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

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ABSTRACT

Enriched with notions of cultural, religious, and biological significance—the water paradigm inherently flows counter to the theoretical currents of the law and economics analysis. The purpose of this research 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 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 across 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 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 managerial, institutional, and political factors. At its core, the primary challenge for nations concerning their respective water

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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. This research does not cabin itself into a free-market advocacy position, nor does it exclusively promote a human rights approach. In contrast, this unique argument maintains its objectivity by exploring the problems from a scientific perspective, thereby embracing an ecological approach that seeks interdisciplinary solutions by recognizing these symbiotic contradictions. Even water management regimes, such as Integrated Water Resource Management, include economic efficiency as a relevant factor within the framework for sustainable development.

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 research represents one of the first to both analyze and support the human right to water from within the purview of law and economics analyses. The applicability of the Coase Thereom and transaction costs, among other law and economics analyses, must be considered on a case-by-case basis. To address these complexities, this research identifies the risks, incentives, and externalities, both in the circumstances with private-sector involvement and without, to examine various approaches (and their alternatives) that can lead to an economically efficient allocation of resources.

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I. INTRODUCTION

> You can comprehend a piece of river. But a whole river…
> it's a thousand different and not compatible things in between
> its changing shores, it is also an entity, one of the real wholes,
> but to feel the whole is hard because to know it is harder still.[1]

Enriched with notions of cultural, religious, and biological significance—the principles of water inherently flow counter to the theoretical currents of the law and economics analysis.[2] Much like distinct tributaries to a mighty river, the legal and economic disciplines maintain differences in methodology, scientific approach, and objectives;[3] but as these disciplines converge, their tributaries form the river's main stem, with potential to influence an entire watershed of jurisprudence. Despite the seemingly ostentatious 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*.[4] 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. In unique contrast, objectivity is maintained by exploring issues from a scientific perspective; thereby embracing an ecological approach that seeks interdisciplinary solutions by recognizing these symbiotic contradictions.

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.[5] Billions of individuals throughout the world lack access to basic water and sanitation services. The prevalence of these atrocities is an unfortunate reality that cannot be understated. To combat this tragedy, the justiciability of the human right to

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[1] JOHN GRAVES, GOODBYE TO A RIVER 1-3 (1960).

[2] "The River of God is full of water." Psalm 65:9, English Standard Version translation. 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, "And 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.

[3] JEFFREY HARRISON & JULES THEEUWES, LAW AND ECONOMICS xxi (2008).

[4] R.H. Coase, *The Problem of Social Cost,* 3 J. LAW & ECON. 1, 42 (1960) (hereinafter, "Social Cost"). Coase explained, "In 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.

[5] Summit Global Management is an investment firm that specializes in "global hydrocommerce," describing the sector as follows: "Water…is the most critical industrial input to the world's economy…[W]ater remains absurdly undervalued." 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, … [and] 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." Summit Global Management, *Global Hydrocommerce* (last accessed Feb. 17, 2016), http://www.summitglobal.com/index.php.

water continues to develop into an enforceable obligation.[6] 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.[7] 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 order to construct adequate water infrastructure and manage water distribution services.[8]

The provision of water presents numerous challenges to all parties involved in the 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, 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.[9] The human right to water implicates states with an obligation

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[6] *See, e.g.*, Amy Hardberger, *Life, Liberty, and the Pursuit of Water: Evaluating Water as a Human Right and the Duties and Obligations it Creates*, 4 NW U. J. INT'L HUM. RTS. 331 (2005) (discussing implications of customary law in the international arena); Erik B. Bluemel, *The Implications of Formulating a Human Right to Water*, 31 ECOL. LQ 957 (2004)

[7] In many developing countries, there are a majority of people that 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 NATURAL RESOURCES JOURNAL 307, 319 (2011); *See also* WORLD HEALTH ORG. & UNITED NATIONS CHILDREN'S FUND, PROGRESS ON SANITATION AND DRINKING WATER: 2010 UPDATE 7 (2010).

[8] 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* R. Ashley & A. 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, ORGANIZATION FOR ECONOMIC CO-OPERATION AND DEVELOPMENT (2005); *see also* World Water Assessment Programme, *Water in a Changing World: The United Nations World Water Development Report* 3, UNESCO (2009). There are various examples of public-sector and private-sector management of water utilities, each with successes and failures, throughout the developed world.

[9] Both the U.N. General Assembly and the U.N. Human Rights Council recognized the human right to safe drinking water and sanitation. Enforceability of these rights, on the other hand, remains an important development in legal scholarship, as discussed *infra*, Section IV.B. United Nations, 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)*, 29th Sess., 2002, U.N. Doc. E/C.12/2002.11 (Jan. 20, 2003) [hereinafter General Comment No. 15]; G.A. Res. 64/292, U.N. Doc. A/RES/64/292 (Aug. 3, 2010); G.A. Res 64/PV.108, U.N. Doc. 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

to ensure its citizens have access to water. Simultaneously, providing this right constrains states that lack the necessary capital to make the right accessible, which is predicated upon maintaining adequate water distribution systems and infrastructure.[10] The lack of sufficient funding is brutally apparent when considering the billions of people that lack access to safe drinking water and sanitation.[11] Given the vast funding gap for water infrastructure, public funds alone are likely not sufficient even in developed countries.[12]

On the other hand, the markets of global hydrocommerce continue to suffer from "chronic under-investment" according to financial institutions.[13] Estimates indicate that over the next twenty years, almost $22 trillion (USD) will be necessary to fully modernize global water delivery and wastewater systems.[14] This suggests that government- and state-funding alone will be insufficient to address the ubiquity of these challenges. 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 the global water resource challenges.

These paradigms are compatible on a pragmatic level, and based on the foundation that water is a legal right, an economic approach to water management becomes an essential component to the development of legal regimes that will ensure the accessibility and availability of water.[15]

Favour, None Against, 41 Abstentions, U.N. Press Release GA/10967 (28 July 2010); *see also* 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, 89 (2013). "The enforceability of the right to water and, in general, of Economic, Cultural and Social Rights is a transnational issue which has been raised by prominent scholarship over the past years." M. Belen Olmos Giupponi and Martha C. Paz, *The Implementation of the Human Right to Water in Argentina and Colombia*, XV ANUARIO MEXICANO DE DERECHO INTERNACIONAL 323-352 (2015).

[10] 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 21st century, such as peace and security, climate change, sustainable development, [and] human rights." *See About the U.N.*, UNITED NATIONS (last accessed Mar. 15, 2016) http://www.un.org/en/sections/about-un/overview/index.html

[11] The externalities surrounding the global water crisis are discussed *Infra* section III.A.

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

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

[14] *Id.*

[15] 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 7; *See* SALMAN M. A. SALMAN & SIOBHAN MCINERNEY-LANKFORD, THE HUMAN RIGHT TO WATER: LEGAL AND POLICY DIMENSIONS 3-4 (2004) (study prepared for The World Bank) *available at* http://www.ais.unwater.org/ais/pluginfile.php/44/course/section/18/302290PAPER0Human0right0to0H20.pdf.

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 & demand, efficiency of use, avoiding waste, ecological considerations, and perhaps most importantly, transaction costs.[16] Nevertheless, the following quote represents the riptide between the two competing paradigms, embracing the challenges the 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."[17]

During the last several decades, the nexus between economic development, water resources, and human rights, has achieved prominence as being among 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 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."[18] Although certainly reasonable, this sentiment is a 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. This sentiment is derived from and justified in its critique of privatization. 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, thereby promoting scenarios where neither bargain party is harmed. In particular, an efficient outcome may be achieved through the development of infrastructure projects that allow the realization of the right by ensuring actual delivery of the water.[19] Perhaps the issue is not a comparison between

[16] *See* SALMAN & MCINERNEY-LANKFORD, *supra* note 15. "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." *Id.* at 4. 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 7, at 331 (citing J.W. Milliman, *Water Law and Private Decision Making: A Critique*, 2 J.L. & ECON. 41 (1959)). 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." Tremblay, supra note 7, at 331 (citing AM. WATER WORKS ASS'N, PRINCIPLES OF WATER RATES, FEES, AND CHARGES (5th ed., 2000).

[17] SALMON & LANKFORD, *supra* note 15, at 72-73; *see also* The Report of the World Panel on Financing Water Infrastructure, *Financing Water for All* at 3, WORLD WATER COUNCIL (2003).

[18] 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).

[19] 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 paper. 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.

"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."[20]

The distinctions between water, law, and economics are most apparent amongst the numerous attempts to reconcile the economic 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…."[21] In contrast, water law scholars incorporate another distinction, and "categoriz[e] the intrinsic value of water as priceless or even incalculable."[22] Whether examined from anthropocentric or ecocentric perspectives, the inherent value of water remains undeniable. As a matter of precision, contentious debate has raged within the valuation continuum; suggesting that in the alternative, the efficiency continuum could provide a platform for reconciliation. 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.

By meandering around the traditional arguments concerning the economic "value" of water,[23] the course of this Article—through the braided channels of law and economics[24]—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

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[20] 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).

[21] ADAM SMITH, *Of the Origin and Use of Money*, AN INQUIRY INTO THE NATURE AND CAUSES OF THE WEALTH OF NATIONS 26 (emphasis added) *available at* http://www.ibiblio.org/ml/libri/s/SmithA_WealthNations_p.pdf; *see also* W.M. Hanemann, *The Economic Conception of Water* 62-63 *in* WATER CRISIS: MYTH OR REALITY? (eds. Peter P. Rogers, M. Ramon Llamas, & Luiz Martinez-Cortina 2006) (emphasis added).

