions of another and there is no offsetting payment.”).

29. Richard A. Posner, *Legal Scholarship Today*, 115 HARV. L. REV. 1314, 1316–17 (2002) (noting that law and economics was one “of the external approaches that began to take hold in the legal academy around 1970”).

30. Nuno Garoupa, *The Law and Economics of Legal Parochialism*, 2011 U. ILL. L. REV. 1517, 1518 (2011) (noting that law and economics “is virtually ignored by courts” outside of the United States and Israel).

31. *Id.*

32. See, e.g., Richard A. Posner, *Law and Economics in Common-Law, Civil-Law, and Developing Nations*, 17 RATIO JURIS 66, 77 (2004) (asserting that common-law judges embrace law and economics in part because they are “appointed from the practice of law,” making them “more worldly than their counterparts in the career judiciaries of civilian legal systems.”); Richard A. Posner, *The Future of the Law and Economics Movement in Europe*, 17 INT’L REV. L. & ECON. 3, 4–5 (1997) (explaining cultural differences under continental Europe’s civil law system).

33. Garoupa, *supra* note 30, at 1519–20. With particular regards to the topics discussed herein and the development of a harmonic balance between the legal right to water and economic analyses, Professor Garoupa’s historical analysis of law and economics in Europe offers interesting insight into these challenges.

We should acknowledge that legal scholars in Europe show an intense dislike for efficiency and seem to be much more open to social justice or redistributive legal arguments. Chronologically, however, the distaste for efficiency seems to have been revealed when confronted with law and economics. Therefore, it is unclear whether law and economics has been rejected because legal scholars dislike efficiency, or efficiency is disliked because legal scholars rejected law and economics.

*Id.* at 1520. Nevertheless, this underscores the potential significance of this Article, which provides an economic analysis in support of the legal right to water on a global scale.

34. *Id.* at 1525 (defining legal parochialism as a “form of trade protectionism in the context of the market for legal ideas”).

unique opportunity for scholarship seeking to analyze foreign legal regimes from an economics perspective. The legal right to water continues to evolve as an international establishment, and because the field of law and economics has gained worldwide influence at a slower pace—this approach is among the first to both analyze and support the human right to water from an economics perspective.

### *B. The Coase Theorem & Transaction Costs*

The legacy of Professor Ronald Coase is embedded within his substantial contributions to the subject of law and economics,<sup>35</sup> including the concepts of transaction costs and associated limits of firms in *The Nature of the Firm* (1937).<sup>36</sup> Coase famously established the notion that externalities could be overcome by well-defined property rights in *The Problem of Social Cost* (1960).<sup>37</sup> Coase maintains his significance because of the pragmatic perspectives that are derived from his problem-solving approach and desire to identify efficient outcomes within the scope of real world challenges.<sup>38</sup> The roots of his scholarship, at least chronologically, were influenced by an Economics of Public Utilities course that he was assigned to teach as an Assistant Lecturer at the London School of Economics in 1935.

While researching “historical studies of the *water*, gas, and electricity supply industries,” Coase found that little was known about British public utilities.<sup>39</sup> Most applicable to the discussion set forth herein, (which favors private-sector involvement in the delivery of the right to water, as opposed to countries that rely solely on the public sector) Coase described what he learned about water utilities: “These researches taught me much about the public utility industries and they

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35. See David D. Haddock, Fred S. McChesney & Menahem Spiegel, *An Ordinary Economic Rationale for Extraordinary Legal Sanctions*, 78 CALIF. L. REV. 1, 8 (1990) (describing the Coase Theorem as the basis for virtually all law and economics theory).

36. For much of his life and beginning in 1964, Ronald H. Coase was the Clifton R. Musser Professor Emeritus of Economics at the University of Chicago Law School. Professor Coase was the editor of the *Journal of Law and Economics* from 1964–1982. He received the Alfred Nobel Memorial Prize in Economic Sciences in 1991. See RONALD COASE INST., *About Ronald Coase*, <https://coase.org/aboutronaldcoase.htm> (last visited Mar. 10, 2016).

37. See generally Coase, *Social Cost*, *supra* note 3.

38. In describing his views on governmental involvement in the economy, Coase offered insight into his approach, which rather than being theoretical, was predominantly based on practical analyses: “[m]y views on government intervention in the economy have changed over my life, but they have always been driven by factual investigations.” Coase, *Law and Economics and A.W. Brian Simpson*, *supra* note 24, at 108.

39. *Id.* at 106. This research was interrupted by World War II, when Coase joined the Civil Service. *Id.* at 106–07.

certainly made me aware of the defects of government operation of these industries, whether municipal or through nationalization.”<sup>40</sup> Although the extent to which these studies influenced his later scholarship is uncertain, the fact that his academic career began with research on water and other utilities suggests that Coase is relevant to a discussion concerning the obligation of governments to deliver the human right to water.

The Coase Theorem is fundamental to any law and economics analysis, as *The Problem of Social Cost* is among the most cited articles within the discipline.<sup>41</sup> Before the Coase Theorem became the formative doctrine among economists, Pigouvian taxes were the preferred remedy to restore efficiency and alleviate the effects of externalities.<sup>42</sup> Coase’s argument fundamentally shifted the prevailing views among economists.<sup>43</sup> The applicability of the Coase Theorem incorporates the nature of transaction costs.<sup>44</sup> Transaction costs are those derived from the creation of the bargain. When there are no transaction costs, the Coase Theorem applies and the legal system in question necessarily achieves its desirable outcome. This outcome is an efficient equilibrium. The Coase Theorem advanced several significant notions with regards to the law and economics analysis: the application of Pigouvian taxes to remedy negative externalities does not always lead to an efficient result; the existence of externalities does not necessarily lead to an inefficient result; and most importantly, the focus should be on transaction costs, not necessarily externalities.<sup>45</sup>

At its core, the Coase Theorem provides that the primary objective is to reach the most efficient allocation of resources (e.g., and for purposes of this article, access to water) with limited judicial and governmental involvement.<sup>46</sup> Coase argued that as long as property rights are well defined and the parties enter a bargain without transaction costs, the market system will efficiently alleviate the effects

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40. *Id.* at 106.

41. *See generally* Coase, *Social Cost*, *supra* note 3.

42. For an explanation of this methodology, see generally A.C. PIGOU, *THE ECONOMICS OF WELFARE* (1932).

43. *See generally* Coase, *Social Cost*, *supra* note 3.

44. *See* A. MITCHELL POLINSKY, *INTRODUCTION TO LAW AND ECONOMICS* 12–13 (4<sup>th</sup> ed. 2011) (explaining the Coase Theorem).

45. HARRISON & THEEUWES, *supra* note 26, at 82; *see also* David Friedman, *The Swedes Get It Right*, [http://davidfriedman.com/Libertarian/The\\_Swedes.html](http://davidfriedman.com/Libertarian/The_Swedes.html) (last visited Sept. 17, 2017).

46. *See* Coase, *Social Cost*, *supra* note 3, at 13 (“If we are to attain an optimum allocation of resources, it is therefore desirable that both parties should take the harmful effect (the nuisance) into account in deciding on their course of action.”).

of externalities.<sup>47</sup> An efficient outcome, and thus an efficient allocation of resources, requires that the transaction costs be less than the benefits each party will receive.<sup>48</sup> From a Coasean perspective, these transaction costs must be low (or at zero) to incentivize activity and achieve an economically efficient right allocation.<sup>49</sup> Otherwise, when transaction costs are too high, parties may never achieve “this optimal arrangement of rights.”<sup>50</sup>

The Coase Theorem, and its concept of transaction costs, is relevant to the discussion concerning whether an efficient equilibrium can be achieved by including the private sector in facilitating the delivery of the human right to water. According to some legal scholars, the reality is that transaction costs are almost never zero and are often substantial.<sup>51</sup> As discussed *infra* in Section V, various transaction costs and externalities exist among the private sector, governments, and individuals within the global hydrocommerce arena. Determinations regarding the applicability of the Coase Theorem must be considered on a case-by-case basis. To address these complexities, this Article will consider the risks, incentives, and reduction of externalities, both in the case of private-sector involvement and without, to examine various approaches (and their alternatives) that can lead to an economically efficient allocation of resources.

### C. Principles of Economic Efficiency

In an efficient economic system, goods worth more than they cost to produce get produced, while goods worth less than they cost to produce do not.<sup>52</sup> Externalities and their associated effects complicate the system, leading to inefficient outcomes and limited production. As the original baseline standard of efficiency, Pareto efficiency is often incorporated into the law and economics analysis.<sup>53</sup> At its core, Pareto efficiency examines various allocations of resources and the

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47. See Friedman, *supra* note 45 (“If transaction costs are zero—if in other words, any agreement that is to the mutual benefit of the parties concerned gets made—then any initial definition of property rights leads to an efficient outcome.”).

48. See Coase, *Social Cost*, *supra* note 3, at 15 (explaining that, even if transactions are costless, rights will be rearranged “if it would lead to an increase in the value of production”).

49. *Id.* at 15–16.

50. *Id.* at 16.

51. HARRISON & THEEUWES, *supra* note 26, at 98; see also Friedman, *supra* note 45.

52. HARRISON & THEEUWES, *supra* note 26, at 82.

53. The Pareto concept of economic efficiency is credited to Italian economist and engineer Vilfredo Pareto (1848–1923). SEAN INGHAM, ENCYC. BRITANNICA, PARETO-OPTIMALITY, <https://www.britannica.com/topic/Pareto-optimality> (last visited Sept. 17, 2017).

corresponding societal impact if those allocations are altered. When an alteration can be made that makes at least one person better off and no person worse off, then this efficient outcome is *Pareto superior*.<sup>54</sup> In contrast, an alteration that leaves at least one person worse off is *Pareto inferior*, disregarding any beneficial effects to other parties.<sup>55</sup> An allocation is considered *Pareto efficient* or optimal when no change can be made without making at least one person worse off.<sup>56</sup>

Pareto efficiency is important because these benefits or detriments are not weighed against each other. It is difficult to orchestrate legal or policy regimes with universal agreement—where all parties benefit and none are disadvantaged. Although some scholars have suggested that the standard of Pareto efficiency is confined to certain situations and limited in its applicability,<sup>57</sup> this Article’s analysis is significant because it may broaden the scope of this applicability, such that Pareto efficiency may be apparent within the relationship between the human right to water and global hydrocommerce. Multiple parties will be evaluated in the subsequent economic analysis, which evaluates legal regimes that create an obligation for states to seek private-sector involvement to ensure the provision of the human right to water for its citizens. For the sake of this macro-level analysis, the relevant parties include individuals receiving the right to water, governments with an obligation to provide this right to water to the citizens of the state, and private-sector investors seeking to profit within the lucrative global market.

One alternative to the efficiency considered within the purview of the Coase Theorem is the Kaldor-Hicks efficiency, which is essentially a standard of wealth maximization.<sup>58</sup> This concept of efficiency is often relied upon by economists in analyzing legal regimes from an economic perspective.<sup>59</sup> In terms of wealth maximization, the Kaldor-Hicks standard of efficiency ensures that resources end up in the possession of those who value the resources most, irrespective of the voluntary exchange of compensation. Kaldor-Hicks efficiency is different than Pareto efficiency because Pareto efficiency concepts rely on “interpersonal comparisons of utility,” which may be unscientific and

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54. HARRISON & THEEUWES, *supra* note 26, at 27

55. *Id.*

56. HARRISON & THEEUWES, *supra* note 26, at 26–27; *see also* POLINSKY, *supra* note 44, at 7–9.

57. HARRISON & THEEUWES, *supra* note 26, at 28–29.

58. *Id.* at 28.

59. *Id.*

arbitrary in comparison to units of “wealth” and “value.”<sup>60</sup> Economists realized utility comparisons among buyers and sellers is quantitatively impractical because utility refers to the psychological satisfaction of the parties. In contrast, Kaldor-Hicks efficiency provided an acceptable substitute because wealth maximization is expressed as a “willingness or ability to pay.”<sup>61</sup> This concept is imperfect, particularly in its applicability to the right to water as a legal regime, because a consequence of Kaldor-Hicks efficiency is that “those who cannot pay for something, even though they might derive great utility from it, will not be regarded as valuing it.”<sup>62</sup>

Externalities must also be examined, particularly in situations where the Coase Theorem may lack applicability. An externality occurs when one is harmed or benefited by the actions of another and there is no offsetting payment.<sup>63</sup> For example, air and water pollution are externalities that result from market failure. No party can offer it for sale, and no corresponding party can acquire it for production purposes.<sup>64</sup> The scope of externalities can affect individuals by reducing their respective utility in a way beyond their control, as well as firms, by affecting production in a positive or negative manner.<sup>65</sup> When only two parties are involved, it is likely easier to achieve a solution that addresses the externalities. In contrast, when numerous individuals, nations, and private-sector representatives are involved—as is the case with legal regimes that provide the right to water—it becomes exponentially more challenging to address the prevailing externalities.

The applicability of these law and economics concepts, namely Pareto efficiency, Kaldor-Hicks efficiency, and externalities, are essential to the analysis. They address whether the most efficient regime in the provision of the right to water is through private-sector involvement or if alternatives should also be considered from a law and economics perspective.

#### *D. Water Law & Economics*

The application of economic analyses within the realm of water law jurisprudence has garnered increasing recognition among legal

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60. *Id.* at 29–30.

61. *Id.*

62. *Id.* at 31.

63. *Id.* at 59.

64. *See City of Los Angeles v. Alameda Books, Inc.*, 535 U.S. 425, 446 (2002) (describing pollution as an example of a negative externality).

65. HARRISON & THEEUWES, *supra* note 26, at 64–65.

scholars and law review publications in the United States.<sup>66</sup> Building on this scholarship, this Article is unique in its application of economics analyses to internationally recognized human rights, rather than a national (i.e., domestic) legal regime.<sup>67</sup> Water management institutions, such as the Integrated Water Resources Management, often reference economic efficiency as a relevant factor within successful regimes. Much of the legal scholarship, however, focuses on supply and demand, waste, and the economic “value” of water. Most importantly, there has been limited scholarship that applies the economic concepts of efficiency (i.e., Pareto, Kaldor-Hicks) “the human rights to water.”

