

JUDGES' REFLECTIONS FOR THE 8TH WORLD WATER FORUM

Introduction: Environmental Rule of Law and the Critical Role of Courts in Achieving Sustainable Water Resources

by Scott Fulton and Antonio Herman Benjamin

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This year's 8th World Water Forum in Brazil—the largest gathering on this subject, held every three years—will for the first time bring judges and prosecutors together with policymakers from around the world to discuss the precarious state of freshwater resources and the importance of rule of law in achieving water resource objectives. Recognizing this, the Environmental Law Institute (ELI), in collaboration with the Global Judicial Institute for the Environment (GJIE) and the International Union for Conservation of Nature (IUCN) World Commission on Environmental Law, is dedicating this section of this issue of the *Environmental Law Reporter* to marking the symbolic and reflective importance of the role of the judiciary in achieving water justice and ecological sustainability. The Comments we present here—all written by practicing senior judges—speak to the legal and scientific complexity involved in adjudication of water controversies in different jurisdictions, the criticality of rule of law in protecting and maintaining water resources, the central role of the courts in advancing environmental rule of law, and the approaches judges are taking in their effort to fulfill this role.

The concept of “environmental rule of law” draws its meaning from its precursor, the general concept of “rule of law,” which has been defined within the U.N. system as the “principle of governance in which all persons, institutions and entities, public and private, including the State

itself, are accountable to laws that are publicly promulgated, equally enforced and independently adjudicated, and which are consistent with international human rights norms and standards.”¹ This definition contains three related strands: the idea that law be consistent with fundamental rights; the notion that law be inclusively developed and fairly effectuated; and the importance of accountability not just on paper, but in practice, such that the law becomes operative through observance of or compliance with it. These strands are best seen as interdependent: when law is consistent with fundamental rights, and is inclusively promulgated and even-handedly implemented, then it will be respected by members of the affected community and observed in their actions and behaviors. Conversely, if the law is neither respected nor observed, then the societal values and objectives reflected in law will prove elusive.

Experience to date in the environmental setting permits a more granular understanding of the conditions necessary for formation of environmental rule of law, as reflected by the consensus declaration contained in the March 2013

Authors' Note: We want to thank Alejandra Rabasa, Director of ELI's Judicial Education Program, for conceptualizing and steering the process that led to this publication and for her contributions to this introductory piece.

1. Report of the Secretary-General, *The Rule of Law and Transitional Justice in Conflict and Post-Conflict Societies*, S/2004/616 (Aug. 23, 2004).

United Nations Environment Programme (UNEP) Governing Council Decision 27/9.² This decision recognized that for environmental rule of law to emerge, key “mutually supporting” governance features need to be in place, “including information disclosure, public participation, implementable and enforceable laws, and implementation and accountability mechanisms including coordination of roles as well as environmental auditing and criminal, civil and administrative enforcement with timely, impartial and independent dispute resolution.”³

Along the same lines, the 2016 IUCN World Declaration on the Environmental Rule of Law proclaimed that “[t]he environmental rule of law is understood as the legal framework of procedural and substantive rights and obligations that incorporates the principles of ecologically sustainable development in the rule of law. Strengthening the environmental rule of law is the key to the protection, conservation, and restoration of environmental integrity. Without it, environmental governance and the enforcement of rights and obligations may be arbitrary, subjective, and unpredictable.”

While all of the foregoing precepts are critical, there is none more important in advancing environmental rule of law than the role of the judiciary, and this is nowhere more on display than in the water context. Judges ensure that the law vindicates fundamental rights and the public interest pertaining to water resources, serve to safeguard procedural fairness and transparency in water resource decisionmaking, and hold to account those who violate legal obligations pertaining to water resources. Through their decisions, judges breathe life into the law. And because judges are among the most revered of public servants, judicial decisions and pronouncements can be deeply influential in a society’s progression toward sustainable use of water. What judges treat as important through their decisions, a society comes to judge as important.

And water is beyond important; it is essential. We are largely made of water, and life itself depends on it. Water is transcendent, at once both intensely local and, by virtue of hydrogeological connectivity, often regional or transnational in nature. In the best of circumstances, water is a fragile resource, easily degraded or depleted, and highly vulnerable to development undertaken without appropriate regard for water impacts.

But these are not the best of circumstances. Rapid economic development and continued population growth promise to increase pressure on already stressed water resources, and climate change will uniquely impact the distribution, accessibility, and quality of water resources. According to the International Panel on Climate Change (IPCC), climate change is projected to reduce water

resources in many regions, intensifying competition over water among diverse economic sectors and increasing social tensions and conflicts due to water scarcity.⁴ Indeed, many, if not most, forecasted climate calamities connect with water resources in some meaningful way.

In short, humanity is rapidly approaching a scenario where risks of irreversible, non-linear and abrupt environmental changes threaten catastrophic consequences to social and economic development.⁵ Degradation of water resources due, in particular, to pollution and over-exploitation of surface and underground water resources is already severely affecting biodiversity and ecosystem services and increasing the threats global warming poses to sustainable development.

In view of this, the focus being brought to the environmental rule of law and the role of the courts by the 2018 World Water Forum could not be more timely. In this publication, the judges who have generously participated as authors examine some of the most pressing challenges for the adjudication of water controversies cross-jurisdictionally, from Africa, to the European Union, Latin America, and the United States. From their contributions, a number of trends in judicial engagement and approach emerge, such as:

- **Judicial awareness.** As these Comments indicate, judicial sophistication in understanding environmental phenomena, such as the hydrologic cycle, hydrogeological connectivity, and climate change, is increasingly animating the judicial response to cases involving water resource impacts.
- **Adjudication models for integrated water resource management.** The Comments reflect an effort by courts to overcome the limits of the classical rules of jurisdiction, and to move toward adjudication models that are consistent with an integrated water resource management approach, an approach capable of delivering comprehensive solutions to address threats posed by pollution and overexploitation of hydric ecosystems due to fragmented sectoral policies and competing economic interests.
- **Deployment of new and emerging legal principles.** The authors suggest that in the face of environmental uncertainty and the complexity of the legal system itself—for example in the context of water resources in a changing climate—judges are increasingly deploying a strong precautionary decision making model, as reflected in principles like *in dubio pro natura* and *in dubio pro aqua*, and are also

2. UNEP/GC Dec. 27/9 (Dec. 13, 2015).

3. *Id.* at 5(a).

4. See Rajendra K. Pachauri et al., IPCC, Climate Change 2014: Synthesis Report (Rajendra K. Pachauri & Leo Meyer eds., 2014).

5. See Johan Rockström et al., *Planetary Boundaries: Exploring the Safe Operating Space for Humanity*, 14(2) *ECOLOGICAL & SOCIAL SCIENCE* 32 (2009).

reexamining property rights in view of a modern understanding of ecosystem services.

- **The human rights interface.** Finally, the Comments point to the growing convergence between environmental law and human rights law, as courts endeavor to give meaning to the idea of universal access to clean water,⁶ and reckon with the relationship between water rights and the enjoyment of all other

fundamental rights, including rights to an adequate standard of living and to a healthy environment.

We hope that this publication will advance understanding of the critical role of the judiciary in meeting the world's water justice and sustainability objectives, and facilitate the important discussions around these topics that will occur at the 8th World Water Forum.

6. See U.N. Sustainable Development Goal 6, under which the international community has committed to ensuring the availability and sustainable management of water and sanitation for all by 2030, <https://sustainabledevelopment.un.org/sdg6> (last visited Feb. 1, 2018).

Water Justice: The Case of Brazil

by Antonio Herman Benjamin

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Water¹ is directly linked to health, wealth, and the fertility and productivity of the land, and as such presents—simultaneously—ethical, economic, and political questions, as well as legal concerns. Conventional scientific wisdom posits that there is no life without water. This inextricable inseparability, a cliché even among laypersons, has indelibly marked the trajectory of humankind, so much so that “nearly every ancient society enjoyed close spiritual relationships with water.”² From the baptism of Jesus in the Jordan River to ritual Hindu bathing in the Ganges even today, the purifying gift and sacred nature of water have always expressed universal characteristics of both past and present cultures.³

Human life and dignity unquestionably occupy a central position in today’s legal systems. Logically, water—understood as an absolute necessity or the *sine qua non* of our very existence—should be accorded the same maximum priority by law. This intuitive step necessarily demands the inclusion of water among the fundamental values that guide human relations in both rural and urban areas.

In other words, just like life itself, water demands the greatest possible attention and care from all of us, but in a very special way from legislators, administrators, and judges. Notwithstanding this necessarily high priority for

water, the reality of legal and judicial treatment of water, viewed from a comparative law perspective, is still terribly inadequate and far from achieving this rational and self-evident expectation. Thus, one speaks of a “water crisis,” a global phenomenon marked by unbelievably dramatic episodes, extending far beyond the local-level tragedy of having to ration drinking water in large cities, such as São Paulo and Brasília.

Despite the gravity of hydrological degradation, there are signs that allow for a certain degree of optimism. One indication of change is the growing public awareness of the urgency of taking concrete measures—locally, nationally, and internationally—to protect freshwater resources through legal rules and institutions, though a sufficient level of political will may still be lacking for a truly effective move in this direction.⁴

Failings in the design and enforcement of regulatory frameworks must be included among the multifaceted causes of the enormous disconnect between, on the one hand, perceptions of the importance of water and, on the other, impactful public and private measures aimed at protecting it. Viewed in this light, today’s water crisis should be tackled simultaneously as a *legal crisis* and a *judicial crisis*, since our inability to respond to water injustice can be traced to serious deficiencies in the way the law and judges deal with this precious resource.

In most countries, legislation regulating water and its uses is not lacking. However, with discernible exceptions here and there, traditional legal regimes and case law in developing countries either fail to break away from old and outdated concepts and institutions—inherited from ancient agrarian societies, such as Roman law, or the later

Author’s Note: The author wishes to thank Profs. Nicholas S. Bryner, Denise Antolini, Owen McIntyre, and Stefano Burchi for their insightful comments and assistance.

1. This Comment is focused on freshwater. “Water” and “water resources” (or hydric resources) are used as synonyms, though this would not be entirely correct in technical terms, since “water is the natural element, unbonded to any specific use or utilization. It is the genre. Hydric resources are water as an economic good to be utilized precisely as such.” Cid Tomanik Pompeu, *Águas Doces no Direito Brasileiro*, in *ÁGUAS DOCES NO BRASIL: CAPITAL ECOLÓGICO, USO E CONSERVAÇÃO* 602 (Aldo Da C. Rebouças et al. eds., Escrituras 1999). Currently, the distinction is legally irrelevant, since law systems regulate—or should regulate—water in the broadest possible sense, even when there is no direct economic interest involved, for example, when it protects ecological flows or precious aquatic ecosystems per se.

2. BRIAN FAGAN, *ELIXIR: A HISTORY OF WATER AND HUMANKIND* 331 (2011).

3. AUDE FARINETTI, *LA PROTECTION JURIDIQUE DES COURS D’EAU: CONTRIBUTIONS À UNE RÉFLEXION SUR L’APPRÉHENSION DES OBJETS COMPLEXES* 31 (2012).

4. Weak or lack of enforcement is a major problem that globally affects the credibility of environmental and water laws. In his seminal article on the Brazilian pollution control system, Roger Findley correctly pointed out in 1988 that different circumstances can be blamed for the enforcement gap observed in developing countries like Brazil, but “the primary factor has been a lack of political will.” Roger W. Findley, *Pollution Control in Brazil*, 15 *ECOLOGY L.Q.* 30 (1988). Thirty years later, this is still an accurate assessment of the situation.

Industrial Revolution—or are insensitive to the peculiarities of water as a vital resource, instead dealing with it as nothing more than a simple accessory to or extension of the land. Either law regulates water without duly considering its central position as a critical component of ecosystems and biomes, or it treats it as something totally separate from other elements (e.g., forests) that, together with water, form the complex unit of the natural environment.

Even though water is linked to human rights today, it is not uncommon to find instances in which the law attributes greater value to private, rather than public, interests in the resource. Judges frequently legitimize personal and individualized water management decisions taken by the owner of land on which the resource happens to exist, with little or no reference to the collective human expectations of present and future generations and the needs of the broader community of life dependent upon water.

Even modern water legislation does not ensure the desired level of protection of this critical resource; without good compliance and enforcement mechanisms and institutions, including judges familiar with the environmental rule of law concept and its tenets, well-drafted statutes have no more value than the paper upon which they are written.

In summary, through law we have in general terms acknowledged certain ethical, religious, social, and principally economic attributes of water, coupled with the more recent inclusion of ecological concerns among these considerations. Yet we have moved in precisely the opposite direction, showing ourselves to be incapable of putting into practice those same norms and enforcement mechanisms to effectively ensure the quantity and quality of this natural resource for all.

The main proposition of this Comment, which focuses on the Brazilian experience⁵ and the jurisprudence of the National High Court of Brazil (STJ),⁶ is that we must develop what I have been calling in academic circles and judicial training programs a *water justice system*. To some extent, this would be a novel concept, aggregating not just traditional principles of water and environmental law, policy, and management—like the polluter-pays, user-pays, and precautionary principles—but one that would also embrace new and strengthen existing legal perspectives, such as recognition of the intrinsic public nature of water and the principle *in dubio pro aqua*. These principles must be coupled with the adoption of innovative enforcement mechanisms and institutions, which should include at their core the judiciary, and that are conformed by nature instead of attempting to conform nature. A good model is the Brazilian “watershed environmental public prosecutor.”⁷

5. On this topic, see also Antonio Herman Benjamin et al., *The Water Giant Awakens: An Overview of Water Law in Brazil*, 83 TEX. L. REV. 2185 (2005).

6. On the environmental jurisprudence of the STJ, see Nicholas S. Bryner, *Brazil's Green Court: Environmental Law in the Superior Tribunal de Justiça*, 29 PACE ENVTL. L. REV. 470 (2012); Nicholas S. Bryner, *Public Interests and Private Land: The Ecological Function of Property in Brazil*, 34 VA. ENVTL. L.J. 122 (2016).

7. In the mid-1990s, when I headed the Environmental Protection Division of the Office of the Attorney General of the State of São Paulo, I formally proposed the creation of what I then called the “office of the watershed

I. General Features of Water Law From a Comparative Perspective

Although legal protection of freshwater varies from one country to another and certain differences can be perceived between the common law and civil law systems, there are broad commonalities that can be easily identified.

First, in the past, one observes a normative phenomenon, namely that the greater the availability of freshwater resources, the less the concern with their comprehensive or effective regulation. It seems that legal protection and enforcement responded to considerations of water scarcity, in terms of both quantity and quality. Therefore, in more arid regions or countries, historical experience indicates that water regulatory frameworks tend to be more detailed and efficacious. There is little difference between this situation regarding water and other fields of law intervention in economic activities, in which neither the legislator nor the judge give due attention to resources considered infinite or abundant, since experience teaches the lesson that legal controversies arise out of natural or artificial shortages, one of the main origins of human conflicts.

In this context, the paucity or absence of judicial precedents in a particular jurisdiction can serve as a barometer capable of roughly indicating that water is not a legal issue at all, that laws and regulations do not address the question adequately or, equally serious, that the doors of the judiciary are closed or difficult to access for such claims. Implausible explanations are occasionally proffered to justify this condition of judicial neglect.

In 1909, for example, a respected and extremely conservative Brazilian legal scholar and federal judge, noting that the country's higher courts had very few precedents involving water, found this judicial lacuna to be a cause for celebration. He interpreted it as a positive sign of the lack of need or even the inconvenience of reforming legislation on this matter, as many proposed at the time, in spite of the clear gaps and inadequacies in the law inherited from the colonial period that granted wide-ranging powers to private owners. Unable to disguise his wariness of state intrusion in the then-prevailing status quo that he desired to preserve, he affirmed:

[T]here is no subject in Brazil in which jurisprudence has had less impact than that involving questions of water.

environmental public prosecutor,” an idea that faced internal resistance and did not gain immediate traction there. The concept, however, was later adopted by other states, beginning with Minas Gerais. In an article published in the *Brazilian Environmental Law Review*, I warned that the *raison d'être* of the suggested new model was the need for the various environmental public prosecutors scattered about the state to avoid fragmented judicial initiatives—in other words:

[A] myopic enforcement lacking a broad overview of the situation as a whole, when not devoid of real practical results. For example, one can imagine a public civil action targeted at combating the channeling of *in natura* domestic sewage directly into a waterway that flows through various municipalities, all of which contribute equally to the overall pollution.

See also Antonio Herman Benjamin, *Um Novo Modelo Para o Ministério Público na Proteção do Meio Ambiente*, 10 REVISTA DE DIREITO AMBIENTAL 7-13 (1998).

Rare, very rare are the decisions of the higher courts handed down on this subject. However, there is no country on earth that possesses such an abundance of rivers and waterways like ours. What does all of this mean therefore? The logical conclusion: a clear and certain sign that what has already been determined in our institutions is quite sufficient to regulate the facts.⁸

He then wrongly predicted that the existing legal framework could “meet our needs for an additional century into the future.”⁹

Second, water resources have always been divided—in the Western world, in a systematic way since the Romans—into at least two large groupings: one category of water bodies of interest to all (the Crown, the state, or the people as a whole), for example public rivers (particularly perennial bodies of water, due to their significance to navigation, public supply, and security); and another category that was subject to private ownership and appropriation for individual use, for example private rivers. Certain key aspects were relevant and repeated in the traditional legislative and jurisprudential vocabulary of existing legal models: whether a particular body of water was navigable or not, the perennial or temporary nature of the waterway, and public or private use.

With respect to Brazil, the paradigm that focused public (royal) utility principally on navigable and perennial waterways is stated in the “Philippine Ordinances” (*Ordenações Filipinas*), promulgated in 1595 by Philip II of Spain (Philip I of Portugal). These Ordinances went into effect only in areas under Portuguese dominion, beginning with their printing in 1603, at the orders of Philip III (Philip II of Portugal). They can be described as a wide-ranging legislation, a sort of general code of law, that, to a great extent, remained in effect in Brazil until adoption of the 1916 Civil Code and 1934 Water Code, at least insofar as water is concerned.

According to the Ordinances:

*[B]elonging to the Royal rights . . . are the navigable waterways and those from which are made the navigable ones, if they never cease to flow. And given that the use . . . of the rivers is common to all, and even to all animals, their proprietorship belongs to the Royal Patrimony.*¹⁰

This legal provision, which represented an extraordinarily wide-ranging royal appropriation of water (a clear break with Roman law tradition), was intensely criticized by legal scholars since it transferred to the domain of properties of the Crown not only the “navigable rivers” (criterion of navigability), but also included “those from which are made the navigable ones, if they never cease to flow” (criteria of flow and perennial nature).¹¹ In other words, the Crown

controlled the tributaries—with the greatest continuous discharge capacity—of navigable waterways.

The powerful reaction of private owners, coupled with an intense traffic of pleadings to the king of “frequent representations seeking to obtain the right to utilize . . . channel water, and similar services in order to benefit the land,” resulted in the issuing of the *alvará* (similar to a royal decree) of November 27, 1804.¹² This edict allowed occupation by private persons and construction of channels in order to benefit agriculture and industry, without prior royal concession and, it would appear, without paying any tax (*foro*) to the king.

With the new privatized approach, abuses of every sort multiplied, including on navigable rivers, with interventions that reduced their flow capacity (*caudal*)—all of this despite the *alvará* requiring that proprietors obtain “licenses for construction” of any “channel or dam to irrigate one’s land.” This prerequisite was probably not enforced, which shows how old and pervasive the problem of “paper law” is in Brazil. The permit was to be issued by a local officer of the Crown who was obligated to take into consideration the advice of “experts” or “intelligent persons” (§11). In certain situations, including projects like aqueducts in “the yards of urban buildings” (§12), an “express Resolution” signed by the king himself was still required. Therefore, the great innovation of the 1804 *alvará*, called the “golden law of Portuguese agriculture” (and also Brazilian, for that matter), was to loosen and, in some cases, abolish the system of royal ownership of waters, since their use no longer “required Royal concession.”¹³

Third, in most legal systems, water was governed with emphasis on its quality as an economic resource, an integral and accessory component of proprietorship of the land. Despite legislative and judicial recognition that “greater or lesser utilization” (water quantity) and “better or worse use” (water quality) were certainly a cause of concern to adjacent land owners, in most cases, the collective interests at large were ignored. Neighboring communities were reduced to the position of, at best, a distant spectator of an economic phenomenon that, in legal terms, had no more than a vague and remote relationship that never gained priority standing in the legal arena.