[22] 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 fresh water 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.

[23] 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: "Water 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 and Meena Palaniappan, *Peak Water Limits to Freshwater Withdrawal and Use*, 107(25) PROC. NAT'L ACAD. SCIENCES 11155-62, at 11157 (June 22, 2010).

[24] Some rivers have lots of small channels that continuously split and join, depending on different hydrological features, these are called "braided" channels. Similarly, the multi-disciplinary approach utilized in this Article is similar to "braided" rivers, both in form, function, and interconnectivity.

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.[25] Premised on the presumption that there exists a legal and moral obligation to deliver the human right to water, this discussion builds on legal scholarship, economic research, and the functionality of basic common sense. By examining these global water challenges through the lens of economic efficiency and transaction costs, the Article 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 the human right to water argument—from its theoretical origins to its pragmatic implementation—by presenting a law and economics analysis in support of private-sector participation in the delivery of water and funding necessary for adequate infrastructure. In Section II, the Article details the increasing importance of the law and economics discipline. Section III, examines the global water crisis and the current state of private-sector participation in the right to water. Section IV highlights the legal foundations of the human right to water. Finally, Section V is divided into two parts, first addressing Coasean solutions, before exploring the efficient outcomes; whereas Section VI explores potential compatibility between the water justice movement and private-sector involvement in facilitating realizations of the human right to water.

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.[26] 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.[27] 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

[25] R. H. Coase, *Law and Economics and A.W. Brian Simpson*, 25(1) JOURNAL OF LEGAL STUDIES 103, 103 (1996) (discussing the two separate, but overlapping, parts that comprise law and economics).
[26] *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 (2008). 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. *Id.* at 1564-65.
[27] HARRISON AND THEEUWES, *supra* note 3, at 5–6.

transaction costs in an economic system, retains seminal importance within the discipline of law and economics.[28] 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.[29]

Within the arena of legal scholarship in the United States, law and economics is among the fasting growing fields of study.[30] 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.[31] 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."[32] 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);[33] language barriers; misperceived influence of ideology (liberal or conservative) on legal philosophy within foreign legal scholarship;[34] and perhaps the most comprehensive of all reasons, legal parochialism.[35]

Despite facing skepticism as legal innovation on the global level, hesitation throughout the international legal community to incorporate the field of law and economics simultaneously presents a 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*

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[28] *See generally id.* at 81–97.

[29] *Id.* at 59. (incorporating a narrow definition, "an externality occurs when one is harmed or benefitted by the actions of another and there is no offsetting payment."

[30] Richard A. Posner, *Legal Scholarship Today*, 115 HARV. L. REV. 1314, 1316-17 (2002).

[31] Nuno Garoupa, *The Law and Economics of Legal Parochialism*, U. ILL. L. REV. 1517, 1518 (2011).

[32] *Id.* at 1518-19.

[33] *See, e.g.*, Richard A. Posner, *The Future of the Law and Economics Movement in Europe*, 17 INT'L REV. L. & ECON. 3, 4–5 (1997); Richard A. Posner, *Law and Economics in Common-Law, Civil-Law, and Developing Nations*, 17 RATIO JURIS 66, 76-77 (2004).

[34] Garoupa, *supra* note 31, at 1519-20. With particular regards to the Article 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 my article, which provides an economic analysis in support of the legal right to water on a global scale.

[35] *Id.* at 1525 (defining legal parochialism as a "form of trade protectionism in the context of the market for legal ideas").

The legacy of Professor Ronald Coase is embedded within his substantial contributions to the subject of law and economics,[36] including the concepts of transaction costs and associated limits of firms in *The Nature of the Firm* (1937).[37] Coase famously established the notion that externalities could be overcome by well-defined property rights in *The Problem of Social Cost* (1960).[38] An eventual Nobel Laureate, it is important to consider the origins of Coase's scholarship. Coase maintains his perpetual significance because of the pragmatic perspectives that derived from within his problem-solving approach and desire to identify efficient outcomes within the scope of real world challenges.[39] 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.[40] 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 certainly made me aware of the defects of government operation of these industries, whether municipal or through nationalization."[41] 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 certainly relevant to a discussion concerning the obligation of governments to deliver the human right to water.

The Coase Theorem is central to discipline of law and economics.[42] It is also fundamental to any law and economics analysis, as *The Problem of Social Cost* is among the most cited articles within the discipline.[43] 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.[44] Coase's argument was fundamental in shifting the prevailing views among economists. The applicability of the Coase Theorem relies solely on the nature of transaction costs.[45] 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

[36] *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).

[37] 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* THE RONALD COASE INSTITUTE, *About Ronald Coase*, https://coase.org/aboutronaldcoase.htm (last accessed Mar. 10, 20166).

[38] R.H. Coase, *The Problem of Social Cost*, 3 J. LAW & ECON. 1 (1960) (hereinafter, "*Social Cost*")

[39] 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 real world analyses. "My views on government intervention in the economy have changed over my life, but they have always been driven by factual investigations." R. H. Coase, *Law and Economics and A.W. Brian Simpson*, 25(1) J. OF LEGAL STUD. 99, 108 (1996).

[40] *Id.* at 106. This research was interrupted by World War II, when Coase joined the civil service. *Id.* at 106-07.

[41] *Id.*

[42] HARRISON AND THEEUWES, *supra* note 3, at 5–6.

[43] Coase, *Social Cost*, *supra* note 4.

[44] A.C. PIGOU, THE ECONOMICS OF WELFARE (1932).

[45] A. MITCHELL POLINSKY, INTRODUCTION TO LAW AND ECONOMICS 12-13 (4th ed. 2011).

equilibrium. The Coase Theorem advanced several significant notions with regards to the law and economics analysis: such that 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.[46]

At its core, the Coase Theorem provides that the primary objective is to reach the most efficient allocation of resources (i.e., and for purposes of this article—access to water) with limited judicial and governmental involvement.[47] Coase argued that as long as property rights are well defined, the market system will efficiently alleviate the effects of externalities.[48] When two parties enter a bargain without transaction costs, the resulting outcome is economically efficient.[49] Transaction costs are those derived from the creation of the bargain. An efficient outcome, and thus an efficient allocation of resources, requires that the transaction costs be less than the benefits each party will receive.[50] From a Coasean perspective, these transaction costs must be low (or at zero) to "incentivize activity" and achieve an economically efficient resource allocation.[51] Otherwise, when transaction costs are too high, parties may never achieve "this optimal arrangement of rights."[52]

The Coase Theorem, and its concept of transaction costs, are particularly 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.[53] 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 Thereom 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.[54] 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

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[46] HARRISON AND THEEUWES, *supra* note 3, at 82; *see also* David Friedman, *The Swedes Get It Right*, LIBERTY (Mar. 4, 1997), accessed at http://daviddfriedman.com/Libertarian/The_Swedes.html.
[47] Coase, *Social Cost*, *supra* note 4, at 102.
[48] *Id.* at 23. The Coase Theorem, as published in *The Problem of Social Cost*: "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." *Id.*
[49] POLINSKY, supra note 45, at 12-13; HARRISON AND THEEUWES, *supra* note 3, at 96.
[50] Coase, *Social Cost*, *supra* note 4, at 15 (explaining that, even if transactions are costless, rights will be rearranged "if it will lead to an increase in the value of production").
[51] *Id.* at 15-16.
[52] *Id.* at 16.
[53] HARRISON AND THEEUWES, *supra* note 3, at 98; *see also* Friedman, *supra* note *47.*
[54] HARRISON AND THEEUWES, *supra* note 3, at 82.

analysis.[55] At its core, Pareto efficiency examines various allocations of resources and the corresponding societal impact if those allocations are altered. Scholars have instituted several measures to qualify varying degrees of efficiency. 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*. In contrast, an alteration that leaves at least one person worse off is *Pareto inferior*, disregarding any beneficial effects to other parties. An allocation is considered *Pareto efficient* or optimal when no change can be made without making at least one person worse off.[56]

Pareto efficiency is important because these benefits or detriments are not weighted 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 in certain situations and limited in its applicability,[57] this 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 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.

Alternatively, the efficiency considered within the purview of the Coase Theorem is the Kaldor-Hicks efficiency, which is essentially a standard of wealth maximization. This concept of efficiency is often relied upon by economists in analyzing legal regimes from an economic perspective.[58] In terms of wealth maximization, the key features of Kaldor-Hicks efficiency are to ensure that resources end up in the possession of those who value them most and the notion that compensation is not required. Kaldor-Hicks efficiency is different than Pareto efficiency, because Pareto efficiency concepts rely on "interpersonal comparisons of utility," which may be unscientific and arbitrary in comparison to units of "wealth" and "value."[59] As economists realized, however, 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."[60] 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."[61]

Externalities must also be examined, particularly in situations where the Coase Thereom may lack applicability. Depending on the circumstances, externalities can lead to economic

[55] The Pareto concept of economic efficiency is credited to Italian economist and engineer Vilfredo Pareto (1848-1923).
[56] HARRISON AND THEEUWES, *supra* note 3, at 26-27; *see also* POLINSKY, *supra* note 45, at 7-9.
[57] HARRISON AND THEEUWES, *supra* note 3, at 28-29.
[58] *Id.* at 28.
[59] *Id.* at 29-30.
[60] *Id.*
[61] *Id.* at 31.

inefficiencies, because they arise when one party's decisions have positive or negative effects on another party. Although externalities can affect decisions in a variety of forms, an externality occurs when one is harmed or benefited by the actions of another and there is no offsetting payment. For example, air and water pollution are externalities because they are indicative of market failure, such that no party can offer it for sale and no corresponding party can acquire it for production purposes.[62] The scope of externalities can affect both individuals, by reducing their respective utility in an involuntary way, as well as firms, by affecting productive in a positive or negative manner.[63] 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—such as 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 because 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 scholars and law review publications in the United States.[64] Building on this scholarship, the Article is unique in its application of economics analyses to internationally recognized human rights, rather than a national (i.e., domestic) legal regime.[65] Water management institutions, such as the Integrated Water Resources Management, often reference economic efficiency as a relevant factor within successful regimes. Despite this recognition, much of the legal scholarship focuses on supply and demand, waste, and the economic "value" of water. Most importantly, there has been limited scholarship that applies these economic concepts of efficiency (i.e., Pareto, Kaldor-Hicks) to the human rights to water argument.