In American legal scholarship, economic principles intersect with concepts of water law primarily in the water markets discussion. Within the market system, voluntary transfers would occur between willing sellers and buyers who decide what the water is worth to each of them.<sup>68</sup> From an economics perspective, embracing the market system would “facilitate the movement of water from low-value activities to higher value ones,” thereby promoting efficiency by decreasing waste.<sup>69</sup> Nevertheless, although the potential benefits of water markets may be significant in various regions and circumstances, this approach may not fully address the underlying global water crisis. How can an individual who lacks basic access to water begin to bargain or negotiate with

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66. See Aaron Culp, Comment, *Water Can Be for Drinking Again: Economic and Collaborative Solutions to a Texas Water Fight*, 45 ST. MARY'S L.J. 103, 110–13 (using economic analyses including the Coase Theorem, as well as Calabresi and Melamed's “Cathedral” model, to examine a water rights conflict in Texas between downstream rice farmers and upstream domestic water users in the Highland Lakes Region and City of Austin). See also Guido Calabresi & Douglas Melamed, *Property Rules, Liability Rules, and Inalienability: One View of the Cathedral*, 85 HARV. L. REV. 1089, 1107 (1972) (exploring transaction cost issues derived from “holdouts”). For an application of Coasean principles to water law, see generally Sarah P. Hollinshead, *Water Is Not Liquid: Securitization, Transaction Costs, and California's Water Market*, 33 COLUM. J. ENVTL. L. 323 (2008), and C. Carter Ruml, *The Coase Theorem and Western U.S. Appropriative Water Rights*, 45 NAT. RESOURCES J. 169 (2005). Ruml analyzed the legal and pragmatic obstacles to water transfers to demonstrate that the prior appropriation regime did not achieve the Coase equilibria because “transaction costs [were] high and title to water rights [was] insecure.” *Id.* at 182.

67. Although law review articles have explored, or at least acknowledged, the interactions between economic efficiency and the right to water, see, e.g., Tremblay, *supra* note 6, at 309, none have offered a thorough examination of these symbiotic contradictions from an economics and the law perspective.

68. See Robert Glennon, *Water Scarcity, Marketing, and Privatization*, 83 TEX. L. REV. 1873, 1884 (2005); see also Robert Glennon, *The Price of Water*, 24 J. LAND RESOURCES & ENVTL. L. 337, 339 (2004) (exploring “the voluntary transfer of water between water users” as a potential option for addressing our increasing use of water).

69. Glennon, *Water Scarcity, Marketing, and Privatization*, *supra* note 68, at 1884.

another party within a water market transaction? Moreover, what is the value of water if your country lacks the basic distribution systems and infrastructure to even deliver this resource?

### III. THE WORLD'S MOST "FUNDAMENTAL" RESOURCE

#### A. *Global Water Crisis*

Throughout the history of mankind, the importance of water has remained constant because there is simply no substitute for water. More importantly, water is a "prerequisite for the realization of other human rights."<sup>70</sup> Despite the essential nature of this resource, "more than [two] billion people are affected by water shortages in over forty countries."<sup>71</sup> 1.1 billion people do not have sufficient access to clean and safe water, while 2.6 billion people have no provisions for sanitation.<sup>72</sup> These proportions are staggering in a world of almost 7.5 billion individuals. Even more alarming, an estimated 1.4 million children under the age of five die every year due to lack of clean water and adequate sanitation.<sup>73</sup> For instance, in the African countries of Nigeria and Cameroon, the increased use of unprotected water sources for drinking purposes is directly associated with an increase child mortality rates.<sup>74</sup>

Renowned scientist Peter Gleick describes the failure to provide individuals with affordable and reliable access to clean water and sanitation as one of humankind's greatest failings.<sup>78</sup> These statistics are exacerbated by the increasing global population, which has more than tripled in the last century. This corresponds with an increasing demand

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70. General Comment No. 15, *supra* note 8, para. 1.

71. SALMAN & MCINERNEY-LANKFORD, *supra* note 14, at 1.

72. Michael D. Young, *Investing in Water Services Infrastructure Policies and Management* 3, in *INVESTING IN WATER FOR A GREEN ECONOMY: SERVICES, INFRASTRUCTURE, POLICIES, AND MANAGEMENT* (Mike D. Young & Christine Esau eds., 2013); *see also* FREDRIK SEGERFELDT, *WATER FOR SALE: HOW BUSINESS AND THE MARKET CAN RESOLVE THE WORLD'S WATER CRISIS* 1, CATO INST. (2005); *UN-Water Global Annual Assessment of Sanitation and Drinking-Water (GLAAS) 2010: Targeting Resources for Better Results*, WORLD HEALTH ORGANIZATION (2010), [www.who.int/water\\_sanitation\\_health/glaas/en/](http://www.who.int/water_sanitation_health/glaas/en/) (last visited Sept. 28, 2017).

73. Young, *supra* note 72, at 3, 9. At this rate, an estimated 3,900 children under 5 years old die per day because of lack of access to clean water and sanitation. *Id.* at 9; *see also* UNICEF, *STATE OF THE WORLD'S CHILDREN* 2005 (2004).

74. *See* John Ward et al., *Challenging Hydrological Panaceas: Evidence from the Niger River Basin* at 177, in *INVESTING IN WATER FOR A GREEN ECONOMY: SERVICES, INFRASTRUCTURE, POLICIES, AND MANAGEMENT* (Mike D. Young & Christine Esau eds., 2013).

<sup>78</sup> *See* PETER H. GLEICK, *THE WORLD'S WATER 2008-2009: THE BIENNIAL REPORT ON FRESHWATER RESOURCES* (2009).

for water, further straining the finite supply of this natural resource. Throughout this same timeframe, water uses for human purposes have multiplied at a six-fold rate.<sup>75</sup> The gravity of these adverse impacts is resounding, with widespread implications for countries and their citizens.

Although the difficulty in providing individuals with clean water and sanitation exists in various degrees—each uniquely affected at regional-levels by socio-economics, aridity, development, and climate, among other factors<sup>76</sup>—the inability to ensure the provision of water occurs throughout the world. Many countries have failed to provide even the most basic water industry services. In fact, most countries in Africa, large areas of central Asia, and countries such as China, India, Peru, and Bolivia cannot provide many of their citizens with access to clean water or sanitation.<sup>77</sup> According to Australian water economist Michael D. Young, “[t]he existing inadequacies in provision of water and sanitation services generate considerable social costs and economic inefficiencies.”<sup>78</sup> The various perspectives on water, in connection with the increasing global population and demand for freshwater, creates an intricate mosaic of tensions concerning the availability, accessibility, provision, and protection of this fundamental natural resource.<sup>79</sup>

### 1. Government Failure and Inefficiency in the Delivery of Water

Water scarcity—an individual’s lack of access to clean water—arises due to economic and physical constraints, while being influenced by managerial, institutional, and political factors.<sup>80</sup> The primary

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75. SALMAN & MCINERNEY-LANKFORD, *supra* note 14, at 1 (citing WILLIAM J. COSGROVE & FRANK R. RIJSBERMAN, WORLD WATER COUNCIL, WORLD WATER VISION—MAKING WATER EVERYBODY’S BUSINESS 4 (Earthscan Publications Ltd. 2000)).

76. See, e.g., Arab Water Council, *Vulnerability of Arid and Semi-Arid Regions to Climate Change*, PERSPECTIVES ON WATER AND CLIMATE CHANGE ADAPTATION, [http://www.worldwatercouncil.org/fileadmin/wwc/Library/Publications\\_and\\_reports/Climate\\_Change/PersPap\\_09.\\_Arid\\_and\\_Semi-Arid\\_Regions.pdf](http://www.worldwatercouncil.org/fileadmin/wwc/Library/Publications_and_reports/Climate_Change/PersPap_09._Arid_and_Semi-Arid_Regions.pdf). (last visited Sept. 28, 2017).

77. See Charles J. Vorosmarty et al., *Global Threats to Human Water Security and River Biodiversity*, 467 NATURE 555, 556–61 (2010) (quantifying stressors affecting surface water resources and analyzing policy and management responses to water security and biodiversity threats over a range of scales, “from global to local”); see generally JOINT MONITORING PROGRAMME ON WATER SUPPLY AND SANITATION, WORLD HEALTH ORG./UNICEF, PROGRESS ON SANITATION AND DRINKING-WATER: 2010 UPDATE (2010).

78. Young, *supra* note 72, at 3.

79. See generally Eckstein, *supra* note 21, at 964.

80. See Ward et al., *supra* note 74, at 177–78; see also Francois Molle & Peter Mollinga, *Water Policy Indicators: Conceptual Problems and Policy Issues*, 5 WATER POLICY 529, 531 (2003).

challenge faced by states concerning their respective water distribution schemes is a lack of adequate financial resources. In developing countries, an estimated ninety-seven percent of all water distribution is managed by public-sector suppliers.<sup>81</sup> In these same developing countries, more than a billion individuals are deprived of access to water.<sup>82</sup> The realities concerning these water distribution systems in developing countries, and the fact that over a billion people still lack access to this resource, suggests that governments retain at least some responsibility in the persistence of the global water crisis.

Multiple externalities permeate water utilities that are controlled and operated by the public sector (i.e., government management/funding regimes). These externalities may come from the motivations of politicians and trade unions, which are often driven by self-interest as opposed to the greater welfare of society. The problem with these individual government-actors may actually be a lack of motivation, at least in terms of ensuring the delivery of water to citizens. These systems often become inefficient, as the bureaucracies preserve the failing status quo. Government utilities in developing countries must deal with intermittent power supplies, lack of regulations, poorly educated staff, and bureaucratic demands, leading to an environment of complacency and corruption.<sup>83</sup> In comparison, the private sector maintains different motivations, benefitting from a range of factors, including more robust financial resources, specialized expertise in water distribution, experience with corporate operations, access to innovative technology, cost-awareness, and incentive-based structures.<sup>84</sup> The billions of people lacking access to water suggests that public-sector utilities are not often successful in the provision of water, at least not in a capacity that features sole management authority. Further, the frequency of these critical circumstances is indicative of a prevailing trend where the public sector lacks the requisite financial resources to efficiently manage their water distribution systems.

Governments are affected by numerous other factors. Public-sector utilities may be operating in serious debt, overstaffed by politically connected individuals, and understaffed by individuals that have the appropriate expertise. The public sector operational structure often relies on bureaucrats, while placing too little emphasis on engineers, economists, and hydrologists. Political concerns are

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81. SEGERFELDT, *supra* note 72, at 1.

82. *Id.*

83. ZETLAND, *supra* note 19, at 155.

84. *See* SEGERFELDT, *supra* note 72, at 59–62.

pervasive in the public sector, which can result in monopoly-type regimes that inevitably fail.<sup>85</sup> These inefficiencies lead to coverage issues for citizens, in which government utilities cannot supply water to its whole distribution network throughout the entire twenty-four hour day. For example, before the Philippine government privatized its water sector, the government agency could only supply water for seventeen hours per day, and even this was limited to two-thirds of the utilities coverage.<sup>86</sup>

Despite the alarming nature of these statistics regarding public-sector failures in the water industry, this should not be considered a reason to presume that private-sector participation in water delivery and infrastructure is an automatic, fail-safe solution. It is true that the private sector participation in this complex industry has also contributed to the failure of certain water delivery regimes. Nevertheless, as this Article contemplates through the law and economics analysis, this suggests that we must examine the current status of global water delivery regimes and acknowledge that the public sector may not be best suited to handle these responsibilities, at least not as sole management authority in some situations.

## 2. Private-Sector Participation in Water Distribution Regimes

By the 1990s, the breadth of the global water crisis led many governments in developing countries to seek private-sector participation in more than 100 water and sewerage projects.<sup>87</sup> Although the degree of participation may be considered controversial (e.g., complete privatization vs. public-private partnerships), there is optimism throughout the global water industry that private-sector

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85. ZETLAND, *supra* note 19, at 88–90.

86. See Tanya Kapoor, *Is Successful Water Privatization a Pipe Dream?: An Analysis of Three Global Case Studies*, 40 YALE J. INT'L L. 157, 178–79 (2015).

87. See George R.G. Clarke, Katrina Kosec & Scott Wallsten, *Has Private Participation in Water and Sewerage Improved Coverage? Empirical Evidence From Latin America*, 21 J. INT'L DEV. 327, 328 (2009). According to some international commentators, concepts of efficiency were central to the private sector's increased involvement in the development of services and infrastructure:

In the 1980s, the neoliberal agenda shifted the focus of development efforts from economic growth with equity towards efficiency and the productive allocation of resources. Around this time, private sector participation in previously state run enterprises...was particularly encouraged. Essentially, a 'tidal wave of privatization' was unleashed with private actors taking over the delivery of services related to social welfare, health care, water, gas, electricity, and so on.

Anna F.S. Russell, *Incorporating Social Rights in Development: Transnational Corporations and the Right to Water*, 7 INT'L. J. L. IN CONT. 1, 1 (2011).

involvement will maintain a significant role in the delivery of water and development of adequate infrastructure. Participation by the private sector within the realm of the global water industry has encountered both successes and failures.<sup>88</sup> However, many case studies, commentaries, and media coverage focus on the most extreme examples.<sup>89</sup> More generally, the comparison of water-utility performances before and after privatization does not address whether the result would have been different in the absence of such privatization reforms.<sup>90</sup> It is difficult to make these estimates with certainty, at least from a quantitative perspective. Thus, some researchers suggest that empirical deficiencies may reside within case studies comparing successes and failures.<sup>91</sup>

Although the private sector has experienced failures in the water industry, there are also many successful examples of private investments that improve water distribution in developing countries. Most notably, in the Philippines, after the private sector obtained management control of the water distribution system in Manila, the results were the delivery of water to millions of citizens that were not previously served by the public, government-controlled utility.<sup>92</sup> The Manila Water Company has served residents for over fifteen years and is now listed on the Philippine Stock Exchange.<sup>93</sup> By 2006, ninety-nine percent of Manila Water Company's distribution network had twenty-four hour access to water.<sup>94</sup> Even when rates increased, the private sector instituted programs to ensure that residents in the poorest neighborhoods paid below the price charged to other customers.<sup>95</sup>

Although there are many examples of private-sector participation, media sensationalism suggests that news coverage will focus on the most controversial and disastrous events. Thus, the press is more likely to cover events similar to the protests in Cochabamba, Bolivia, after the water concession contract was revoked, rather than a moderately

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88. See Clarke et al., *supra* note 87, at 328. ]

89. *Id.*

90. *Id.* at 328–30.

91. *Id.* at 328.

92. See SEGERFELDT, *supra* note 72, at 2; see also Xun Wu & Nepomuceno A. Malaluan, *A Tale of Two Concessionaires: A Natural Experiment of Water Privatization in Metro Manila*, 45 URB. STUD. 207, 213–17 (2008).

93. See Kapoor, *supra* note 86, at 178. In the year of its IPO (2005), Asia Money voted Manila Water Company the “best managed small cap company.” See *id.* at n.262.

94. See *id.* at 181.

95. See *id.* at 183.

successful example of private-sector participation.<sup>96</sup> Some commentators suggest that empirical studies of the success of private-sector participation may also retain this sample selection bias.<sup>97</sup> Many critiques of private-sector involvement focus on absolute privatization regimes, rather than capital investments in local or regional water infrastructure projects. For example, one commentator suggests that “water privatization programs are highly unlikely to deliver Pareto improvements if privatizers charge impoverished and wealthy populations the prevailing market rate,” instead proposing that they should allow progressive pricing.<sup>98</sup> The resulting negotiations and transaction costs will almost certainly be different if the private company is seeking full privatization of the water industry through concession contracts, as opposed to investments in water infrastructure projects and similar management contracts.