From another perspective, a rapid and superficial survey of the jurisprudence of both civil and common law countries shows similar results regarding the status of water—viewed exclusively or predominantly in economic terms, with little or no real concern, other than lip service, for its social, ecological, ethical, and religious implications.

The deplorable state of water, mainly in urban areas, has been denounced for decades and has, on occasion, provoked spasms of insufficient and fragmented legislative action. However, only when rivers in such highly polluted areas as industrialized regions became dead ecological

8. MANOEL IGNACIO CARVALHO DE MENDONÇA, RIOS E ÁGUAS CORRENTES EM SUAS RELAÇÕES JURÍDICAS, at VI (1909).

9. *Id.* at 183.

10. Ord. L. II, tit. XXVI, 8 (emphasis added).

11. *Id.*

12. Applicable to Brazil and “Overseas Dominions,” as per the terms of another *alvará* dated March 4, 1819, the promulgation of which was justified by “benefiting agriculture and the public cause.”

13. MÁRIO TAVARELA LOBO, MANUAL DO DIREITO DAS ÁGUAS Vol. 1, at 31-32 (2d ed. 1999).

zones and even caught fire—the Cuyahoga River in Ohio comes to mind—has the pressure of public opinion generated deep-rooted legal changes to the limited economic notion of water.

The excessively individualistic conception of water has also impacted enforcement arrangements. For private resources, it followed that only persons directly affected (normally, landowners)—and not the state (with exceptions, such as public nuisances), much less diffuse and distant communities—would or should have the necessary standing to sue for judicial protection. This narrow understanding of who is entitled to knock on the doors of justice was totally incompatible with the nature of the resource in question—a restriction particularly unwise given that one of the essential characteristics of water, similar to fauna, is its mobility. Today, it is located on one property; tomorrow, on another; and, within a short time, it will cross international borders¹⁴ or flow into the sea.

II. Modern Law Systems: Water as a Public Good and a Fundamental Human Right¹⁵

In the second half of the 20th century, legislators and judges began to view water as something more than a private commodity, awakening to the need to regulate it as an “atypical natural resource.”¹⁶ Legal systems started to acknowledge the strong *ecological interface* of water, and at the same time treated it differently in many aspects from other elements of the “environment,”¹⁷ a term that was itself unknown to constitutions, statutes, and the jurisprudence of the world until environmental law appeared in the 1960s as a new legal discipline.

The abyss between the law model of the *ancien régime* and this new holistic vision of water was evident. One of the old tenets, now considered indefensible, was the presumption that as long as the water-consumptive activity did not seriously and directly affect landowners who also made use of the watercourse, statutes and jurisprudence—with only rare exceptions—should be indifferent to the manner and

degree of appropriation. The law did not restrain, or was incapable of preventing, waste of every type or activities such as excessive impoundment that blocked currents and consequently the capacity of water to maintain biodiversity and ecological processes dependent upon it. To make things worse, occasionally, courts in countries like Brazil added that a person could not be prosecuted as a polluter if the water had already been polluted by others.

In response to evolution in ethical and legal perceptions—and public attitudes—over the past 50 years, major changes have taken place in law with regard to the status, ownership, management, allocation, distribution, and judicial protection of freshwater resources. There exists a noticeable worldwide trend toward broadening the regulation of water as a public resource, one vital to the community of life. At the same time, we are seeing a remarkable decline in models of management founded in theories that, closely or vaguely, borrow from the absolutely minority and mainly American (and in just a few states) system of rights of “priority” in the private use of water, an approach that grants legal recognition of water use to those who were the first to appropriate the resource (prior appropriation system).¹⁸ This evolution should come as no surprise, since “the greater the importance of a particular good to society, the greater will be the tendency to publicize it, with the objective of obtaining the protection of the State and the guarantee that all will have access to that good.”¹⁹

As already mentioned, the trend toward expanding the public domain over water was strongly resisted in Brazil prior to promulgation of the 1934 Water Code. Opponents claimed that “the intention of extending domain over the waters by issuing a generic measure is equivalent to expropriation of what even today was subject to the peaceful dominion of private parties. Nothing could be more repugnant; nothing could be less republican.”²⁰ They further raised the alarm that reformist legislators “have forgotten that they are altering the general principles that govern property, thus conflicting with our national habits and implementing fiscal socialism, a thousand times more dangerous than any type of despotism.”²¹

Outdated and nowadays minority rules of the type “first in time, first in right” or “the land is mine, therefore I do what I want with *my* water” directly conflict with more modern constitutional systems that attribute a *social function* and, more recently, an *ecological function* to any property right or ownership of natural resources (as seen

14. It is estimated that more than 300 river systems cross national boundaries and that 47% of the earth's surface is bathed by international river basins (MARQ DE VILLIERS, *WATER* 21, 81 (2000)).

15. A “fundamental human right,” but unfortunately still more in theory than in practice. As Owen McIntyre correctly states, “support for the human right to water can be found in a very wide and diverse range of legal instruments operating at both the international and national levels and covering a variety of areas of activity,” but its recognition “in national constitutional texts, national legislation and the pronouncements of national courts has often tended to be anything but unequivocal.” See Owen McIntyre, *The UNECE Water Convention and the Human Right to Access to Water: The Protocol on Water and Health*, in *THE UNECE CONVENTION ON THE PROTECTION AND USE OF TRANSBOUNDARY WATERCOURSES AND INTERNATIONAL LAKES* 352-53 (Attila Tanzi et al. eds., Brill Nijhoff 2015).

16. ANTOINE FRÉROT, *L'EAU: POUR UNE CULTURE DE LA RESPONSABILITÉ* 27 (2009).

17. “Water is a fundamental and inseparable component of the environment. It is a natural resource that, even when removed artificially from nature through human endeavor, tends to find its way back to the environment.” See UNITED NATIONS ENVIRONMENT PROGRAMME, *THE GREENING OF WATER LAW: MANAGING FRESHWATER RESOURCES FOR PEOPLE AND THE ENVIRONMENT* 9 (2010).

18. This is precisely the assessment made by Stefano Burchi, when he states that “Groundwater in particular, and riparian rights in surface watercourses and in groundwater, have been steadily attracted into the ever-expanding sphere of ‘public’ domain waters.” The author goes on to state that the variety of relevant legal constructs notwithstanding, “the result has been the same, i.e., to extricate a nation's water resources from the ownership or control of landowners, and to bring the resource and the relevant allocation under the scope of governmental authority.” See Stefano Burchi, *A Comparative Review of Contemporary Water Resources Legislation: Trends, Developments and an Agenda for Reform*, published in 37(6) *WATER INT'L* 613-27 (2012).

19. MARIA LUIZA MACHADO GRANZIERA, *DIREITO DAS ÁGUAS: DISCIPLINA JURÍDICA DAS ÁGUAS DOÇES* 81 (4th ed. 2014).

20. DE MENDONÇA, *supra* note 8, at VII.

21. *Id.* at 181.

in Bolivia, Brazil, Colombia, and Ecuador, among others). Specifically referring to water, Brazil's STJ held in 2016 that there can be no "vested right to occupation, regardless of when it is claimed, because, in legal and ethical terms, no one has or can legitimately have the right to kill others with thirst, no matter what pretext applies—housing crisis, adverse economic conditions, real estate speculation, or other productive uses that create jobs and generate income."²² In other words, as a general principle, water is so vital to humans that it cannot be a privilege of one or a few, a conclusion that serves as a departure point for its recognition as a fundamental human right that precludes most, if not all, other rights.

Aside from the growing acceptance of the public character of water—as private freshwater bodies become the exception or are simply eliminated (as in the case of the 1988 Brazilian Constitution)—the process of legislative reform includes a variety of fronts. In comparative law, one can cite several well-established and other still-evolving principles of water justice: the adoption of a strict and integrated system of administrative authorization for impounding and using water (water permits) that takes due account of its multiple uses; prioritizing human domestic consumption and the guarantee of ecological flows or minimum volumes of water; water rights trading; organization of water management—and of judicial intervention—by river basins or similar models; use of new legal and economic instruments, such as environmental impact assessment; protected water areas; payment for ecosystem services; and due regard for transparency, participation, and integrity in water management.

An additional manner in which current water legislation has shifted away from prior legal frameworks, as the STJ has had the opportunity to hold, is the "absence of any distinction between *navigable* and *non-navigable* rivers." In the new legal paradigm, "the *criterion of navigability* has been replaced by the criterion of *hydrological basin*, as an indicator of the State's direct interest in the river or lake."²³ As is well-known, the concept of navigability was central to water regulation of the past, and still plays a role in certain jurisdictions.

Brazil's water legislation can be considered modern and sophisticated. As already stressed, until promulgation of the 1934 Water Code, the subject of water was disciplined by the 1916 Civil Code and, before that, by the Philippine Code (Philippine Ordinances). The major concern of the Water Code—though certainly not the only one—was to make utilization of hydroelectricity feasible since this was considered essential to the nation's industrialization and a national priority that had garnered total government backing.²⁴ In 1988, when the period of military govern-

ment initiated in 1964 came to a close, a constitutional assembly promulgated a new constitution featuring several provisions specifically addressing water resources. Later on, in 1997, the Brazilian Congress approved the National Water Policy Act (Law 9433, Lei da Política Nacional de Recursos Hídricos)²⁵ and, in 2000, created the National Water Agency.

Although water quality has improved in several critical regions of the country, the greatest problem is still weak enforcement of legislation. Central provisions and instruments of the 1997 National Water Policy Act have been only partially implemented: for example, River Basin Committees and mechanisms for controlling the discharge of domestic and industrial effluents that have "killed" water bodies, making them veritable open-air sewers perpetuated by decades of omission and insufficient investments in sanitation systems.²⁶

In the world, Brazil is not alone in reforming its water law system. More than just embracing access to water as a human right, a major evolution in itself, countries have increasingly expanded, through legislation, the scope of judicial oversight, empowering judges to adjudicate water controversies in the context of complex ecological processes that are vital for the broader community of life.

III. Judges and Water

Judges operate within territorial boundaries defined by rules of jurisdiction. Consequently, the myopic way in which they view the question of water is understandable, particularly with respect to rivers. What arrives before the courts is often an incomplete picture, disconnected pieces of an enormous whole. In other words, ordinary water litigation rarely goes beyond a mere collection of totally insufficient facts or material attached to a particular situation, incapable of transmitting a global and coherent understanding of the hydrological system under judicial examination. Of course, this makes it difficult, if not impossible, to properly adjudicate these controversies, taking into account the ecological framework in which water and land are part of and function as a single body.²⁷

of the owners of private waterways"; see ALFREDO VALLADÃO, DIREITO DAS ÁGUAS VIII (1931).

22. REsp 1376199/SP, Rapporteur Justice Herman Benjamin, DJe 7/11/2016.

23. REsp 1184624/SP, Rapporteur Justice Herman Benjamin, DJe 4/2/2011.

24. The drafter of the 1934 Water Code made it very clear that the intention of the legislation was to make hydroelectricity feasible in Brazil. It was for this reason that water was called white coal (*bulha branca*) by him and others. Public ownership of the main sources of hydroelectricity was considered essential, one of the principal "measures required to overcome the egoism

25. According to the STJ, the National Water Policy Act (Law No. 9.433/97) has three main objectives: "preservation of water availability, both quantitatively and qualitatively, for present and future generations; sustainability, allowing only rational uses of water; and the protection of people and the environment from critical hydrological events—a charge that gains greater importance in an era of climate change." The STJ concludes by explaining that the National Water Policy rests on several fundamental pillars, including "the principle of public ownership (water, as the law expressly provides, is a public good), the principle of scarcity (water is a naturally limited resource) and the principle of decentralized and democratic management"; see REsp 994120/RS, Rapporteur Justice Herman Benjamin, DJe 27/4/2011.

26. Promulgated in 2007, the National Basic Sanitation Policy Act includes among its "fundamental principles": "water supply, sanitation systems, urban cleanup and management of solid residues *performed in manners suited to public health and environmental protection*" (art. 2, III).

27. Water cannot be legally or judicially treated separately from land and its uses, a perspective that is being taken in consideration by more recent legislation.

When deciding individual freshwater cases, very few judges have the legal or technical expertise required to absorb the highly intricate facets of the hydrology of those bodies of water. Sometimes, the judge cannot grasp a very subtle aspect of the science; other times, she may simply be unfamiliar with the upstream or downstream water basin of a river that crosses her jurisdiction. It is in no way surprising therefore that a judge may not understand the broader context of water pollution, let alone the cumulative effects of degradation and less-evident forms of abuse of the resource. Courts are normally called upon to react to incidents of point source pollution, ignoring the gravity of nonpoint source pollution, particularly in large-scale agricultural and livestock countries like Brazil.

Judicial disputes often arise not just among direct users of water (internal conflicts). Conflicts commonly occur between, on the one side, the present and future collectivity dependent upon and benefitting from the freshwater sources, and, on the other, equally constitutionalized and ethically legitimate holders of different social values (external conflicts). Housing, roads, energy, leisure, and, paradoxically, even sanitation infrastructure are some of the expectations of voters that at the same time have great potential to degrade or even destroy the hydrological network, particularly in major cities. Once again, judges are invited to decide on these controversies that raise immeasurable moral dilemmas and contain enormous political content.

In a civil suit against the state of São Paulo and a private company, the state environmental prosecutor claimed ecological restoration and damages caused to the watershed of the Guarapiranga Reservoir—which provides freshwater to the metropolitan region of the city of São Paulo—by the illegal construction of a building. Affirming the ruling of the state Supreme Court in respect to the order of demolition of the structure and other measures, but reversing it regarding the finding of no liability on the state itself, in spite of its lack of effective enforcement measures, the STJ held:

Any other interest, while legitimate—housing, commerce, industry, tourism, agriculture, mining—pales in comparison to the indispensable and irreplaceable nature of water, a precious resource that can be encountered only where it exists, unlike competing activities that are not only fungible but can, in theory, be located and exploited in various sites throughout the country. In metropolises, characterized by high population density, the value of water rises in the face of greater scarcity, which ravages cities in general, and is further aggravated by climate change. These resources are already insufficient to meet the needs of those *with water*, let alone those millions still *without*

water—the poor and the marginalized, excluded from a service so vital to the dignity of each human being.²⁸

In developing countries, the spaces occupied by sources of water for domestic use—increasingly scarcer in the rapidly deteriorating context caused by climatic change—are habitual victims of chaotic urban expansion. It is frequently an irreversible phenomenon that results in an ever-growing multiplicity of slums and informal housing constructions. People with nowhere else to go illegally appropriate those so-called “open” spaces, many of which are irreplaceable areas for the production and accumulation of freshwater. These irregular occupations cause destruction of native vegetation, often forests, and, simultaneously, pollution and reduction of water supply.

How should a judge respond to such conflicts? It is extremely difficult to choose between a “roof” for a few today—no matter how meager—and water, for millions, tomorrow. Precisely this issue came before the STJ in the context of a civil suit filed by the local environmental public prosecutor, pleading the necessity of removing illegal occupations from the banks of the Billings Reservoir, a key water source for São Paulo, one of the 10 most populous cities in the world.

The state Supreme Court, after noting that, in such cases, “[t]he facts do not show any irreversible damage, although remediation is costly,” ordered the defendants, including the city government,

to restore the area to its prior state, with complete reposition of the complex ecosystem in place, demolition of built structures, reclamation of the affected surface, regrowth of vegetation to cover the soil, de-sedimentation of streams, and other measures to be indicated in a technical report toward remedying the environmental damage.²⁹

In confirming the ruling, while recognizing that “[e]vidently, compliance with the court’s order will cause suffering to those affected by it,” the STJ stressed that the judicial intervention was necessary in order to avoid “greater suffering by a greater number of people in the future; this reality cannot be discounted.” The Court added:

This case is not simply a matter of re-planting a forest at the expense of needy families who, in the hope of obtaining a place to live with dignity, had likely been deceived by project developers. Rather, it is a question of preserving an urban reservoir that benefits a far greater number of people than those living in the environmental protected area. The public interest must prevail over private interests when there is no way to satisfactorily reconcile the two.³⁰

Other situations pose equally complex and hard choices to judges, because instead of challenging established legal theories and principles or old precedents, they involve instances in which legitimate social and political priori-

The connection between land and its uses, and the quality of water resources, both surface and underground, is readily apparent from the analysis of the regulatory approaches to the diffuse pollution of water resources The connection can be equally compelling in regard to water quantity management, and in relation to, in particular, flood control and the natural recharge of groundwater.

See Burchi, *supra* note 18, at 5.

28. REsp 1376199/SP, Rapporteur Justice Herman Benjamin, DJe 7/11/26.

29. REsp 403190/SP, Rapporteur Ministro João Otávio de Noronha, DJ 14/8/2006.

30. *Id.*

ties, including water, compete among themselves for the scarce financial resources of the state. This is what occurs in the absence or insufficient supply of basic sanitation in cities of the developing world. Faced with options that are essentially political in nature for the most part (more resources for some social demands and less, or even none at all, for others) courts, in water and sanitation litigation, are frequently placed in untenable situations. In other words, although judges may be aware of the problems, some tend to see themselves not in a position to give a satisfactory and meaningful solution out of concern of violating the constitutional principle of the separation of powers.

What judge is capable of simply ignoring the terribly degraded state of the waterways that ply their way through the cities in which he or she lives, marked by an often-unbearable stench and continuously contaminated by untreated domestic and industrial effluents? In spite of that and although no sophisticated technical examination is needed to confirm what everybody can see, feel, and know, the courts—above all in the overwhelming majority of countries in which their members are not elected—risk being considered powerless under constitutional rules that confine policy decisions to legislators and administrators.

Indeed, it is safe to say that there is not a single judge who is unaware that millions of people fall ill, suffer, and die as a consequence of diseases caused by the poor quality of the “drinkable” water that they consume and utilize. Jurisprudence is often permeated by an orthodox rationale—to the detriment of effective judicial protection of water and sanitation—that at the end of the day, the task of judges is to decide individual controversies involving water, not to replace the public authorities in charge of collective water management.

Here again, courts must find a point of equilibrium between *judicial water deference* to the administration and *judicial water indifference* to the fate and quality of this vital resource. I have absolutely no intention of preaching judicial activism, since there is no need for that in the water context in many jurisdictions. With the progressive incorporation of a holistic approach to the water protection into constitutional and other legislative norms, which explicitly and unmistakably set out precise rights and obligations, what we in fact have is *legislative water activism*, through legislated and mandatory public policies that *must* be applied by judges.

The STJ has, in a growing number of cases, been called on to resolve litigation on the lack of basic sanitation, particularly where riparian vegetation, rivers, or other water bodies have been contaminated or destroyed by direct discharge of untreated sewage. In one precedent, the Supreme Court of the state of Santa Catarina held that a large municipality’s twin failures—the refusal to build a sewage collection system in an irregular housing subdivision (which was constructed and expanded due to the lack of municipal enforcement), as well as its resistance to reclaim the Itaum River (degraded by illegal development in the area)—constituted “discretionary acts” of the

mayor, and, as such, were not subject to judicial scrutiny. The STJ reversed, based on a number of statutory provisions that protect water and riparian vegetation. The Court reasoned that because Article 225 of the Brazilian Constitution proclaims that the “right to an ecologically balanced environment is *essential* to a healthy quality of life,” this essentialness gives such an entitlement the status of a “fundamental right,” opening the door for judges to guarantee “maximum effectiveness” of the law in securing it.³¹

In the field of water, as in any other endeavor designed to protect human dignity and health by law, special care must be taken to ensure that administrative discretion, a concept recognized in all legal systems, does not lead to arbitrary and capricious practices and omissions, in true disregard for and violation of basic fundamental rights. According to the STJ, in a precedent related to the protection of health (but fully applicable to water),

[the] excuse of limited budgetary resources is often nothing more than a screen to hide administrative officials’ decisions to choose their own priorities instead of those established in the Constitution and by law—mandates that supersede personal interests in order to attend to society’s most urgent needs. Budgetary absurdities and aberrations, because they stretch and break the bounds of reasonableness and common sense, and go beyond legislated public policies, are fully reviewable by the Judiciary. Doing so does not infringe the proper discretion of public administrators, nor does it violate the principle of separation of powers.³²

The Constitutional Court of Brazil (STF) expressed a similar understanding when, for example, in 2012, it reversed a ruling from the Supreme Court of the state of Rio Grande do Sul, in a suit brought to compel a city government to provide basic sanitation. The state court had declared that, in addition to the right to a healthy environment, there are “innumerable other constitutionally guaranteed rights that remain unimplemented, and it is left solely to the government to decide how to proceed.” For a judge to suggest otherwise would compromise the “independence among Powers.”