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[62] *See City of Los Angeles v. Alameda Books, Inc.*, 535 U.S. 425 (2002) (describing air and water pollution as "classic" externalities).

[63] HARRISON AND THEEUWES, *supra* note ___, at 64-65.

[64] Aaron Culp, Comment, *Water Can Be For Drinking Again: Economic and Collaborative Solutions to a Texas Water Fight*, 45 ST. MARY'S LAW 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 Calbresi & 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"). *See generally* Sarah Hollinshead, *Water is Not Liquid: Securitization, Transaction Costs, and California's Water Market*, 33 COLUM. J. ENVTL. L. 323 (2008); 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 were insecure. *Id.* at 182.

[65] Although law review articles have explored and at least acknowledged the interactions between economic efficiency and the right to water, none have offered a thorough examination these symbiotic contradictions from an economics and the law perspective. *See, e.g.*, 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 NATURAL RESOURCES JOURNAL 307, 310 (2011).

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 would decide what the water is worth to each of them.[66] 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.[67] Nevertheless, although the potential benefits of water markets may be monumental among 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 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? On a global level, the beauty of the law and economics analysis are the beneficial implications retained by various perspectives. This Article focuses on the transaction costs and efficiencies by integrating both practical and theoretical arguments, focusing on the nexus of the human right to water and the decision to improve water distribution services through capital investments in infrastructure projects.

III. THE WORLD'S MOST "FUNDAMENTAL" RESOURCE

A. *Global Water Crisis*

Throughout the history of mankind, the prevailing 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."[68] Despite the essential nature of this resource—more than two billion people are affected by water shortages in over forty countries.[69] In fact, 1.1 billion people do not have sufficient access to clean and safe water, while 2.6 billion people have no provision for sanitation.[70] In a world of almost 7.5 billion individuals, these proportions are staggering. 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.[71] For instance, in the African countries of

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[66] 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 (2004).

[67] *Id.*

[68] General Comment No. 15, *supra* note 9, at ¶ 1.

[69] SALMON & LANKFORD, *supra* note 15.

[70] Michael D. Young, *Investing in Water Services Infrastructure Polices and Management* 3, *in* INVESTING IN WATER FOR A GREEN ECONOMY: SERVICES, INFRASTRUCTURE, POLICIES, AND MANAGEMENT (eds. Mike D. Young and Christine Esau, 2013); *see also* FREDRIK SEGERFELDT, WATER FOR SALE: HOW BUSINESS AND THE MARKET CAN RESOLVE THE WORLD'S WATER CRISIS 1 (Cato Institute, 2005); World Health Organization, *UN-Water Global Annual Assessment of Sanitation and Drinking-Water (GLAAS) 2010: Targeting Resources for Better Results*, GENEVA: WORLD HEALTH ORGANIZATION (2010), available at www.who.int/water_sanitation_health/glaas/en/.

[71] Young, *supra* note 70, 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).

Nigeria and Cameroon, the increased use of unprotected water sources for drinking purposes is directly associated with an increase child mortality rates.[72]

As renowned scientist Peter Gleick warns, the failure to provide individuals with affordable and reliable access to clean water and sanitation represents "one of humankind's greatest failings."[73] These statistics are exacerbated by the increasing global population, which corresponds with an increasing demand for water—further straining the finite supply of this natural resource. During the last century, the world's total population has more than tripled. Throughout this same timeframe, water uses for human purposes have multiplied at a sixfold rate.[74] The gravity of these adverse impacts is resounding, with widespread implications for countries and their citizens.

Although these challenges exist in various degrees—each uniquely affected at regional-levels by socio-economics, aridity, development, and climate, among other factors[75]—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 its citizens with access to clean water or sanitation.[76] 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."[77] The various perspectives on water, in connection to the increasing global population and demand for fresh water, creates an intricate mosaic of tensions concerning the availability, accessibility, provision, and protection of this fundamental natural resource.[78]

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 managerial, institutional, and political factors.[79] At its core, the primary 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.[80] In these same developing countries, more than a billion individuals are deprived of access to water. In fact, nearly twenty

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[72] *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 (eds. Mike D. Young and Christine Esau, 2013)

[73] PETER GLEICK, THE WORLD'S WATER: THE BIENNIAL REPORT ON FRESHWATER RESOURCES 2008-09 (2009).

[74] SALMON & LANKFORD, *supra* note 15, at 1. (citing William J. Cosgrove & Frank R. Rijsberman, World Water Vision—Making Water Everybody's Business (World Water Council), 4 (Earthscan Publications Ltd. 2000)).

[75] *See, e.g.*, WORLD WATER COUNCIL, *Vulnerability of Arid and Semi-Arid Regions to Climate Change* http://www.worldwatercouncil.org/fileadmin/wwc/Library/Publications_and_reports/Climate_Change/PersPap_09._Arid_and_Semi-Arid_Regions.pdf.

[76] *See* Vorosmarty, C.J, et al., *Global Threats to Human Water Security and River Biodiversity*, 467 NATURE 556-61 (2010); *see generally* Joint Monitoring Programme on Water Supply and Sanitation, *Progress on Sanitation and Drinking-Water: 2010 Update*, WORLD HEALTH ORGANIZATION/UNICEF (2010).

[77] Young, *supra* note 70, at 3.

[78] *See generally* Eckstein, *Ethic of Water*, supra note 22, at 964.

[79] *See* Ward et al., *supra* note 72, at 177-78; *see also* F. Molle and P. Mollinga, *Water Policy Indicators: Conceptual Problems and Policy Issues*, 5 WATER POLICY 529-544 (2003).

[80] SEGERFELDT, *supra* note 70, at 1.

percent of the global population does not have access to clean water, while more than a third lacks access to basic sanitation services.[81] 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 include the motivations of politicians and trade unions, which are often driven by self-interest as opposed to the greater welfare of society. In fact, motivations by State-actors on an individual level may actually be a lack thereof, at least in terms of ensuring the delivery of water to citizens. These systems often become inefficient, as these 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.[82] 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.[83] The substantial cohort of population lacking access to water suggests—particularly with regards to the billions of people lacking water in the world—that public-sector utilities are not often successful in the provision of water, at least not in a capacity that retains 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.

Beyond a lack of funds to pursue development projects that will ensure the provision of water, governments are further affected by numerous additional externalities. Public-sector utilities may be operating in serious debt, overstaffed by politically connected individuals, and understaffed by individuals that have the appropriate expertise. Essentially, the public-sector operational structure often relies on bureaucrats, while placing too little emphasis on engineers, economists, and hydrologists. In fact, political concerns are pervasive in the public-sector, which can result in monopoly-type regimes that inevitably fail.[84] 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.[85]

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

[81] *See, e.g.*, I. Kessides, *Reforming Infrastructure—Privatization, Regulation, and Competition*, WORLD BANK (2004).
[82] ZETLAND, *supra* note 20, at 155.
[83] *See* SEGERFELDT, *supra* note 70, at 59-62.
[84] ZETLAND, supra note 20, at 88-90.
[85] *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).

regimes. Nevertheless, as this Article contemplates through the law and economics analysis, this does indicate 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.[86] Although the level of participation is controversial, there is optimism throughout the global water industry that private-sector 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. However, many case studies, commentaries, and media coverage focuses on the most extreme examples. More generally, the comparison of water-utility performances before and after privatization does not present whether the result would have been different in the absence of such privatization reforms.[87] 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.[88]

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 Manila, Philippines, after the private-sector obtained management control of the water distribution system, the results were the delivery of water to millions of citizens that were not previously served by the public, government-controlled utility.[89] The Manila Water Company has served residents for over fifteen years and is now listed on the Philippine Stock Exchange.[90] By 2006, ninety-nine percent of Manila Water Company's distribution network had twenty-four hour access to water.[91] 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.

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[86] Clarke et al., *Has Private Participation in Water and Sewerage Improved Coverage? Empirical Evidence From Latin America*, 21 J. INT. 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. J. OF L. IN CONT. 1, 1 (2011).

[87] *See* Clarke et al., *supra* note 86, at 328-330.

[88] *Id.* at 331.

[89] SEGERFELDT, *supra* note 70, 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, 213-217 (2008).

[90] *See* Kapoor, *supra* note 85, at 178-85. In the year of its IPO (2005), Asia Money voted Manila Water Company the "best managed small cap company." *See Id.* at n. 262.

[91] *See id.*

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 obviously more likely to cover events similar to the protests in Cochabamba, Bolivia after the water concession contract was revoked, rather than a moderately successful example of private-sector participation.[92] Some commentators suggest that empirical studies on the success of private-sector participation may also retain this sample selection bias.[93] 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.[94] 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.[95] 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.[96] Lease and management contracts also invite private-sector investment.[97] 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 financing without private-sector participation.[98] 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*

[92] *See infra* note 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.