In general, it is true that all types of water services regimes have been met with varying degrees of success and failure.<sup>99</sup> For purposes of this Article, it is important to consider that the various types and degrees of private-sector participation may affect water distribution systems and coverage differently. For example, concession contracts represent absolute privatization and may invite substantial private investment.<sup>100</sup> Lease and management contracts also invite private-sector investment.<sup>101</sup> In some instances, loans from international donors such as the World Bank provided the financial resources to expand the water sector; commentators suggest that due to the poor performance of public utilities, countries would not have received the

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96. See *infra* Section IV for more thorough discussion on the events in Cochabamba, Bolivia and the implications for future private-sector involvement. In summary, Bolivia allowed private sector participation in the water and sewerage sectors. In 1999, the Cochabamba government signed a 40-year concession agreement, but after higher tariffs resulted in civil unrest, the agreement was cancelled five months later. *Id.* at 340.

97. See Clarke et al., *supra* note 87, at 328–29.

98. Kapoor, *supra* note 86, at 159–60 (critiquing “development banks’ privatization policies by analyzing water privatizations in Bolivia, South Africa, and the Philippines”).

99. The three general types of water service utilities include the public sector, the private sector, and public-private partnerships. ZETLAND, *supra* note 19, at 86–98.

100. Concession contracts “give private company a license to run the water system and charge customers to make a profit. The private company is responsible for all investments, including building new pipes and sewers to connect households.” MAUDE BARLOW & TONY CLARK, *BLUE GOLD: THE FIGHT TO STOP THE CORPORATE THEFT OF THE WORLD’S WATER* 39 (2002).

101. Leases are “contracts under which the company is responsible for running the distribution system and for making the investments necessary to repair and renew the existing assets, but the local government remains responsible for new investment.” Management contracts “make the private company responsible only for managing the water service but not for any investments.” *Id.* at 39.

financing without private-sector participation.<sup>102</sup> Although a detailed analysis of these levels of involvement may be an entirely different discussion, the overarching approach should be to examine effects on a case-by-case basis, rather than making general assumptions.

### *B. Blue Gold: Investment in the Global Water Industry*

The business of water, particularly investment opportunities within the realm of water distribution, is linked to infrastructure gaps, treatment methodologies, water industry sectors, regulatory requirements, and the practical needs for emerging countries, among many other sub-disciplines and related sectors.<sup>103</sup> The costs associated with the provision of clean water are inextricably linked to these same factors. Resource economist Steve Hoffman best described the prospects of entering the global water industry from an investor's perspective, "Any time there is a structural change in an industry caused by shifts in the economic fundamentals, there is a huge potential for corresponding economic gain...creat[ing] the unprecedented investment opportunity of the twenty-first century—the business of water."<sup>104</sup> This remarkable statistic broadly represents the cost of providing access to water and adequate sanitation, either through construction of new infrastructure or to maintain existing water delivery services.

Even in developed countries, the costs to operate, maintain, monitor, and replace existing infrastructure are quite staggering, annually approaching hundreds of billions of dollars (USD). Reports also suggest that only three percent of impoverished citizens in the developing world are provided water by private-sector utilities.<sup>105</sup> Among these developing countries, private-sector participation in water distribution has been limited. This presents a host of challenges and opportunities: At least \$180 billion is required annually to ensure the universal delivery of water to citizens of the Third World.<sup>106</sup> Because water utilities directly provide water to the user, they play a substantial role in ensuring an individual's human right to water.

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102. Clarke et al., *supra* note 87, at 334–35. Countries that received World Bank financed loans for water sector projects include Guinea and Colombia (specifically the city of Cartagena) *Id.* at 8.

103. *Id.* at 41.

104. STEVE HOFFMAN, PLANET WATER: INVESTING IN THE WORLD'S MOST VALUABLE RESOURCE 49 (2009).

105. SEGERFELDT, *supra* note 72, at 2–4.

106. *Id.*

Although the business of water remains integrated as a whole, the industry can be characterized by various sectors including: water utilities, infrastructure, treatment, and resource management. Despite differences concerning their respective investment characteristics, each sector is immediately relevant to the delivery of the resource, and equally relevant to fulfilling the right to water in terms of accessibility, availability, quantity, and quality. The water infrastructure sector constructs, replaces, repairs, and monitors the water distribution systems, including vast networks of pipelines, pumps, storage facilities, and other mechanisms in the system.<sup>107</sup> The nature of water distribution provides strategic investment opportunities: “[i]nternational markets for new infrastructure construction in emerging economies add significantly to the magnitude of the potential expenditures.”<sup>108</sup> The water and wastewater treatment sector also provides opportunities for investors intrigued by technological developments in the use, reuse, or discharge of water, processes which could include equipment, chemicals, filtration, or disinfection. Desalination is another exciting investment technology, a technique that has experienced significant growth over the last decade.<sup>109</sup>

Management efforts traditionally focused on increasing water supplies and access to these supplies, allowing private capital investments for the construction of dams and impoundments, as well as other large-scale infrastructure projects.<sup>110</sup> Nevertheless, the demand for water continues to increase, intensified by urbanization, agricultural development, industrial development, climate change, and pollution.<sup>111</sup> These factors have further created investment opportunities within global water management, so scarcity concerns

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107. HOFFMAN, *supra* note 104, at 57.

108. *Id.* In the United States, the EPA estimates that the total costs to repair the existing water and wastewater infrastructure will approach \$1 trillion over the next several decades. *Id.*

109. See Isabel Kershner, *Aided by the Sea, Israel Overcomes an Old Foe: Drought*, N.Y. TIMES (May 29, 2015), [http://www.nytimes.com/2015/05/30/world/middleeast/water-revolution-in-israel-overcomes-any-threat-of-drought.html?\\_r=0](http://www.nytimes.com/2015/05/30/world/middleeast/water-revolution-in-israel-overcomes-any-threat-of-drought.html?_r=0).

110. See Murthy, *supra* note 17, at 95. Turkey’s Southeastern Anatolia Project (“GAP”), a development project to build a series of dams and hydroelectric plants along the Tigris and Euphrates Rivers in the southeastern part of Turkey. The project will take 30 years to complete and is estimated to cost \$32 billion. This project is expected to assist the economic and socio-cultural development of the region. However, aside from the transnational complications in a region lacking long-term stability, there are questions regarding whether Turkey can provide the necessary initial investments in order to procure the long-term benefits. See, e.g., Ali Unal, *Turkey Will Invest \$10 Billion in Southeastern Anatolia Project*, DAILY SABAH (Mar. 8, 2015), <https://www.dailysabah.com/economy/2015/03/08/turkey-will-invest-10-billion-in-southeastern-anatolia-project>.

111. See Murthy, *supra* note 17, at 95.

are met with technological solutions designed to reduce waste and improve efficiency.<sup>112</sup>

The total cost of providing access to clean water is staggering, even when the initial costs are spread out over the course of several decades. According to most commentators, these total cost figures are dynamic, for the magnitude of the water industry “is simply too extensive to be viewed in a composite manner.”<sup>113</sup> In the *Infrastructure to 2030* report, the Organization for Economic Co-operation and Development (“OECD”) estimates that the average annual costs for global water infrastructure and water-related services will approach \$1.04 trillion (USD) by 2025.<sup>114</sup> Yet, the enormity of this total only includes the cumulative estimated costs of clean water for the twenty OECD member countries, combined with Brazil, Russia, India, and China (the “BRIC countries”), and between the years 2008–2025.<sup>115</sup> On a global scale, this total is much higher, for the annual \$1.04 trillion in projected expenditures does not include the project costs among non-OECD countries. Thus, many developing countries that are most severely in need of clean water and many regions of Latin America, South America, Africa, Asia, and the Middle East are excluded from the calculation.<sup>116</sup> Within the realm of transaction costs, many of these estimates do not even account for issues such as water scarcity, regulatory developments, sustainability regimes (i.e., IWRM), financing costs, and accumulating shortfall deficits.<sup>117</sup> Developing countries must also consider many of these same transaction costs, as well as additional concerns over obtaining new water supplies and constructing adequate distribution/storage systems.

### 1. Financing Water Infrastructure Projects

In order to finance infrastructure projects, various funding mechanisms will benefit from investors that recognize the advantages associated with private-sector participation in the global water industry. Water-related investments have traditionally focused on

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112. BARLOW & CLARK, *supra* note 100, at 73–85 (describing desalination, nanotechnology, and other emerging technologies).

113. HOFFMAN, *supra* note 104, at 42. Clean water refers to all related activities within the full spectrum of water, wastewater, storm water, and recycled water.

114. ORG. FOR ECON. CO-OPERATION AND DEV., *INFRASTRUCTURE TO 2030: TELECOM, LAND TRANSPORT, WATER AND ELECTRICITY* 313–14 (2006) (Table 5.16).

115. *Id.* at 313–14.

116. HOFFMAN, *supra* note 104, at 42–43.

117. *Id.* at 44–45.

equities, which provide the most straightforward vehicle to realize gains associated with the fundamentals of the industry.<sup>118</sup>

Growth in the private equity market may be particularly compatible with large-scale water infrastructure projects. “Private equity is an important potential source of capital for the water sector that could drive consolidation, efficiency and new investments in technology and infrastructure.”<sup>119</sup> In general, private equity funds are a collection of investors who can commit large sums of money for long periods of time.<sup>120</sup> As the general partner, the investment manager will seek high net worth individuals and institutional investors as limited partners to invest directly into private companies or pursue buyouts of public companies. Capital is then used to fund new technologies, pursue acquisitions, or augment the company’s balance sheet. Most importantly, because private equity investments have long holding periods, investors are not seeking immediate returns, meaning that time-consuming infrastructure projects will retain the requisite capital throughout their duration. Investors that plan to maintain a certain infrastructure investment over the course of twenty years, subjecting themselves to substantial stakeholder scrutiny, are much more likely to invest in companies that have not “cut corners.”

The private sector may play a serious role because the lifecycle costs to construct, maintain, and operate infrastructure services are primarily capital costs. Within the international water sector, expanding access to water is a potentially robust investment that also ensures that people receive their right to water. On a global scale, leading private investment firms have platforms to investment capital in growth markets, including the diverse water sectors. Aqua International Partners, L.P., a private equity fund of TPG Capital, focused on investing in specialized companies providing water and water-related products to emerging market economies.<sup>121</sup> Recently, Blackstone Energy Partners, another leading investment firm,

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118. HOFFMAN, *supra* note 104, at 293.

119. *US Water Sector Transformation*, *supra* note 11, at 9.

120. *Private Equity*, INVESTOPEDIA.COM, <http://www.investopedia.com/terms/p/privateequity.asp?ad=dirN&qo=investopediaSiteSearch&qsrc=0&o=40186> (last visited Mar. 16, 2016).

121. *Company Overview of Aqua International Partners*, BLOOMBERG, <https://www.bloomberg.com/research/stocks/private/snapshot.asp?privcapId=18839>. William K. Reilly was the Founding Partner of Aqua International. He previously served as Administrator of the U.S. Environmental Protection Agency (1989–1993) and president of the World Wildlife Fund (1985–1989). The investment firm TPG now has over \$70 billion under management, having invested in approximately 300 companies.

announced the creation of Global Water Development Partners, a company designed to “support companies with critically-needed capital to create long-term and sustainable water facilities...and to identify, develop, finance, construct, and operate large scale independent water development projects globally.”<sup>122</sup> Estimates suggest a majority of current funding for all types of infrastructure projects comes from public sources, primarily debt investment from state-owned development banks.<sup>123</sup>

Institutional investors have also begun to find attractive deals investing in water infrastructure projects.<sup>124</sup> In recognition of the extensive time required to complete infrastructure projects, these long-term assets are paired with institutional investors, including the long-term liabilities of insurance companies, reinsurers, pension funds, and sovereign wealth funds. Although institutional investors in the U.S., like the California Public Employees’ Retirement System (“CalPERS”), have expanded their strategies to include water investments, “they’re still far behind their peers in Australia and Europe, where water infrastructure has been a mainstay of portfolios for decades.”<sup>125</sup> The World Bank noted that on a global scale “infrastructure re-emerged as a popular, nearly consensus solution to the economic and societal woes of developing countries and industrialized nations alike.”<sup>126</sup> Describing the potential opportunities for investment in the water market, one investment manager characterized the status of water infrastructure investments as being “in the first inning of what is going to be an 11-inning Yankees-Red Sox game.”<sup>127</sup>

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122. Press Release, Blackstone, Blackstone Energy Partners Establishes Global Water Development Platform (Mar. 27, 2014), <https://www.blackstone.com/media/press-releases/article/blackstone-energy-partners-establishes-global-water-development-platform>. As a global leader in growth equity, real estate investments, hedge funds, and a diverse credit portfolio, The Blackstone Group claims an estimated \$336 billion (USD) assets under management as of Dec. 31, 2015. *The Firm*, BLACKSTONE, <http://www.blackstone.com/the-firm/overview> (last visited Sept. 28, 2017).

123. Jordan Z. Schwartz, *Institutional Investment in Infrastructure: A View from the Bridge of a Development Agency*, THE WORLD BANK (Apr. 16, 2015), <http://blogs.worldbank.org/psd/institutional-investment-infrastructure-view-bridge-development-agency>.

124. Kaitlin Ugolik, *Investors Finally Tap Into U.S. Water Market*, INSTITUTIONAL INVESTOR (June 24, 2015), <http://www.institutionalinvestor.com/article/3464966/investors-pensions/investors-finally-tap-into-us-water-market.html#.WcMsdOGMWo>.

125. *Id.*

126. See Schwartz, *supra* note 123 (estimating that less than fifteen percent of all types of infrastructure investment actually involve some form of private participation).

127. Ugolik, *supra* note 124.

From a specialized standpoint, other firms are integrating specialized water investment strategies. Summit Global Management, a registered investment adviser with the U.S. Securities and Exchange Commission, invests directly into water-related equities and physical water assets, through both managed accounts and private investment partnerships.<sup>128</sup> In the decentralized water system of the U.S., an estimated 90% of the water-utilities are government-owned.<sup>129</sup> The water sector traditionally raised capital through municipal bonds.<sup>130</sup> However, many U.S. water utilities have sought greater access to private capital to withstand the shortfalls in public financing.<sup>131</sup> Through innovative financing options such as financing from infrastructure equity funds, the water sector seeks to “expand the number of market participants and types of securities beyond the municipal bond market and to improve the awareness and attractiveness of water infrastructure projects for new private investors.”<sup>132</sup>

Despite the breadth of the municipal bond market, including both general obligation and revenue bonds, some commentators suggest that many water investors continue to overlook this asset class.<sup>133</sup> At some point during or after the infrastructure project, governments must repay these financing costs. General obligation bonds are issued with governmental authority that provides the power to levy taxes for the repayment of the bonds. Revenue bonds are issued to finance particular projects that will generate rates (i.e., income) to repay the bonds. Depending on the circumstances of the given locality, there are various options for pursuing water-related development or expansion projects.