Reversing the judgement, the STF ruled that, although the traditional function of the judiciary does not include “the responsibility to formulate and implement public policy,” judges may, in “exceptional” circumstances, carry out this task, “if and when the competent state bodies, for failing to fulfill binding political-legal responsibilities, have, through their actions, compromised the effectiveness and the integrity of individual and/or collective rights imbued with constitutional stature.”³³ In such circumstances, the STF held, in this and other, similar cases, that “judicial intervention, justified by arbitrary government refusal to give real meaning to the right to the environment, becomes

31. REsp 1150392/SC, Rapporteur Ministro Sérgio Kukina, DJe 20/9/2016.

32. REsp 1068731/RS, Rapporteur Justice Herman Benjamin, DJe 8/3/2012.

33. RE 796347 AgR/RS, Rapporteur Ministro Celso de Mello, 24/3/2015.

fully legitimate (without offending, therefore, the separation of powers).³⁴

Finally, one must add that very few judges are familiar with the basic aspects of water science and the hydrologic cycle. Confined within the limited boundaries of their jurisdictions, and typically not coming into the judicial role with scientific backgrounds, judges are technically and geographically poorly positioned to consider the question of integrated water management.

Consequently, the usual result in water cases is the absence of sensitivity to the destruction and degradation of small waterways and springs, particularly when there are much larger ones in the same area or jurisdiction. Yet, great rivers would not even exist were it not for their networks of innumerable tributaries. Thus, a judicial focus on the whole without noting the untold number of small but essential water components can be as erroneous as, alternatively, viewing those tiny but essential elements while losing sight of their direct connection to the survival of the main or bigger water system. In the same way, a lay tourist can visit the beautiful springs at the crest of the Andes and not understand how these fragmented and cold little wetlands, and uncountable numbers of ponds and narrow trickling streams, gradually come together thousands of kilometers downstream to form the world's mightiest river, the gigantic Amazon.

In a direct rejection of this distorted and incomplete understanding of hydrology, in 2009, the STJ reversed a ruling from the Federal Court of Appeals of the 4th Circuit (based in Porto Alegre, in the South of Brazil) and held that judges cannot permit the clearing of riparian forests “under the argument that they merely border a simple ‘rivulet.’” The Court concluded:

It would be nonsensical to take care of only the mightiest currents and the springs, leaving without any protection between them streams of smaller volume or flow. In Brazil, a legal guarantee is granted to the river basin and to the entirety of the riparian system, regardless of the flow of the watercourse. Rivers do not exist without springs and tributaries—even the smallest and narrowest, the width of which does not reduce their essential importance in maintaining the integrity of the whole system.³⁵

34. RE 796347 AgR/RS, Rapporteur Ministro Celso de Mello, 24/3/2015; similarly, in a precedent under the rapporteurship of Justice Marco Aurélio, the STF decided that it is perfectly “consistent with the legal order for the Office of the Attorney General to bring a public civil action seeking the proper treatment of sewage before it is discharged into the river” (RE 254.764/SP, DJe 21/2/11); In another case, with Justice Dias Toffoli as rapporteur, in which the Federal Office of the Attorney General brought a public civil action against the state of Rio de Janeiro and the state water company (CE-DAE), seeking to enjoin pollution by discharge of untreated sewage into the South Paraíba River, which supplies the city of Rio de Janeiro, the STF affirmed that “[t]he Judiciary, in exceptional circumstances, may order administrative agencies to adopt measures to ensure the enjoyment of constitutional rights deemed essential; doing so does not violate the principle of separation of powers” (RE 417.408/RJ-AgR, DJe 26/4/2012).

35. REsp 176.753/SC, Rapporteur Ministro Herman Benjamin, DJe 11/11/2009. The plaintiff, the Federal Office of the Attorney General, sued the Environmental Protection Agency of Brazil (IBAMA), the state of Santa Catarina Environmental Protect Agency, and the city of Joinville for illegally authorizing land clearing for construction of a sports facility.

Water law has advanced considerably since 1909 when Professor and Federal Judge Manoel Ignacio Carvalho de Mendonça, one of the first Brazilian legal scholars to write an in-depth analysis of water law, defended the position that, in Brazil, “a vast country, cut by innumerable powerful and flowing rivers, the small streams and waterways are obviously of little import.”³⁶ The 2009 STJ ruling exhibits the modern “hydrological holism” that gives cause for optimism about the future of water in courts.

IV. Conclusion: Toward Water Justice

Where does this evolution of legal concepts, objectives, principles, instruments, and institutions of water regimes lead us, particularly after the 1972 Stockholm Conference, which started our present international (and national) environmental law era? Is the global dialogue converging on a new unique, comprehensive, and integrated approach that one would call water justice?

Comparing the details of the legal structures of each country, differences and divergences will always exist, since the law—even when it responds to international influences and demands—cannot suddenly and entirely break away from its historic and local cultural foundations. Despite the diversity of national systems, water law, just as has occurred with environmental law, is flowing swiftly like rapid streams to form a large legal river and generating this all-encompassing concept that I call *water justice*.

What precisely is water justice? Some basic and general components of this new paradigm are already emerging. In the first place, at the most profound level of the very nature of the resource in question, it means a legal system where water is not viewed and legally characterized as a simple economic commodity, and for this reason emphasizes its public, intergenerational, and ecological nature (the holistic view).

Second, water justice attributes a paramount position to this resource in the broader legal system, based upon its absolute essentiality to the very existence of the human being and the planetary community of life.

Third comes acceptance—with all the consequent legal repercussions—of the fact that, although water is everywhere and even a prevalent element of our physiological body composition, and despite what jurists of the past imagined, “the world supply of freshwater is finite.”³⁷

Fourth, water is unequally distributed, thus demanding the pursuit of forms of water inclusion in the regulatory framework, so as to meet the specific needs of the water poor and vulnerable, whose livelihood and culture for some may depend directly on the resource, such as indigenous peoples and traditional communities.

Fifth, acceptance of the holistic character of water demands broadening of the mechanisms of access to justice, a road that has led jurisdictions into creative and even “legally heretical” solutions in order to overcome the vision

36. DE MENDONÇA, *supra* note 8, at 179.

37. FAGAN, *supra* note 2, at 341.

of water as a mere thing, including standing to sue, in their own name, for rivers and other ecological entities.

Sixth, both at the legislative and administrative levels, as well as in the framework of judicial remedies, water justice emphasizes preventive and precautionary mechanisms, with the addition of a new principle that I would term “*in dubio pro aqua*.”³⁸ This concept reverses the burden of proof of risks and, at the same time, works as a hermeneutic tool to be used by judges and administrators when interpreting and applying statutes and regulations.

Finally, water justice requires original formulas to replace the well-known geographic limitations of judicial jurisdiction, including institutional arrangements such as the establishment of watershed public prosecutors.

In conclusion, if it is true that law by itself will be unable to resolve the water crisis of our age, one cannot at the same time ignore the reality that, without law, no model of water protection will have sufficient credibility and stability to ensure the minimum degree of authority and compliance demanded for its success. Evidently, without judges—who

play the role of final arbiters of the entire edifice of water regulation and management—it becomes almost impossible to achieve genuine water justice.

In water law discourse and practice, the intergenerational damage caused by the blind application of outdated legal paradigms is outweighed only by judicial indifference, which arises mainly from ignorance of the central nature of water in all that concerns law, society, and the survival of humanity.

I would finish as I started, recalling that water is the foundation of life (the cliché), but also the pillar of civilization, war and peace, wealth and poverty, and, especially, justice and injustice. Water sustainability is a demand of present, but also of future generations, a category of law still looking for its proper place in jurisprudence. Instead of an obstacle requiring construction of physical and legal bridges over it, water should be treated by law and judges as a universal invitation to understand it as a liquid bridge capable of guaranteeing our human dignity and the existence of all living beings.

38. Referring to a similar concept, Principle 5 *In Dubio Pro Natura*, of the IUCN World Declaration on the Environmental Rule of Law states:

In cases of doubt, all matters before courts, administrative agencies, and other decision-makers shall be resolved in a way most likely to favour the protection and conservation of the environment, with preference to be given to alternatives that are least harmful to the environment. Actions shall not be undertaken when their potential adverse impacts on the environment are disproportionate or excessive in relation to the benefits derived therefrom.

The Conflict Over the Atuel River in Argentina

by Ricardo Lorenzetti

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I. The Atuel River: An Introduction to the Case

In a historic ruling¹ that began to shape the solution to a conflict that has been going on for more than 70 years, the Supreme Court of Argentina ordered in 2017 that the province of Mendoza, together with the province of La Pampa, should allocate the water flow of the Atuel River within 30 days in order to enable restoration of the ecosystem that was affected in the northwest of La Pampa by the Los Nihuiles dams. In the ruling, the Argentine high court ordered that the two provinces, together with the national government, submit a work plan for allocation of the waters of the Atuel River.² The court imposed a deadline of 120 days to submit the plan.

This conflict is old. At the beginning of the 20th century, the Atuel River's flow began to diminish due to the construction of private water works and dams, but in 1947, Mendoza started the construction of a dam that ended up drying out the northwest of La Pampa province. The waters of the Atuel River stopped reaching the Pampean towns of Santa Isabel and Algarroba del Águila. Therefore, a diaspora began and hundreds of settlers abandoned their towns, unlike the Mendoza department of General Alvear, which managed to continue developing. La Pampa began to depend economically on Mendoza.

The Supreme Court had already ruled in 1987 that the river was interprovincial. In addition, the ruling granted to Mendoza a quota for the irrigation of 72,000 hectares in southern Mendoza, in the areas of General Alvear and San Rafael, and exhorted it to enact measures to make this irrigation more efficient, such as leak-proofing, conduc-

tion, and execution of marginal channels. Thus, the surplus water for Mendoza resulting from the quota granted by the ruling would force the province to negotiate and to make "interprovincial agreements" in order to benefit La Pampa at the same time. La Pampa alleged that the ruling was never implemented, and initiated a lawsuit in 2014 for environmental and social damage. It demanded a continuous flow of five cubic meters per second to repair the environmental damage, an improvement of the efficiency of irrigation in Mendoza and leak-proofing of the riverbed, and the construction of a reservoir.

During public hearings that were held at the Supreme Court in 2017, La Pampa alleged that it was robbed of the Atuel River, which caused an environmental catastrophe, in addition to profound social, economic, and emotional damage suffered by the inhabitants in the western part of the province. Mendoza, on the other hand, arguing that it was not reasonable to ask the desert for water,³ stated that 97% of the territory was desert, and pointed out—in order to indicate its efficient use of water—that the Diamante, Mendoza, Tunuyán, and Atuel Rivers had a combined flow that was 1% of the Paraná River, South America's second-longest river.⁴ Mendoza accused La Pampa of only doing waterworks in the eastern part of the province.

1. Corte Suprema de Justicia de la Nación [CSJN] [National Supreme Court of Justice], 243/2014 (50-L), "Province of La Pampa vs Province of Mendoza on the Use of Water" (Arg.). See complete ruling in Spanish at <http://www.cij.gov.ar/nota-28698-Conflicto-Río-Atuel--la-Corte-orden--a-las-provincias-de-La-Pampa-y-Mendoza-la-presentación-de-un-programa-de-obras-con-la-participación-del-Estado-Nacional.html>.

2. The Atuel River rises in the Andes, fed by snow. In 1914, it had a route of almost 800 kilometers (km) and ended at the Colorado River after crossing La Pampa.

3. During the Public Hearing held at the Supreme Court of Argentina, after all the parties presented their grounds before the Tribunal, the Governor of Mendoza explained:

There are possibilities of agreement. Mendoza is always open to agreements. La Pampa has built a myth about a stolen river that harms the northwest of La Pampa, but they have done nothing to make that sector of their province not arid. They could have redirected the Colorado River or made a dam for the water that comes from the Atuel sporadically, and then distribute it.

In this context, he added, "It is not reasonable to ask the desert to deliver water." Prensa Gobierno de Mendoza, Cornejo: "No Es Razonable Pedirle al Desierto que Entregue Agua," MENDOZA GOBIERNO (June 14, 2017), <http://www.prensa.mendoza.gov.ar/cornejo-no-es-razonable-pedirle-al-desierto-que-entregue-agua/>.

4. The Paraná River rises on the plateau of southeast-central Brazil and flows generally south to the point where, after a course of 4,880 km, it joins the Uruguay River to form the extensive Río de la Plata estuary of the Atlantic Ocean.

According to the Supreme Court's latest decision, the program to be developed by the provinces with the national government should contemplate technical alternatives for the river's specific ecological characteristics, the costs of construction of the works, and its mode of distribution among the three governments. It must also anticipate the benefits of use, the needs of neighboring populations, the need to defend populations' access to drinking water, participation of the original communities located in the region, and productive economic activity. The decision implies a change in the management of the river. The Court required Mendoza, La Pampa, and the national government to reach an agreement to implement the plan and to finance works that mitigate desertification and improve the efficiency of the use of water.

Thus, the ruling aims to finally reach an agreement after decades of litigation. For that reason, it asks that the governments come to a consensus on the management of the Atuel River and the works necessary to regulate it. But the key is a requirement to guarantee a minimum flow of water that allows the environmental restoration of the La Pampa area, particularly Santa Isabel and its surroundings. The Court emphasized the environmental problems that communities face due to climate change. In this sense, it explained that the problem was not so much the "demand" for water that Mendoza and La Pampa might have, but that the supply would increasingly diminish.

The Court emphasized that it was necessary to change the confrontational approach taken by the two provinces to one of cooperation. In this context, it wrote, "[I]n the face of the existence of tensions in interjurisdictional relations, it is necessary to assume a conjunctive or cooperative perception, typical of a concerted federalism, that overcomes disjunctive or separatist approaches."⁵ The Court also made reaching an agreement mandatory, stating that in 120 days there must be a management plan and works to improve the management of and guarantee water from the Atuel River for the two provinces.

In the following parts, I will discuss each of the main elements of the 2017 decision: La Pampa's original lawsuit of 2014; the ruling competence of the Supreme Court of Argentina; its rejection of the defense of *res judicata* raised by Mendoza; the human right of access to drinking water; the fight against desertification; the integral vision of a water basin; and the establishment of the Lower Atuel Interprovincial Commission (CIAI) as a conflict resolution body. I conclude by reflecting on the importance of a paradigm shift in the management of shared water resources.

II. La Pampa's 2014 Lawsuit

In its lawsuit, La Pampa claimed that Mendoza violated the obligation to negotiate and observe in good faith the agreements to regulate the uses of the Atuel River. The province offered that the greatest proof of Mendoza's bad faith was the intentional delay in the consideration and the subsequent rejection by its legislature of the framework agreement of 2008, which provided for a plan of works to be carried out and financed by the two provinces and the national government. It requested that environmental damage be declared a consequence of the aforementioned noncompliance, and that its cessation and restoration of the environment be ordered. It also claimed that a minimum water flow to La Pampa territory must be established, taking into account the human right to water, and to harmonious and balanced growth among the provinces.

As mentioned in Part I, the Supreme Court ruled that these two provinces—jointly with the national government—must establish through the CIAI a program for the execution of measures to resolve the conflict over the river. The program must be submitted to the Supreme Court for approval within a period of 120 days. It must consider various technical alternatives in relation to the problem of the Atuel River, with any construction costs divided between the three governments. The program must also contemplate its benefits, the needs of the surrounding populations and access to drinking water, the participation of the original communities located in the region, and the sustainability of productive economic activity and of the ecosystem. The Court also ordered, in a precautionary manner, the establishment of a suitable water flow for the recomposition of the affected ecosystem in the northwest of La Pampa province.

III. Ruling Competence of the Court

The Supreme Court held that its intervention in the litigation is framed under Article 127 of Argentina's National Constitution, according to which the complaints of the provinces "must be submitted to the Supreme Court of Justice and settled by it."⁶ The Court emphasized the need to respect the principle of federal loyalty or good faith to advance the resolution of the conflict, according to which in the harmonious exercise of power, abuses must be avoided in order to reach cooperatively the functionality of the federal structure as a whole. In this context, the Court concluded that, in light of interjurisdictional tensions, it is necessary to assume a perception of a concerted federalism that goes beyond disjunctive or separatist approaches.

5. *Supra* note 1.

6. Art. 127, Constitución Nacional [Const. Nac.] (Arg.).

IV. Rejection of Res Judicata

The Court rejected the argument that this conflict was identical to the one resolved in 1987 between the two provinces, and therefore denied the defense of res judicata raised by Mendoza. In deciding this, it took into consideration that although in both cases there was a conflict over the use of the Atuel River, the issues submitted in this case were different from those described in the decision of December 3, 1987,⁷ because, over the years, the conflict began to involve aspects related to the integral vision of the environment that emanates from the environmental clause of Argentina's 1994 constitutional reform.

This distinction, explained the Court, "substantially changes the focus of the problem, whose solution should not only address the claims of the provincial states, since those affected are multiple and include a broad region."⁸ For this reason, the solution cannot be limited to solving the past issues, but rather, and fundamentally, must focus on future sustainability. The Court emphasized that the legal regulation of water has gone from an anthropocentric, purely ownership model, which was largely present in the conflict resolved by the 1987 ruling, to an ecocentric, systemic model.

V. The Human Right of Access to Drinking Water

The Court also emphasized that in the more recent conflict the human right to drinking water was a central consideration. It argued that access to drinking water directly affects the life and health of people, which is why it should be protected by judges and in the area of collective rights; therefore, it is essential to protect water so that nature maintains its functioning as a system and its capacity for regeneration and resilience. Both the United Nations and the Organization of American States have recognized the right to water with resolutions on The Human Right to Water and Sanitation⁹ and The Human Right to Safe Drinking Water and Sanitation,¹⁰ passed in 2010 and 2012, respectively. This declaration of a human right has been reiterated in numerous rulings of the Inter-American Court of Human Rights and at international and national conferences. In this case, the right to drinking water is specified in the right to a water flow that ensures environmental restoration.

VI. The Fight Against Desertification

The Court also considered desertification to be a relevant legal issue. It affirmed that the images viewed in the public hearing, and the showings of the parties in the case, clearly demonstrated the state of drought and desertification that characterizes the Pampean region in the Atuel Basin.

This proven fact, said the Court, has legal implications, since Argentina signed the United Nations Convention to Combat Desertification in Those Countries Experiencing Serious Drought and/or Desertification, Particularly in Africa,¹¹ adopted in Paris and ratified in Argentina by Law 24701. Under this convention, Argentina must prioritize combating desertification and mitigating the effects of drought, and also allocate sufficient resources to do so according to its abilities and circumstances.

The Court added that the fight against desertification includes focusing on the supply of water, not only on the demand for water. This means that it is necessary to identify possible sources of supply with a broader scope, covering the whole basin and the affected regions. This follows from Argentina's obligation to allocate resources to combat severe drought or desertification, with a vision that includes the entire basin.

VII. The Integral Vision of a Water Basin

The Atuel River Basin is an integral system, which is reflected in the close interdependence between the various parts of the watercourse. The Court highlighted the importance of addressing the conflict from that integral perspective. It explained that the solution of the case requires the adoption of measures referring to the basin in general and not limited to territorial jurisdictions, because environmental conflicts do not coincide with political or jurisdictional divisions. It stressed that the very concept of the water basin is one of unity, in which the hydrological cycle as a whole is understood, and linked to a particular territory and environment.

The Court's decision specified that the hydrological basin must be the focus of the basin organization's required action. Basins are physical areas within which the different uses and effects of water resources and other natural resources are naturally interdependent, and they therefore must be used and conserved in an integrated manner. Therefore, the river basin should be treated as a management unit, coordinated by a basin organization, as opposed to sector-by-sector management; in Argentina, this is reflected in Principle 17, "Integrated Water Resources Management," of the Federal Water Council's *Guiding Principles of Water Policy*.¹²

The Court emphasized that this vision is part of the evolution of the concept of watershed management: it has changed from an approach oriented basically to the capture of water to other more complex levels, such as the protection of natural resources and the mitigation of the effects of extreme natural phenomena, and to the improvement of production (agricultural, industrial, livestock, mining,

7. Province of La Pampa vs Province of Mendoza, Rulings 310:2478 (1987).

8. *Supra* note 1.