[93] *See* Clarke et al., *supra* note 85, at 328-29.

[94] *Id.*

[95] The three general types of water service utilities include, the public-sector, the private-sector, and public-private partnerships.

[96] 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).

[97] 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.

[98] Clarke et al., *supra* note 85, at 334-35. Countries received World Bank financed loans for water sector projects include Guinea, Senegal, and Colombia (Cartagena).

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.[99] 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 investors 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."[100] Researchers estimate that over the next twenty years, almost $22 trillion (USD) will be necessary to fully modernize global water delivery and wastewater systems.[101] 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, and will annually approach hundreds of billions of dollars (USD). Reports also suggest that only three percent of impoverished citizens in the developing world are provided water through private-sector utilities.[102] Among these developing countries, private-sector participation in water distribution has been limited, presenting host of challenges and opportunities, because at least $180 billion is required annually to ensure the universal delivery of water to citizens of the Third World.[103] In general, because water utilities directly provide water to the user, these utilities play a substantial role in ensuring an individual's human right to water.

Although the business of water remains integrated as a whole, the industry can be characterized by various sectors: water utilities, infrastructure, treatment, and resource management, among others. 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. From a logistical standpoint, 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."[104] The water and wastewater treatment sector also provides exciting opportunities for investors intrigued by technological developments in the use, reuse, or discharge of water, processes which could include

[99] *Id.* at 41.
[100] STEVE HOFFMAN, PLANET WATER: INVESTING IN THE WORLD'S MOST VALUABLE RESOURCE 49 (2009).
[101] Leila Boulton, *Investing in Blue Gold*, FINANCIAL ADVISOR (Jan. 7, 2014), available at http://www.fa-mag.com/news/investing-in-blue-gold-16511.html.
[102] SEGERFELDT, *supra* note 70, at 2-4.
[103] *Id.*
[104] HOFFMAN, *supra* note 100, at 57. 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.*

equipment, chemicals, filtration, or disinfection. Desalination is another exciting investment technology, a technique that has experienced significant growth over the last decade.[105]

A complex mosaic of externalities saturates the global business of water management, particularly within the water utility and infrastructure sectors. These features are interconnected because they pertain to the delivery of (i.e., access to) the resource. 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.[106] Nevertheless, the demand for water continues to increase, as these global challenges are intensified by urbanization, agricultural development, industrial development, climate change, and pollution.[107] These factors have further created investment opportunities within global water management, as scarcity concerns are met with technological solutions designed to reduce waste and improve efficiency.[108]

The total cost of providing access to clean water is staggering, even when the intitial costs are extrapolated over the course of several decades. According to most commentators, these total figures are dynamic, as the magnitude of the water industry "is simply too extensive to be viewed in a composite manner."[109] In the *Infrastructure to 2030* report, the Organization for Economic Co-operation and Development ("OECD") estimates that the projected costs for global water infrastructure and water-related services will approach $14.8 trillion (USD).[110] 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.[111] On a global scale, this total is much higher, as the $14.8 trillion does not include the project costs among non-OECD countries. Thus, many developing countries that are most severely in need of clean water are excluded from the calculation. This means that the $14.8 trillion excludes the projected costs from many regions of Latin America, South America, Africa, Asia, and the Middle East.[112] 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.[113] Developing countries must also consider many of these same transaction costs, as well as

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[105] Isabel Kershner, *Aided by the Sea, Israel Overcomes an Old Foe: Drought*, NY 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.

[106] Murthy, *supra* note 9, at 95. *See, e.g.* 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 whether Turkey can provide the necessary initial investments in order to procure the long-term benefits. http://www.dailysabah.com/economy/2015/03/08/turkey-will-invest-10-billion-in-southeastern-anatolia-project.

[107] Murthy, *supra* note 9, at 95.

[108] BARLOW, *supra* note 97, at 73-85 (describing desalination, nanotechnology, and other emerging technologies).

[109] HOFFMAN, *supra* note 100, at 42. Clean water refers to all related activities within the full spectrum of water, wastewater, stormwater, and recycled water.

[110] INFRASTRUCTURE TO 2030: TELECOM, LAND TRANSPORT, WATER AND ELECTRICITY, ORGANIZATION FOR ECONOMIC CO-OPERATION AND DEVELOPMENT (July 2006).

[111] *Id.*

[112] HOFFMAN, *supra* note 100, at 42-43.

[113] *Id.* at 44-45.

additional concerns with 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 positive externalities associated with private-sector participation in the global water industry. Water-related investments have traditionally focused on equities, which provide the most straightforward vehicle to realize gains associated with the fundamentals of the industry.[114]

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."[115] In general, private equity funds are a collection of investors, who can commit large sums of money for long periods of time.[116] As the general partner, the investment manager will seek high net worth individuals and institutional investors as limited partners, which 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. For instance, investors that plan to maintain a certain infrastructure investment over the course of twenty years, subjecting themselves to substantial stakeholder scrutiny, is 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 represents potentially robust investments, while also ensuring that citizens 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.[117] Recently, Blackstone Energy Partners, another leading investment firm, announced the creation of Global Water Development Partners, a company dedicated 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."[118] Estimates suggest a majority of current funding, for all types of infrastructure

[114] HOFFMAN, *supra* note 100, at 293.
[115] *US Water Sector Transformation*, *supra* note 12, at *9.*
[116] INVESTOPEDIA, *Private Equity* (last accessed Mar. 16, 2016), http://www.investopedia.com/terms/p/privateequity.
[117] http://www.bloomberg.com/research/stocks/private/snapshot.asp?privcapId=3480877. 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. http://www.tpg.com/about-tpg.
[118] *About Blackstone Group,* http://www.blackstone.com/media/press-releases/details/blackstone-energy-partners-establishes-global-water-development-platform. As a global leader in growth equity, real estate investments, hedge

projects, comes from public sources, primarily debt investment form state-owned development banks.[119]

Institutional investors have also began to find attractive deals investing in water infrastructure projects. 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."[120] Currently, on a global scale, The World Bank noted that "infrastructure re-emerged as a popular, nearly consensus solution to the economic and societal woes of developing countries and industrialized nations alike."[121] 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."[122]

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.[123] In the decentralized water system of the U.S., an estimated 90% of the water-utilities are government-owned.[124] To raise capital, financing for the water sector traditionally took place through municipal bonds. However, many U.S. water utilities have sought greater access to private capital, in order to withstand the shortfalls in public financing.[125] 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."[126]

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funds, and a diverse credit portfolio, The Blackstone Group claims an estimated $336 billion (USD) assets under management (as of Dec. 31, 2015). http://www.blackstone.com/the-firm/overview.

[119] 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.

[120] Kaitlan Ugolik, *Investors Finally Tap Into U.S. Water Market* (June 24, 2015) INSTITUTIONAL INVESTOR, http://www.institutionalinvestor.com/article/3464966/investors-pensions/investors-finally-tap-into-us-water-market.html#/.VvMhGU3rtR0

[121] *See Institutional Investment in Infrastructure, supra note* ___ (estimating that less than fifteen percent of all types of infrastructure investment actually has some form of private participation).

[122] *Investors Finally Tap Into*, supra note 121.

[123] *About Summit*, SUMMIT GLOBAL MANAGEMENT (last accessed Feb. 17, 2016), http://www.summitglobal .com/index.php.

[124] *Ernst & Young*, http://www.ey.com/Publication/vwLUAssets/Cleantech_Water_Whitepaper/$FILE/Cleantech-Water-Whitepaper.pdf

[125] *See id.*

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

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.[127] 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, as quoted by natural resource economist Dr. David B. Brooks in a publication analyzing water management regimes.[128] 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 rather than to manage demand."[129] The agricultural sector itself comprises an estimated seventy percent of all fresh water consumption globally,[130] while concepts of "virtual water" reflect the commodification of water.

These complications are furthered 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; but 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.[131]

C. *Role of Water Infrastructure in Economic Growth*

The lack of adequate infrastructure is seminal challenge to achieving an efficient allocation of resources, in terms of both economics and providing the right to water. Despite this impediment, the water infrastructure sector also establishes a platform upon which individuals, governments, and private-sector investors can reconcile their externalities and transaction costs. In many cases, this approach may lead to achieve an efficient equilibria among the parties.

Water is the world's third largest industry after oil & gas production and energy generation.[132] In many developing countries, existing infrastructure is not sufficient to deliver water to its citizens. The water distribution system is complex, interconnected network of pipes, pumps, and treatment facilities, requiring significant financial resources for construction and

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[127] HOFFMAN, *supra* note 100, at 292-94.

[128] *See generally* https://www.iisd.org/about/people/david-b-brooks International Institute for Sustainable Development (IISD).

[129] David B. Brooks, *An Operational Definition of Water Management*, 22 INT'L J. WATER RESOURCES 521, 522 (2006).

[130] Young, *supra* note 20, 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), just 10% is used for direct human consumption. *Id.*

[131] *See generally* DAVID ZETLAND, THE END OF ABUNDANCE: ECONOMIC SOLUTIONS TO WATER SCARCITY 31-51 (2011).

[132] 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).

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.[133] The same figures are true in Maputo, Mozambique.[134] 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.[135] 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.[136]

Infrastructure has been described in broad terms as "the physical framework that supports and sustains virtually all economic activity." This definition is more alarming in light of the consequences that affect individuals who cannot even access their right to water—when their governments cannot provide the 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 vastly 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.[137] In direct contrast, the corresponding notion is equally reasonably 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.