Consider the following remarks by natural resource economist Dr. David B. Brooks in a publication analyzing water management regimes. The sentiment underscores both the market potential for investors, along with the alarming realities that permeate water management efforts on a global scale: “[W]ater is often oversupplied relative to demand, generally underpriced relative to its intrinsic and economic values, and governed by institutions geared to augment

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128. SUMMIT WATER CAPITAL ADVISORS, <http://www.summitwatercapital.com> (last visited Feb. 17, 2016).

129. *US Water Sector Transformation*, *supra* note 11, at 6.

130. *See id.*

131. *Id.*

132. *Id.* Other financing options for the water sector include private activity bonds, infrastructure equity funds, and investments from state revolving funds.

133. HOFFMAN, *supra* note 104, at 292–94.

rather than to manage demand.”<sup>134</sup> The agricultural sector itself comprises an estimated seventy percent of all freshwater consumption globally,<sup>135</sup> and concepts of “virtual water” reflect the commodification of water.

These complications are further amplified by the fact that water’s price, at least in most parts of the world, is not a reflection of water’s value in use. Rather, the value of water is a reflection of delivery and infrastructure costs, specifically wells, pipes, treatment, and many other features. Despite these concerns, economic solutions are at the forefront of potential avenues to mitigate water scarcity concerns by reducing transaction costs and improving productivity.<sup>136</sup>

### C. *Role of Water Infrastructure in Economic Growth*

The lack of adequate infrastructure is a seminal challenge in achieving an efficient allocation of resources, in terms of both economics and providing the right to water. Despite this impediment, investment opportunities in the water infrastructure sector establish a platform upon which individuals, governments, and private-sector investors can reconcile their differences to achieve an efficient equilibrium among the various parties.

Infrastructure has been described in broad terms as “the physical framework that supports and sustains virtually all economic activity.”<sup>137</sup> This definition is more alarming considering the consequences that affect individuals who cannot even access their right to water because their governments cannot provide adequate infrastructure and distribution systems. Because water is the “dominant constituent” for human life, the State’s inability to ensure the provision of this resource can have vast negative consequences for both citizen and country. The failure of governments or public-sector utilities to ensure the availability of water—both in sufficient quantity and acceptable quality—may influence poverty, food security, human disease, economic development, and national security.<sup>138</sup> The corresponding

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134. David B. Brooks, *An Operational Definition of Water Management*, 22 INT’L J. WATER RESOURCES 521, 522 (2006).

135. 2030 WATER RESOURCES GROUP, *supra* note 12, at 6. Of water that is extracted for human purposes, in addition to 70% used by agriculture, 20% is used by industry (including power generation), and just 10% is used for direct human consumption. *Id.*

136. *See generally* DAVID ZETLAND, *THE END OF ABUNDANCE: ECONOMIC SOLUTIONS TO WATER SCARCITY* 31–51 (2011).

137. *See* STEVE HOFFMAN, *PLANET WATER: INVESTING IN THE WORLD’S MOST VALUABLE RESOURCE* 7–8 (2009).

138. *Id.*

contrast is therefore reasonable to presume: if governments do provide access to water and sanitation, countries may then experience reduced poverty and disease outbreaks as well as increased economic growth.

Water is the world's third largest industry after oil & gas production and energy generation.<sup>139</sup> In many developing countries, existing infrastructure is not sufficient to deliver water to its citizens. The water distribution system is a complex interconnected network of pipes, pumps, and treatment facilities, requiring significant financial resources for construction and maintenance. In Madras, India, for example, at least fifty percent of the population does not receive access to water from the main water infrastructure network.<sup>140</sup> The same figures are true in Maputo, Mozambique.<sup>141</sup> In fact, the figures in Bandung, Indonesia, are even higher, as over sixty percent of the individuals are not served by the region's main water network.<sup>142</sup> As a result, in an empirical study about water distribution systems in developing regions of Asia and the Pacific, researchers affiliated with the World Bank suggested that private-sector involvement in the provision of water was more efficient than otherwise.<sup>143</sup>

The lack of adequate water infrastructure is a global issue that extends to both developed and developing countries. The problem is clear—either the infrastructure does not exist, or if infrastructure does exist, significant capital is required to fully modernize the system. On the other hand, emerging global markets will present opportunities for water-related investments, such as the infrastructure and water distribution sectors. Within the global hydrocommerce markets, growth drivers like industrialization and urbanization become more acute in rapidly expanding economies like China and India.<sup>144</sup> These countries recognize the vital role of water as it relates to their expanding economies. For instance, China makes up 21% of the world's population but only has 7% of the renewable water

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139. Fabrizio Marrella, *On the Changing Structure of International Investment Law: The Human Right to Water and ICSID Arbitration*, 12 INT'L COMM. L. REV. 335, 335 (2010).

140. SEGERFELDT, *supra* note 72, at 7.

141. *Id.*

142. *Id.*

143. Antonio Estache & Martin A. Rossi, *Comparing the Performance of Public and Private Water Companies in Asia and Pacific Region: What a Stochastic Cost Frontier Shows*, THE WORLD BANK (1999), [http://www.wds.worldbank.org/external/default/WDSContentServer/WDSP/IB/1999/09/10/000094946\\_9908190532063/Rendered/PDF/multi\\_page.pdf](http://www.wds.worldbank.org/external/default/WDSContentServer/WDSP/IB/1999/09/10/000094946_9908190532063/Rendered/PDF/multi_page.pdf).

144. See HOFFMAN, *supra* note 104, at 65–75.

resources.<sup>145</sup> Water has been mentioned as the single biggest impediment to China's long-term success.<sup>146</sup> In its most recent "Five-Year Plan," China plans to spend \$128 billion over the next five years on water infrastructure projects alone.<sup>147</sup>

In the U.S., government and industry sources estimate that it will cost between \$17-\$50 billion per year to maintain and repair an inefficient water infrastructure system that was constructed more than fifty years ago.<sup>148</sup> Within the infrastructure sector, capital investments can expand the productive capacity of a region, both by increasing resources and by enhancing the productivity of existing resources.<sup>149</sup> In fact, investments in public infrastructure can positively affect the economic growth and economic output of the region.<sup>150</sup>

#### *D. The "Water Justice" Movement's Criticism of Private-Sector Involvement*

The "water justice" movement arose out of a controversial protest in Cochabamba, Bolivia in 2000.<sup>151</sup> After the absolute privatization of water utilities lead to a significant increase in prices, widespread civil unrest resulted in the Bolivian government cancelling its contract with the private sector operator.<sup>152</sup> These protests were the symbolic beginnings of the anti-privatization sentiment that sparked the human right to water movement.<sup>153</sup>

145. See Rob Schmitz, *A Warning for Parched China: A City Runs Out of Water*, MARKETPLACE (Apr. 25, 2016), <https://www.marketplace.org/2016/04/21/world/warning-parched-china-city-runs-out-water>.

146. See *id.* (reporting that prominent journalist and author Dai Quing believes China's water crisis is "the greatest danger facing China today.").

147. See generally CHINA WATER RISK *China's 12<sup>th</sup> Five-Year Plan*, <http://chinawaterrisk.org/regulations/water-policy/12th-five-year-plan/> (last visited Sept. 17, 2017).

148. ZETLAND, *supra* note 19, at 83.

149. See Alicia H. Munnell, *Policy Watch: Infrastructure Investment & Economic Growth*, 6 J. ECON. PERSPS. 189, 190-91 (1992) (stating that public capital investment, including investment within the infrastructure section, "can expand the productive capacity of an area, both by increasing resources and by enhancing the productivity of existing resources").

150. *Id.* at 196-97.

151. Rocio Bustamante et al., *Seeing Through the Concept of Water as a Human Right in Bolivia*, in THE RIGHT TO WATER: POLITICS, GOVERNANCE AND SOCIAL STRUGGLES 223, 231 (Farhana Sultana & Alex Loftus eds., 2012)

152. *Id.*

153. See *Id.* at 231-32. (noting the "well-documented Water Wars of Cochabamba became the poster child and impetus for the international Anti-Privatization and Right to Water Movement throughout the 2000s"); see also SALMAN & MCINERNEY-LANKFORD, *supra* note 14, at 72-73 (noting that privatization increased the price of water, leading to civil unrest).

In her book *Blue Covenant*, Maude Barlow strongly criticized private-sector involvement in the global water industry.<sup>154</sup> Barlow's argument, in terms of the law and economics analysis, is addressed in more detail in Section VI. The principle of water as an economic good has sparked much controversy within the water justice movement: "the treatment of water as an economic good would pave the way for greater commodification and privatization, placing control over a vital natural resource in the hands of few who would sell it for a price."<sup>155</sup>

Privatization has seemingly gathered a negative connotation, and thus the World Bank only uses the term "privatization" when referring to complete divestiture of public assets.<sup>156</sup> When less than complete divestiture is in effect, the World Bank prefers terms like "private sector participation" or "public-private partnerships," particularly when referring to leases or management contracts for water distribution and infrastructure.<sup>157</sup> The contention of this Article is that to even begin the public vs. private debate regarding water utilities, there must first be an adequate water distribution system in place to deliver the water to the consumer. Many governments lack the financial resources to complete these infrastructure projects. From a practical standpoint, the private sector may be best suited to provide the level of capital investment necessary to develop and maintain these expensive distribution systems.

#### IV. LEGAL FOUNDATIONS FOR THE HUMAN RIGHT TO WATER

"Eventually, all things merge into one, and a river runs through it."<sup>158</sup>

A multitude of complex challenges are evident when describing the human right to water as a legal obligation. These challenges exist because water is fundamental to human existence. Throughout the world, legal scholars suggest that a "growing number of national constitutions guarantee a right to water."<sup>159</sup> From a biological perspective, there is an absolute physical requirement for this natural

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154. MAUDE BARLOW, *BLUE COVENANT: THE GLOBAL WATER CRISIS AND THE COMING BATTLE FOR THE RIGHT TO WATER* 58 (2009).

155. *Murthy*, *supra* note 8, at 93.

156. *Id.* at 124.

157. BARLOW, *BLUE COVENANT* 39.

158. NORMAN MACLEAN, *A RIVER RUNS THROUGH IT AND OTHER STORIES* 1 (1976). (Need book, requested from library)

159. Rhett B. Larson, *The New Right to Water*, 70 WASH. & LEE L. REV. 2181, 2181 (2013).

resource. But it is more than just a resource, as humans have developed a cultural, religious, and spiritual appreciation of water that permeates almost all notions of humanity.<sup>160</sup>

Under international law, the human right to water continues to trend towards developing into a legal, justiciable obligation for states. Although the legal basis of this right remains a subject of debate in legal scholarship,<sup>161</sup> for purposes of the law and economics analysis, this Article presupposes that the legal status of the right to water will continue to progress towards, and ultimately achieve, international recognition as an enforceable human right. The following developments are presented in support of the prevailing theory that the human right to water is evolving into a recognizable obligation for states within international and customary law.

Throughout the historical development of human rights, particularly at seminal conferences and conventions during an era beginning in the 1950s through the early 1970s, the drafters of international legal and institutional agreements “implicitly considered water to be a fundamental resource.”<sup>162</sup> Thus, these early agreements did not explicitly recognize the human right to water.<sup>163</sup> The 1977 Mar del Plata Conference in Argentina was among the first to recognize the human right to water, and much of the subsequent debate can be traced to this Conference.<sup>164</sup>

The following sub-sections examine various international developments that are of particular interest to principles of economic

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160. The Bible contains many references to water, including *Revelations* 21:6 (New International Version translation) (“To the thirsty I will give water without cost from the spring of the water of life.”). Throughout history, civilizations and communities have prospered from the resources that living near a river provides, including numerous Native American tribes along the banks of the Mississippi River. Many global communities also suffered when that same river floods. Perhaps this is the source to help explain the importance of water and waterways from religious, cultural, and spiritual perspectives.

161. See, e.g., Hardberger, *supra* note 5, at 347. Larson, *supra* note 159, at 2184. SALMAN & MCINERNEY-LANKFORD, *supra* note 14 at 8; Peter Gleick, *The Human Right to Water*, 1 WATER POL’Y 487, 490 (1998).

162. See Gleick, *supra* note 161, at 490 (noting that among the early human rights conventions were the International Covenant on Economic, Social and Cultural Rights (“ICESCR”).

163. See Murthy, *supra* note 8, at 92.

164. SALMAN M. A. SALMAN & SIOBHAN MCINERNEY-LANKFORD, *supra* note 14 at 9; U.N. Water Conference, *Report of the United Nations Water Conference*, 37, U.N. Doc. E/CONF.70/29 (Mar. 14–25, 1977). Resolution II issued an Action Plan on “Community Water Supply,” being the first of its kind to declare that, “[A]ll peoples, whatever stage of development and their social and economic conditions, have the right to access to drinking water in quantities and of a quality equal to their basic needs.” See *id.*, at 66; see generally U.N. Conference on Env’t and Dev., *Agenda 21*, U.N. Doc. A/CONF.151/26 (June 3–14, 1992) (reaffirming similar principles).

efficiency, as well as examples that suggest that the human right to water is evolving into a legal obligation that instills a justiciable duty on governments to provide access to this natural resource.

*A. Dublin Statement on Water and Sustainable Development (1992)*

Although the 1992 International Conference on Water and Environment recognized water as a human right, the Dublin Statement on Water and Sustainable Development (“Dublin Statement”) emphasized the economic value of water among its four Dublin Principles.<sup>165</sup> Principle 4 of the Dublin Statement provided that “[w]ater has an economic value in all its competing uses and should be recognized as an economic good.”<sup>166</sup> The Dublin Statement recognized that water had been historically undervalued from an economic perspective, and provided guidance regarding Principle 4:

Within this principle, it is vital to recognize first the basic right of all human beings to have access to clean water and sanitation at an affordable price. Past failure to recognize the economic value of water has led to wasteful and environmentally damaging uses of the resource. Managing water as an *economic good* is an important way of *achieving efficient and equitable use*, and of encouraging conservation and protection of water resources.<sup>167</sup>

Despite the controversial sentiment that accompanied the treatment of water as an economic good, Principle 4 of the Dublin Statement influenced and promoted “water services strategies that seek to achieve *economic efficiency*, environmental sustainability, and social equity.”<sup>168</sup>

Principles of economic efficiency in water use are also relevant to Integrated Water Resource Management (“IWRM”), the dominant paradigm for water resource management that evolved out of the Dublin Principles.<sup>169</sup> IWRM is a holistic management approach that

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165. Int’l Conference on Water and the Env’t, *The Dublin Statement on Water and Sustainable Development* 4 (Jan. 26–31, 1992) [hereinafter *Dublin Statement*]. See also SALMAN & MCINERNEY-LANKFORD, *supra* note 14, at 9 (noting that Principle 4 of the Dublin Statement characterizes water as an economic good).

166. *Dublin Statement*, *supra* note 165, at 4.

167. *Id.* (emphasis added). The economic perspectives within the *Dublin Statement* initiated a controversy, which evolved into the water justice movement that opposed private-sector involvement in water. The harsh criticism aimed at privatization regimes is discussed in more detail *infra*, at Section VI.