9. G.A. Res. 64/292, 64th Sess., U.N. Doc. A/RES/64/292 (July 28, 2010).

10. OAS, GA/RES 2760 (XLII-O/12) (June 5, 2012).

11. United Nations Convention to Combat Desertification in Those Countries Experiencing Serious Drought and/or Desertification, Particularly in Africa, Oct. 14, 1994, 33 I.L.M. 1328 (1994).

12. CONSEJO HÍDRICO FEDERAL, PRINCIPIOS RECTORES DE POLÍTICA HÍDRICA DE LA ARGENTINA (2003), available at <http://www.cohife.org/advf/documentos/2015/10/561b1c0da79ae.pdf>.

forestry) combined with the integrated management of the basin's natural resources.

VIII. The CIAI

The Supreme Court established that the program for the implementation of remedial measures must be prepared within the framework of the CIAI, on the understanding that it is an organ created by the interested provinces themselves, precisely to respond to the conflict. To ensure that this objective is met, the Court specified that the provinces and the national government must provide the necessary resources to institutionally strengthen the CIAI.

The Court emphasized that the CIAI is the body formally constituted by the parties for the purpose of carrying out negotiations aimed at achieving an understanding regarding the use of the waters of the Atuel River, within the framework of a federalism of coordination (rather than federalism of opposition) to overcome conflicts between member states of a single nation.

IX. Conclusion

The Supreme Court's new ruling highlighted that this conflict between the two provinces was different from the one the Court resolved in 1987, and held that it must be resolved based on a concerted federalism that overcomes separatist approaches. It said that the case, in its current form, involved an environmental problem; that there was a right to water that must overcome the ownership model to be systemic and ecocentric. It found that access to drinking water directly affects the life and health of people, and

that its protection is essential for nature to maintain its functioning as a system and its regenerative capacity and resilience. It also affirmed that the fight against desertification includes focusing on the supply of water, not only on the demand for water.

For these reasons, the Court ordered the two provinces, with the participation of the national government, to submit a plan that includes the allocation of their costs, within the scope of the CIAI. The parties were also ordered to set a water flow suitable for the recomposition of the affected ecosystem in the northwest of La Pampa province. The Court emphasized the need to address the Atuel conflict from a perspective of unity—as a water basin—given that natural resources are interdependent and must be cared for in an integrated manner.

Once this decision was reached, the governors of both provinces sent formal requests for a meeting with the national government to discuss the conflict and to begin formulating the joint and cooperative mechanisms ordered by the Court. The Court's judgment overcomes historical differences and necessitates everyone in the conflict to compromise and negotiate. The Court ordered the parties to reconcile with guidelines benefiting a system in which the provinces and the nation are directly involved.

In short, there are no winners or losers in this case. The Court's ruling is about a debate on environmental approaches. There is no one owner of the environment; the environment is the responsibility of everyone. Further, the decision of the Court raised awareness about the need for a paradigm shift around the use of water, in Argentina and worldwide.

Is Integrated Water Management on Track in the European Union?

by Luc Lavrysen

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I. Water Legislation in the European Union

In the 1960s and 1970s, more than one European Union (EU) Member State developed a patchwork of water-related legislation. Most of the time, separate legislation on the protection of surface waters against pollution, the protection of groundwater, or the management of public water courses was introduced.¹ For example, in Belgium after the Water Pollution Protection Act of 1950,² which was not successful due to lack of implementation by the local authorities in charge of it, a new Act on the Protection of Surface Water Against Pollution was enacted in 1971.³ In the same year, an Act on the Protection of Groundwater was promulgated,⁴ while an Act on the Management of Non-Navigable Waters had been enacted in 1967.⁵ In addition, different pieces of legislation dealt with some aspects of the management of navigable water courses.

On the EU level too, a piecemeal body of water legislation has been developed since the mid-1970s. Environmental quality standards for some categories of surface waters were introduced by Directive 75/440/EEC of 16 June 1975 concerning the quality required of surface water intended for the abstraction of drinking water in the Member States, Directive 76/160/EEC of 8 December 1975 concerning the quality of bathing water, Directive 78/659/EEC of 18 July 1978 on the quality of freshwaters needing protection or improvement in order to support fish life, and Directive

79/923/EEC of 30 October 1979 on the quality required of shellfish waters.⁶

Notable was Directive 76/464/EEC of 4 May 1976 on pollution caused by certain dangerous substances discharged into the aquatic environment, and its “daughter directives” containing environmental quality standards and limit values for the discharge of certain blacklisted substances such as mercury, cadmium, hexachlorocyclohexane, DDT, asbestos, and others. The Directive sought to phase out the pollution of surface waters by blacklisted substances and reduce the pollution from grey-listed substances, based on the use of best available techniques. A somewhat similar Directive to protect groundwater against pollution, Directive 80/68/EEC of 17 December 1979 on the protection of groundwater against pollution caused by certain dangerous substances, was adopted a few years later.

Very important for the collection, treatment, and discharge of urban wastewater has been Directive 91/271/EEC of 21 May 1991 concerning urban wastewater treatment, which has led to huge investments all over the EU in wastewater collection and treatment systems. Directive 91/676/EEC of 12 December 1991 concerning the protection of waters against pollution caused by nitrates from agricultural sources aims to reduce water pollution caused or induced by nitrates from agricultural sources and to further prevent such pollution.⁷

These policies have been, on the whole, successful. In Belgium, the percentage of households connected to water treatment plants increased from nearly 0% in the early 1970s to around 60% in 2000. Emissions of polluting substances by industry fell between 35% and 97%, depending on the parameter concerned, toward the end of the century. The different quality indexes of surface waters showed

1. JAN C. BONGAERTS & R. ANDREAS KRAEMER, INTERNATIONAL INSTITUTE FOR ENVIRONMENT AND SOCIETY, IIUG DP 86-5, WATER POLLUTION CONTROL POLICIES: A COMPARISON OF FRANCE, WEST GERMANY, AND THE NETHERLANDS (1986).

2. Wet van 11 maart 1950 op de bescherming van de oppervlaktewateren, *Belgisch Staatsblad* 27 April 1950.

3. Wet van 26 maart 1971 op de bescherming van de oppervlaktewateren tegen verontreiniging, *Belgisch Staatsblad* 1 May 1971; <http://www.ejustice.just.fgov.be/eli/wet/1971/03/26/1971B32613/justel>.

4. Wet van 26 maart 1971 op de bescherming van het grondwater, *Belgisch Staatsblad* 1 May 1971.

5. Wet van 28 december 1967 betreffende de onbevaarbare waterlopen, *Belgisch Staatsblad* 5 January 1968; <http://www.ejustice.just.fgov.be/eli/wet/1967/12/28/1967122850/justel>.

6. Olivia O. Green et al., *EU Water Governance: Striking the Right Balance Between Regulatory Flexibility and Enforcement*, 18 *ECOLOGY & SOC'Y* 10 (2013); Pascale Kromarek, *La Protection des Eaux Douces en Droit Communautaire*, in *MILIEURECHT: RECENTE ONTWIKKELINGEN DEEL 1—DROIT DE L'ENVIRONNEMENT: DÉVELOPPEMENTS RÉCENTS VOLUME 1*, at 17-35 (H. Bocken ed., Story-Scientia 1988).

7. Luc Lavrysen, *De Europese wetgeving op bescherming van de oppervlaktewateren*, *TJDSCHRIFT VOOR MILIEURECHT*, 1992, at 2-12.

a reduction of the proportion of surface waters that were heavily polluted or of very poor biological quality, while the proportion of waters of good or acceptable quality had noticeably increased. Investment in public wastewater treatment was considerable, especially in the last decade of the 20th century.⁸

River water quality across Europe generally improved in the period from enactment of the first pieces of EU water law until the turn of the century. In northwest Europe, around 90% of the population was at that moment connected to sewer and treatment systems, and between 50% and 80% in the southern Member States, while in the new Member States, the average was less than 60%. Most industries also had their effluent discharges connected to sewerage systems or had their own treatment plant. Many EU Member States were, however, not able to meet all the deadlines of the Urban Waste Water Treatment Directive. Despite the gaps in compliance, the Directive made substantial reductions in point sources of pollution to rivers, sometimes by as much as 90%. Most rivers had improved across Europe, particularly those in once badly polluted urban and industrial areas, where point sources of pollution predominated, and where cleanup investment had been concentrated.

Discharges of a wide range of trace amounts of hazardous substances into the aquatic environment have been in decline, thanks to a range of EU environmental measures, some related to water and some more general in scope. For instance, large quantities of hazardous substances reaching the Baltic Sea had fallen by at least 50% since the late 1980s. More than 50% of environmental investment has related to water pollution control. Direct legislative action to reduce certain widely used pollutants in consumer products has been shown to be highly cost-effective, such as the more than 50% reduction of phosphorus in household detergents.⁹

II. A New Umbrella Approach: Integrated Water Management

Pressure for a fundamental rethink of EU water policy came to a head in mid-1995. The European Commission, which had already been considering the need for a more global approach to water policy, accepted requests from the European Parliament's Committee on the Environment and from the Environment Council of environment ministers to fundamentally review water policies. While the EU actions of the past could duly be considered milestones, European water policy had to address the increasing awareness of citizens and other stakeholders about their water. At

the same time, water policy and water management had to address problems in a more coherent way.

A Commission Communication was formally addressed to the Council and the European Parliament, but at the same time invited comment from all interested parties, such as local and regional authorities, water users, and non-governmental organizations. A score of organizations and individuals responded in writing, most of the comments welcoming the broad outline given by the Commission.¹⁰ The outcome of this consultation process was a widespread consensus that, while considerable progress had been made in tackling individual issues, water policy was fragmented, both in terms of objectives and of means. All parties agreed on the need for a single piece of framework legislation to resolve these problems.

In response, the European Commission presented in 1997 the Proposal for a Water Framework Directive, which resulted three years later in Directive 2000/60/EC of the European Parliament and of the Council of 23 October 2000 establishing a framework for Community action in the field of water policy, better known as the EU Water Framework Directive, or WFD.¹¹ The Directive has been amended a few times since.¹²

Article 1 of the WFD reads:

The purpose of this Directive is to establish a framework for the protection of inland surface waters, transitional waters, coastal waters and groundwater which:

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10. European Commission, *Introduction to the New EU Water Framework Directive*, http://ec.europa.eu/environment/water/water-framework/info/intro_en.htm (last updated June 8, 2016); PETER CHAVE, *THE EU WATER FRAMEWORK DIRECTIVE: AN INTRODUCTION* (2001); Andrea M. Keessen et al., *Transboundary River Basin Management in Europe: Legal Instruments to Comply With European Water Management Obligations in Case of Transboundary Water Pollution and Floods*, 4 *UTRECHT L. REV.* 35-56 (2008).
 11. David Grimeaud, *Reforming EU Water Law: Towards Sustainability?*, 10 *EUR. ENVTL. L. REV.* 41-51 (2001); LA DIRECTIVE 2000/60/CE DU 23 OCTOBRE 2000 ÉTABLISSANT UN CADRE POUR UNE POLITIQUE COMMUNAUTAIRE DANS LE DOMAINE DE L'EAU—DE RICHTLIJN 2000/60/EG VAN 23 OKTOBER 2000 TOT VASTSTELLING VAN EEN KADER VOOR COMMUNAUTAIRE MAATREGELEN BETREFFENDE HET WATERBELEID—DIRECTIVE 2000/60/EC OF 23 OCTOBER 2000 ESTABLISHING A FRAMEWORK FOR COMMUNITY ACTION IN THE FIELD OF WATER POLICY (Jean-François Neufay ed., Bruylant 2005); Peter De Smedt & Marleen van Rijswijk, *Nature Conservation and Water Management: One Battle?*, in *THE HABITATS DIRECTIVE IN ITS EU ENVIRONMENTAL LAW CONTEXT: EUROPEAN NATURE'S BEST HOPE?* 417-33 (Charles-Hubert Born et al. eds., Routledge 2015); Giuseppe Sgorbati & Nicoletta Dotti, *Perspectives and Actions to Improve Water Quality in European Union Member States*, *ELNI REV.* 10-16 (2015). Nearly one-half of the Member States have been found by the Court of Justice of the European Union (CJEU) to be in breach of the obligation to transpose and implement the Directive at the latest on December 22, 2003: Case C-648/13, *Commission v. Poland* (2016); Case C-151/12, *Commission v. Spain* (2013); Case C-118/05, *Commission v. Portugal* (2006); Case C-85/05, *Commission v. Italy* (2006); Case C-67/05, *Commission v. Germany* (2005); Case C-33/05, *Commission v. Belgium* (2015); and Case C-32/05, *Commission v. Luxembourg* (2006).
 12. A consolidated version of the Directive is available at <http://eur-lex.europa.eu/legal-content/EN/TXT/HTML/?uri=CELEX:02000L0060-20141120&rid=1> (last visited Jan. 11, 2018).

8. MIRA-T 1999—MILIEU-EN NATUURRAPPORT VLAANDEREN: THEMA'S 313-31 (Veerle Vandeweerd ed., VMM 1999).

9. EUROPEAN ENVIRONMENT AGENCY, *THE EUROPEAN ENVIRONMENT: STATE AND OUTLOOK 2005*, at 120-28, 328-54 (2005).

(a) *prevents further deterioration and protects and enhances the status of aquatic ecosystems* and, with regard to their water needs, terrestrial ecosystems and wetlands directly depending on the aquatic ecosystems;

(b) promotes *sustainable water use* based on a long-term protection of available water resources;

(c) aims at *enhanced protection and improvement of the aquatic environment*, inter alia, through specific measures for the progressive reduction of discharges, emissions and losses of priority substances and the cessation or phasing-out of discharges, emissions and losses of the priority hazardous substances;

(d) ensures the *progressive reduction of pollution of groundwater* and prevents its further pollution, and

(e) contributes to *mitigating the effects of floods and droughts*

and thereby contributes to:

- the provision of sufficient supply of good quality surface water and groundwater as needed for sustainable, balanced and equitable water use,

- a significant reduction in pollution of groundwater,

- the protection of territorial and marine waters, and

- achieving the objectives of relevant international agreements, including those which aim to prevent and eliminate pollution of the marine environment, by [EU] action to cease or phase out discharges, emissions and losses of priority hazardous substances, with the ultimate aim of achieving concentrations in the marine environment near background values for naturally occurring substances and close to zero for man-made synthetic substances.¹³

III. River Basin Management

The Directive requires EU Member States to develop management by river basin, the natural geographical and hydrological unit, instead of according to administrative or political boundaries. For each river basin district¹⁴—some of which cross national borders—a “river basin management plan” (RBMP) must be established and updated every six years, and this will provide the context for the coordination requirements of the riparian authorities.¹⁵

13. WFD art. 1 (emphasis added).

14. Small river basins may be combined with larger river basins or joined with neighboring small basins to form individual river basin districts where appropriate. Where groundwater does not fully follow a particular river basin, it shall be identified and assigned to the nearest or most appropriate river basin district. Coastal waters shall be identified and assigned to the nearest or most appropriate river basin district or districts (WFD art. 3(1)).

15. Member States shall ensure that the requirements of the Directive for the achievement of the environmental objectives established under Article 4,

By removing jurisdictional barriers, integrated river basin management emphasizes coordination across borders, and if fully implemented, strong horizontal and vertical information flows.¹⁶ The core of the RBMPs consists of “programs of measures” (PoMs).¹⁷

There are a number of environmental objectives for protection of water quality.¹⁸ A general requirement for ecological protection and a general minimum chemical standard were introduced to cover all surface waters, known as “good ecological status” and “good chemical status,” respectively. Good ecological status is defined in Annex V of the WFD in terms of the quality of the biological community, the hydrological characteristics, and the chemical characteristics. Good chemical status is defined in terms of compliance with all the quality standards established for chemical substances at the European level.

Those objectives should have been attained 15 years after the publication of the Directive, namely on December 22, 2015, but extensions of this deadline can be obtained under certain conditions. The Directive also provides a mechanism for renewing these standards and establishing new ones by means of a prioritization mechanism for hazardous chemicals during the second and third six-year cycle. The other uses or objectives for which water is protected apply in specific areas. Therefore, the RBMPs should designate specific protection zones within the river basin that must meet these different objectives.¹⁹

A. RBMPs

The RBMP is a detailed account of how the objectives set for the river basin (ecological status, quantitative status, chemical status, and protected area objectives) are to be reached within the timescale required.²⁰ The plan shall include all the results of the analysis to be done: the river basin’s characteristics, a review of the impact of human activity on the status of waters in the basin, estimation of the effect of existing legislation, and the remaining “gap”

and in particular all programs of measures, are coordinated for the whole of the river basin district. For international river basin districts, the Member States concerned shall together ensure this coordination and may, for this purpose, use existing structures stemming from international agreements (WFD art. 3(4)).

16. Green et al., *supra* note 6.

17. WFD art. 11.

18. WFD art. 4. The WFD must be interpreted as meaning that the Member States are required—unless an exemption is granted—to refuse authorization for an individual project where it may cause a deterioration of the status of a body of surface water, or where it jeopardizes the attainment of good surface water status or of good ecological potential and good surface water chemical status by the date laid down by the Directive. The concept of “deterioration of the status” of a body of surface water must be interpreted as meaning that there is deterioration as soon as the status of at least one of the quality elements, within the meaning of Annex V to the Directive, falls by one class, even if that fall does not result in a fall in classification of the body of surface water as a whole. However, if the quality element concerned, within the meaning of that annex, is already in the lowest class, any deterioration of that element constitutes a “deterioration of the status” of a body of surface water (CJEU, Case C-461/13, Bund für Umwelt und Naturschutz Deutschland (2015)).

19. WFD arts. 6 and 7.

20. WFD art. 13.

to meeting these objectives and a set of measures designed to fill the gap.²¹ The WFD requires information and consultation when RBMPs are established: the RBMP must be issued in draft, and the background documentation on which the decisions are based must be made accessible. Public information and consultation is mandatory.²² Various Member States have been found in breach of the obligation to publish the final RBMPs of the first cycle at the latest by December 22, 2009, and to send a copy of those plans to the commission by March 22, 2010.²³

B. Recovery of Costs for Water Services

The need to conserve adequate supplies of a resource for which demand is continuously increasing is also one of the drivers behind what is arguably one of the WFD's most important innovations: the introduction of pricing. The basic idea is that adequate water pricing acts as an incentive for the sustainable use of water resources and thus helps to achieve the environmental objectives under the Directive. Member States are required to ensure that the price charged to water consumers—such as for the abstraction and distribution of freshwater and the collection and treatment of wastewater—reflects the true costs.²⁴

C. Complementary Legislation

The WFD has been complemented by Directive 2006/118/EC of the European Parliament and of the Council of 12 December 2006 on the protection of groundwater against pollution and deterioration, Directive 2007/60/EC on the assessment and management of flood risks, and Directive 2008/105/EC of the European Parliament and of the Council of 16 December 2008 on environmental quality standards in the field of water policy.

IV. Transposition of the Water Framework Directive Into Belgian Law

The Member States have transposed the WFD into their domestic legislation, more than once with some delay. That was also the case in Belgium, where this had to be done separately by the three regions. The Flemish Region was on time by enacting its Decree of July 18, 2003, on integrated

water management.²⁵ While it followed the WFD by transposing its wording closely, in particular in relation to the RBMPs, it also contains some additional policy instruments, one of which deserves a word of explanation: the so-called water check or water test contained in Article 8 of the Decree. This determines that authorities who have to decide on a permit, plan, or program that can have harmful effects on a water system ensure, by refusing permission or approval of the plan or program or by imposing appropriate conditions or modifications on the plan or program, that no harmful effect²⁶ is caused or that it is limited as much as possible. If this is not possible, they must restore the harmful effect or, in the case of the reduction of the infiltration of rainwater or reduction of space for the water system, ensure that it is compensated.

When making this decision, Flemish authorities must take into account the relevant water management plans, and the decision must be justified taking into account the relevant objectives and principles of integrated water management. In case a strategic environmental assessment or environmental impact assessment is required, the water test is integrated into the relevant statement. This water test has proven to be a strong tool to integrate water management-related concerns into project-type and planning-type decisions.