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. In the U.S., billions of dollars are required each year to maintain and repair an inefficient infrastructure system that was constructed more than fifty years ago. 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 become more acute in the case of many rapidly expanding economies like China and India." 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 resources. Water has been mentioned as the single biggest impediment to China's long term-success. In its most recent "5-Year Plan," China plans to spend $128 billion over the next five years on water infrastructure projects alone.[138]

In the U.S., government and industry sources estimate that it will cost between $17-$50 billion per year to maintain and repair water infrastructure.[139]Within the infrastructure sector,

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[133] SEGERFELDT, *supra* note 70, at 7.
[134] *Id.*
[135] *Id.*
[136] Antonio Estache and 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 (Washington D.C., 1999) http://www.wds.worldbank.org/external/default/WDSContentServer/WDSP/IB/1999/09/10/000094946_99081905320 63/Rendered/PDF/multi_page.pdf
[137] See STEVE HOFFMAN, PLANET WATER: INVESTING IN THE WORLD'S MOST VALUABLE RESOURCE 7-8 (2009)
[138] *See generally*, CHINA WATER RISK, *China's 12th Five-Year Plan*, http://chinawaterrisk.org/regulations/water-policy/12th-five-year-plan/.
[139] Zetland, *supra* note 70, at 83.

capital investments can expand the productive capacity of a region, both by increasing resources and by enhancing the productivity of existing resources.[140] In fact, investments in public infrastructure can positively affect the economic growth and economic output of the region.[141]

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

The "water justice" movement arose out of a controversial protest in Cochabamba, Bolivia in 2000. These protests represent the symbolic beginnings of the anti-privatization sentiment that sparked the human right to water movement.[142] 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.

In her book entitled Blue Covenant, Maude Barlow offered strong criticism of private-sector involvement in the global water industry. Barlows'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."[143]

However, 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. 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.[144] 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 first deliver the water to the consumer. Many governments lack the financial resources to realize 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."[145]

As a legal obligation, a multitude of complex challenges are evident when describing water as a human right because it is so fundamental to human existence. Throughout the world, legal

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[140] A.H. Munnell, *Policy Watch: Infrastructure Investment & Economic Growth*, 6 J. EC. PERS. 189, 191 (1992).
[141] *Id*. at 196-97.
[142] Rocio Bustamante, Carlos Crespo, & Anne Marie Walnycki, *Seeing Through the Concept of Water as a Human Right in Bolivia*, *in* THE RIGHT TO WATER: POLITICS, GOVERNANCE AND SOCIAL STRUGGLES 223, 231-232 (Farhana Sultana & Alex Loftus eds., 2012) (noting the "well-documented Water Wars of Cochabama became the poster child and impetus for the international Anti-Privatiation and Right to Water Movement throughout the 2000s"); *see also* SALMAN & MCINERNEY-LANKFORD, *supra* note 15, at 72-73.
[143] *Murthy*, *supra* note 9, at 93 (referencing, for example, MAUDE BARLOW & TONY CLARK, BLUE GOLD: THE FIGHT TO STOP THE CORPORATE THEFT OF THE WORLD'S WATER xii (2002)).
[144] BARLOW, BLUE COVENANT 39-40.
[145] NORMAN MACLEAN, A RIVER RUNS THROUGH IT AND OTHER STORIES 1 (1976).

scholars suggest that a "growing number of national constitutions guarantee a right to water."[146] From a biological perspective, there is an absolute physical requirement for this natural resource. But it is more than just a resource, as humans have developed a cultural, religious, spiritual, and familial appreciation of water that permeates almost all notions of humanity.[147]

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 the source of debate in legal scholarship,[148] 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."[149] Thus, these early agreements did not explicitly recognize the human right to water.[150] 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.[151]

The following sub-sections examine various international developments that are of particular interest to principles of economic efficiency, as well as examples that suggest that the human right to water is evolving into a legal obligation that does in fact instill a justiciable duty on governments to provide access to this natural resource.

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

[147] The Bible contains many references to water, including Revelation 21:6, "To the thirsty I will give water without cost from the spring of the water of life." (New International Version translation). 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.

[148] *See, e.g.*, Amy Hardberger, *Life, Liberty, and the Pursuit of Water: Evaluating Water as a Human Right and the Duties and Obligations it Creates*, 4 NW U. J. INT'L HUM. RTS. 331, 347 (2005); Rhett B. Larson, *The New Right to Water*, 70 WASH. & LEE L. REV. 2181, 2181 (2013); SALMAN M. A. SALMAN & SIOBHAN MCINERNEY-LANKFORD, THE HUMAN RIGHT TO WATER: LEGAL AND POLICY DIMENSIONS 8–9 (2004); Peter Gleick, *The Human Right to Water*, 1 WATER POLICY 490 (1998).

[149] *See* Gleick, *Human Right to Water*, *supra* note 148, 490; *see also* Stephen C. McCaffrey, *A Human Right to Water: Domestic and International Implications*, 5 GEO. INT'L ENVTL. L. REV. 1 (1992-93). Among these early human rights conventions were the International Covenant on Economic, Social and Cultural Rights ("ICESCR").

[150] *See* Murthy, *supra* note 9, at 92.

[151] SALMAN M. A. SALMAN & SIOBHAN MCINERNEY-LANKFORD, THE HUMAN RIGHT TO WATER: LEGAL AND POLICY DIMENSIONS 8–9 (2004) (study prepared for The World Bank); United Nations Water Conference, Mar del Plata, Mar. 14-25, 1977, *Report of the United States Nations Water Conference*, U.N. Doc. E/CONF.70/29 (1977). Resolution II issued an Action Plan on "Community Water Supply," being the first of its kind to declare that "All 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 Resolution II (a), at 66. These principles were later affirmed at a U.N. Conference in 1992. United Nations Conference on Environment and Development, Rio de Janiero, Braz., June 3-14, 1992, *Agenda 21*, U.N. Doc. A/CONF.151/26 (1993).

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 (hereinafter, "Dublin Statement") further emphasized the economic value of water among its four Dublin Principles.[152] 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."[153] The Dublin Statement recognized that water had been historically undervalued from an economic perspective, and provided the 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.[154]

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."[155]

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.[156] IWRM is a holistic management approach that provides a framework to promote sustainable development, while also achieving optimal economic efficiency.[157] 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.[158]

These prevailing factors—both economic (opportunity) costs and social costs—suggesting that the Coase Thereom, as well as other economic efficiency analyses, may be particularly relevant within the arena of solving global water challenges. To further emphasize the relevance of the subsequent economic analyses in this Article, the Global Water Partnership provides the

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[152] International Conference on Water and the Environment, Dublin, Ireland, Jan. 26-31, 1992, *The Dublin Statement on Water and Sustainable Development* (June 1992) (hereinafter "*Dublin Statement*"); *see* Journal of Water SRT, Aqua, Vol. 41, No. 3, at 129; *see also* SALMAN & MCINERNEY-LANKFORD, *supra* note 15, at 9.

[153] *Dublin Statement*, *supra* note 9

[154] *Id.* The economic perspectives within the *Dublin Statement* initiated a controversy, which evolved into the water justice movement that opposed private-sector involvement in water services. The harsh criticism aimed at privatization regimes is discussed in more detail *infra*, at Section VI. *See, e.g.*, MAUDE BARLOW & TONY CLARK, BLUE GOLD: THE FIGHT TO STOP THE CORPORATE THEFT OF THE WORLD'S WATER (2002); MAUDE BARLOW, BLUE COVENANT: THE GLOBAL WATER CRISIS AND THE COMING BATTLE FOR THE RIGHT TO WATER (2007).

[155] Murthy, *supra* note 9, at 94.

[156] 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 NATURAL RESOURCES JOURNAL 307, 310 (2011).

[157] *See generally id.*

[158] *Id.* at 310-11.

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."[159]

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").[160] Legal scholars suggest that the General Comment was one of the "greatest victories to date or those seeking to establish water as a human right."[161] 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. Paragraph 2 of the General Comment provides the legal basis for the right:

> 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.[162]

This right to water is dependent on three normative factors—availability, quality, and accessibility.[163] The accessibility prong 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.[164] The General Comment also recognized the limitations of the financial resources for some countries, but nevertheless still provided that countries must take "deliberate, concrete, and targeted" steps towards guaranteeing this right for all individuals.[165] These substantive obligations, particularly the accessibility factor, create a foundation for establish the right to water as an enforceable obligation recognized by international law.

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[159] GLOBAL WATER PARTNERSHIP TECHNICAL ADVISORY COMMITTEE, INTEGRATED WATER RESOURCES MANAGEMENT 22 (Global Water Partnership Tech. Advisory Committee Background Paper No. 4, 2000). More recently, additional IWRM definitions were released after the 2009 World Water Forum and World Water Week. *See, e.g.*, INTEGRATED WATER MANAGEMENT IN PRACTICE: BETTER WATER MANAGEMENT FOR DEVELOPMENT (Roberto Lenton & Mike Muller eds., 2009).

[160] *See generally* General Comment No. 15, *supra* note 1. 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.* at ¶ 3. *See also*, Fabrizio Marrella, *On the Changing Structure of International Investment Law: The Human Right to Water and ICSID Arbitration*, 12 INT'L COMMUNITY L. REV. 335, 338 (2010).