168. Murthy, *supra* note 8, at 94 (emphasis added).

169. Hugo Tremblay, *A Clash of Paradigms in the Water Sector? Tensions and Synergies Between Integrated Water Resources Management and the Human Rights-Based Approach to Development*, 51 NAT. RESOURCES. J. 307, 308 (2011).

provides a framework to promote sustainable development while also achieving optimal economic efficiency.<sup>170</sup> Most importantly, an IWRM approach provides a management platform that emphasizes the nexus between the contrasting ideologies of economic efficiency in water use and social equity.<sup>171</sup>

These prevailing economic factors—both opportunity costs and social costs—suggest that the Coase Theorem, as well as other economic efficiency analyses, may be particularly relevant to solving global water challenges. To further emphasize the relevance of the subsequent economic analyses in this Article, the Global Water Partnership provides the authoritative definition of IWRM, describing the management approach as one that “maximize[s] the resultant economic and social welfare in an equitable manner without compromising the sustainability of vital ecosystems.”<sup>172</sup>

#### *B. U.N. General Comment No. 15 (2002)*

The legal basis for the right to water, at least in terms of a soft law instrument, was set forth in 2002 by the U.N. Committee on Economic, Social and Cultural Rights, which adopted the human right to water in its General Comment No. 15 (“General Comment”).<sup>173</sup> Legal scholars suggest that the General Comment was one of the “greatest victories to date for those seeking to establish water as a human right.”<sup>174</sup> In terms of encouraging countries to seek private-sector investments to realize the right to water from a practical standpoint, most notable are the provisions pertaining to “accessibility” and the “obligation to fulfil” the right.<sup>175</sup> Paragraph 2 of the General Comment provides the legal basis for the right:

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170. *See id.* at 311 (“IWRM is a holistic approach applicable to all water resources and water uses . . .”).

171. *Id.* at 310–11.

172. GLOBAL WATER P'SHIP TECH. ADVISORY COMM., INTEGRATED WATER RESOURCES MANAGEMENT 22 (2000). More recently, additional IWRM definitions were released after the 2009 World Water Forum and World Water Week. *See, e.g.*, GLOBAL WATER P'SHIP, INTEGRATED WATER MANAGEMENT IN PRACTICE: BETTER WATER MANAGEMENT FOR DEVELOPMENT 5 (Roberto Lenton & Mike Muller eds., 2009).

173. *See* General Comment No. 15, *supra* note 8, para. 1 (“The Committee has been confronted continually with the widespread denial of the right to water in developing as well as developed countries.”). The right to water is derived from the right to an adequate standard of living (Art. 11) and the right to the highest attainable standard of health. *Id.* para. 3. *See also* Fabrizio Marrella, *On the Changing Structure of International Investment Law: The Human Right to Water and ICSID Arbitration*, 12 INT'L COMMUN. L. REV. 335, 338 (2010).

174. Hardberger, *supra* note 5, at 347.

175. General Comment No. 15, *supra* note 8, para. 25 (emphasis added).

The human right to water entitles everyone to sufficient, safe, acceptable, *physically accessible* and affordable water for personal and domestic uses. An adequate amount of safe water is necessary to prevent death from dehydration, to reduce the risk of water-related diseases and to provide for consumption, cooking, personal and domestic hygienic requirements.<sup>176</sup>

This right to water is dependent on three normative factors—availability, quality, and accessibility.<sup>177</sup> The accessibility requirement implicates notions of economic efficiency, from both a textual interpretation perspective and a practical implementation perspective.

The General Comment offers further elaboration regarding the substantive obligations associated with the right to water, noting that the obligations are of immediate effect.<sup>178</sup> The General Comment also recognized the limited financial resources of some countries, but nevertheless still provided that countries must take “deliberate, concrete, and targeted” steps towards guaranteeing this right to all individuals.<sup>179</sup> These substantive obligations, particularly the accessibility factor, create a foundation for establishing the right to water as an enforceable obligation recognized by international law.

Considering the inadequate infrastructure encompassing the global water crisis, the General Comment elaborates on accessibility: “[w]ater and water facilities and services have to be accessible to *everyone* without discrimination, within the jurisdiction of the State party.”<sup>180</sup> The Drafters of this provision undoubtedly knew of the deficient water distribution systems prevalent in both developing and developed countries. In practical terms, this definition is central to creating an obligation for countries to construct and maintain the necessary infrastructure to fulfill the right for all individuals—a starting point for answering questions on how and how far the right extends. The General Comment further referenced several dimensions of accessibility. The “physical accessibility” dimension provides that the

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176. *Id.* para. 2 (emphasis added).

177. *Id.* para. 12 (proclaiming that the three factors apply in all circumstances, though the adequacy of water necessary to fulfill the right may vary according to different conditions).

178. *Id.* para. 17.

179. *Id.*; see also SALMAN & MCINERNEY-LANKFORD, *supra* note 14, at 65.

180. General Comment No. 15, *supra* note 8, para. 12(c) (emphasis added). Paragraph 37 proceeds to confirm the core obligations of General Comment No. 3 (1990), including the obligation “[t]o ensure the right of access to water and water facilities and services on a non-discriminatory basis.” *Id.* para. 37(c).

right extends “for all sections of the population,” and is accessible for “each household, educational institution and workplace.”<sup>181</sup>

Private-sector participation is further implicated in the General Comment’s provision on “General Legal Obligations.” Paragraph 18 recognizes the practical funding challenges for these large-scale projects: “[r]ealization of the right should be feasible and practicable, since all States parties exercise control over a broad range of resources, including water, technology, financial resources and international assistance.”<sup>182</sup> Accordingly, the right to water, within the prism of human rights, maintains three specific legal obligations, which indirectly encourage the right kind of private-sector involvement: the obligations to respect, to protect, and to fulfil.<sup>183</sup>

The obligation to fulfil the right can be viewed as action-based, such that it obligates the government to take the steps necessary to fulfill the right by facilitating, promoting, and providing the accessibility of water to its citizens.<sup>184</sup> This includes adopting a national water strategy and ensuring that water is affordable for everyone. Paragraph 27 is the most encouraging to potential investment opportunities because it explicitly references the role of third party actors: “[a]ny payment for water services has to be based on the principle of equity, ensuring that these services, whether privately or publicly provided, are affordable for all, including socially disadvantaged groups.”<sup>185</sup> The General Comment goes on to mandate that states adopt integrated and comprehensive management strategies.<sup>186</sup> Among the various provisions, the suggestions to increase the efficient use of water and reduce water wastage in its distribution are relevant to addressing the needs to repair or develop infrastructure.<sup>187</sup> In fact, the General Comment seemingly contemplates private-sector investment in other countries, explicitly mentioning “financial and technical assistance” as a means to facilitate that country’s ability to fulfil its obligation to provide the right to water.<sup>188</sup>

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181. *Id.* para. 12(c)(i). Four dimensions are enumerated to characterize the accessibility factor, including physical accessibility, economic accessibility (i.e., affordable for all), non-discrimination, and information accessibility. *Id.*

182. *Id.* para. 18.

183. *Id.* para. 20.

184. *Id.* para. 25.

185. *Id.* para. 27.

186. *Id.* para. 28.

187. *Id.*

188. *Id.* para. 34. (“Depending on the availability of resources, States should facilitate

To ensure the accessibility of water, in terms of achieving economic efficiency, governments that cannot provide this right to their citizens may further be obligated to seek private-sector participation through water infrastructure development projects. Paragraph 41 of the General Comment provides this function, “If resource constraints render it impossible for a State Party to comply fully with Covenant obligations, [the State Party] has the *burden of justifying that every effort* has nevertheless been made to use all resources.”<sup>189</sup> Otherwise, if a state lacks the necessary capital to fund projects that will ensure adequate distribution networks, then presumably taking “every effort” will implicate the potential for increased private-sector participation. The General Comment’s provision on “Implementation” does in fact encourage private-sector activity. Pursuant to Paragraph 50, countries should adopt legislation that helps “operationalize their right to water strategy,” including “the intended collaboration with civil society, private sector and international organizations.”<sup>190</sup>

Although a sense of optimism may be read from its provisions that seemingly encourage private-sector participation, the General Comment addresses the bad actors that will undoubtedly be present among international third-party participants.<sup>191</sup> Paragraph 24 provides an obligation for states to prevent third-parties (such as private-sector operation or control of water services) “from compromising equal, affordable, and physical access to sufficient, safe, and acceptable water.”<sup>192</sup>

In 2003, the *Report of the High Commissioner for Human Rights* highlighted the underlying concerns and negative externalities that may be associated with private sector participation:

While promoting investment through private-sector participation in the water and sanitation sector might be a possible strategy to upgrade the sector, there is concern that private-sector participation might threaten the goal of the basic service provision for all, particularly the poor, and transform water from being

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realization of the right to water in other countries, for example through provision of water resources, financial and technical assistance, and provide the necessary aid when required.”).

189. *Id.* para.41 (emphasis added).

190. *Id.* para. 50.

191. *See generally id.* The General Comment refers to the private sector as “third parties” throughout.

192. SALMAN & MCINERNEY-LANKFORD, *supra* note 14, at 73; General Comment No.15, *supra* note 8, para.24.

source basic human need to primarily an economic good.<sup>193</sup>

These concerns are reasonable because these negative externalities have been consequential (e.g., Cochabamba, Bolivia).<sup>194</sup> However, as discussed *infra*,<sup>195</sup> the economic analysis from a country perspective offers alternative examples of ways to circumvent these negative externalities. Instances of government resourcefulness have provided strategies that make it possible to maximize the benefits for the private sector and ensure that every citizen receives its right to water.

The provisions of the General Comment (and similar U.N. Comments) are intended to clarify the rights within the underlying source document, which is further intended to help countries implement the U.N. Covenants. The legal basis for the right to water remains the source of much advocacy, because “[c]omments are not binding *per se*, can only elucidate existing rights, and cannot create new rights or expand existing ones.”<sup>196</sup> The General Comment remains important, eliciting controversy because some opponents feel that the Committee went too far in the creation of a new “right,” whereas supporters believe it acknowledged an already existing or implied right.<sup>197</sup> Perhaps the law and economics analysis can be utilized in further support of establishing the legal basis for the right to water.

### C. U.N. Human Rights Council Resolution 15/9 (2010)

In July 2010, a resolution on the human right to drinking water and sanitation was introduced to the General Assembly.<sup>198</sup> Commentators suggest that the resolution was a surprise for many countries, as evidenced by the abstention of forty-one countries from the ultimate vote. According to the General Assembly minutes, it appears that many of these countries may have chosen to abstain for procedural reasons rather than substantive concerns.<sup>199</sup> Meanwhile,

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193. SALMAN & MCINERNEY-LANKFORD, *supra* note 14, at 73–74, n. 272. It is important to note that the Authors of the quote just finished mentioning the unfortunate situation in Cochabamba, and thus may have been considering private-sector involvement in terms of absolute privatization of the water utility, rather than some of the more practical investment strategies mentioned in this Article. *Id.* at 72–74.

194. *See id.* at 72–74 (discussing the effects of privatization on Cochabamba, Bolivia).

195. *See infra*, Section V.B.2 regarding the discussion on economic efficiency for countries.

196. Hardberger, *supra* note 5, at 348.

197. *See* Murthy, *supra* note 8, at 101.

198. G.A. Res. 64/PV.108, *supra* note 8.

199. Murthy, *supra* note 8, at 102–03.

122 countries voted to adopt a resolution that “[r]ecognizes the right to safe and clean drinking water and sanitation as a human right.”<sup>200</sup>

In the subsequent months, the U.N. Human Rights Council adopted, by consensus on September 30, 2010, Resolution 15/9 on human rights and access to safe drinking water and sanitation.<sup>201</sup> Resolution 15/9 was more specific than any prior resolution, affirming that the right to water is “inextricably related to the right to the highest attainable standard of physical and mental health, as well as the right to life and human dignity.”<sup>202</sup> Most interesting to the future of global hydro-commerce, Resolution 15/9 also addressed the role of private-sector participation in providing access to water.<sup>203</sup> According to legal scholars, Resolution 15/9 “affirm[ed] that states may opt to involve non-state actors provided that they maintain primary responsibility for ensuring the realization of human rights.”<sup>204</sup> This analysis suggests that going forward, countries are obligated to provide access to water, and if the government alone cannot provide the right to water then perhaps they should seek private-sector participation.

A closer examination of Resolution 15/9 seemingly provides more opportunities for private-sector participation in the delivery of the right to water. Clause 7 of Resolution 15/9 “[r]ecognizes that States, in accordance with their laws, regulations and public policies, may opt to involve non-State actors in the provision of safe drinking water and sanitation services and, regardless of the form of provision, should ensure transparency, non-discrimination and accountability.”<sup>205</sup> In effect, the Human Rights Council affirmed that the human right to water is not incompatible with private-sector participation.

#### *D. State Obligations to Integrate Private-Sector Involvement within Water Delivery Regimes*

One assumption underlying the argument in this Article is that the General Comments are currently not binding *per se*, because the Committee has no authority to establish new obligations under the ICESCR. Nevertheless, scholars argue that the General Comments “provide a critical mechanism for developing a normative and

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200. See G.A. Res. 64/PV.108, *supra* note 8.

201. Murthy, *supra* note 8, at 104.

202. *Id.*

203. *Id.* “The resolution also has several clauses that address head-on the debate around privatization . . .”. *Id.*

204. *Id.* (examining H.R.C. Res. 15/9 at 2).

205. Human Rights Council Res. 15/9, 3 (Oct. 6, 2010).

contextualized understanding of the provisions of the ICESCR.”<sup>206</sup> Is the right to water a justiciable obligation? International law does not require agreement for a country to be bound to that idea.<sup>207</sup> In the context of a human right to water, even countries that abstain from signing the international treaty could still be bound by a provision if its level of general acceptance as a rule rises to the level of customary law.<sup>208</sup>

“The human right to water implies considerable state responsibility and action.”<sup>209</sup> In terms of the availability, quality, and accessibility of water, these substantive obligations may invite private-sector involvement. The right to water is not a reality unless a government possesses both plans for implementation and financing.<sup>210</sup> According to the World Water Council (“WWC”), some State governments may be reluctant to take progressive steps to implement the right to water because they lack financial resources.<sup>211</sup> This is especially true in developing countries where a significant portion of the population lacks sufficient access to water.

Even the WWC acknowledges, at least indirectly, that the implementation of the right to water will involve the private sector: “[p]ublic authorities must exercise effective control over water services after having chosen the most appropriate management method—public, private or mixed—for these services. The State should enable the sub-sovereign entities to implement [the] right to water.”<sup>212</sup> The particular modalities of implementation will necessarily differ between countries, with regard to whether the infrastructure is available as well as whether a large portion of people are lacking access to water.

Sovereign debt is a particularly complex institution, although the following provides a general overview of capital market funding in relation to water management projects. As these sub-sovereign (regional and local) levels of government begin implementing the right

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206. SALMAN & MCINERNEY-LANKFORD, *supra* note 14, at 5.