The water test consists of a step-by-step approach. Refusal of a permit or dismissal of a plan (third stage) is only possible when no alternatives can be thought of to prevent, reduce (first stage), repair, or compensate (second stage) the harmful effect.²⁷ The water test and the resulting “water paragraph” containing the formal justification of the decision in light of the test have been taken very seriously by the administrative courts from the outset. There are abundant cases in which a permit or a plan has been annulled for unlawfully not having been submitted to a

21. WFD art. 11.

22. WFD art. 14.

23. CJEU, Case C-190/14, *Commission v. Denmark* (2014); Case C-403/11, *Commission v. Spain* (2012); Case C-366/11, *Commission v. Belgium* (2012); Case C-297/11, *Commission v. Greece* (2012); Case C-223/11, *Commission v. Portugal* (2012). See also in relation to the preparatory steps: CJEU, Case C-43/10, *Nomarchiaki Aftodioikisi Aitolokarnanias & Others* (2012); Case C-351/09, *Commission v. Malta* (2010); Case C-516/07, *Commission v. Spain* (2009); Case C-264/07, *Commission v. Greece* (2008); and Case C-85/07, *Commission v. Italy* (2007).

24. WFD art. 9. The CJEU was of the opinion that the WFD must be interpreted as not precluding national legislation that provides that the price of water services invoiced to the consumer includes not only a variable component calculated according to the volume of water actually consumed by the person concerned, but also a fixed component that is not connected with that volume (CJEU, Case C-686/15, *Vodoopskrba i odvodnja* (2016)).

25. INTEGRAAL WATERBELEID IN VLAANDEREN EN NEDERLAND (Frank Maes & Luc Lavrysen eds., die Keure 2003); Frank Maes, *Integrated Water Policy in Flanders: The Implementation of the EC Framework Directive Water in the Decree on Integral Water Policy*, in DIRECTIVE 2000/60/EG OF 23 OCTOBER 2000 ESTABLISHING A FRAMEWORK FOR COMMUNITY ACTION IN THE FIELD OF WATER POLICY 29-54 (Jean-François Neuray ed., Bruylant 2005); Peter De Smedt, *Water-Related Tools for Climate Change Adaptation in the Flemish Region: The Art of Linking Water Quality Standards to Spatial Planning*, 7 J. FOR EUR. ENVTL. & PLAN. L. 292-301 (2010); Peter De Smedt, *Legal Instruments in Spatial Planning to Ban Building in Flood Zones: From Water Test to Planological Protection Via “Water Sensitive Open-Air Areas,”* 17 J. FOR EUR. ENVTL. & PLAN. L. 346-60 (2017).

26. A harmful effect is defined as

any significant adverse effect on the environment resulting from a change in the conditions of water systems or parts of it, caused by human activity: such effects include effects on human health and the safety of houses and business premises outside flood areas, that are permitted or considered to be permitted, effects on sustainable use of water for human consumption, on flora, fauna, soil, air, water, climate, landscape and the immovable heritage, as well as the interaction amongst one or more of those.

Translation from Art. 3 (17) of the Decree on July 18, 2003, on integrated water management, <http://www.ejustice.just.fgov.be/eli/decreet/2003/07/18/2003201696/justel>.

27. Constitutional Court, Judgment No. 32/2005, v.z.w. Vlaams Overleg voor Ruimtelijke Ordening en Huisvesting en de v.z.w. Landelijk Vlaanderen, vereniging van Bos-, Land- en Natuur-eigenaars (2005).

water test or to a poor test or for lack of proper justification in light of the test.²⁸

V. Implementation of EU Water Law

According to the most recent Communication From the European Commission on the Implementation of the EU Water Framework and Flood Directives,²⁹ the current water policy framework addresses the challenges faced by European freshwaters. However, there is still a long way to go before the quality of all EU waters is good enough, due to decades of previous degradation and persistently ineffective management. In 2012, the Commission's Blueprint to Safeguard Europe's Water Resources³⁰ found that about one-half of EU surface waters were unlikely to reach a good ecological status in 2015. Moreover, gaps in monitoring the chemical status of surface waters were so significant that in 2012 the status of more than 40% of water bodies was unknown and it was impossible to establish a baseline. The picture seems to be more positive for groundwater, but problems in some basins are still severe.

In the agricultural sector, the last report on the Nitrates Directive³¹ points to a slight improvement in groundwater nitrate pollution while stressing the need for further action to reduce and prevent pollution. Despite the fact that 63% of river basin districts reported that implementation of the Nitrates Directive is not enough to tackle diffuse (nonpoint source) pollution to the level required by WFD objectives, necessary measures have not been added to address the remaining shortcomings. Diffuse pollution significantly affects 90% of river basin districts, 50% of surface water bodies, and 33% of groundwater bodies across the EU. The agricultural sector is the primary source of diffuse pollution. In spite of some progress made in reducing mineral fertilizer consumption, there are still many gaps in the basic measures put in place by Member States to address agricultural pressures, including a lack of measures to control phosphate and nitrate emissions outside nitrate-vulnerable zones established under the Nitrates Directive.

As concerns households, implementation of the Urban Waste Water Treatment Directive has been challeng-

ing, mainly because of the financial and planning aspects related to major infrastructure investment in sewerage systems and treatment facilities. Implementation is advanced in the EU-15 (the Member States who joined before May 1, 2004), with several Member States close to full compliance. For most of the EU-13 (the New Member States), however, the transitional periods negotiated in the accession treaties are coming to an end and most countries are still far from full compliance, in spite of significant work carried out in the past decade.

Pollution caused by industrial activities can be particularly significant for certain pollutants and water bodies. The Industrial Emissions Directive provides the main ways of tackling this, notably through its requirement for operators of industrial installations to apply the "best available techniques" to ensure a high level of protection of the environment as a whole (i.e., water, air, and land quality). The national authorities ensure that emission limit values in industrial emissions permits are in line with best available techniques and take into account relevant water objectives. Although this does happen to some extent, it is not done systematically, or if it is done, it is not reported. Most Member States have begun work on their inventories of emissions of priority substances, as required by the Environmental Quality Standards Directive, but most of the measures identified by Member States in relation to chemical pollution are too general, with unquantified outcomes, rather than substance- or source-specific.

The abstraction of water beyond the renewing capacity of nature puts major pressure on EU surface and groundwater, especially due to irrigation in Mediterranean and Black Sea countries, but also because of urbanization and other economic activities in different parts of the EU. The first RBMPs showed that most Member States have not addressed the water needs of nature, which they are required to do if the WFD environmental objectives are to be achieved.

Changes to the flow and physical shape (the "hydro-morphology") of water bodies are among the main factors preventing the achievement of good water status but, in general, the first PoMs propose insufficient actions to counter this.

It is widely recognized that large parts of Europe will be confronted with an increase in the occurrence and frequency of flood events due to climate change. The first steps in the risk management process established by the Floods Directive were the preparation of preliminary flood risk assessments by the end of 2011 and the identification of areas of potential significant flood risks, which enabled Member States to focus implementation on areas where this risk is significant. Preliminary assessments were largely based on available information about past significant floods and on forecasts of potential significant future floods. Most Member States have developed new preliminary flood risk assessments, while others have relied on existing assessments or on a mix of new and existing ones. Only one-third of Member States explicitly consid-

28. See the cases discussed in Peter De Smedt, *De watertoets anno 2012: over oude gedachten en nieuwe vormen*, in *NATUUR, WATER EN ONDERNEMEN. KWELLING OF UITDAGING?* 1-62 (Luc Lavrysen ed., die Keure 2012); LUC LAVRYSEN, *HANDBOEK MILIEURECHT* 688-93 (2016).

29. Communication From the Commission to the European Parliament and the Council: The Water Framework Directive and the Flood Directive: Actions Towards the "Good Status" of EU Water and to Reduce Flood Risks, COM (15)120 final [hereinafter *The Water Framework Directive and the Flood Directive*].

30. Communication From the Commission to the European Parliament, the Council, the European Economic and Social Committee, and the Committee of the Regions: A Blueprint to Safeguard Europe's Water Resources, COM(12)673 final, http://eur-lex.europa.eu/legal-content/EN/ALL/;ELX_SESSIONID=66YWJLpQGGSclRQpQ7XWwTMG6M1JYMkvtvGvnMgr9IQP3bZnN8QT%21263987438?uri=CELEX:52012DC0673.

31. Report From the Commission to the Council and the European Parliament on the Implementation of Council Directive 91/676/EEC Concerning the Protection of Waters Against Pollution Caused by Nitrates From Agricultural Sources Based on Member State Reports for the Period 2008-2011, COM (13)683 final.

ered long-term developments (climate and socioeconomic changes) in their assessment of flood risk.

VI. Conclusion

Although major progress has been made in water management compared with the sometimes dramatic situation in the 1960s and 1970s, much has still to be done to achieve the ambitious objectives of EU water law, in particular

those of the WFD and the Floods Directive.³² Climate change is adding an extra challenge. Additional measures should be taken, and continuous investment in upgrading and maintaining water treatment systems, together with an environmentally friendly management of water systems, will be on the agenda for many years. The judiciary can help to bring closer the realization of those objectives by enforcing the rules that have been enacted on the EU and at domestic levels.

32. See the conclusions and recommendations contained in the Water Framework Directive and the Flood Directive, *supra* note 25, at 10-14.

Recent Developments in Environmental Jurisprudence Affecting Water in Africa

by Emmanuel Ugirashebuja

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This Comment is a compendium of select recent cases pertaining to water in Africa, and details how these cases have contributed to the interpretation of the legal framework within which water is utilized and protected as a “common good.” The most notable issues dealt with in these cases include the use and protection of water as a common good; how other rights, such as the right to property, interface with the use and protection of water; and important jurisdictional questions on the most appropriate forum for adjudicating water disputes when faced with two competing jurisdictions.

I. Environmental Protection of Water Vis-à-Vis Property Ownership Rights

For a period of time, it was accepted that certain things such as running water were *res communes*, which meant that “no one could own them, but the use of them belonged to or could be appropriated by certain individuals.”¹ This doctrine was acceptable as long as unpolluted freshwater was abundant. However, in present times, there is an unprecedented demand for earth’s natural resources, including freshwater. This has led to pollution, deforestation that has ultimately led to desertification, food insecurity, famine, and the growing need for freshwater.

Clearly, one of the most pressing issues relates to the utilization of freshwater. A number of authors have rightly held that unlike other natural resources such as oil, there is no substitute for water.² Humans utilize water for purposes that include drinking, washing, and industrial applications such as production of hydroelectric power, irrigation, animal husbandry, and waste disposal. Despite the basic

necessity for water, two-thirds of the world’s population experience water scarcity for at least one month per year, and about 500 million people live in areas “where water consumption exceeds the locally renewable water resources by a factor of 2.”³ The high demand for water as a result of population growth and increase in consumption per capita has led to overexploitation of the resource or even depletion in extreme cases, as well as significant diminishing of water quality.

As a result of competing interests in utilization of water, the tendency nowadays, as will be illustrated in the selected case law, is to find that water is a community asset that is protected and conserved as a natural resource in the broader interests of society. Two cases discussed below will illuminate how courts have dealt with cases involving the right to ownership of property and how this right is treated where it conflicts with the conservation of water.

A. *Nyakaana v. National Environment Management Authority (NEMA) of Uganda*

The case of *Nyakaana v. National Environment Management Authority (NEMA) of Uganda*⁴ presented an important issue pertaining to protection of the environment where it conflicts with individual property rights in the area of conservation of wetlands, among other issues. There was no dispute as to the facts of the case: the appellant was registered as the proprietor of land categorized as leasehold. He had obtained a lease from the Kampala City Council with the objective of constructing a house. However, in the midst of this, environmental inspectors of NEMA (the authority), carried out an inspection of Nakivubo wetland

1. The doctrine emanated from Roman law. See 2 ROSCOE POUND, JURISPRUDENCE 449 (1959).

2. RICCARDO PETRELLA, THE WATER MANIFESTO: ARGUMENTS FOR A WORLD WATER CONTRACT 55 (2001); Hubert Savenije & Pieter van der Zaag, *Water as an Economic Good and Demand Management: Paradigms With Pitfalls*, 27 WATER INT’L 98-104 (2002).

3. UNITED NATIONS WORLD WATER ASSESSMENT PROGRAMME, THE UNITED NATIONS WORLD WATER DEVELOPMENT REPORT 2017—WASTEWATER: THE UNTAPPED RESOURCE 2 (2017).

4. *Nyakaana v. National Env’t Mgmt. Auth.* (Constitutional Appeal No. 5 of 2011), [2015] U.G.S.C. 14, available at <https://ulii.org/node/25385> (last visited Jan. 12, 2018) (The copy of the judgment is neither paginated nor paraphrased for ease of reference in the subsequent discussion.).

and concluded that the appellant's house was situated in the wetland.

It is noteworthy that the appellant had secured all the required approvals for the construction. After several meetings between the two parties, the appellant was issued a restoration order by the authority, which required him among other things to demolish the structure within 21 days, and failure to do so would lead to its demolition by the authority. The appellant did not heed the order, and his house was razed.

The said wetland, in the description of the Supreme Court, drains into Lake Victoria which has immense ecological and economic importance not only to the City but to the Country and the region as a whole. Such a wetland should call for properly planned and controlled utilization so that the Constitutional requirement to use the resources for sustainable development is realized.

The appellant filed a petition before the Constitutional Court,⁵ challenging among other things the constitutionality of the legal basis relied upon by the authority in effecting the demolition of his property. He argued that the demolition contravened, among other provisions, his right to property embodied in Article 26 of the Constitution of Uganda.⁶ The Constitutional Court ruled in favor of the authority, leading to the appeal to the Supreme Court.

Article 26 states as follows:

- (1) Every person has a right to own property either individually or in association with others.
- (2) No person shall be compulsorily deprived of property or any interest in or right over property of any description except when the following conditions are satisfied—
 - (a) the taking of possession or acquisition is necessary for public use or in the interest of defence, public safety, public order, public morality or public health; and (b) the compulsory taking of possession or acquisition of property is made under a law which makes provision for—
 - (i) prompt payment of fair and adequate compensation, prior to the taking of possession or acquisition of the property; and
 - (ii) a right of access to a court of law by any person who has an interest or right over the property.

5. The Constitutional Court in the Ugandan judicial system is the Court of Appeal that is one tier below the Supreme Court of Uganda. For the petition, see Amooti Godfrey Nyakaana and NEMA and Others, Constitutional Petition No. 03/05, Constitutional Court of Uganda, judgment delivered on Aug. 20, 2015.

6. UGANDA CONST. art. 26 (1995).

In the view of the appellant, this article afforded him an absolute right of property that can only be tampered with through a procedure of expropriation that should follow the conditions established by the provision.

In reviewing the provision, the Supreme Court read it alongside the following articles of the Constitution:

237 (1): Land in Uganda belongs to the citizens of Uganda and shall vest in them in accordance with the land tenure systems provided for in this Constitution.

(2) Notwithstanding clause (1) of this Article . . .

(b) the Government or a local government as determined by Parliament by law shall hold in trust for the people and protect natural lakes, rivers, wetlands, forest reserves, game reserves, national parks and any land to be reserved for ecological and tourist purposes for the common good of all citizens.

242: Government may, under laws made by Parliament and policies made from time to time, regulate the use of land.

245: Parliament shall, by law, provide for measures intended—

- (a) to protect and preserve the environment from abuse, pollution and degradation;
- (b) to manage the environment for sustainable development; and
- (c) to promote environmental awareness.

After engaging in the task of reading the Constitution as a whole and by application of purposive interpretation⁷ with the view of reconciling the right to property with the relevant provisions expressed above, the Court concluded:

[A]lthough one has a right to own land through one of the systems of land tenure listed in the Constitution, there may be situations which necessitate the government either to take over that land, or to regulate its use for purposes of promoting and protecting the environment for the common good of all the people of Uganda.⁸

7. See *Nyakaana*, [2015] U.G.S.C. 14. The Court held:

Since the appeal involves the issue of protection of fundamental human rights, we shall also be guided by the principle that the Constitution and particularly that part which protects and entrenches fundamental rights and freedoms must be given a generous and purposive interpretation to realize the full benefit of the right guaranteed, and both purpose and effect are important in determining constitutionality.

8. *Id.*

The reasoning of the Court in this case highlighted the all-encompassing nature of the duty of the state to protect the environment. The Court held that “the cardinal principles” of “precaution” and “polluter-pays” “must be adopted and applied if the State is to carry out its Constitutional mandate to protect the environment for citizens, while at the same time promoting sustainable development.”⁹

A corollary of the principles developed by the Court is that the state has a positive duty to protect the environment so that community interests are not prejudiced, even if it is at the expense of curtailing certain individual property rights. The Court held in this regard that if a person owns land “and that land contains a wetland, his ownership does not preclude the Government from protecting that wetland,” if it is done within the law.¹⁰

B. African Commission on Human and Peoples’ Rights v. Republic of Kenya (The Ogiek Case)

The focus of the *Ogiek*¹¹ case was the right to communal ownership of land in the face of the need to protect the environment. The case was instituted at the African Court on Human and Peoples’ Rights, which is a continental court whose mandate is to ensure protection of human and peoples’ rights in Africa.

The Ogiek community was evicted from their land in the Mau Forest Complex in Kenya,¹² which they had inhabited “since time immemorial,” and the government’s justification for evicting the community was the preservation of the natural ecosystem in the public interest.¹³ The applicants contended that they possessed the right to communal ownership of land as provided for in Article 14 of the African Charter on Human and Peoples’ Rights: “The Right to property shall be guaranteed. It may only be encroached in the interest of public need or in the general interest of the community and in accordance with the provisions of appropriate laws.”¹⁴ As the Court rightly opined, “Article 14 envisages a right to property including land provided that such restriction is in the public interest and is also necessary and proportional.”¹⁵

9. For a detailed discussion of the principles in the context of the judgment, see *id.* It is important to note that the Supreme Court of Uganda relied on *Vellore Citizen’s Welfare Forum v. Union of India*, A.I.R. 1996 S.C. 2715, which considered the principles in detail.

10. *Id.*

11. African Commission on Human & Peoples’ Rights v. Republic of Kenya, Application No. 006/2012 (2017), African Court on Human and Peoples’ Rights (*Ogiek case*).

12. According to the African Wildlife Foundation:

The Mau Forest Complex sits within Kenya’s Rift Valley and is the largest indigenous montane forest in East Africa. It serves as a critical water catchment area for the country and is the source from which numerous rivers flow, many of them draining into bodies of water like Lake Victoria, which receives 60% of its water from Mau. These rivers exist as lifelines for much of western Kenya’s wildlife and people.

See African Wildlife Foundation, *Mau Forest*, <http://www.awf.org/landscape/mau-forest-complex> (last visited Jan. 12, 2018).

13. See *supra* note 11, at ¶ 130.

14. African Charter on Human and Peoples’ Rights art. 14, June 27, 1981, Organization of African Unity, No. 26363.

15. *Ogiek case*, Application No. 006/2012, ¶ 129.

The African Court in this case came to the same conclusion as in the Ugandan Supreme Court *Nyakaama* case, discussed in Part I.A., that the right to ownership of the property is not absolute; rather, it may be truncated where the public/community interests are in peril. The African Court emphatically stated that “the restriction of the Ogiek population to preserve the natural environment of the Mau Forest Complex may in principle be justified to safeguard ‘the common interest’”¹⁶ However, the Court observed that the restriction to the right to property should not only be in the public/community interests and provided for by the law, but that it should also be “necessary and proportional to the legitimate interest sought to be attained by such an interference.”¹⁷ Applying this test, and on the basis of the available evidence,¹⁸ the Court concluded that “the continued denial of access to and eviction from Mau Forest of the Ogiek population cannot be necessary or proportional to achieve the justification of preserving the natural ecosystems of the Mau Forest.”¹⁹

From the two cases discussed above, jurisprudence is emerging that the right to property is not absolute, and that it can be interfered with in the preservation/conservation of the natural environment, including water and wetlands, in the interest of the community/society. However, such interference should not be justified by a state’s mere assertion of the existence of a common interest, but should be triggered by a genuine and legitimate need to protect the common interest. Such interference should be within the law, and should be proved to be necessary and proportional to the legitimate objective being sought.

