Part III

The Innovators

Chapter 6

Joseph Sax: The Public Trust in Environmental Law

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Introduction

Most Americans born after 1980 do not remember the time before there were systematic legal efforts to protect the environment. They may have heard of the mobilization of 20 million Americans who took to the streets on the inaugural Earth Day in 1970, but most do not really know why their fellow Americans

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were marching to demand action on the environment. They may have heard of or even read Rachel Carson's *Silent Spring* that laid out the likely effects of our profligate use of pesticides and herbicides and other commercial toxins. Or perhaps they are familiar with the Aldo Leopold's clearly stated reasons to conceive of the world we live in as a biotic community and be guided by what he called a land ethic. Almost certainly, they would not know of a young Department of Justice lawyer who, in the early 1960's, first asked questions about how the law could be used to protect the environment.

Joseph L. Sax began his career in the Justice Department and there he learned how the administrative state functioned and how citizens might engage and challenge its decisions. He also understood through his defense of the actions of the government that the government was the agent of the people and that the mechanism of the state had to labor for the common good. These goals all depended on a clear understanding of the role of the government and how its decisions affecting broadly held resources needed to be closely scrutinized, not just for regularity, but to ensure that they were doing the work of the people in the way that took full account of their fiduciary responsibility in regards to those resources.

He believed deeply in citizen activism. His book *Defending the Environment* was subtitled "A Strategy for Citizen Action." The book does not minimize the difficulty of taking on entrenched interests, but it offers moments of hope that those in the middle of protracted disputes can look to for reassurance. There is one bit of irony in the book that even Joe had forgotten about. In the discussion of the effort to stop the landfill at Hunting Creek, a young Deputy Assistant Secretary of the Interior got an earful. That Deputy Assistant Secretary was Jim Watt. When Joe was asked, "*the* James Watt?"—the official who, during the Reagan administration, was bent on dismantling environmental protections—Joe reflected briefly and said with a laugh, "yes, I think it was." They were adversaries even then, but the victor was the one who believed in the people and their right to protect their environment rather than the apologist for the despoilers.

This chapter highlights Joseph Sax, a legal pioneer who rediscovered the public trust principle in modern American law and who then applied it to environmental decision making. His scholarly excavation through legal materials dating back to ancient Rome revealed the public trust as a principle of property law that operated as an inherent limitation on governmental power. It was not dependent on any statutory enactment. Its roots are ancient, and he traced the principle back to the Roman laws expressed in the Justinian Institutes. The trust principle holds that some resources are simply so crucial to society that government cannot "alienate" them by giving them away to private interests, nor can it allow their destruction. Resources that are crucial to the proper functioning of society and which are incapable of either public (in the sense of governmental) or private ownership are said to be held "in trust" by the state. The government,

as a trustee, must manage them as a fiduciary for the benefit of the present and future generations of citizens. This public trust principle charges officials with a strict obligation to protect those elements of ecosystems that are not reducible to public or private commodities as generational inheritance for all citizens. Joe Sax's work spelled out the proper legal incorporation of this principle as a public trust mandate that necessarily included intergenerational equity.

This ancient legal obligation has existed like an essential strand of legal DNA in all forms of government, but especially in those that claim legitimacy through consent. Importantly, Professor Sax demonstrated that consent was not the genesis of the obligation but just the clearest expression of the duty that binds all government. The importance of the public trust idea in American law was not obvious until Professor Sax wrote a seminal article on the subject in 1969. *The Public Trust Doctrine in Natural Resource Law: Effective Judicial Intervention*, published in the Michigan Law Review, became the most cited article in the field of environmental law.