207. Amy Hardberger, *Whose Job Is It Anyway?: Governmental Obligations Created by the Human Right to Water*, 41 TEX. INT. L.J. 533, 536–37 (2006), *See generally* General Comment No. 15, *supra* note 8, para. 17 (stating that the Covenant “also imposes on States parties various obligations which are of immediate effect.”).

208. *See* Hardberger, *supra* note 5 at 536–37.

209. SALMAN & MCINERNEY-LANKFORD, *supra* note 14, at 65.

210. CELINE DUBREUIL, THE RIGHT TO WATER: FROM CONCEPT TO IMPLEMENTATION 40 (2006),

[http://www.worldwatercouncil.org/fileadmin/wwc/Library/RightToWater\\_FinalText\\_Cover.pdf](http://www.worldwatercouncil.org/fileadmin/wwc/Library/RightToWater_FinalText_Cover.pdf).

211. *Id.* at 13.

212. *Id.* at 14.

to water by providing the infrastructure for the requisite access to the resource, capital markets and securities may yield an increasingly prominent role.<sup>213</sup> Debt instruments, financed by bonds or other securities, afford various levels of government the ability to construct the infrastructure necessary to implement the right to water. From a financial perspective, this allows the governmental authorities to enter the capital markets to raise funds for various water management projects, while also maintaining focus on long-term financial planning. Although there are many funding alternatives, international investors may be attracted to the benefits provided by the project diversification that is present through participation with distinct local and regional governments.

General Comment 15 further recognizes the relationship between the private sector and the implementation of the right to water:

The international financial institutions, notably the International Monetary Fund and the World Bank, should take into account the right to water in their lending policies, credit agreements, structural adjustment programmes and other development projects, so that the enjoyment of the right to water is promoted. When examining the reports of State parties and their ability to meet the obligations to realize the right to water, the Committee will consider the effects of the assistance provided by all other actors.<sup>214</sup>

Most legal scholars agree that the human right to safe drinking water is acknowledged within the arena of international law.<sup>215</sup> However, the actual obligations can be understood as either provision rights or participation rights.<sup>216</sup> Provision rights are a broad reference to the right that has been discussed herein, where the government acknowledges substantive obligations to provide minimum quantities and qualities of the good or service.<sup>217</sup> In comparison, a participation right mandates that the government is legally proscribed from

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213. Stefan Vetter et al., *Small is beautiful?*, DEUTSCHE BANK RESEARCH (July 25, 2014), [https://www.dbresearch.com/PROD/DBR\\_INTERNET\\_EN-PROD/PROD000000000338741/Small\\_is\\_beautiful%3F\\_Capital\\_market\\_funding\\_for\\_sub.pdf](https://www.dbresearch.com/PROD/DBR_INTERNET_EN-PROD/PROD000000000338741/Small_is_beautiful%3F_Capital_market_funding_for_sub.pdf).

214. General Comment No. 15, *supra* note 8, para. 60.

215. See Murthy, *supra* note 8, at 90 (“While the human right to safe drinking is arguably recognized in international law, the legal status of an independent right to sanitation is less clear . . .”). *Id.*

216. See Larson, *supra* note 159, at 2181 (“This Article divides all rights into two broad categories – provision rights and participation rights.”).

217. See *id.* at 2209–25.

interfering with a citizen's access to resources controlled by the state.<sup>218</sup> In many countries, the right to water is considered a provision right, which could have implications in terms of "enforceability, equity, and sustainability."<sup>219</sup>

## V. ECONOMIC ANALYSIS OF THE RIGHT TO WATER AS A LEGAL REGIME

The lack of effective management and inadequate provision of water presents challenges that threaten human health, economies, and ecosystems. The right to water and private-sector participation may appear to be facially incompatible. This sentiment is a matter of perspective, one which overlooks the correlative nature of these two paradigms. Every citizen in every country needs water. While the consequences of private-sector participation have been well-documented; the practical benefits and positive externalities are all too often overlooked. Given the breadth of these implications, one can also presume the prevalence of transaction costs and externalities that permeate the water distribution industry.

To further evaluate the allocation of water resources within a law and economics context, let us consider a water distribution regime in the hypothetical country of Rioland, a developing country that is seeking to provide all of its citizens with the right to water while continuing to develop as an emerging economic market. In Rioland, the government has commissioned an extensive infrastructure project that will address their goals. The analysis of this hypothetical can disassemble the broader themes, while also explicitly examining the three principal parties to a bargain. Here, the underlying bargain is of the type that enables the private sector to work with governments in the delivery of the right to water, thus benefiting the citizens that otherwise would have received this vital resource. Despite the transaction costs and externalities that may be apparent in certain scenarios, the following analyses provide a framework to achieve an efficient equilibrium through cognitive recognition and practical consideration of predominant features within the water services industry.

From a macro-level perspective, three principal parties have an

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218. See *id.* at 2181 ("With a participation right, the government is legally proscribed from interfering with individual citizen's access to institutions and resources controlled or held in trust by the state . . .").

219. See *id.*

interest in the water distribution industry within the hypothetical country of Rioland. First, governments have overarching interests with regard to the bargain concerning water delivery services and infrastructure. These government interests may have financial, social, health, and cultural implications that must be considered, regardless of whether the country benefits from the private sector participation.

Next, and most importantly, we consider the citizens of Rioland. Two types of individuals exist throughout this bargaining process: individuals that currently have access to water and individuals that cannot access their right to water, either because of physical limitations (i.e., inadequate infrastructure) or financial limitations (i.e., cannot afford the resource). These distinctions are particularly relevant in the evaluation of transaction costs and externalities.

The final interested party in this bargain is the water distribution and infrastructure sector. For the purposes of this analysis, assume that a public-private partnership has been formed to operate water distribution and services while also developing water infrastructure that promotes new projects and maintains existing infrastructure. The water distribution regime in Rioland is not indicative of absolute privatization, nor does the partnership exhibit monopolistic tendencies.<sup>220</sup> The partnership is structured in a way that projects are financed by capital from a private equity firm, as the public sector benefits from transparency and maintains management oversight concerning water utility decisions. Assume that this private equity firm is the principal investor from the private sector, with significant capital from its institutional investors. These investors would like to enter a market with potential for immediate growth, while maximizing their long-term gains and diversifying their respective portfolios.

Rioland represents a developing country with the potential to experience growth and economic development throughout the industrial and agricultural sectors. Rioland would like to begin development on a large-scale water infrastructure project that improves access to the right to water for its citizens. Moderate in size, the country would like to continue trending towards achieving first world status, at least in terms of GDP, education, and health. Despite the cause for optimism, only 80% of the Rioland citizens have access to clean water. Many of the country's citizens can afford moderate prices for the delivery of water, while almost 20% of the citizens do not

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220. See ZETLAND, *supra* note 19, 88–90 (discussing in detail, “that success and failure can happen at private or public firms, in developed and developing countries”).

have access to water. Private-sector participation provides the necessary mechanism to fund Rioland's water infrastructure project. Despite the capital investments of \$200 million (USD) to improve the water delivery system and provide new infrastructure for these objectives, the financial realities are evidence that these projects would not be possible without the public-private partnership.

The following discussion will first address the numerous transaction costs that permeate the water sector. These costs, particularly in the case of certain parties, limit the realization of the Coasean ideal. To address transaction costs and efficient outcomes, the discussion will utilize the challenges in hypothetical Rioland. In addition, further analysis of the parties indicates there is potential to achieve an efficient outcome because each party is ultimately made better off. This may provide a practical framework that policy-makers could rely on within the global water industry. Thus even if the Coase Theorem does not apply to this scenario because of high transaction costs, the fact that each party benefits suggests that the legal regime promoting the right to water exhibits an outcome that obtains an efficient equilibrium and high Pareto optimality.

#### *A. Coasean Analysis of the Right to Water & Private-Sector Participation*

An efficient allocation of resources requires that the transaction costs be less than the benefits each party will receive. When two parties enter a bargain that lacks transaction costs, the outcome is economically efficient according to the underlying principles of the Coase Theorem. The complex nature of the water industry, however, likely prevents transaction costs from ever being zero. Other alternatives may not yield precisely zero transaction costs, yet there are opportunities to promote reasonable transaction costs that would otherwise be higher. The Coasean analysis provides the channels to identify transaction costs and explore the complexities of the water distribution industry at the intersection of the right to water and private-sector participation.

Although the allocation of resources in the hypothetical country of Rioland may not portray an efficient equilibrium, a law and economics analysis via the Coase Theorem offers a practical framework to prompt lower transaction costs. With more than two parties, each with concealed and unconcealed motivations, the water sector inherently contributes to instill a sense of unpredictability. Thus, any efforts to achieve an efficient outcome within the arena of global

hydro-commerce are influenced by the presence of transaction costs. As real world governments pursue developments that fulfill their respective obligations to provide access to water, a preliminary Coasean analysis offers distinct channels to identify the ultimate transaction costs that will be encountered throughout the bargaining processes.

### 1. Transaction Costs

Transaction costs are those that occur in the course of making a deal. It is difficult to dispute that the complexity of the water industry likely impedes the ability to ever achieve zero transaction costs. However, there are circumstances that “incentivize activity” by promoting the prevalence of lower transaction costs.<sup>221</sup> The following analysis identifies the transaction costs for each respective party with an interest in Rioland’s water industry (i.e., infrastructure & delivery of the resource).

Governmental institutions face myriad transaction costs in the transfer or delivery of water to its citizens, analogous to the well-documented transaction costs in water transfers.<sup>222</sup> Transaction costs may include administrative costs, expenditures for public agency review, costs to search for private-sector investments, scientific monitoring costs for hydrology and other disciplines, and brokerage service fees, among others.<sup>223</sup> Other transaction costs range from financing expenditures, including costs associated with debt or interest rates, as well as employee fees and political costs. According to water scholar Joseph Dellapenna, Coasean economics are misapplied to the concept of water markets when there is an assumption that no transaction costs are in the exchange.<sup>224</sup>

Moreover, the Coase Theorem may be limited in terms of its applicability. Rather than being applicable to *all* allocations of water resources, such as the prior appropriation system in the western U.S., the Coase Theorem is most applicable when governments facilitate low

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221. Coase, *The Problem of Social Cost*, *supra* note 3, at 15–16.

222. See, e.g., Charles W. Howe, Carolyn S. Boggs & Peter Butler, *Transaction Costs as Determinants of Water Transfers*, 61 U. COLO. L. REV. 393, 397 (1990); see generally *Culp*, *supra* note 66, at 117–20.

223. Howe et al., *supra* note 222, at 397.

224. Joseph W. Dellapenna, *Climate Disruption, the Washington Consensus, and Water Law Reform*, 81 TEMP. L. REV. 383, 397–402. The market system, particularly water markets, often overlooks potentially significant barriers by assuming that the fundamentals of the market will work themselves out. According to Dellapenna, Coase warned against this “blind faith” when he criticized those who ignore basic concerns about the success or failures of markets. *Id.* at 397–98.

transaction costs and secure the property rights.<sup>225</sup> As a result, the Coase Theorem may be even less applicable within the right to water legal regime, where governments often lack the institutional capacity to deliver low transaction costs. This is also true in the developing world, where many countries have not secured property rights for water.

For individuals, the existence of transaction costs is often rooted in the expectation for water, whether financially or physically. Assume that 80% of the citizens in Rioland have access to affordable water. Interestingly, it is these individuals who will be most implicated by the existence of transaction costs. For instance, if water costs are increased to offset the 20% of the Rioland population that cannot pay, then these transaction costs could prevent an efficient outcome because the costs are directly subsumed by those individuals who already have access to water (i.e., the 80% pays). As a sole individual, the transaction costs may be minimal in comparison if this citizen is required to pay more to compensate for the 20% who lack access to water. However, these transaction costs strain the bargain when costs are accumulated.<sup>226</sup> Moreover, if the majority of citizens are used to purchasing resources at a certain cost, then any tariffs or taxes initiated by the government to finance the infrastructure projects can be viewed as a potential transaction cost.

In times of water scarcity, another transaction cost exists when additional 20% of citizens are allowed to access a finite resource. The Coase Theorem helps identify the contentions that arise out of the existence of transaction costs. If 80% of the Rioland population is expected to pay more for the same service, to offset the inability to pay by 20% of the population, then the resulting outcome suggests that transaction costs exist. Nevertheless, as the economic system of Rioland continues to develop, perhaps the Coase Theorem will be applicable to future water system challenges in Rioland. If these 20% of citizens eventually reach the point where they can pay for water, then future decisions can rely on Coasean perspectives in its decision-making.

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225. See *infra* Section VI for further discussion on Coase Theorem and water rights. See C. Carter Ruml, *The Coase Theorem and Western U.S. Appropriative Water Rights*, 45 NAT. RESOURCES J. 169, 199 (2005). The lack of property rights for water is particularly relevant to citizens in developing countries—the same citizens that lack the accessibility prong of the human right to water.

226. See generally HOLLY DOREMUS & DAN TARLOCK, *WATER WAR IN THE KLAMATH BASIN* 195–96 (2008).

Private investors encounter transaction costs because water is often considered a public good, for which the government holds in trust for the people and ensures equal use for all. In the right to water legal regime, private-sector corporations may not have the most incentives to produce public goods because consumers will consume goods without paying for them. This could be the case in our hypothetical Rioland, as the private investors retain fewer profits to compensate for the 20% of citizens that cannot afford or lack access to water. As a result, transaction costs exist because these private-sector participants may not enjoy their maximum level of profitability from their investments. Furthermore, additional transaction costs for private investors include currency exposure, in addition to the prevailing environmental and social pressures.

## 2. Alternative Comparisons

As a counter-argument, “water justice” activists may argue that the existence of transaction costs suggests that private-sector participation should not be allowed. However, these same transaction costs still exist throughout the water industry with or without private-sector participation. Thus, the applicability of the Coase Theorem remains limited even without corporate involvement.

Perhaps a non-traditional approach to the Coasian analysis could help bridge the gap and expand the applicability of this law and economics tool. Using the law and economics approach could evaluate the varying degrees of transaction costs within this particular aspect of the water industry. In other words, does private-sector participation in the delivery of water either increase or decrease the transaction costs? If one particular scenario or investment scheme in a region has lower transaction costs, then the justifications for participation in certain regions could be evident.

If these transaction costs decrease with corporate involvement, then we should allow private-sector participation. However, if these transaction costs remain present or even increase, then perhaps Maude Barlow and the “water justice” movement have a stronger argument. In that case, some regulatory palliatives may be necessary. Thus, Pigouvian taxation could have a role if the nature of the regulation actually offsets the transaction costs associated with a Coasean solution.

The “water justice” movement’s argument against the private sector seemingly relies on the pessimistic view that corporations are all strictly motivated by profit and the public sector is strictly motivated

by the common good. This argument does not address the practicality of allowing the private sector to perform the water delivery tasks that the government could not perform. Most importantly, the argument in favor of public-sector control of the water sector relies on a misguided view that all actors in the public sector are motivated by the common good. In reality, many public-sector actors are motivated by political power and there is not a utopian common good. The narrative that compares the “bad” private-sector with the “good” public-sector is not useful or correct. As referenced throughout the Article, both sectors have experienced successes and failures, and thus we can conclude that neither approach is overwhelmingly “ideal.” Therefore, we should instead look for a second-best solution to achieve an efficient outcome.