II. Piercing the Corporate Veil: The Principle of Forum Non Conveniens Rethought in Environmental Matters

“Piercing the corporate veil” in order to expose the ills of companies, especially their environmental degradation, has been the subject of some researchers and policymakers for quite some time.²⁰ One of the means at the disposal of companies, especially those involved in extractive industries in Africa, to protect themselves from possible litigation has been to structure the companies in such a way that

16. *Id.* ¶ 188.

17. *Id.* In this case, the Court adopted an earlier test that it espoused in *Konaté v. Burkina Faso*, Application No. 004/2013 (2014), that for there to be any interference of a freedom or right by a respondent state, such an interference should “be provided for by the law, within international standards pursue a legitimate objective and are proportionate means to attain the objective sought.” See *id.* ¶¶ 125-166.

18. According to different reports prepared by or in collaboration with the respondent (the Republic of Kenya) on the situation of the Mau Complex, “the main causes of the environment are encroachments upon the land by other groups and government excisions for settlements and ill-advised logging concessions.” *Ogiek case*, Application No. 006/2012, ¶ 130.

19. *Id.*

20. See, e.g., DANIEL AUGENSTEIN ET AL., UNIVERSITY OF EDINBURGH, STUDY OF THE LEGAL FRAMEWORK ON HUMAN RIGHTS AND THE ENVIRONMENT APPLICABLE TO EUROPEAN ENTERPRISES OPERATING OUTSIDE THE EUROPEAN UNION (2010).

they are immune from any judicial review; and such that if the review is available, it will not be an effective one.²¹ Such corporations' legal structures can pose a challenge to victims of environmental harm, who cannot obtain a remedy from these third-country subsidiaries due to either lack of funds or assets, or because access to justice or due process is not available or guaranteed in the third country; yet, the victims also cannot seek redress from the parent corporation jurisdiction due to the fact that the forum is not appropriate (*forum non conveniens*).²²

In the recent case of *Lungowe v. Vedanta Resources Plc*²³ before United Kingdom (U.K.) courts, both the High Court and Court of Appeal grappled with the question of the appropriate forum to deal with a case involving 1,826 Zambian nationals (the claimants) against Zambia-based Konkola Copper Mines Plc (KCM) and its London-based parent, Vedanta Resources Plc. The claimants commenced proceedings alleging personal injury, damage of property, loss of income, and loss of amenity and enjoyment of land arising out of alleged pollution and environmental damage caused by the disposal of tailings and other effluent of Nchanga Copper Mine from 2005-2015 into the Kafua River and adjacent waterways. The claimants pleaded that they relied on the waterways as "their primary source of clean water for drinking, bathing, cooking, cleaning and other domestic and recreational purposes," and that the waterways are used to irrigate crops, sustain livestock, and as a source of fresh fish.²⁴

From the onset, Vedanta and KCM challenged the jurisdiction of the U.K. courts on *forum non conveniens* grounds, and argued that the claims against Vedanta were launched illegitimately merely as a hook to obtain the English jurisdiction over KCM.²⁵ On their side, the claimants argued that "Article 4 of the Recast Brussels Regulations provides a clear and unqualified right to sue a United Kingdom domiciled company in the United Kingdom,"²⁶ and that "Article 4 allows for no discretion or qualification to that simple proposition."²⁷ The claimants relied on the *Owusu v. Jackson*²⁸ decision of the European Court of Justice (ECJ), which plainly made clear:

[T]he doctrine of *forum non conveniens* has no role to play under Article 4, and that the Brussels Convention precludes a Court of a contracting State from declining the jurisdiction conferred on it by Article 4 on the ground that a court of a non-contracting State would be a more appropriate forum.²⁹

The Court of Appeal, agreeing with Judge Coulson of the High Court, dismissed Vedanta's jurisdictional appeal, holding that the European Union (EU) law imposes mandatory jurisdiction on the English courts for claims against the English companies.³⁰ In other words, *forum non conveniens* cannot be used as a jurisdictional bar in the English courts so long as they are bound by the EU law and the jurisdiction of the ECJ.

Apart from Article 4 of the Recast Brussels Regulation, the courts also considered important underlying factors, including the track record of the subsidiary, its financial status, and the level of control of the parent corporation, as well as the possibility of the claimants accessing effective justice in Zambia, in determining whether the English courts would be an appropriate forum to entertain the matter on its merits. Based on Article 4 of the Brussels Regulation and the underlying facts, the Court of Appeal concluded, in agreement with the High Court, that the case would advance on the merits to the English courts.

It is evident that Article 4 of the Recast Brussels Regulation, which was fundamentally relied on in this judgment, has called into question the basic assumption founded on the principle of *forum non conveniens*. This article has significantly reduced the discretion of courts in European countries to identify the forum in which cases of this nature can be suitably tried in the interests of all the parties and the ends of justice. Article 4, the *Owusu* case in the ECJ, and this case in the English courts have ensured that the veil of *forum non conveniens*, which is sometimes used to shield corporations from the effective reach of justice in cases involving environmental degradation, has been pierced at least in Europe.

III. Conclusion

The cases analyzed in this Comment are evidence that the legal regime governing protection of the African environment, including water, has over the years significantly improved, and as a result, courts have taken the cue and interpreted the available laws in favor of protection. It is clear from the *Nyakaana* and *Ogiek* cases that the courts are increasingly taking the view that where individual property rights are genuinely in conflict with community rights such as a clean environment, the community rights will take precedence—that is, that individual property rights are not absolute.

The jurisprudence of regional courts, as in the *Owusu* case in the ECJ, discussed in Part II, has the potential to

21. See, e.g., *id.* at 61 ("The doctrine of separate legal personality can create significant obstacles for holding European Corporations responsible for human rights and environmental harm caused by their third-country subsidiaries, despite the fact that the former may have owned, controlled, directed or managed the latter.").

22. *Id.*

23. *Lungowe v. Vedanta Resources Plc*, [2017] EWCA (Civ) Civ. 1528; *Lungowe v. Vedanta Resources Plc*, [2016] EWHC (Civ) 975 (T.C.C.). Even though the cases were entertained by the courts in Britain, they concerned activities that had taken place in Zambia, an African State.

24. E.W.H.C. 975 (T.C.C.), at ¶ 15.

25. *Id.* at ¶ 51.

26. Article 4 of the Recast Brussels Regulation provides that "[s]ubject to the Regulation, persons domiciled in a member State shall, whatever their nationality, be sued in the Courts of the Member State." See Regulation (EU) 1215/2012 of the European Parliament and of the Council of 12 December 2012 on Jurisdiction and the Recognition and Enforcement of Judgments in Civil and Commercial Matters (Recast), 2012 O.J. (L351) 1. Article 4 is a successor of Article 2 and its terms are similar.

27. See *Lungowe*, [2016] EWHC (QB) 975 (T.C.C.), ¶ 49.

28. *Owusu v. Jackson*, [2005], EWHC (QB) 801.

29. *Id.*

30. *Lungowe v. Vedanta Resources Plc*, [2017] E.W.C.A. Civ. 1528, ¶ 37.

shape the interpretation of principles relevant to the protection of water in national courts, especially where those judgments of regional courts are binding on national courts and where the regional legal framework enhances the protection. The East African Court of Justice has such jurisdiction.

It is also noteworthy that different courts in many different places are producing decisions relevant to the protection of the environment in general and water specifically.

Such jurisprudence can be an inspiration to other courts that face cases of similar facts within similar legal frameworks. For example, the jurisprudence from courts of India has inspired other decisions such as the *Nyakaana* case in the courts of Uganda, discussed in Part I.A. This momentum of courts inspiring courts in other jurisdictions can be fully maintained if initiatives such as the Global Judicial Institute on the Environment (GJIE)³¹ are fully supported.

31. The GJIE was launched in 2016 in Rio de Janeiro, Brazil, and has the mission of supporting the role of courts and tribunals in applying and enforcing environmental laws and in promoting the environmental rule of law. The GJIE is composed of actively sitting judges from around the world. It provides opportunities for collaboration, strengthens capacity, and provides research and analysis on topics important for environmental adjudication, court practices, and environmental rule of law. See *Judges Establish the Global Judicial Institute for the Environment*, INT'L UNION FOR CONSERVATION NATURE (July 8, 2016), <https://www.iucn.org/news/world-commission-environmental-law/201607/judges-establish-global-judicial-institute-environment>.

Climate Change and the Judge as Water Trustee

by Michael D. Wilson

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Something extraordinary is happening. Through the carbon emissions from burning fossil fuel and deforestation, humans have disrupted earth's climate system, leading to global warming. The challenge we now face is to stop these emissions and limit the extent of warming and the associated loss, damage, and harm to people and ecosystems. Failure to mitigate these emissions will lead to irreversible impacts and a planet so damaged it will be biologically impoverished, provide less freshwater, grow less agriculture, produce more diseases, and kill unprecedented millions of people with storms, heat waves, coastal inundation, flooding, and fires. This is as we head toward a world population projected to grow from 7.4 billion to 11.2 billion by 2100.¹

The catastrophic future that the Paris Agreement² is intended to save us from will arrive by the time the earth warms two degrees above its pre-industrial temperature—a ceiling we are already rapidly approaching.³ A more pronounced catastrophe distinguished by a world of 3+ degrees of global warming by 2100 is now the more likely future for humanity based on present levels of carbon emissions.⁴

Humanity's quest to achieve orderly mitigation of and adaptation to climate change is dependent upon the just application of the environmental rule of law—the legal framework that protects and sustains the environment on which life depends. A 3+ degree world of collapsing ecosystems will arrive within the century, unless the environ-

mental rule of law is enforced. This Comment posits that the present framework positions earth's judges as guardians of the public trust—sworn to protect earth's water resources from the severe damage that will be caused by heating the earth system two to three degrees above pre-industrial levels.

Environmental courts and tribunals are proving to be critical to the world judiciary's just application of the environmental rule of law to issues of climate change. To further equip the judges who must apply the environmental rule of law, Brazil Supreme Court Justice Antonio Benjamin, in collaboration with the World Commission on Environmental Law, the United Nations Environment Programme (UNEP), and the Organization of American States, has led the establishment of the Global Judicial Institute on the Environment (GJIE). These institutions fortify the world judiciary as it performs its public trust duty to protect humanity and the ecological integrity of earth through responsible, resilient application of the environmental rule of law. Through the empowering framework of environmental courts and the GJIE, judges will be trained to apply the environmental rule of law in our Anthropocene era of climate change.

I. Humanity Notices Climate Change: The Big Picture

The need for judicial institutions to address climate change is apparent. Humanity is demanding solutions. Large-scale demonstrations have become commonplace. The largest single gathering in history to protest climate change was the People's Climate March on September 21, 2014, when an estimated 311,000 participants marched at the United Nations (U.N.) in New York City.⁵ At the same time, marches were conducted throughout the world, including Amsterdam, Berlin, London, New Delhi, and Rio. During

1. DEPARTMENT OF ECONOMIC AND SOCIAL AFFAIRS, UNITED NATIONS, WORLD POPULATION PROSPECTS: THE 2015 REVISION (2015) (ESA/P/WP.241), available at https://esa.un.org/unpd/wpp/publications/files/key_findings_wpp_2015.pdf.
2. Paris Agreement, U.N. Doc. FCCC/CP/2015/L.9/Rev.1 (Dec. 12, 2015), available at http://unfccc.int/files/essential_background/convention/application/pdf/english_paris_agreement.pdf.
3. Eric Holthaus, *Our Planet's Temperature Just Reached a Terrifying Milestone*, SLATE (Mar. 12, 2016), http://www.slate.com/blogs/future_tense/2016/03/01/february_2016_s_shocking_global_warming_temperature_record.html; see also National Aeronautics and Space Administration, *Global Temperature*, <https://climate.nasa.gov/vital-signs/global-temperature/> (last updated Jan. 12, 2018).
4. UNITED NATIONS ENVIRONMENT PROGRAMME (UNEP), THE EMISSIONS GAP REPORT 2017: A UN ENVIRONMENT SYNTHESIS REPORT (2017), available at <http://wedocs.unep.org/handle/20.500.11822/22070>.

5. Lisa W. Foderaro, *Taking a Call for Climate Change to the Streets*, N.Y. TIMES (Sept. 21, 2014), <https://www.nytimes.com/2014/09/22/nyregion/new-york-city-climate-change-march.html>.

the 2015 United Nations Conference of the Parties (COP 21) in Paris, more than 600,000 people marched in 175 countries.⁶ On April 29, 2017, an estimated 200,000 climate change protesters marched in Washington, D.C.⁷

Consistent with the views of the many marchers, a growing number of iconic figures have declared climate change to be the preeminent problem facing humanity. China's President Xi Jinping highlighted climate change in his address to the U.N. in Geneva on January 18, 2017: "We should make our world clean and beautiful by pursuing green and low-carbon development. . . . Industrialization has created material wealth never seen before, but it has also inflicted irreparable damage to the world."⁸ At the Paris climate summit in 2014, then-President Barack Obama labeled climate change as the "one issue that will define the contours of this century more dramatically than any other."⁹ The chancellor of Germany, Angela Merkel, stated at the November 2017 United Nations Climate Change Conference in Bonn, Germany: "climate change is an issue determining our destiny as mankind."¹⁰

Pope Francis' message to 1.2 billion Catholics in his June 2015 encyclical on the environment described climate change as "one of the principal challenges facing humanity in our day."¹¹ It represents a rupture of the relationship between humanity and the earth that "is sin."¹² One of the world's most renowned scientists, Stephen Hawking, described "runaway" human-caused climate change as the greatest threat facing the world: "A rise in ocean temperature would melt the ice-caps, and cause a release of large amounts of carbon dioxide from the ocean floor. Both effects could make our climate like that of Venus, with a temperature of 250 degrees."¹³ E.O. Wilson, professor emeritus of the Entomology Department at Harvard University, offers a similar view of "human-forced climate

change," calling it "the great, wrathful demon that threatens all our lives."¹⁴

Underlying the preeminent attention paid to climate change by leaders from the political, economic, scientific, and religious sectors is the immediacy of its peril. Conservation biologist Thomas Lovejoy, the originator of the term "biodiversity," warns that at two degrees global warming, "there undoubtedly will be massive extinctions and widespread ecosystem collapse."¹⁵

An obvious consequence of the collapse of ecosystems will be social unrest, including fights for water. The president of the World Bank, Jim Yong Kim, has noted "fights over water and food are going to be the most significant direct impacts of climate change in the next five to ten years. There's just no question about it."¹⁶

No one can predict the future with certainty. Yet a formidable consensus of the world scientific community has provided convincing evidence to world leaders of the severe consequences of maintaining the current level of greenhouse gas/carbon emissions. The most reliable projections of future climate impacts are those generated from global climate change models that simulate the earth system and human interventions on key natural processes. The Intergovernmental Panel on Climate Change (IPCC) was established to review current scientific knowledge about climate change and provide regular reports to the world community. The IPCC's conclusions are "conservative" in that they represent published, peer-reviewed science and what has been established as reliable scientific knowledge to date.

These IPCC conclusions are unqualified, they have been formally accepted by the world's national governments,¹⁷ and thus they can be considered, both scientifically and politically, as "known facts." They cannot be dismissed or ignored if one is committed to an evidence-based approach to public policy and the environmental rule of law. They are the scientific authority upon which all but one (the United States) of the world's nations have committed to reduce

6. Claire Phipps et al., *Global Climate March 2015: Hundreds of Thousands March Around the World—As It Happened*, GUARDIAN (Dec. 1, 2015), <https://www.theguardian.com/environment/live/2015/nov/29/global-peoples-climate-change-march-2015-day-of-action-live>.

7. *Peoples Climate March a Huge Success: 200,000+ March in D.C. for Climate, Jobs, and Justice*, 350.ORG (Apr. 29, 2017), <https://350.org/press-release/peoples-climate-march-a-huge-success-200000-march-in-d-c-for-climate-jobs-and-justice>.

8. Tom Phillips, *China's Xi Jinping Says Paris Climate Deal Must Not Be Allowed to Fail*, GUARDIAN (Jan. 18, 2017), <https://www.theguardian.com/world/2017/jan/19/chinas-xi-jinping-says-world-must-implement-paris-climate-deal>.

9. President Barack Obama, Remarks at U.N. Climate Change Summit (Sept. 23, 2014), <https://obamawhitehouse.archives.gov/the-press-office/2014/09/23/remarks-president-un-climate-change-summit>.

10. Damian Carrington, *Climate Change Will Determine Humanity's Destiny, Says Angela Merkel*, GUARDIAN (Nov. 15, 2017), <https://www.theguardian.com/environment/2017/nov/15/climate-change-will-determine-humanitys-destiny-says-angela-merkel>.

11. POPE FRANCIS, ENCYCLICAL LETTER, LAUDATO SI' (2015), available at http://w2.vatican.va/content/dam/francesco/pdf/encyclicals/documents/papa-francesco_20150524_enciclica-laudato-si_en.pdf.

12. *Id.* at 48.

13. Emily Atkin, *The Media Is Ignoring the Most Important Part of Stephen Hawking's Comments on Trump*, THINKPROGRESS (May 31, 2016), <https://thinkprogress.org/the-media-is-ignoring-the-most-important-part-of-stephen-hawkings-comments-on-trump-d97a5fdbf55>.

14. Edward O. Wilson, *The Global Solution to Extinction*, N.Y. TIMES (Mar. 12, 2016), <https://www.nytimes.com/2016/03/13/opinion/sunday/the-global-solution-to-extinction.html>.

15. Thomas E. Lovejoy, *The Climate Change Endgame*, N.Y. TIMES (Jan. 21, 2013), <http://www.nytimes.com/2013/01/22/opinion/global/the-climate-change-endgame.html>. With the arrival of two degrees of warming, climate change will not only bring massive die-off of earth's plant and animal species—increases in infectious diseases such as cholera, malaria, dengue fever, Lyme disease, bird flu, Ebola, and tuberculosis will also occur. Xiaoxu Wu et al., *Impact of Climate Change on Human Infectious Diseases: Empirical Evidence and Human Adaptation*, 86 ENV'T INT'L 14-23 (2016), available at <http://www.sciencedirect.com/science/article/pii/S0160412015300489>.

16. Larry Elliott, *Climate Change Will "Lead to Battles for Food," Says Head of World Bank*, GUARDIAN (Apr. 3, 2014), <https://www.theguardian.com/environment/2014/apr/03/climate-change-battle-food-head-world-bank>.

17. The IPCC was established by UNEP and the World Meteorological Organization (WMO) in 1988 to provide the world with a clear scientific view on the current state of knowledge in climate change and its potential environmental and socioeconomic impacts. In the same year, the U.N. General Assembly endorsed the action by WMO and UNEP in jointly establishing the IPCC. Membership of the IPCC is open to all Member countries of the United Nations and WMO. Currently, 195 countries are Members of the IPCC. See IPCC, *Organization*, <http://www.ipcc.ch/organization/organization.shtml> (last visited Jan. 12, 2018).

carbon emissions through the 2015 Paris Agreement of the U.N. Framework Convention of Climate Change¹⁸

II. Water Resources in a Two- to Three-Degree World

Yet, at the most recent United Nations Climate Change Conference, in November 2017, it was acknowledged that current mitigation commitments fall short of those needed to limit global warming to below two degrees by 2100. No longer are judges applying the environmental rule of law with the impending catastrophe of a two-degree world. Unless the level of carbon emissions is reduced, the natural resources of earth, particularly water, will succumb to the effects of 3+ degrees global warming by 2100.¹⁹

A three-degree world is difficult to imagine. It requires careful study. At present, understanding the enormity of the degradation to ecosystems is limited to those, such as scientists, who are able to fathom the severity of the silent incremental release of carbon dioxide into the atmosphere, the alterations this causes to natural processes, and the quiet demise of nearly half of life on earth.²⁰ Judges by occupation will also be tasked with understanding a 3+ degree world in order to decide whether conduct that causes such a world is consistent with the environmental rule of law.