[161] Amy Hardberger, *Life, Liberty, and the Pursuit of Water: Evaluating Water as a Human Right and the Duties and Obligations it Creates*, 4 NW U. J. INT'L HUM. RTS. 331, 347 (2005).

[162] General Comment No. 15, *supra* note 1, ¶ 2 (emphasis added).

[163] *Id.* at 1, ¶ 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).

[164] *Id.* at ¶ 17.

[165] *Id.*; *see also Salman & McInerney-Lankford*, *supra* note 15, at 65.

In consideration of the inadequate infrastructure encompassing the global water crisis, the General Comment defines accessibility: "Water and water facilities and services have to be accessible to *everyone* without discrimination, within the jurisdiction of the State party."[166] The Drafters of this provision undoubtedly knew of the deficient water distribution systems that are 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 to describe the accessibility factor. The "physical accessibility" dimension provides that the right extends "for all sections of the population," and accessible for "each household, educational institution and workplace."[167]

Private-sector participation is further implicated in the General Comment's provision on "General Legal Obligations." Paragraph 18 provides recognizes the practical funding challenges for this large-scale projects: "Realization 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."[168] 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. These include the obligations to respect, to protect, and to fulfil.[169]

The obligation to fulfil the right can be view as action-based, such that it obligates the government to take steps necessary to "*fulfill* the right by facilitating, promoting, and providing…" the accessibility of water to its citizens.[170] This includes adopting a national water strategy and ensuring that water is affordable for everyone. Paragraph 27 is most encouraging to potential investment opportunities because it explicitly references the role of third party actors. "Any 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 the socially disadvantaged groups."[171] The General Comment goes on to mandate that states adopt integrated and comprehensive management strategies. Among the various provisions, the suggestions to "increase the efficient use of water" and "reduce waste wastage in its distribution," are relevant to addressing the needs to repair or develop infrastructure.[172] In fact, the General Comment seemingly contemplates private-sector investment in other countries, explicitly mentioning "financial and

[166] General Comment No. 15, *supra* note 9, ¶ 12(c). Paragraph 37 proceeds to confirm the core obligations of General Comment No. 3 (1990), include the obligation: "To ensure the right of access to water and water facilities and services on a non-discriminatory basis." *Id.* at ¶ 37(c).
[167] *Id.* at ¶ 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.
[168] *Id.* at ¶ 18.
[169] *Id.* at ¶ 20.
[170] *Id.* ¶ 20-29.
[171] *Id.* ¶ 27.
[172] *Id.* ¶ 28(f)-(g).

technical assistance" as a means facilitate that country's ability to fulfil its obligation to provide the right to water.[173]

In order to ensure the accessibility of water, in terms of achieving economic efficiency, governments that cannot provide this right to its 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."[174] 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."[175]

Although a sense of optimism can be gleaned from the provisions that seemingly encourage private-sector participation, the General Comment addresses the inevitable bad actors that will undoubtedly be present among international third-party participants.[176] 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.[177]

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 an essential life source to primarily an economic good."[178] These concerns are reasonable because these negative externalities have been consequential (e.g., Cochabamba, Bolivia). However, as discussed *infra*,[179] the economic analysis from a country perspective offers alternative examples of ways to circumvent these transaction costs, as 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.

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[173] *Id.* at ¶ 34. "Depending on the availability of resources, States should facilitate 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." *Id.*

[174] *Id.* ¶ 41 (emphasis added).

[175] *Id.* ¶ 50.

[176] The General Comment refers to the private-sector as "third parties" throughout.

[177] SALMAN & MCINERNEY-LANKFORD, *supra* note 15, at 73; General Comment No.15, *supra* note 9, ¶ 24.

[178] Economic and Social Council, *Report of the High Commissioner for Human Rights* 26, COMMISSION ON HUMAN RIGHTS, ECONOMIC, SOCIAL AND CULTURAL RIGHTS—HUMAN RIGHTS, TRADE AND INVESTMENT (E/CN.4/Sub.2/2003/9, July 3, 2003); SALMAN & MCINERNEY-LANKFORD, *supra* note 15, 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.

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

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 "Comments are not binding *per se*, can only elucidate existing rights, and cannot create new rights or expand existing ones."[180] The General Comment remains important, eliciting controversy because some opponents felt that the Committee went too far in the creation of a new "right," whereas supporters believe it acknowledged an already existing or implied (customary) right.[181] Perhaps the law and economics analysis, augmented with innovative perspectives on economic efficiency, 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.[182] 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.[183] Meanwhile, 122 countries voted to adopt a resolution that "recognizes the right to safe and clean drinking water and sanitation as a human right."[184]

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.[185] 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."[186] Most interesting to future of global hydrocommerce, Resolution 15/9 also addressed the role of private-sector participation in providing access to water. 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."[187] This analysis suggests that going forward, countries are obligated not only to provide access to water, but to seek private-sector participation if government alone cannot provide the right.

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

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[180] Hardberger, *Life, Liberty, and Pursuit*, *supra* note 6, at 347-48.
[181] *See* Murthy, *supra* note 9, at 101.
[182] G.A. Res. 64/PV.108, *supra* note 5.
[183] Murthy, *supra* note 9, at 102-03.
[184] *See* G.A. Res. 64/PV.108, *supra* note 5.
[185] Human Rights Council Res. 15/9, U.N. Doc. A/HRC/RES 15/9 (Oct. 6, 2010) ("H.R.C. Res. 15/9").
[186] *Id.* at 2.
[187] *See* Murthy, *supra* note 9, at 104 (examining H.R.C. Res. 15/9 at 2).

accountability."[188] 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 contextualized understanding of the provisions of the ICESCR."[189] Is the right to water a justiciable obligation? International law does not require agreement for a country to be bound to that idea. 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 raises to the level of customary law.[190]

"The human right to water implies considerable state responsibility and action,"[191] thus implicating substantive obligations that may invite private-sector involvement—particularly in terms of availability, quality, and accessibility. The right to water is not a reality unless a government possesses both plans for implementation and financing.[192] 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.[193] 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: "Public 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."[194] The particular modalities of implementation will necessarily differ between countries, with regards to whether or not the infrastructure is available, as well as whether or not 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 the process of implementing the right to water by ensuring the availability of infrastructure to provide the requisite access to the resource, capital markets and securities may yield an increasingly prominent role.[195] Debt instruments, financed by bonds or other securities, afford various levels of government with the ability to construct the infrastructure necessary to implement the right to water. From a financial

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[188] H.R.C. Res. 15/9, *supra* note 185, at 3, Clause 7.
[189] SALMAN & MCINERNEY-LANKFORD, *supra* note 15, at 5.
[190] IAN BROWNLIE, PRINCIPLES OF PUBLIC INTERNATIONAL LAW 6 (6th ed. 2003).
[191] SALMAN & MCINERNEY-LANKFORD, *supra* note 15, at 65.
[192] Celine Dubreuil, THE RIGHT TO WATER: FROM CONCEPT TO IMPLEMENTATION, WORLD WATER COUNCIL 1-48, at 40 (2006), http://www.worldwatercouncil.org/fileadmin/wwc/Library/RightToWater_FinalText_Cover.pdf.
[193] *Id.* at 13.
[194] *Id.* at 14.
[195] *Capital Market Funding*, https://www.dbresearch.com/PROD/DBR_INTERNET_EN-PROD/PROD0000000000338741/Small_is_beautiful%3F_Capital_market_funding_for_sub.pdf.

perspective, this allows the governmental authorities to enter the capital markets in order 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.[196]

Most legal scholars agree that the human right to safe drinking water is acknowledged within the arena of international law.[197] However, the actual obligations can be understood as either provision rights or participation rights.[198] 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.[199] In comparison, a participation right mandates that the government is legally proscribed from interfering with a citizen's access to resources controlled by the state.[200] In many countries, the right to water is considered a provision right, which could have implications in terms of "enforceability, equity, and sustainability."

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.

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[196] General Comment No. 15, *supra* note 9, ¶ 60.
[197] *See, e.g.*, 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). Murthy suggests that "[w]hile 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.*
[198] *See* Larson, *supra* note 146, at 2181.
[199] *See id.* at 2209-2225.
[200] *See id.* at 2236-2245.

To further evaluate this allocation of resources within a law and economics context, let us consider 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. By doing so, the analyses 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 the 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 equilibria—through cognitive recognition and practical consideration of predominant features within the water services industry.

From a macro-level perspective, three principal parties have an interest in the water distribution industry within the hypothetical country of Rioland. First, governments have overarching interests with regards 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 or not the country benefits from the private-sector participation.

Next, and most importantly, we consider the citizens of Rioland. Two types of individuals exist throughout in this bargaining party: those individuals that currently have access to water and those 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.

Lastly, the final interested party to this bargain characterizes the water distribution and infrastructure sector. For the purposes of this analysis, presume 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.[201] 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. Presume that this private equity firm is the principal investor from the private-sector, with significant capital from its institutional investors. These particular 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 potential to experience growth and economic development throughout the industrial and agricultural sectors. In terms of this law and economics analysis, 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

[201] *See* ZETLAND *supra* note 20, 88-90 (discussing in detail, "that success and failure can happen at private or public firms, in developed and developing countries").

water. Many of the country's citizens can afford moderate prices for the delivery of water, while almost 20% of the citizens do not 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 scope of the Coase Theorem. 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, thus providing a framework that policy-makers could rely on within the global water industry. Thus, even if the Coase Thereom does not apply to this scenario, because of the voluminous transaction costs; the fact that each party ultimately benefits, suggests that the legal regime promoting the right to water exhibits an outcome that obtains an efficient equilibria and high Pareto optimal.