The nature of the water industry is complex, so perhaps this alternative approach will help policy-makers. “Every water basin, urban area and household has a unique water fingerprint that reflects the influence of local hydrology, cultural norms, history, environmental constraints, political and economic structures, and other institutional characteristics . . . . The causes of a water shortage in Atlanta may differ from those of a shortage in Cairo, but their solutions may share similarities.”<sup>227</sup> Keeping this in mind, it is important to recognize that the type and degree of transaction costs will vary throughout the world. The following section provides the benefits that accompany private-sector participation.

*B. Does Private-Sector Involvement in the Delivery of the Right to Water Yield an Efficient Economic Outcome?*

Taking an alternative approach, it is also likely that encouraging private-sector participation in the delivery of the right to water will result in an efficient outcome. In fact, the notion that this scenario rises to the level of Pareto superiority is further supported by the idea that neither of the three parties is made worse off by this allocation of resources. When an alteration can be made that makes at least one person better off and no one worse off, this allocation of resources will be an efficient outcome and Pareto superior. According to legal scholar Gary Lawson, an efficient outcome of Pareto superiority represents a “change or action . . . mak[ing] at least one person better off by his own standards and no one worse off by her own standards.”<sup>228</sup> The scenario is the most socially, morally, and economically desired outcome.<sup>229</sup> By

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227. ZETLAND, *supra* note 19, at 23.

228. Gary Lawson, *Efficiency and Individualism*, 42 DUKE L.J. 53, 85 (1992).

229. *Id.*

recognizing efficient outcomes that are positive for all parties, the law and economics approach may have broad applicability throughout the realm of global hydrocommerce, particularly in the realm of infrastructure development and access to water. Thus, even though the prevailing transaction costs in reality limit the Coase Theorem's applicability under these circumstances, policy-makers can still benefit from seeking to stimulate an economically efficient outcome.

### 1. Efficient Outcome for Individuals: The Indispensable Element for Human Life

As recognized in the opening statement of General Comment No. 15, “[t]he human right to water is indispensable for leading a life in human dignity. It is a prerequisite for the realization of other human rights.”<sup>230</sup> Based on this text alone, the benefits associated with the access to right to water are clearly recognizable. From the individual's perspective, access to water has wide-reaching implications, which both directly and indirectly relate to health, jobs, social rights, gender equality, economics, and education, among other benefits. Thus, providing citizens with access to water results in an efficient outcome because it would make individuals better off. Social and economic development are directly linked by the centrality and fundamental nature of water.<sup>231</sup> For individuals, water is directly related to all facets of life, and “the effective access of citizens to safe water and sanitation is crucial.”<sup>232</sup>

Providing access to water for individuals is the first step at reducing many aspects of poverty in the developing world. Water poverty results when people lack access to dependable quantities and quality of water, or lack the capacity to use these water resources. Water may be insufficient for basic human needs and food production, while also influencing the availability of economic and ecosystem services.<sup>233</sup> The linkage between economic poverty and the lack of water is well-established.<sup>234</sup> Poverty is prevalent mostly in water-short areas.<sup>235</sup> The majority of those without sufficient drinking water and

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230. General Comment No. 15, *supra* note 8, para. 1.

231. See generally Young, *supra* note 72, at 9–35.

232. Note, *What price for the priceless?: Implementing the justiciability of the right to water*, 120 HARV. L. REV. 1067 (2007), available at <http://cdn.harvardlawreview.org/wp-content/uploads/pdfs/note.pdf>.

233. See WARD et al., *supra* note 74, at 177–80.

234. *Id.*

235. *Id.*

sanitation are in the more impoverished regions of the developing world.<sup>236</sup>

Inadequate water supply and sanitation can have an enormous impact on the health of individuals. The poor health of its citizens also affect the entire economy of a country. The lack of water and sanitation services is directly correlated to disease and sickness. Further, individuals cannot work and contribute to the local or national economy when they are sick or providing care for their sick family members.<sup>237</sup> Medical treatment also requires considerable expenditures. When water is not provided in sufficient quality, this unclean resource causes water-borne diseases such as diarrhea, among other bacterial infections and diseases. In fact, after malaria and respiratory infections, diarrhea is the third highest cause of child mortality in West Africa.<sup>238</sup>

In the developing world, access to water may help limit the prevalence of certain gender inequality issues.<sup>239</sup> Women and children must devote time to carrying or carting the water from its source when the water is not available in the home. This disparity is primarily inflicted upon the poorest of minorities.<sup>240</sup> In East Africa, for instance, more than a quarter of the total population resides in conditions where each trip to collect water from its source takes over a half an hour.<sup>241</sup> As a result, gender inequality issues become more entrenched because this time-commitment erodes the capacity of women to engage in other activities such as education or gainful employment.<sup>242</sup> For children, the responsibility for collecting water means they have fewer opportunities to attend school, further decreasing their chances of escaping poverty.<sup>243</sup>

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236. Roberto Danino, *Forward to SALMON & MCINERNEY-LANKFORD, THE HUMAN RIGHT TO WATER: LEGAL AND POLICY DIMENSIONS* vii–vii (David Freestone and Salman M.A. Salman eds.) (2004).

237. See generally Young, *supra* note 72, at 9–11.

238. See *id.*

239. SAVITRI BISNATH, *MACROECONOMICS AND THE HUMAN RIGHTS TO WATER AND SANITATION* (2011), Meeting Report at 10 (Center for Women’s Global Leadership 2011).

240. *Id.* (“Without specific attention to disadvantaged groups, often living in poorer regions, government transfers could result in widening regional disparities and perpetuate discrimination.”).

241. UNICEF, *Progress on Sanitation and Drinking-Water* (2010), [http://apps.who.int/iris/bitstream/10665/44272/1/9789241563956\\_eng.pdf](http://apps.who.int/iris/bitstream/10665/44272/1/9789241563956_eng.pdf)

242. Young, *supra* note 72, at 3.

243. *Id.* at 10.

Taking the Rioland hypothetical as an example, upon beginning construction of the water infrastructure project, the benefits for individuals will be vast. Immediately, many citizens of Rioland will have the opportunity to seek employment that is directly related to the project's development. Rioland citizens will also benefit from the jobs that come with managing and maintaining the water infrastructure when construction is completed. Citizens will even benefit as the country improves its economic potential by providing clean water and adequate sanitation to all its citizens.

Therefore, encouraging private-sector participation in the provision of the right to water may lead to an efficient outcome for individuals. The wide-reaching benefits include economic growth and jobs, as well as improvements in health, education, gender equality, and food security.

## 2. Efficient Outcome for Countries: Precondition for Economic Progress

In many countries, both in the developing and developed worlds, there are vast benefits to be had from improvements in the water infrastructure sector. By seeking private-sector participation, these improvements will allow individuals to access their right to clean water and adequate sanitation. In fact, early investments by states in the "provision of these services appears to be a precondition for progress,"<sup>244</sup> particularly given the resulting economic, social, environmental, and educational benefits, among many others. As the population of certain states continues to increase, water constraints and scarcity may negatively influence economic development, especially in geographic regions where water is traditionally scarce.<sup>245</sup>

From a national perspective, access to clean water and education are the most consistent predictors of economic progress.<sup>246</sup> According to researchers, "[d]irect benefits to society can be expected to flow from both increased investment in the water supply and sanitation sector, including investment in the conservation of ecosystems critical for water."<sup>247</sup> The lack of water affects the well-being of individuals and their quality of life, which in turn affects the State. This lack of clean water, whether in quality or quantity, influences the State's poverty

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244. *Id.* at 35.

245. HOFFMAN, *supra* note 104, at 9.

246. *See generally* Ward et al., *supra* note 74.

247. Young, *supra* note 72, at 35.

levels and inability to escape poverty,<sup>248</sup> food security, and the proliferation of disease.<sup>249</sup> Further, the availability of water for all citizens may positively influence economic development, while also reducing the State's need to secure additional resources through geopolitical conflicts or even wars.

In the case of our hypothetical Rioland, investments in water infrastructure will have far-reaching positive benefits, directly and indirectly benefitting the entire country, not just those individuals who already have access to water. In the initial stages, the creation of jobs may stimulate the economy. By reducing waste, this water can be conserved for the environmental or utilized in the agricultural sector to address food security issues. Over the long-term, having the necessary infrastructure will aid economic growth and development. Indirectly, providing access to water may lead to the development of additional industries, allowing the country to look more attractive to investors.

When a country seeks private-sector investments to pursue water development projects, the country will experience health-related benefits. According to a cost-benefits report by the World Health Organization, and depending on location, the economic benefits of each dollar invested in improved drinking water and sanitation ranges from \$3 to \$34.<sup>250</sup> This represents the benefits that arise from preventing disease in the first place, rather than treating infections after the fact. The adverse impacts of diseases from lack of access to water and sanitation also have economic implications for countries. In addition, the lack of access to water and sanitation leads to diseases among the most vulnerable groups of citizens, both children and the elderly population.<sup>251</sup>

The annual economic impacts from poor sanitation are widespread. Alarmingly, Peter Gleick predicted in 2002 that "as many as 76 million people will die by 2020 of preventable water-related diseases."<sup>252</sup> The costs incurred by governments to address water-borne diseases are substantial, resulting from inadequate water sanitation services in places like Cambodia, Indonesia, the Philippines, and

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248. HOFFMAN, *supra* note 104, at 9 ("[l]ack of water does not cause poverty, but poverty virtually always includes a lack of water").

249. *Id.*

250. *Id.* at 44–46.

251. SEGERFELDT, *supra* note 72, at 7–8.

252. Peter H. Gleick, DIRTY WATER: ESTIMATED DEATHS FROM WATER-RELATED DISEASES 2000-2020, at 9 (2002), [http://www.pacinst.org/wpcontent/uploads/2013/02/water\\_related\\_deaths\\_report3.pdf](http://www.pacinst.org/wpcontent/uploads/2013/02/water_related_deaths_report3.pdf).

Vietnam, among others.<sup>253</sup> These four countries lose a combined total of \$9 billion (USD) annually due to inadequate water sanitation, which is approximately two percent of their combined GDP (based on 2005 figures).<sup>254</sup> Lack of water and sanitation contributed to the cholera epidemic suffered by Peru in 1991. This epidemic cost the government over \$1 billion in expenditures to control, treat, and prevent the spread of the disease. If only a fraction of these costs (estimated \$100 million (USD)) had initially taken place to ensure the adequate provision of water and sanitation, this severity of the epidemic likely would not have occurred.<sup>255</sup>

Scientists acknowledge a correlation between threats to biodiversity and ecosystems, with threats to water security.<sup>256</sup> When the threat to human water security is high, the threat to biodiversity is also high.<sup>257</sup> Adequate water infrastructure ensures that the water for human, industrial, and agricultural consumption is not wasted. When this water leaks in large quantities from the existing distribution network, this water is not returned to the ecosystem. There are significant opportunities for governments to protect natural ecosystems and improve biodiversity outcomes by investing in water infrastructure projects.<sup>258</sup>

Some economists suggest that investments in public infrastructure can have significant effects that are positive for economic output and economic growth.<sup>259</sup> In terms of economic development, perhaps our hypothetical Rioland could look to the nation of Turkey as an example. In 2015, Turkey announced its \$10 billion Southeastern Anatolia Project (“GAP Project”), which covers the southeastern portion of Turkey, the region that is located between the Euphrates and Tigris Rivers.<sup>260</sup> The GAP Project will improve Turkey’s irrigation, drinking water infrastructure, and energy sectors (e.g., hydroelectric power plants). In terms of benefits, the GAP Project is expected to improve

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253. Within Indonesia alone, the annual economic impact of inadequate sanitation is approximately \$6.3 billion (USD). Young, *supra* note 72, at 9.

254. Young, *supra* note 72, at 3.

255. 2030 WATER RESOURCES GROUP, *supra* note 12, at 9–10.

256. *Id.* at 7.

257. Vorosmarty, *supra* note 77, at 556–61.

258. *See id.*

259. *See generally* Munnell, *supra* note 149, at 196 (discussing benefits proponents of infrastructure investments argue).

260. Ali Unal, *Turkey will invest \$10 billion in southeastern Anatolia Project*, DAILY SABAH, Mar. 8, 2015, <https://www.dailysabah.com/economy/2015/03/08/turkey-will-invest-10-billion-in-southeastern-anatolia-project>.

the economy in many ways, including employment for over a million people.<sup>261</sup> According to the Prime Minister of Turkey, the five main pillars of the project include economic growth, social development, city planning, infrastructure development, and enhanced institutional capacity.<sup>262</sup>

For developing countries, including Turkey, Rioland, and many others, building adequate infrastructure helps transform the economy and accelerates social development. For Turkey, this project will not only reduce unemployment within the country, but will substantially raise the region's exports: “[m]acroeconomic policies affect the operation of the economy as a whole, shaping the availability and distribution of resources.”<sup>263</sup>

There are obvious questions with regards to financing the capital-intensive projects to fulfil the right to water. In particular, how will the respective governments uphold its obligation to repay the private sector investors, especially if the impoverished proportion of the population cannot afford to purchase the right to access the water? Because the General Comment ensures water for all, the answer to this question involves examining instances of government creativity and adaptability throughout the world. For example, in Durban, South Africa, each citizen is entitled by law to six free kiloliters of water per month.<sup>264</sup> Citizens are then required to pay for any consumption beyond this amount.<sup>265</sup> In another example of government resourcefulness, the Water Code of the Republic of Armenia provides for financial assistance in two forms, either as subsidies for the poor water users that cannot pay or as tax benefits to water suppliers.<sup>266</sup>

In Santiago, Chile, water vouchers are provided for families that fall below the poverty line to pay their water bills.<sup>267</sup> Although an

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261. *Id.*

262. *Id.*

263. SAVITRI BISNATH, MACROECONOMICS AND THE HUMAN RIGHTS TO WATER AND SANITATION (2011), Meeting Report at 7 (Center for Women's Global Leadership 2011). “Macroeconomic policy refers to fiscal (public revenue and public expenditure) and monetary policies (including policies on interest and exchange rates and the money supply), which impact on the economy and living standards, including the levels of employment and growth and the prices and availability of basic social services, such as water and sanitation.” *Id.*

264. SALMAN & MCINERNEY-LANKFORD, *supra* note 14, at 71.

265. See SALMAN & MCINERNEY-LANKFORD, *supra* note 14, at 71, n. 262, 298 (discussing *Manquele v. Durban Transitional Metropolitan*, Council Case, South Africa No. 2036/2000).

266. See SALMAN & MCINERNEY-LANKFORD, *supra* note 14, at 72, n. 264 (noting that the provision was adopted by Armenia on June 4, 2002, with the intention of ensuring equal conditions for all and avoiding discrimination in the supply of water).