The evidence of extreme irreparable injury is compelling. On the current business-as-usual trajectory of carbon

emissions, much of earth's surface will be uninhabitable because it will lack sufficient water resources and be subject to temperatures of 50 degrees Celsius, or 122 degrees Fahrenheit.²¹ In some regions, forests such as the Amazon will suffer drought and ignite, sending carbon into the air to contribute to a robust self-sustaining cycle of increased carbon dioxide—a cycle that spawns higher temperatures and diminishing water resources.²² Rainfall in Central America and Mexico would decline by 50%.²³ Deserts will spread throughout Europe, and the Alps will have no glaciers.²⁴ Much of Honolulu, Miami, Osaka, Rio de Janeiro, and Shanghai will be submerged.²⁵ Added heat will cause equatorial megacities such as Karachi and Kolkata to become nearly uninhabitable.²⁶ Climate refugees are projected to be in the hundreds of millions.²⁷ As the most vulnerable part of humanity, hundreds of millions of children will die.²⁸ We presently have two billion children on earth, nearly half of them poor.²⁹

18. UN Climate Change, Paris Agreement Status of Ratification; http://unfccc.int/paris_agreement/items/9444.php.

19. Brad Plumer, *At Bonn Climate Talks, Stakes Get Higher in Gamble on Planet's Future*, N.Y. TIMES (Nov. 18, 2017), <https://www.nytimes.com/2017/11/18/climate/un-bonn-climate-talks.html>:

Virtually everyone at the Bonn conference acknowledged that the world's nations are still failing to prevent drastic global warming in the decades ahead. "We need more action, more ambition, and we need it now," said Patricia Espinosa, the United Nations climate chief. Under the Paris agreement, nearly every country submitted a voluntary pledge for constraining its emissions. Yet those pledges are modest: even with them, the world is still on course to warm at least 3 degrees Celsius (5.4 degrees Fahrenheit) this century, an outcome that carries far greater risks of destabilizing ice sheets in Greenland and Antarctica, drastic sea-level rise and more extreme heat waves and droughts.

The Three-Degree World: The Cities That Will Be Drowned by Global Warming, GUARDIAN (Nov. 3, 2017) [hereinafter *The Three-Degree World*], <https://www.theguardian.com/cities/ng-interactive/2017/nov/03/three-degree-world-cities-drowned-global-warming> ("Until now, global efforts such as the Paris climate agreement have tried to limit global warming to 2C above pre-industrial levels. However, with latest projections pointing to an increase of 3.2C by 2100, these goals seem to be slipping out of reach."); see also U.S. GLOBAL CHANGE RESEARCH PROGRAM, CLIMATE SCIENCE SPECIAL REPORT: FOURTH US NATIONAL CLIMATE ASSESSMENT VOL. 1, 17 (2017), available at https://science2017.globalchange.gov/downloads/CSSR2017_FullReport.pdf ("Without major reductions in emissions, the increase in annual average global temperature relative to preindustrial times could reach 9°F (5°C) or more by the end of this century."); David Spratt, *What Would 3 Degrees Mean?*, CLIMATE CODE RED (Sept. 1, 2010), <http://www.climatecoderead.org/2010/09/what-would-3-degrees-mean.html> ("The failure of international climate negotiations means that if all countries acted on ALL their commitments, the world would still warm by more than 3 degrees, according to Climate Tracker.")

20. Ian Johnston, *Half the World's Species Failing to Cope With Global Warming as Earth Races Towards Its Sixth Mass Extinction*, INDEPENDENT (Dec. 8, 2016), <http://www.independent.co.uk/environment/climate-change-global-warming-mass-extinctions-species-study-donald-trump-kill-himself-joke-a7464391.html>.

21. Stephen Leahy, *Parts of Asia May Be Too Hot for People by 2100*, NAT'L GEOGRAPHIC (Aug. 2, 2017), <https://news.nationalgeographic.com/2017/08/south-asia-heat-waves-temperature-rise-global-warming-climate-change>.

22. Spratt, *supra* note 19:

As the Arctic continue[s] to warm, melting permafrost in the boreal forests and further north in the Arctic tundra is now starting to melt, triggering the release of methane, a greenhouse gas twenty times more powerful than CO₂, from thick layers of thawing peat. The West Siberian bog is estimated to contain 70 billion tonnes of CO₂. Prof. Sergei Kirpotin, a botanist at Russia's Tomsk State University, says: "There's a critical barrier . . . Once global warming pushes the melting process past that line, it begins to perpetuate itself." The West Antarctic ice sheet would likely [be lost] to irreversibly melting[.]

23. *Id.*

24. CHARLES H. FLETCHER, UNIVERSITY OF HAWAII AT MĀNOA, *WHERE IS CLIMATE CHANGE LEADING US?* 15-16; Bloomberg News, *Snow-Covered Alps No More? 70 Percent of Snow, Glaciers Could Be Gone by 2100*, DENVER POST, Feb. 16, 2017, <https://www.denverpost.com/2017/02/16/climate-change-alps-no-snow>.

25. *The Three-Degree World*, *supra* note 19.

26. *Kolkata to Remain World's Most Heat Stressed City This Century*, SKYMET WEATHER (Mar. 31, 2017), <https://www.skymetweather.com/content/climate-change/kolkata-to-remain-worlds-most-heat-stressed-city-this-century>; see Saba Imtiaz & Zia ur-Rehman, *Death Toll From Heat Wave in Karachi, Pakistan, Hits 1,000*, N.Y. TIMES (June 25, 2015), <https://www.nytimes.com/2015/06/26/world/asia/karachi-pakistan-heat-wave-deaths.html>.

27. As explained by Erich M. Fischer & Reto Knutti:

[T]he amount of warming to date . . . has already multiplied the number of places experiencing dangerous or extreme heat waves by 50 times. . . . Global warming over the last century means heat extremes that previously only occurred once every 1,000 days are happening four to five times more often.

Erich M. Fischer & Reto Knutti, *Anthropogenic Contribution to Global Occurrence of Heavy-Precipitation and High Temperature Extremes*, 5 NATURE CLIMATE CHANGE 560-65 (2015); FLETCHER, *supra* note 24, at 13.

28. For example:

[Approximately] 1.1 billion people worldwide lack access to water, and a total of 2.7 billion find water scarce for at least one month of the year. Inadequate sanitation is also a problem for 2.4 billion people—they are exposed to diseases, such as cholera and typhoid fever, and other water-borne illnesses. Two million people, mostly children, die each year from diarrheal diseases alone.

World Wildlife Fund, *Water Scarcity*, <https://www.worldwildlife.org/threats/water-scarcity> (last visited Jan. 12, 2018).

29. United Nations Children's Fund, *Children Living in Poverty*, <https://www.unicef.org/sowc05/english/poverty.html> (last visited Jan. 12, 2018) ("Number of children in the world: 2.2 billion. Number of children living in developing countries: 1.9 billion. Number of children living in poverty: 1 billion—every second child.")

III. Environmental Rule of Law Will Prevent a Two- to Three-Degree World

Lovejoy—a renowned biodiversity scientist who understands the impending two- to three-degree world—posed the question: “Can we avoid the greatest intergenerational environmental injustice of all time?”³⁰ Will present generations perpetrate a self-indulgent two- to three-degree future for tomorrow’s children by knowingly releasing carbon into the atmosphere? The present framework of the environmental rule of law protects future generations from the environmental injustice of a 2-3 degree earth. The rubric of constitutional and statutory law shaping earth’s water future is replete with rights to a clean and healthy environment, and the fundamental public trust duty of government to protect natural resources for future generations.

The capacity of judicial institutions to contend with the impending consequences of climate change within the framework of environmental law is proving to be strong and resilient. Contemporary principles have arisen, empowering judges to address the rapid onset of climate change through evolved environmental rules of law. Intergenerational equity, public trust, the precautionary principle, the prevention principle, the right to a clean and healthy environment, polluter-pays, and the doctrine of “danger creation” are the propitious progeny of many foundational legal devices—including Principle 1 of the 1992 Rio Declaration,³¹ Sustainable Development Climate Action Goal 13 of the 2015 United Nations Sustainable Development Summit, and, most recently, the nationally determined contributions to carbon mitigation established by 173 Parties who have ratified the Paris Agreement to date.

Intergenerational equity was recognized by the Supreme Court of the Philippines to grant standing to children who represented the interests of future generations in protected forests that were the subject of large-scale illegal deforestation.³² The constitutional right to a healthy environment was recognized by the Supreme Court of India as early as 1991.³³ The right of the sacred Ganga and Yamuna Rivers to legal protection as “legal persons/living persons” was recently established by the High Court of the state of Uttarakhand in India.³⁴

The court found the rivers to “have spiritual and physical sustenance. They support and assist both the life and natural resources and health and well-being of the entire community. Rivers Ganga and Yamuna are breathing, living and sustaining the communities from mountains to sea.”³⁵

The Indian court’s decision was grounded upon Articles 48-A and 51A(g) of the Constitution of India, which provide that the state “shall endeavor to protect and improve the environment and to safeguard the forests and wild life of the country” and that citizens of India have the duty “to protect and improve the natural environment including forests, lakes, rivers and wild life, and to have compassion for living creatures,” respectively. A public trust facsimile was identified in the responsible public officials:

The Director NAMAMI Gange, the Chief Secretary of the State of Uttarakhand and the Advocate General of the State of Uttarakhand are hereby declared *persons in loco parentis* as the human face to protect, conserve and preserve Rivers Ganga and Yamuna and their tributaries. These Officers are bound to uphold the status of Rivers Ganges and Yamuna and also to promote the health and well being of these rivers.³⁶

The hegemony of contemporary environmental law has been applied by judges who command an understanding of emerging environmental science and the social consequences of conduct that causes earth’s land, air, and water to heat above two degrees from pre-industrial levels. Water for agriculture received protection in Pakistan from government action that failed to address the effects of climate change. The Lahore High Court of the Federation of Pakistan identified climate change as “a defining challenge of our time,” which has “resulted in heavy floods and droughts, raising serious concerns regarding water and food security,” and representing “a clarion call for the protection of fundamental rights of the citizens of Pakistan.”³⁷ In response to the claim of an “agriculturalist” that the government was not fulfilling its duty to prepare a national climate change policy, Judge Syed Mansoor Ali Shah ordered the convening of government ministries to prepare such a policy. Most recently, Judge Shah established by court order a Standing Committee on Climate Change “which will act as a link between the Court and the Executive.”³⁸

30. Lovejoy, *supra* note 15.

31. “Human beings are at the centre of concerns for sustainable development. They are entitled to a healthy and productive life in harmony with nature.” *Rio Declaration on Environment and Development*, U.N. Conference on Environment and Development, Rio de Janeiro, Brazil, June 3-14, 1992, Principle I, U.N. Doc. A/CONF.151/26 (1992).

32. *Oposa v. Factoran*, G.R. No. 101083, 33 I.L.M. 173 (S.C. July 30, 1993), http://www.lawphil.net/judjuris/juri1993/jul1993/gr_101083_1993.html.

33. The Court found:

Right to live is a fundamental right under Art. 21 of the Constitution and it includes the right of enjoyment of pollution free water and air for full enjoyment of life. If anything endangers or impairs that quality of life in derogation of laws, a citizen has right to have recourse to Art. 32 of the Constitution for removing the pollution of water or air which may be detrimental to the quality of life.

Kumar v. State of Bihar, A.I.R. 1991 S.C. 420, <http://www.globalhealthrights.org/wp-content/uploads/2013/10/Kumar-India-1991.pdf>.

34. *Salim v. State of Uttarakhand*, Writ Petition (PIL) No. 126 of 2014, decided on Mar. 20, 2017, <https://www.nonhumanrightsproject.org/content/uploads/WPPIL-126-14.pdf>. The Whanganui River in New Zealand was likewise recently granted legal personhood status in recognition of the local Māori Tribe’s belief that the river is an ancestor. In the words of the tribe’s lead negotiator, treating the river as a person “is not an anti-development, or anti-economic use of the river but [means] to begin with the view that it is a living being, and then consider its future from that central belief.” Eleanor Ainge Roy, *New Zealand River Granted Same Legal Rights as Human Being*, *GUARDIAN*, Mar. 16, 2017, <https://www.theguardian.com/world/2017/mar/16/new-zealand-river-granted-same-legal-rights-as-human-being>.

35. *Salim*, Writ Petition (PIL) No. 126 of 2014.

36. *Id.*

37. *Leghari v. Federation of Pakistan*, W.P. No. 25501/2015 (Lahore High Court, Sept. 4, 2015), available at https://elaw.org/pk_Leghari.

38. *Id.*

Recognition of the judicial duty to hear the claims of citizens injured by government's failure to provide protection from carbon-caused climate change is a bellwether of the role of judges contending with the urgency of climate change cases. In Europe, the judges of The Hague District Court also recognized the court's jurisdiction to consider whether the Dutch government met its duty to protect citizens from carbon-caused climate change. In *Urgenda Foundation v. State of the Netherlands*,³⁹ the court found that, due to the alleged failure of the Dutch government to comply with its carbon mitigation responsibilities, the Urgenda Foundation had standing to assert claims on behalf of Dutch citizens. The court's decision was grounded upon recognition that the alleged failure of the government was a violation of a public trust responsibility to protect its citizens from the imminent danger⁴⁰ caused by carbon-caused warming of the atmosphere.

The "danger creation" analysis has been criticized as a deviation from the traditional requirement of tort law that causation be established between the defendant's act and the damage suffered. Under this analysis, Urgenda's claim should fail because there is no direct causal connection between Dutch emissions and the global problem being created primarily by countries with much larger carbon emissions. However, The Hague District Court recognized that climate change is a problem that eludes traditional tort analysis because of its large-scale, generalized impacts:

It is an established fact that climate change is occurring partly due to the Dutch greenhouse gas emissions. It is also an established fact that the negative consequences are currently being experienced in the Netherlands, such as heavy precipitation, and that adaptation measures are already being taken to make the Netherlands "climate-proof." Moreover, it is established that if the global emissions, partly caused by the Netherlands, do not decrease substantially, hazardous climate change will probably occur. In the opinion of the court, the possibility of damages for those whose interests Urgenda represents, including current and future generations of Dutch nationals, is so great and concrete that given its duty of care, the State

must make an adequate contribution, greater than its current contribution, to prevent hazardous climate change.⁴¹

In the United States, one judge found that future generations have a fundamental right under the U.S. Constitution to a climate system capable of sustaining human life.⁴² This right was held to be a "fundamental right" under the Due Process Clause of the Fifth Amendment to the Constitution; the right constitutes "quite literally the foundation 'of society, without which there would be neither civilization nor progress.'"⁴³ Any compromise of that right by government action or inaction is subject to a "strict scrutiny" standard of review.⁴⁴ Judge Ann Aiken of the U.S. District Court for the District of Oregon applied this analysis⁴⁵ to permit suit against the U.S. government by an organization of students who represented future generations allegedly injured by the government's failure to adequately regulate greenhouse gases.⁴⁶

41. *Id.* at ¶ 4.89.

42. See *Juliana v. United States*, 217 F. Supp. 3d 1224, 1250, 46 ELR 20072 (D. Or. 2016), *motion to certify appeal denied*, No. 6:15-CV-01517-TC, 2017 WL 2483705 (D. Or. June 8, 2017):

Exercising my "reasoned judgment" . . . I have no doubt that the right to a climate system capable of sustaining human life is fundamental to a free and ordered society. Just as marriage is the "foundation of the family," a stable climate system is quite literally the foundation "of society, without which there would be neither civilization nor progress."

43. *Id.* (quoting *Maynard v. Hill*, 125 U.S. 190, 211 (1888)) (citing *Oposa v. Factoran*, G.R. No. 101083, 33 I.L.M. 173, 187-88 (S.C. July 30, 1993) (without "a balanced and healthful ecology," future generations "stand to inherit nothing but parched earth incapable of sustaining life").

44. *Id.* at 1248-49 ("When the government infringes a 'fundamental right,' however, a reviewing court applies strict scrutiny. . . . Substantive due process 'forbids the government to infringe certain "fundamental" liberty interests at all, no matter what process is provided, unless the infringement is narrowly tailored to serve a compelling state interest.'").

45. Judge Aiken referred to the *Urgenda* case:

Assuming plaintiffs are correct that the United States is responsible for about 25% of the global CO₂ emissions, the court cannot say, without the record being developed, that it is speculation to posit that a court order to undertake regulation of greenhouse gas emissions to protect the public health will not effectively redress the alleged resulting harm. The impact is an issue for the experts to present to the court after the case moves beyond the pleading stage. And although this court has no authority outside of its jurisdiction, it is worth noting that a Dutch court, on June 24, 2015, did order a reduction of greenhouse gas emissions nationwide by at least 25% by 2020. See *Urgenda Foundation v. The State of The Netherlands*, The Hague District Court, Chamber for Commercial Affairs, Case No. C/09/456689/HA ZA 13-1396 (June 24, 2015) (<http://deep-link.rechtspraak.nl/uitspraak?id=ECLI:NL:RBDHA:2015:7196>) (rejecting arguments that a reduction of Netherlands' emissions would be ineffectual in light of other nations' practices, observing that "The state should not hide behind the argument that the solution to the global climate problem does not depend solely on Dutch efforts. Any reduction of emissions contributes to the prevention of dangerous climate change and as a developed country the Netherlands should take the lead in this."). Thus, regulation by this country, in combination with regulation already being undertaken by other countries, may very well have sufficient impact to redress the alleged harms.

Id. at 1269.

46. The children allege that the federal government knew that greenhouse gas emissions were destabilizing the climate system and that the government's failure to act on climate change "violate[s] their substantive due process rights to life, liberty, and property," and that the government has "violated their obligation to hold certain natural resources in trust for the people and for future generations." *Id.* at 1233. In November, the court issued an order denying defendants and intervenors' motion to dismiss. *Id.* The court noted

39. Case No. C/09/456689/HA ZA 13-1396 (The Hague District Court, Chamber for Commercial Affairs, June 24, 2015), *available at* <http://www.globalhealthrights.org/wp-content/uploads/2016/03/Urgenda-Foundation-v-State-of-Netherlands.pdf>.

40. *Id.* at ¶ 4.16.

It is not disputed between the Parties that dangerous climate change has severe consequences on a global and local level. The IPCC has reported that the ice at the North and South Poles as well as alpine glaciers are melting due to global warming, which will result in a rise in sea levels. Moreover, the warming of the oceans is expected to result in increased hurricane activity, expansion of desert areas and the extinction of many animal species because of the heat, the latter causing a decline in biodiversity. People will suffer damage to their living environment because of these changes, for instance, a deterioration of food production. Furthermore, the temperature rise will lead to heat related deaths, particularly among the elderly and children. The IPCC reports also state that the current temperature rise causes damage to man and the environment. The 2° C target, also assumed by the Netherlands, is intended to prevent climate change from becoming irreversible: without intervention, the aforementioned processes will become unstoppable.

Injuries attributed to climate change by the students in their complaint included polluted water and drought.⁴⁷ Injury from climate change flooding was also alleged by 13-year-old Jayden F.:

Flood waters were pouring into our home through every possible opening. We tried to stop it with towels, blankets, and boards. The water was flowing down the hallway, into my Mom's room and my sisters' room. The water drenched my living room and began to cover our kitchen floor. Our toilets, sinks, and bathtubs began to overflow with awful smelling sewage because our town's sewer system also flooded. Soon the sewage was everywhere. We had a stream of sewage and water running through our house.⁴⁸

The court rejected the government's contention that the plaintiffs' injuries were "nonjusticiable generalized injuries . . . not particular to plaintiffs because they are caused by climate change, which broadly affects the entire planet (and all people on it) in some way."⁴⁹ Judge Aiken emphasized the particular and concrete nature of the injuries alleged: "Applying the correct formulation of the generalized grievance rule, plaintiffs' alleged injuries—harm to their personal, economic and aesthetic interests—are concrete and particularized, not abstract or indefinite."⁵⁰

The court concluded that the plaintiffs did have standing because "[U.S. Environmental Protection Agency's] action/inaction with respect to the regulation of greenhouse gases allegedly results in the numerous instances of emissions that purportedly cause or will cause the plaintiffs harm."⁵¹ It noted that "to hold otherwise would be to say that the Constitution affords no protection against a government's knowing decision to poison the air its citizens breathe or the water its citizens drink. Plaintiffs have adequately alleged infringement of a fundamental right."⁵²

The alleged failure of the government to prevent life-threatening damage to ecosystems upon which the plaintiffs depended also constituted a violation of the government's public trust duty under the Fifth Amendment's Due Process Clause.⁵³ Judge Aiken noted the split of authority

within the federal judiciary as to whether the public trust doctrine applies to the federal government.⁵⁴ As the conditions of a 2-3 degree world approach, the discourse in favor of the federal government being without a public trust duty may lessen. As the archetypal peril of earth with collapsing ecosystems approaches, legal narratives limiting judicial review of alleged government causation of carbon-caused global warming will become anachronisms.⁵⁵

The *Juliana* court's recognition of the plaintiffs' substantive due process and public trust claims on behalf of future generations is consonant with the finding of the U.S. Supreme Court in *Massachusetts v. Environmental Protection Agency* that "the harms associated with climate change are serious and well recognized." Drawing from a National Response Center report and a climate science expert, the Court described the significant harms associated with climate change:

[A] number of environmental changes . . . have already inflicted significant harms, including "the global retreat of mountain glaciers, reduction in snow-cover extent, the earlier spring melting of ice on rivers and lakes, [and] the accelerated rate of rise of sea levels during the 20th century relative to the past few thousand years. . . ." "[Q]ualified scientific experts involved in climate change

substantive component safeguards fundamental rights that are "implicit in the concept of ordered liberty" or "deeply rooted in this Nation's history and tradition," *McDonald*, 561 U.S. at 761, 767, 130 S. Ct. 3020 (internal citations, quotations, and emphasis omitted). Plaintiffs' public trust rights, related as they are to inherent aspects of sovereignty and the consent of the governed from which the United States' authority derives, satisfy both tests.