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 Thereom. The complex nature of the water industry, however, likely prevents transaction costs from ever being exactly zero. Other alternatives may not yield precisely zero transaction costs, yet there are opportunities to promote reasonable transaction costs that would otherwise be higher. From a law and economics perspective, 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 equilibria, through an application of the Coase Theorem to these circumstances—the law and economics analysis offers a practical framework to prompt lower transaction costs. Whether in Rioland or elsewhere, water distribution systems can generally be described as complex. 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 hydrocommerce are influenced by the presence of transaction costs. As real world governments embark to 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 derived from the creation of a bargain. It is difficult to dispute the fact 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.[202] 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).

For governments, the transaction costs in establishing private-sector participation in water distribution regimes are analogous to the well-documented transaction costs in water transfers.[203] Governmental institutions face a myriad of transaction costs in the transfer or delivery of water to its citizens. For instance, transaction costs 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.[204] 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.[205]

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 transaction costs and secure the property rights.[206] 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. Presume 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.[207] 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.

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[202] Coase, *Social Cost*, *supra* note 4, at 15-16.

[203] *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 64, at 117-120.

[204] *Id.*

[205] 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.

[206] 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.

[207] *See generally* HOLLY DOREMUS & DAN TARLOCK, WATER WAR IN THE KLAMATH BASIN195-96 (2008).

In times of water scarcity, another transaction costs 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, in order 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 the 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.

Private investors encounter transaction costs because water is often considered a public good, for which the government holds in trust for the people and ensure 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 in order 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 that private-sector participation should not be allowed. In reality, these same transaction costs still exist, either with or without private-sector participation. Thus, the applicability of the Coase Theorem remains limited—even without corporate involvement—because of the extensive transaction costs that pervade the water industry.

Perhaps a non-traditional approach to the Coasean analysis could help bridge the gap and expand the applicability of this law and economics tool. For example, this innovation could be used to 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 potential justifications for participation in certain regions could be evident.

If these transaction costs decrease with corporate involvement, then we should allow private-sector participation. As discussed previously, if the decision to encourage private-sector involvement actually decreases transaction costs over time, this would support their current participation. However, if these transaction costs remain present or even increase, then perhaps Maude Barlow and the "water justice" movement would have a stronger argument. In that case, because transaction costs would not be zero, 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 explicitly motivated by profit and the public-sector is explicitly motivated by the common good. First, 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. In reality, the narrative that compares the "bad" private-sector with the "good" public-sector cannot be appropriate 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."[208] 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 positive 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 true that encouraging private-sector participation in the delivery of the right to water will result in an efficient outcome. In Rioland, each party is ultimately made better, receiving immediate and long-term positive benefits. 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. In contrast, an alteration that leaves at least one person worse off is Pareto inferior, disregarding any beneficial effects to other parties. The Pareto efficiency continuum does not examine the benefits or detriments of various parties against each other as a direct comparison.[209] Thus, the following discussion will analyze and distinguish each party's outcome in and of themselves.

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."[210] The scenario is perhaps the most socially, morally, and

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[208] ZETLAND, *supra* note 20, at 23.

[209] Although the analysis provides separate analyses for countries, individuals, and private-investors, it's important to consider circumstances where efficiency cannot be achieved without the interactions of all parties involved. Each party plays a role in delivering this obligation, particularly in a way that does not harm, but actually enhances the efficiency of individuals (who previously lacked access), countries, and private-sector investors.

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

economically desired outcome.[211] By 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 limited the Coase Thereom's applicability under these circumstances, policy-makers can still benefit from seeking to stimulate an economic 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."[212] Based on this text alone, the positive externalities 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 the 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.[213] For individuals, water is directly related to all facets of life, and "the effective access of citizens to safe water and sanitation is crucial."[214]

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.[215] The linkage between economic poverty and the lack of water is well-established. Poverty is prevalent mostly in water-short areas. The majority of those who do not have sufficient drinking water and sanitation) are in the more impoverished regions of the developing world.[216]

The widespread implications of inadequate water supply and sanitation can have an enormous impact on the health of individuals. The implications of poor health and disease 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.[217] 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

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[211] *Id.*
[212] General Comment No. 15, *supra* note 9, ¶ 1.
[213] *See generally* Young, *supra* note 20, at 9-35.
[214] 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
[215] *See* Ward et al., *supra* note 72, at 177-180.
[216] SALMON & LANKFORD, *supra* note 15, at vii. *Foreword*, Robert Danino, Senior Vice President and General Counsel, THE WORLD BANK, July 30, 2004, at vii.
[217] *See generally* Young, *supra* note 20, at 9-11.

infections and diseases. In fact, after malaria and respiratory infections, diarrhea is the third highest cause of child mortality in West Africa.[218]

In the developing world, access to water may help limit the prevalence of certain gender inequality issues.[219] When individuals lack access to water, large amounts of income and time is dedicated to obtaining this basic necessity of life. This is particularly true in the case of women and children, who must devote time to carrying or carting the water from its source when the water is not available in the dwelling. This disparity is primarily inflicted upon the poorest of minorities. 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.[220] As a result, gender inequality issues become more entrenched, because this time-commitment erodes the capacity of women to engage in other meaningful activities, such as education or the pursuit of gainful employment.[221] For children, the responsibility to collect water means they have less opportunities to attend school, further decreasing their chances of escaping poverty.[222]

Taking the Rioland scenario into context, upon beginning construction on the water infrastructure project, the positive externalities for individuals will be vast. Even immediately, many citizens of Rioland will benefit from the opportunity to seek employment that is directly related to the project's development. The water project would create jobs for citizens of Rioland. In addition, Rioland citizens will benefit from the jobs that come with managing and maintaining the water infrastructure when construction is completed. Citizens will even benefit indirectly, as the country as a whole 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, among many others.

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,"[223] particularly given the resulting economic, social, environmental, and educational benefits, among many others. As the population of certain states

[218] *See* Young, *supra* note 20, at 9-11.
[219] Savitri Bisnath, *Macroeconomics and the Human Rights to Water and Sanitation, Meeting Report* at 10, CENTER FOR WOMEN'S GLOBAL LEADERSHIP (Mar. 31–Apr. 1, 2011).
[220] WHO/UNICEF, Progress on Sanitation and Drinking-Water: 2010 Updated (2010), *available at* www.who.int/water_sanitation_health/publications/97899241563956/en/index.html.
[221] Young, *supra* note 20, at 3.
[222] *Id* at 10.
[223] *Id* at 35.

continues to increase, water constraints and scarcity may negatively influence economic development, especially in geographic regions where water is traditionally scarce.[224]

From a national perspective, access to clean water and education are the most consistent predictors of economic progress.[225] 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."[226] The lack of water affects the well-being of individuals and their quality of life, which in turn affects the State as a whole. This lack of clean water, whether in quality or quantity, influences the State's poverty and inability to escape poverty,[227] food security, and the proliferation of disease. 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, for instance, 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. Upon embarking on a large-scale water infrastructure project, states can expect immediate and long-term benefits. In the initial stages, the creation of jobs may stimulate the economy. As a prerequisite for human life, the improved infrastructure will provide a more efficient distribution of water throughout the country. 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 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.[228] This suggests 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.[229]

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."[230] The costs incurred by governments to address water-borne diseases are

[224] HOFFMAN, *supra* note 100, at 9.
[225] *See generally* Ward et al., *supra* note 72.
[226] Young, *supra* note 20, at 35.
[227] According to resource economist Steve Hoffman, the "[l]ack of water does not cause poverty, but poverty virtually always includes a lack of water." HOFFMAN, *supra* note 100, at 9.
[228] *Id.* at 44-46.
[229] SEGERFELDT, *supra* note 70, at 2-4.
[230] PETER H. GLEICK, DIRTY WATER: ESTIMATED DEATHS FROM WATER-RELATED DISEASES 2000-2020, at 9 (2002), available at http://www.pacinst/org/wpcontent/uploads/2013/02/water_related_deaths_report3.pdf.

substantial, resulting from inadequate water sanitation services in places like Cambodia, Indonesia, the Philippines, and Vietnam, among others.[231] Because of inadequate water sanitation, these four countries lose a combined total of $9 billion (USD) annually, which is approximately two percent of their combined GDP (based on 2005 prices).[232] 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.[233]

As States pursue economic development, access to water will also have direct implications for women. Within developing countries in Africa, for example, women are often tasked with the daily chore of bringing water from the source to the residence.[234] Not only is this work strenuous, but it prevents women from pursuing education and careers. Within the realm of social rights, principles of gender equality will benefit by ensuring that citizens have access to an adequate quantity and quality of water.

By allowing private investments in the realm of water management efforts, countries may improve their water security regimes by addressing infrastructure concerns. Furthermore, scientists acknowledge a correlation between threats to biodiversity and ecosystems, with threats to water security.[235] When the threat to human water security is high, the threat to biodiversity is also high.[236] 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, consequentially, this water is not returned to the ecosystem. This global correlation suggests that there significant opportunities for governments to protect natural ecosystems and improve biodiversity outcomes by investing in water infrastructure projects.[237]

Some economists suggest that investments in public infrastructure can have significant effects that are positive for economic output and economic growth.[238] 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.[239] The GAP Project will consist of developments to 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 the economy in many ways, including employment for over a million people. According the Prime Minister of Turkey, the five main

[231] Within Indonesia alone, the annual economic impact of inadequate sanitation is approximately $6.3 billion (USD). Young, *supra* note 20, at 9.
[232] *Id.* at 1.
[233] *Id.* at 9-10.
[234] *Id.*
[235] *Id.* at 7.
[236] Vorosmarty, *supra* note 76, at 556-61.
[237] *See id.*
[238] *See generally* Munnell, *supra* note 140. at 196-97.
[239] Ali Unal, *Turkey Will Invest $10 Billion in Southeastern Anatolia Project*, DAILY SABAH, http://www.dailysabah.com/economy/2015/03/08/turkey-will-invest-10-billion-in-southeastern-anatolia-project.

pillars of the project include economic growth, social development, city planning, infrastructure development, and enhanced institutional capacity.