267. *Id.* at 71–72.

apparent contradiction existed as the government subsidized water to the poor, while requiring the water utility to function as a commercial entity, the outcome was indicative of economic efficiency. In fact, the following quote depicts a Pareto optimal scenario, whereby both parties were made better, without either becoming worse off: “[t]he utility then not only strengthened its focus...but now had clear incentive to serve the poor, who became revenue-generating customers like all others. The system works well.”<sup>268</sup> It could be argued that the government was made worse off because it was temporarily burdened by the payment. However, this notion is refuted by the fact that the government achieved its objective (i.e., providing all citizens with their right to water), and by recognizing the long-term benefits for the country through improved health and reduced chances for water-borne disease (i.e., less healthcare costs for the government).

Tariffs and costs to pay for these infrastructure projects may be viewed in an unfavorable light initially because citizens will generally prefer to pay less. However, if governments can have the foresight to see beyond this likely temporary resistance during the interim, the long-term benefit will be abundantly positive, as citizens begin to recognize the benefits of preventing waste and using less quantities of this essential resource. These infrastructure projects will indirectly benefit water conservation.<sup>269</sup> When a price is attached, governments are forced to be more mindful of how much they are using across the country, not just the price of water but the price for the infrastructure.<sup>270</sup>

Therefore, encouraging private-sector participation in the provision of the right to water may lead to an efficient outcome for individuals. The wide-reaching benefits include economic growth and reduced unemployment rates, as well as a healthier and more educated population.

### 3. Efficient Outcome for Private-Sector Investors: “Blue Gold” & Wealth Maximization

The efficient outcome for private sector investors is the most clearly identifiable of all the parties. As mentioned above, many corporations and investors will likely experience an abundance of

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268. *Id.* at 72, n. 263 (citing World Water Vision (Commission Report), *A Water Secure World: Vision for Water, Life, and the Environment* 36, WORLD WATER COUNCIL (2006)).

269. See Robert Glennon, *Water Scarcity, Marketing, and Privatization*, 83 TEX. L. REV. 1873, 1882 (2005) (discussing government rules and regulations as incentives for water conservation).

270. *Id.* at 1883.

profits from many facets of the water industry. Although wealth maximization is the primary motivation that makes this party better off, the fact that private investors are helping provide the human right to water may look good to shareholders, particularly as we enter an era of corporate sustainability.

Investors must contend with numerous risks and transaction costs in the realm of water resources, including insufficient economic data, opaque management, and stakeholders being inadequately linked. According to a 2030 Water Resources Group publication, “water resources face inefficient allocation and poor investment patterns because investors lack a consistent basis for economically rational decision-making.”<sup>271</sup> As demand for water grows in emerging markets, the inefficiency among the current water distribution schemes will be inadequate to ensure the provision of water. These same emerging markets present many opportunities for private-sector participation.

As the right to water becomes a justiciable obligation for countries, perhaps this may trigger the increased participation of private-sector investors, as many of these countries could otherwise not finance these large-scale infrastructure projects. Because the individuals, states, and private-sector are each made better off, the preceding analysis suggests that private-sector participation in water distribution is an allocation of resources that is likely Pareto optimal, thus achieving an efficient equilibrium.

## VI. SHIFTING PERSPECTIVES: THE WATER JUSTICE MOVEMENT’S CONDEMNATION OF PRIVATE-SECTOR PARTICIPATION

Scenarios that invite private-sector involvement within the delivery of the right to water are representative of efficient outcomes, and thus align with the Coase Theorem. In a general sense, the Coase Theorem provides that when transaction costs are zero, such as when any agreement that is in the mutual benefit of the parties concerned gets made, then any initial definition of property rights leads to an efficient outcome.<sup>272</sup> Agreements between governments and investors from the private sector, as explained above, are mutually beneficial to each party. These agreements between governments and investors also provide an efficient platform to achieve zero transaction costs. Countries and individuals both benefit because the governments will be better suited to provide their citizens with water, the fundamental

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271. 2030 WATER RESOURCES GROUP, *supra* note 12, at 4.

272. See generally Friedman, *Swedes Get it Right*, *supra* note 45.

necessity to all aspects of life. Private-sector investors benefit through the pursuit of global profits within the lucrative hydrocommerce industry. The main distinction is that the Coase Theorem addressed property rights, rather than human rights, as in the right to water. Although this distinction has sparked debate, a thorough Coasian analysis supports the notion that an efficient economic outcome can be achieved through cooperation between governments and the private sector, at least in the delivery of the human right to water.

Nevertheless, closer examination of the property rights described in *The Problem of Social Cost* resembles the human right to water regime, at least within the context of the relationship between private-sector involvement and this right to water. Coase's analysis is similar to this Article because it relies upon a mosaic of rights among various parties "to carry out a circumscribed list of actions."<sup>273</sup> For instance, the landowner does not possess unlimited rights. The landowner may not have the right to build certain structures or grow certain crops on his land. Other parties may even have rights to use or cross the land. As Coase reasons, "[t]he cost of exercising a right...is always the loss which is suffered elsewhere in consequence of the exercise of that right" such that the most desirable social arrangements prompt results where "what was gained was worth more than what was lost."<sup>274</sup>

Based on the Coasian premise that rights are not unlimited, individuals have the right to access water but neither these individuals nor their governments possess the right to exclude the corresponding rights of the private sector to participate in the delivery of the right to water. Individuals, governments, and the private sector each possess distinct, yet interconnected rights within the water industry. Recognition of these rights may lead to the most economically efficient outcome because minimal costs will be associated with the exercise of these rights. Much more will be gained than what is lost: individuals receive a fundamental necessity of life, governments benefit from increased health within their country, and corporations obtain significant profits within the water industry.<sup>275</sup> In terms of water markets, noted scholar Robert Glennon explains the relationship between rights and efficiency:

An ability to transfer ownership creates an incentive to use property more productively. This is the core idea of markets. Owners of property assess the

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273. See generally Coase, *Social Cost*, *supra* note 3.

274. *Id.*

275. *Id.*

value of it to them and part with it if they will realize a profit. Buyers seek to change the use of property and capture the value added by the new use. In this process, both sellers and buyers make profits, and society benefits from increased efficiency.<sup>276</sup>

But what happens when governments cannot fulfill this obligation to deliver water and provide this basic necessity of life to its citizens? The more than two billion people that lack access to clean water are proof that governments, in their sole capacity, are not equipped with the resources and capital necessary to deliver this obligation. As one commentator says, “Given the capital failure of the public sector to supply poor people with clean water, the positions and actions of anti-privatization activists are hard to understand”, concluding that the water justice activists “are driven by an ideologically inspired aversion to enterprise.”<sup>277</sup>

These activists who oppose corporate participation in the global water industry also acknowledge this alarming statistic, but argue that the predominant roadblock to governmental failure to provide clean water is because “they are burdened by their debt to the World Bank and the International Monetary Fund.”<sup>278</sup> While this may be true to a limited extent, the underlying reality remains the same: governments are failing to fulfill their obligation to deliver water to its citizens. It is here that the pragmatic argument in favor of private-sector involvement begins to flow cohesively within the economic currents of the Coase Theorem. Perhaps a shift in baseline perspectives—very much akin to the “change of approach” suggested by Coase<sup>279</sup>—to those perspectives that embrace an economic analysis by encompassing all relevant factors, will begin to facilitate the reconciliation between water justice activists and private-sector investors within the arena of global hydrocommerce.

In *Blue Covenant*, water justice activist Maude Barlow levied harsh criticism aimed at private-sector involvement in the human right to water. Barlow does not completely reject private-sector

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276. Glennon, *supra* note 75, at 1887.

277. Segerfeldt, *supra* note 74, at 4 (explaining that these anti-privatization groups also have a profound suspicion of the market economy and business enterprise in general, as well as belief in the “superior ability” of the public sector to deliver the needs of citizens).

278. BARLOW, *BLUE COVENANT* 159.

279. Coase, *supra* note 3, at 42 (suggesting that a change in approach to welfare economics is necessary to ensure economists arrive at correct conclusions about “the treatment of harmful effects”).

participation as an absolute;<sup>280</sup> The overarching sentiment is that the human right to water should be void of corporate investments.<sup>281</sup> “Private transnational corporations cannot maintain a competitive position in the water industry if they operate on the principles of water conservation, water justice and water democracy.”<sup>282</sup> Instead, Barlow suggests that the better scenario is one in which “[o]nly governments, with their mandate to work in the public good, can operate on these principles.”<sup>283</sup> Within a Coasian analysis context, the arguments against private-sector involvement in the right to water seemingly “concentrate[ ] attention on particular deficiencies,”<sup>284</sup> such that the water justice movement’s disparagement of corporate participation may theoretically “nourish the belief that any measure which will remove the deficiency is necessarily desirable.”<sup>285</sup>

The alleged “deficiency,” at least according to water justice activists, is that profit-driven corporations will inevitably disrupt the right to water.<sup>286</sup> But the reality, which water justice activists often overlook, is that many governments cannot fulfill their obligation to deliver this particular human right to its citizens. In Coasian terms, if the “corrective measure” is to prevent private-sector investment in the water industry, Barlow’s argument may divert attention from other changes associated with sole reliance on the government to deliver water to its citizens.<sup>287</sup> The realities stemming from these other changes are that the right to water is either delivered inefficiently or not at all— “changes which may well produce more harm than the original deficiency.”<sup>288</sup> Legal scholars tend to agree, although indirectly, with the pragmatic undercurrents of the Coasian approach: “From a human rights perspective, the important question is not *whether* a private

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280. BARLOW, BLUE COVENANT 161. Despite the anti-corporation sentiment expressed throughout the book, Barlow does somewhat qualify the criticism as not being an absolute. “That is not to say there is no role for the private sector in finding solutions to the global water crisis. But all private sector activity must come under strict public oversight and government accountability, and all would have to operate within a program whose goals are conservation and water justice.” *Id.*

281. *See generally id.*

282. *Id.* at 162.

283. *Id.* at 162.

284. Coase, *supra* note 3, at 42.

285. Coase, *supra* note 3, at 42–43.

286. BARLOW, BLUE COVENANT 161–62. “The creation of a worldwide water cartel is wrong ethically, environmentally and socially and ensures that decisions regarding the allocation of water are made based on commercial, not environmental or social, concerns.”

287. *Id.*

288. Coase, *supra* note 3, at 43.

sector entity is involved in the delivery of services, but *how* the arrangement is structured, implemented, and monitored.”<sup>289</sup>

Coase qualified the scope of his analysis in *The Problem of Social Cost*, suggesting that his comparisons were confined to the value of production. Although his analysis may have been limited in that sense, Coase reasoned that choices between different solutions should be examined in “broader terms,” such that the “total effect of these arrangements in all spheres of life should be taken into account.”<sup>290</sup> Nevertheless, Barlow’s argument is not one that considers whether varying degrees of private-sector involvement could be acceptable. She suggests that corporate participation in the water industry is “criminal,” a scenario in which corporations “impos[e] a new form of colonial conquest dressed up as the one and only economic model available.”<sup>291</sup> These water justice activists point to examples of failed private-sector participation in Cochabamba, Bolivia<sup>292</sup> and Kwazule-Natal, South Africa,<sup>293</sup> as reasons to suggest that water corporations “should be forced to leave poor countries.”<sup>294</sup> Because this diverts attention to these unsuccessful examples, it is important to reconsider whether or not the failed ventures were necessarily the result of private-sector investment *per se* or instead rooted in bespoke occurrences that could not be resolved. Thus, the argument against private-sector participation does not embrace the “totality of circumstances,” at least not within the broader economic context that Coase preferred.

Relying entirely on government regulation or oversight may lead to ineffective outcomes because the “government is attempting to do too much,” such that the public sector “has reached the stage at which, for many of its activities, as economists would say, the marginal product is negative.”<sup>295</sup> Rather than admonishing the potential effects of

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289. Sharmila L. Murthy, *The Human Right(s) to Water and Sanitation: History, Meaning, and the Controversy Over-Privatization*, 31 BERKELEY JOURNAL OF INTERNATIONAL LAW 89, 90 (2013).

290. Coase, *supra* note 3, at 42–44.

291. BARLOW, BLUE COVENANT 160.

292. See Kapoor *supra* note 90, at 163. See also OSCAR OLIVERA & TOM LEWIS, COCHABAMBA: WATER WAR IN BOLIVIA (2004) (describing shortcomings of water privatization in Cochabamba); Willem Assies, *David versus Goliath in Cochabamba: Water Rights, Neoliberalism, and the Revival of Social Protest in Bolivia*, 30 LATIN AM. PERSP. 14, 30 (2003).

293. See generally Kapoor, *supra* note 90, at 177. See also Jacques Pauw, *The Politics of Underdevelopment: Metered to Death – How a Water Experiment Caused Riots and a Cholera Epidemic*, 33 INT’L J. HEALTH SERV. 819 (2003).

294. BARLOW, BLUE COVENANT 160.

295. R.H. Coase, *Economists and Public Policy*, in ESSAYS ON ECONOMICS AND

corporate participation as Barlow suggests,<sup>296</sup> should we instead examine what private-sector involvement can do? The global water challenges are much too vast to completely ostracize an entire sector. The shortfalls that permeate Barlow's water justice argument are similar to the inadequacies within the Pigouvian tradition that Coase demonstrated. The policy conclusions of both Barlow and Pigou are "the result of not comparing the total product obtainable with alternative social arrangements."<sup>297</sup>

For example, Coase criticized the scenario in which regulations (such as zoning regulations or a Pigouvian tax) would force smoke-producing factories to be removed from areas where the smoke causes harmful effects. These measures would result in reduced production, an outcome that should be weighed against the harm if the factory remained. In comparison, Barlow's suggestion to eliminate private-sector involvement may reduce the potential for corporate failure (or harm), but this certainly would not improve the abilities of governments to provide the right to water. The significant harm that would arise by not permitting private-sector participation and governments subsequently not fulfilling their obligation to deliver the right to water would be a disastrous outcome that should be weighed against the random harm that could result from corporate involvement on occasion. As Coase might say, the aim of such policy considerations "should not be to eliminate" externalities such as smoke pollution and intermittent corporate harm, "but rather to secure the optimum amount" of smoke-emitting factories and participation by the private sector in delivering the right to water, thereby ensuring the "amount which will maximise the value of production."<sup>298</sup>

## VII. CONCLUSION

To meet all competing demands and achieve economic efficiency, in light of existing market dynamics, there must be a concerted effort among stakeholders to adopt a holistic resource view that acknowledges water as the key input for economic development, social and cultural growth, and environmental conservation. As shown by the nearly two billion people around the world lacking access to clean water, governments are currently falling short of their obligation to provide the human right to water. Governments should therefore be

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ECONOMISTS 34, 62 (The University of Chicago Press 1994).

296. BARLOW, BLUE COVENANT 101.

297. Coase, *supra* note 3, at 39–40.

298. Coase, *supra* note 3, at 42.

encouraged to seek private-sector investors to successfully provide their citizens with water. Many of these developments will be in the form of water infrastructure projects, involving three main parties. The allocation of resources among these parties, including citizens, countries, and private-sector investors, may be an efficient outcome, even despite the existence of transaction costs.