54. *Id.* at 1256:

Defendants and intervenors contend that in the United States, the public trust doctrine applies only to the states and not to the federal government. This argument rests primarily on a passing statement in *PPL Montana, LLC v. Montana*, 565 U.S. 576, 132 S. Ct. 1215, 182 L. Ed. 2d 77 (2012). A close examination of that case reveals that it cannot fairly be read to foreclose application of the public trust doctrine to assets owned by the federal government.

55. For example, the contention in *Massachusetts v. Environmental Prot. Agency* that carbon could not be regulated as an air pollutant that endangers public health or welfare predates additional scientific evidence—such as IPCC, *Summary for Policymakers, in CLIMATE CHANGE 2013: THE PHYSICAL SCIENCE BASIS, CONTRIBUTION OF WORKING GROUP I TO THE FIFTH ASSESSMENT REPORT OF THE INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE* (T.F. Stocker et al. eds., Cambridge Univ. Press 2013), and U.S. GLOBAL CHANGE RESEARCH PROGRAM, *supra* note 19—that arose after the 2007 decision:

Petitioners are never able to trace their alleged injuries back through this complex web to the fractional amount of global emissions that might have been limited with [U.S. Environmental Protection Agency] standards. In light of the bit-part domestic new motor vehicle greenhouse gas emissions have played in what petitioners describe as a 150-year global phenomenon, and the myriad additional factors bearing on petitioners' alleged injury—the loss of Massachusetts coastal land—the connection is far too speculative to establish causation.

Massachusetts v. Environmental Prot. Agency, 549 U.S. 497, 544-45, 37 ELR 20075 (2007) (Roberts, J., dissenting).

[T]he Court mistakenly believes this to be the end of the analysis. In order to be an "air pollutant" under the Act's definition, the "substance or matter [being] emitted into . . . the ambient air" must also meet the *first* half of the definition—namely, it must be an "air pollution agent or combination of such agents." The Court simply pretends this half of the definition does not exist.

Id. at 556 (Scalia, J., dissenting).

that the lawsuit was "not about proving that climate change is happening or that human activity is driving it. For the purposes of this motion, those facts are undisputed." *Id.* at 1234. Rather, the court recognized that the questions before it were whether the U.S. government was responsible for some of the harms caused by climate change, and whether the youth plaintiffs had standing to challenge the government's policies in court. *Id.*

47. *Id.* at 1242 ("Lead plaintiff Kelsey Juliana alleges algae blooms harm the water she drinks, and low water levels caused by drought kill the wild salmon she eats. . . . Plaintiff Jacob Lebel alleges drought conditions required his family to install an irrigation system at their farm.").

48. *Id.* at 1243.

49. *Id.*

50. *Id.* at 1244. Because U.S. Court of Appeals for the Ninth Circuit is currently reviewing the district court's decision not to dismiss the case, the decision remains persuasive district court precedent.

51. *Id.* at 1268.

52. *Id.* at 1250.

53. *Id.* at 1261:

[P]laintiffs' right of action to enforce the government's obligations as trustee arises from the Constitution. I agree with Judge Coffin that plaintiffs' public trust claims are properly categorized as substantive due process claims. As explained, the Due Process Clause's

research” have reached a “strong consensus” that global warming threatens (among other things) a precipitate rise in sea levels by the end of the century . . . “severe and irreversible changes to natural ecosystems,” . . . a “significant reduction in water storage in winter snowpack in mountainous regions with direct and important economic consequences,” . . . and an increase in the spread of disease. . . . [The expert] also observes that rising ocean temperatures may contribute to the ferocity of hurricanes.⁵⁶

The ferocity of extreme weather events, the increase in drought, the diminution of clean water supplies for agriculture, contamination of water, and flooding—each of these carbon-emission-caused climate change threats to water resources has been met by judges applying the environmental rule of law. Hawaii is no exception. The public trust responsibility of the state of Hawaii with respect to water resources derives from Article XI, Sections 1 and 7 of the Hawaii State Constitution, and has been incorporated into the State Water Code.⁵⁷ The right of citizens to challenge the government’s regulation of greenhouse gas emissions derives from the right to a clean and healthy environment in Article XI, Section 9⁵⁸ and Hawaii Revised Statutes Chapter 269, the statute prescribing the manner in which the public utilities commission must regulate fossil fuels.⁵⁹

56. *Id.* at 521-22.

57. The Hawaii State Constitution provides: “For the benefit of present and future generations, the State . . . shall promote the development and utilization of these [water] resources in a manner consistent with their conservation and in furtherance of the self-sufficiency of the State.” HAW. CONST. art. XI, §1.

The Hawaii State Constitution further provides:

The State has an obligation to protect, control and regulate the use of Hawaii’s water resources for the benefit of its people.

The legislature shall provide for a water resources agency which, as provided by law, shall set overall water conservation, quality and use policies; define beneficial and reasonable uses; protect ground and surface water resources, watersheds and natural stream environments; establish criteria for water use priorities while assuring appurtenant rights and existing correlative and riparian uses and establish procedures for regulating all uses of Hawaii’s water resources.

HAW. CONST. art. XI, §7; *see also* In re Waiola O Molokai, Inc., 83 P.3d 664, 686 (Haw. 2004):

In *Waiāhole*, this court held that the public trust doctrine applied “to all water resources, unlimited by any surface-ground distinction.” 94 Hawai’i at 133-35, 9 P.3d at 445-47 (affirming *Robinson*, 65 Haw. at 674, 658 P.2d at 310, wherein the court stated that “a public trust was imposed upon all the waters of the kingdom”). In so doing, this court traced the historical development of the public trust doctrine in Hawai’i and reasoned therefrom that article XI, sections 1 and 7 of the Hawai’i Constitution . . . adopted “the public trust doctrine as a fundamental principle of constitutional law in Hawai’i” and that the legislature, pursuant to the constitutional mandate of article XI, section 7, incorporated public trust principles into the Code. *Id.* at 130-32, 9 P.3d at 443-45. Moreover, in holding that the Code “does not supplant the protections of the public trust doctrine,” this court recognized that “[e]ven with the enactment and any future development of the Code, the doctrine continues to inform the Code’s interpretation, define its permissible ‘outer limits,’ and justify its existence.” *Id.* at 133, 9 P.3d at 445.

58. Article XI, Section 9 was first declared self-executing in *County of Hawaii v. Ala Loop Homeowners*: “the right of enforcement described in the provision is self-executing.” *County of Hawaii v. Ala Loop Homeowners*, 235 P.3d 1103, 1125 (Haw. 2010).

59. In re Application of Maui Elec. Co., Ltd., No. SCWC-15-0000640, 2017 WL 6390388, at *10, 47 ELR 20165 (Haw. Dec. 14, 2017):

The 2-3 degree future for water resources caused by greenhouse gas emissions is one inconsistent with a clean and healthful environment in Hawaii. The public trust responsibility to preserve water resources for future generations counsels reduction of the rate of fossil fuel emissions. As the most isolated population center on earth, Hawaii’s ecosystems are among the most vulnerable to global warming. In a 2-3 degree future, its water resources will likely be inadequate to serve the population. At present, water use has led to declining aquifer levels; to relieve demand on the aquifers, the state must find an additional 100 million gallons a day of freshwater.⁶⁰ Global warming of 2-3 degrees will jeopardize the ability of the forested watersheds to recharge aquifers.

The increase in extreme weather events will cause the devastation of the watersheds. By the end of the century, global warming will spawn 60% more storms that could cause potentially catastrophic damage to Hawaii.⁶¹ Hawaii’s state climatologist has noted that “historically we have maybe four [hurricanes a year] . . . last year [2015], we had 15. . . .”⁶² Hurricanes in contact with Hawaii’s steep mountain watersheds sustain wind speeds lethal to the trees that otherwise retain moisture and release water into the ground to recharge underground freshwater aquifers.

Aquifer recharge will also be diminished by declining rainfall:

[W]e next consider whether Chapter 269 is a law relating to environmental quality within the meaning of article XI, section 9. HRS §269-6 pertains to the general powers and duties of the Commission and prescribes that the Commission “shall consider the need to reduce the State’s reliance on fossil fuels through energy efficiency and increased renewable energy generation.” HRS §269-6(b) (Supp. 2013). This statutory provision also provides that in its decision-making, the Commission “shall explicitly consider” the effect of the State’s reliance on fossil fuels on the level of “greenhouse gas emissions.” *Id.* Indeed, dating back as far as 1977, when the legislature adopted HRS §269-27.2 concerning the utilization of electricity generated from nonfossil fuels, the legislature has repeatedly communicated its intent that the Commission is to reduce the State’s dependence on fossil fuels and utilize renewable energy sources. This intent is manifest in the legislative history of Chapter 269, which unequivocally demonstrates an established State policy of prioritizing the utilization of renewable energy sources to reduce pollution in addition to securing the potential economic benefits and enhanced reliability of the State’s energy supply.

60. HAWAII COMMUNITY FOUNDATION, A BLUEPRINT FOR ACTION: WATER SECURITY FOR AN UNCERTAIN FUTURE 13 (2016).

61. For example:

If the waters warm 4 or 5 degrees by the end of the century, there could be an alarming rise in tropical systems forming in the Central Pacific by the end of the century, specifically a 60 percent increase in storms that could cause potentially catastrophic damage to Hawai’i. . . . “If hurricanes are going to become more common, not just once a century, but once every 10 or 20 years, then maybe we should be thinking about changing the infrastructure, whether we should protect our power grid, whether we should have so many houses that are not well grounded.”

Melanie Yamaguchi, “*Wicked, Giant Problem*”: Is Hawaii Ready for Effects of Climate Change?, HAW. NEWS NOW (Aug. 17, 2017), <http://www.hawaiinewsnow.com/story/36025290/wicked-giant-problem-is-hawaii-ready-for-damaging-effects-of-climate-change> (quoting Kevin Hamilton, University of Hawai’i atmospheric science researcher and former director of the International Pacific Research Center).

62. Vicki Viotti, *Pao-Shin Chu: Hawaii’s State Climatologist Sees From the Data That Certain Trends Have Been Affecting Our Weather, but He’s Not One to Suggest Policy Prescriptions*, HONOLULU STAR-ADVERTISER, Aug. 5, 2016.

On most islands, increased temperatures coupled with decreased rainfall and increased drought will reduce the amount of freshwater available for drinking and crop irrigation. Climate change impacts on freshwater resources in the region will also vary because of differing island size and topography, which affect water storage capability and susceptibility to coastal flooding. . . . Freshwater supplies are already constrained and will become more limited on many islands.⁶³

Further, “saltwater intrusion associated with sea level rise will further reduce the quantity and quality of freshwater in coastal aquifers, especially on low islands.”⁶⁴ Sea-level rise caused by global warming of 2-3 degrees will flood the city of Waikiki, destroying urban water systems and causing economic damage of two billion dollars a year in visitor spending.⁶⁵

The specter of a Hawaii impacted by 2-3 degrees of global warming is before Hawaii’s judiciary. As interpreters of the right to a clean and healthy environment and the public trust duties of government under the Hawaii State Constitution, Hawaii’s judges are equipped to achieve just resolution of climate change claims by Hawaii citizens.

IV. Environmental Courts and the GJIE

The present framework of the environmental rule of law is inconsistent with carbon-induced heating of earth two or more degrees beyond pre-industrial levels. Nonetheless, the grave consequences of global warming of two degrees, deemed unacceptable by all the world’s national governments (with the sole exception of the United States) are fast approaching.⁶⁶ One of the world’s most acclaimed environmental jurists, Antonio Benjamin, Justice of the National High Court of Brazil, has described climate change “as the single most important legal issue facing judges globally.”

Effective application of evolving environmental law and understanding of concomitant science is the gravamen of a world judiciary equipped to achieve just decisionmaking as global warming threatens the well-being of humanity. The compelling guide for policymakers published by UNEP on environmental courts and tribunals is a paean to the extraordinary capacity of environmental courts to prepare judges for the rigors of applying the environmental

rule of law as society seeks to contend with global warming and climate change.⁶⁷ Two of the world’s three largest carbon emitters, China and India, have developed extensive environmental court systems to supply judges with specialized knowledge of environmental law and related science. The country with the second largest carbon footprint, the United States, has only one environmental court with broad statewide criminal and civil jurisdiction encompassing regulation of land, air, and water—Hawaii’s.⁶⁸ The handful of other environmental courts in the United States are of limited civil or municipal jurisdiction.⁶⁹

Clearly, precedent is evolving rapidly as the world judiciary meets its constitutional, statutory, common-law, and civil code⁷⁰ duties to protect humanity within its jurisdiction from the devastation of a world warmed to 2+ degrees. Pivotal issues of causation, imminence of danger, sufficiency of evidence of damage, proper remediation, scale of injury, and valuation of costs of carbon emissions versus benefits of carbon emissions confront the judges who persevere to achieve a just application of the environmental rule of law to cases involving the most serious environmental crisis ever encountered. Environmental courts offer a veritable prescription for an arena of enlightened decisionmaking on such issues. This is so because the environmental court judge receives training in fast-evolving areas of relevant science and environmental law and thereafter remains as a decisionmaker to amass the insight and experience that accompanies just decisions on cases with complex technical/scientific issues.

Likewise, the GJIE⁷¹ is a forum vital to strengthening the vanguard of judges who must decide the plight of those who resort to the courts for relief from global warming. Led by judges for judges, its mandate is to equip judges whose interest is the environment.⁷² Regardless of jurisdic-

63. Jo-Ann Leong et al., *Hawai’i and U.S. Affiliated Pacific Islands*, in CLIMATE CHANGE IMPACTS IN THE UNITED STATES: THE THIRD NATIONAL CLIMATE ASSESSMENT 537, 542, 538 (J.M. Melillo et al. eds., U.S. Global Change Research Program 2014), available at <https://nca2014.globalchange.gov/report/regions/hawaii-and-pacific-islands>.

64. *Id.* at 538.

65. See CHARLES H. FLETCHER, U.S. GEOLOGICAL SURVEY, NATIONAL ASSESSMENT OF SHORELINE CHANGE: HISTORICAL SHORELINE CHANGE IN THE HAWAIIAN ISLANDS (2012) (Open-File Report 2011-1051); Nathan Eagle, *Save Beaches or Property? Climate Change Will Force Tough Choices*, HONOLULU CIV. BEAT, July 28, 2017, <http://www.civilbeat.org/2017/07/save-beaches-or-property-climate-change-will-force-tough-choices/>.

66. By some estimates, at the present rate of carbon emission, global temperatures are predicted to rise by up to four degrees Celsius by 2100. Damian Carrington, *Planet Likely to Warm by 4C by 2100, Scientists Warn*, GUARDIAN (Dec. 31, 2013), <https://www.theguardian.com/environment/2013/dec/31/planet-will-warm-4c-2100-climate>.

67. UNEP, ENVIRONMENTAL COURTS & TRIBUNALS: A GUIDE FOR POLICY MAKERS (2016), available at <https://wedocs.unep.org/bitstream/handle/20.500.11822/10001/environmental-courts-tribunals.pdf?sequence=1&isAllowed=y>.

68. HAW. REV. STAT. §§604A-1 to 604A-3 (2016).

69. The state of Vermont established the nation’s first environmental court in 1990, but it does not have criminal jurisdiction. *Compare* VT. STAT. ANN. tit. 4, §§1001-1004, with HAW. REV. STAT. §§604A-1 to 604A-3.

70. For example, the Constitutional Court of Colombia recognized the critical role of wetlands in water security and climate change mitigation with Law No. 1450 of 2011, Colombian National Development Plan (Decision C-035/16). See ORGANIZATION OF AMERICAN STATES, CLIMATE CHANGE: A COMPARATIVE OVERVIEW OF THE RIGHTS BASED APPROACH IN THE AMERICAS 64-65 (2016), available at http://www.oas.org/en/sedi/dsd/docs/climate_change.pdf.

71. The GJIE was formally established at the International Union for the Conservation of Nature (IUCN) World Environmental Law Congress in Rio de Janeiro on April 29, 2016. Thereafter, it was approved by the IUCN World Congress in Honolulu in September 2016.

72. The Charter for the GJIE outlines two categories of judicial members: institutional and individual. Individual membership is open to the following:
(1) Individuals currently serving as judges or in a capacity as judicial decision-makers on specialized environmental courts or tribunals; or
(2) Individuals currently serving as judges or in a capacity as judicial decision-makers on other courts or tribunals, with an expressed interest or expertise in environmental matters.

Charter of the Global Judicial Institute for the Environment, Apr. 29, 2016, at 3-4, <http://iucnael2016.no/wp-content/uploads/2016/06/Charter-of-the-Global-Judicial-Institute-Rio-de-Janeiro-29-April-2016-v2.pdf>.

tion or court assignment, judges who wish to build capacity for decisions involving the environment are eligible for membership.⁷³ The mission of the GJIE is to “support the role of courts and tribunals in applying and enforcing environmental laws and in promoting the environmental rule of law and the fair distribution of environmental benefits and burdens.”⁷⁴

To fulfill its mission, the GJIE has established specific objectives, including to:

- a. Provide research, analysis, and publications on environmental adjudication, environmental dispute resolution, court practices and procedures, court administration, legal claims and actions, judicial remedies, and environmental justice, including access to environmental information, public participation in environmental decision-making, and access to justice;
- b. Strengthen the capacity of judges in administration and resolution of cases and disputes related to the environment;
- c. Provide a forum for convening international, regional, national, and subnational judges, court officials, and judicial institutions, to create partnerships for collaboration and information exchange on environmental law issues[.]⁷⁵

Any judge tasked with applying the environmental rule of law will have the GJIE as a resource. It will be a repository for decisions of judicial colleagues who are decisionmakers on the front line of global warming litigation. It will be

a collaborative center to facilitate global communication between judges and to support those whose independence may be threatened in response to the just application of the environmental rule of law.

V. Conclusion

Environmental law principles applicable to the impacts of climate change upon the water resources of future generations stand against the present rate of anthropogenic warming of earth. Guided by the environmental rule of law, the world judiciary is responding to humanity’s struggle to limit global warming to well below two degrees above pre-industrial levels, as per the Paris Agreement, and in so doing avoid catastrophic consequences for the human race and the greater community of life with whom we share earth as home. Within the parameters of the environmental rule of law, judges strive to protect earth’s water resources and its people from the impending consequences of ongoing human-induced carbon emitted at the present rate. Their decisions must be based on command of rapidly developing science and complete understanding of accelerating change in judicial precedent.

The endeavor to reach a solution that avoids two degrees of warming is time-limited to no more than the year 2100, at present levels of emission. The men and women who are tasked as judges with the duty to decide the manner in which the environmental rule of law is applied to the most important social issue yet facing humanity will be greatly empowered by the instruction, support, and collaboration of environmental courts and the GJIE.

73. Institutional membership in the GJIE includes the following:

Institutional Membership is open to any international, regional, national, and subnational courts and tribunals, and to judicial institutions, such as judicial institutes, schools, associations, academies, and other similar organizations that are directed by judges and are composed of or provide services to judges and judiciaries. The Institute particularly encourages the participation of courts, tribunals, and institutions of judges that include within their jurisdiction the consideration of environmental, land use, or natural resources issues.

Id. at 3.

74. *Id.* at 2.

75. *Id.*