For developing countries, including Turkey, Rioland, and many others, building adequate infrastructure is dispositive factors in transforming the economy and accelerating social development. For Turkey, this project will not only reduce unemployment within the country, but will substantially raise the region's exports. "Macroeconomic policies affect the operation of the economy as a whole, shaping the availability and distribution of resources."[240]

There are obvious questions with regards to financing the capital-intensive projects in order 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. Citizens are then required to pay for any consumption beyond this amount.[241] 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.[242]

In Santiago, Chile, water vouchers are provided for families that fall below the poverty line in order to pay their water bills.[243] Although an 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, "The 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."[244] 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 as citizens will generally prefer to pay less. However, if governments can

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[240] *Macroeconomics and the Human Rights to Water and Sanitation*, Meeting Report at 7 (March 31 – April 1, 2011), written by Savitri Bisnath, Center for Women's Global Leadership. "Macroeconomic policy refers to fiscal (public revenue and public expenditure) and monetary *policieis (including policies on interest and exchange rates and the money supply), which impact* on the economy and living standards, including the levels of employing and growth and the prices and availability of basic social services, such as water and sanitation." *Id.*

[241] SALMAN & MCINERNEY-LANKFORD, *supra* note 15, at 71, n. 262, 298 (discussing *Manquele v. Durban Transitional Metropolitan*, Council Case, South Africa No. 2036/2000).

[242] SALMAN & MCINERNEY-LANKFORD, *supra* note 15, 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 to avoid discrimination in the supply of water).

[243] *Id.* at 72, n. 263.

[244] World Water Vision (Commission Report*), A Water Secure World: Vision for Water, Life, and the Environment* 36, WORLD WATER COUNCIL (2006).

have the foresight to see beyond this likely temporary negative externality during the interim; the long-term externality 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.[245] 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.[246]

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

For private-sector investors, the efficient outcome is most clearly identifiable of all the parties. As mentioned above, many corporations and investors will likely experience an abundance of profits from many facets of the water industry. Although wealth maximization is the primary outcome that makes this party better off—the fact private-investors are helping provide the human right to water may look good to shareholders, particularly as we enter an era of corporate sustainability. Numerous countries are currently failing to provide their citizens with access to water, as evidenced by the billions of people that lack accessibility to water and sanitation. Therefore, countries should be encouraged to seek private-sector participation in providing the right to water, a scenario that would make both parties better off.

Investors must contend with numerous 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 ration decision-making."[247] In emerging markets, as demand for water grows, 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. As private-sector continues to develop innovative ways to maximize wealth in global hydrocommerce, it is clear that this party, along with the others, are each made better off. Because all parties are each made better off, particularly the individuals, states, and private-sector, 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 equilibria.

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[245] Robert Glennon, *Water Scarcity, Marketing, and Privatization*, 83 TEX. L. REV. 1873, 1882 (2005).
[246] *Id.*
[247] 2030 Water Resources Group, *Charting Our Water Future: Economic Frameworks to Inform Decision-Making*, at 46-47 *in* INVESTING IN WATER FOR A GREEN ECONOMY: SERVICES, INFRASTRUCTURE, POLICIES, AND MANAGEMENT (eds. Mike D. Young and Christine Esau, 2013).

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.[248] Agreements between governments and investors from the private-sector, as explained above, are mutually beneficial to each party and 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 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 Thereom addressed property rights, rather than human rights, as in the right to water. Although this distinction has sparked debate, a thorough Coasean 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. In fact, Coase's analysis is similar because it relies upon a mosaic of rights among various parties "to carry out a circumscribed list of actions."[249] 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."[250]

Based on the Cosean premise that rights are not unlimited, although individuals have the right to access water, 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. Much like the aforementioned mosaic of rights—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. In terms of water markets, noted scholar Robert Glannon explains the relationship between rights and efficiency, "[a]n ability to transfer ownership creates an incentive to use property more productively. This is the core idea of markets. Owners of property access the 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

[248] *See* Friedman, *Swedes Get it Right*, supra note 46.
[249] R.H. Coase, *The Problem of Social Cost*, 3 J. LAW & ECON. 1, 44 (1960).
[250] *Id.*

the value added by the new use. In this process, both sellers and buyers make profits, and society benefits from increased efficiency."[251]

But what happens when governments cannot fulfill this obligation to deliver water and provide this basic necessity of life to its citizens? Within the current global water crisis, the more than two billion people that lack access to clean water are evidence to the contrary—that governments, in their sole capacity, are not equipped with the resources and capital necessary to deliver this obligation. As one commentator postulates, "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."[252]

These activists, however, who oppose corporate participation in the global water industry, also acknowledge this alarming statistic, but instead argue that the predominant externality behind governmental failure to provide clean water is because "they are burdened by their debt to the World Bank and the International Monetary Fund."[253] While this may be evident to a limited extent, the underlying reality remains the same: Governments are failing to fulfill their obligation to deliver water to its citizens. Based on this reality, it is here that the pragmatic argument in favor of private-sector involvement begins to flow cohesively within the economic currents of the Coasean Theorem. Perhaps a shift in baseline perspectives—very much akin to the "change of approach" suggested by Coase[254]—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 her book entitled *Blue Covenant*, water justice activist and author Maude Barlow elicits harsh criticism aimed at private-sector involvement in the human right to water. The general tone of Barlow's argument, although thorough and well-researched, disparages corporate participation in the global water regime. Although Barlow does not completely reject private-sector participation as an absolute,[255] the overarching sentiment is that the human right to water should be void of corporate investments. "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."[256] Instead, Barlow suggests that the better scenario, is one that "[o]nly governments, with their mandate to work in the public good, can operate on these principles."[257] Within a Coasean analysis context, the arguments against private-sector

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[251] Glennon, *Water Scarcity*, *supra* note 66, at 1887 (discussing the benefits of water permits and rights in California).

[252] SEGERFELDT, *supra* note 70, 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).

[253] BARLOW, BLUE COVENANT 159.

[254] Coase, *Social Cost*, *supra* note 4, at 42.

[255] 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.*

[256] *Id.* at 162.

[257] *Id.* at 162.

involvement in the right to water would seemingly "concentrate attention on particular deficiencies,"[258] 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."[259]

The alleged "deficiency," at least according to water justice activists, is that profit-driven corporations will inevitably disrupt the right to water.[260] But the reality, which water justice activists often overlook, is that many governments cannot fulfill their obligation to deliver this particular to human right to its citizens. In Coasean 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.[261] 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."[262] Legal scholars tend to agree, although indirectly, with the pragmatic undercurrents of the Coasean approach: "From a human rights perspective, the important question is not *whether* a private sector entity is involved in the delivery of services, but *how* the arrangement is structure, implemented, and monitored."[263]

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."[264] Nevertheless, Barlow's argument is not one that considers whether varying degrees of private-sector involvement could be acceptable—rather suggesting 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."[265] These water justice activists point to examples of failed private-sector participation in Cochabamba, Bolivia[266] and Kwazule-Natal, South Africa,[267] as reasons to suggest that water corporations "should be forced to leave poor countries."[268] Because this diverts attention to these unsuccessful examples, it is important to reconsider whether or not the failed ventures were necessarily the

[258] Coase, *Social Cost*, supra note 3, at 42.
[259] *Id.* at 42-43
[260] 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."
[261] *Id.*
[262] Coase, *Social Cost*, supra note 3, at 42.
[263] 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) (emphasis in original).
[264] *See* Coase, *Social Cost*, supra note 3, at 42-44.
[265] BARLOW, BLUE COVENANT 160.
[266] *See* Tanya Kapoor, Note, *Is Successful Water Privatization a Pipe Dream?: An Analysis of Three Global Case Studies*, 40 YALE J. INT'L L. 157, 163 (2015). *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).
[267] *See* Kapoor, *supra* note 266, at 171. *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 SERVICES 819 (2003).
[268] BARLOW, BLUE COVENANT 160.

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.

From a Coasean perspective, 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."[269] Rather than admonishing the potential effects of corporate participation as Barlow suggests, 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 Pigovian tradition that Coase demonstrated—because the policy conclusions of both Barlow and Pigou are "the result of not comparing the total product obtainable with alternative social arrangements."[270]

For example, Coase criticized the scenario in which zoning regulations would force smoke producing factories to be removed from areas where the smoke causes harmful effects. This Pigovian tax 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—a disastrous outcome that should be weighed against the random harm that could result from corporate involvement on occasion. As Coase suggests, 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 maximize the value of production."[271]

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. In light of recent developments in the human right to water arena, perhaps government should be encouraged to seek private-sector investors in order to successfully provide the 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.

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[269] R.H. Coase, *Economists and Public Policy*, in ESSAYS ON ECONOMICS AND ECONOMISTS 34, 62 (1994). (This article was originally published in Large Corporations in a Changing society (J. Fred Weston ed. 1975).)
[270] Coase, *Social Cost*, supra note 3, at 39-40.
[271] *Id.* at 42.