Countless decisions both in the United States and internationally have relied on its reasoning to apply the trust to protect society's crucial resources. Professor Sax pointed out the need for a reinvigorated trust idea in our legal system, and he explored the decisions that had invoked the trust since the founding of the nation. Writing at the dawn of modern environmental law, he observed that the power of government must be to act in the best interests of the people and future generations and to resist private profiteers in bending policy that would betray that fundamental obligation. Sax understood that, while some problems in society arise because of majorities oppressing minority interests, in the realm of environmental law virtually the opposite occurs: politically powerful minority interests constantly pressure governmental agencies to alienate resources and allow pollution even when doing so harms the public interest. The power of well-organized interests against a diffuse public interest is a well-recognized political liability in democratic systems, but that inherent hazard cannot be permitted to change the basic orientation of public law. As Sax recognized, "For self-interested and powerful minorities often have an undue influence on the public resource decisions of legislative and administrative bodies and cause those bodies to ignore broadly based public interests." He therefore concluded that public trust protection is needed in "a wide range of situations in which diffuse public interests need protection against tightly organized groups with clear and immediate goals."

In suggesting that the trust would be a necessary constraint on government, Sax had to wade into the matter of judicial enforcement. Summarizing a wide range of trust cases, he suggested standards by which it would be appropriate for a court to halt agency action. We describe them more fully below. He also explored the judicial interface with legislatures, noting that if a legislature violated the trust, a court could order a "legislative remand" sending the matter

back to the legislature for reconsideration. In that manner, Sax observed, each branch would observe its constitutionally appointed role. His observation of the implications of the trust duty were to show how it not only was fully consistent with the idea underlying the system of separation of powers, but more importantly it was a critical part of the proper functioning of that system.

Sax's trust scholarship gained significant attention in the academic world decades before attaining a similar impact in the broader world of judicial and public policy debate. He published the article immediately prior to passage of a multitude of laws by Congress in the early 1970s. Those laws ushered in a new era of environmental law—one dominated by the new statutes and regulations passed to implement them. When that happened, American lawyers and most law professors focused almost singularly (and perhaps properly) on what the statutes said. That narrowness of focus obscured the underlying trust obligation that was at the heart of the statutes and at the root of the administrative process.

For four decades, most lawyers and judges simply assumed environmental law was working and for limited purposes of the most obvious pollution reduction, it was. There is no question that the Clean Water Act reduced water pollution in significant ways or that the air, as measured by pulmonary health, is markedly cleaner than before the Clean Air Act. But the assumption of unvarnished success was increasingly belied by the science showing that the effects of pollution were pervasive, systemic, and threatened ecosystem destruction and collapse.

The failure of the basic environmental statutory scheme is manifest in the broad ecological challenges now facing humanity, but the field also suffers from a volatility that can no longer be ignored. Regulations implementing the statutes undergo wrenching change with nearly every administration, and the few protective ones that have been passed are later invalidated by administrations allied with industry interests. What this volatility reveals is that environmental law has come unmoored from its foundation. The focus on the cost internalization function of pollution control caused those tasked with environmental protection to forget that the justification for environmental regulation was based on the trust principle as much as tort law.

The United States has more pages of environmental law than any other nation on Earth. Congress passed the Clean Water Act, Clean Air Act, Endangered Species Act, and a host of other laws in the 1970s to protect and restore the environmental systems that were threatened by the unregulated industrial activity that was guided by the goal of shifting costs to others. That strategy was reflected in the political pressure relentlessly exerted by the regulated community, and it eroded the will of state and federal officials to administer the statutes' protections as vigorously as the statutes might allow. The constant tug and pull of the politics surrounding enforcement and the reach of the core environmental statutes resulted in much of the destruction the statutes were designed to prevent. Agencies are not immune from the politics of the environmental protection, and in times when enforcement was undervalued, the permit systems and other provisions in these statutes were used to open vast public lands to coal mining and oil drilling, log the national forests, harm already endangered or threatened species, increase toxic groundwater pollution, and perhaps most crucially, permit massive carbon emissions to destabilize the atmosphere. A transformational approach was needed to reorient environmental enforcement in the public interest and to see clearly that the public interest, and not just baseline health measurements, were at the root of the statutes.

This confluence of phenomena brought a renewed focus on the work of Joe Sax as a legal pioneer who illuminated the public trust principle in modern American environmental law. The duty embedded in the trust runs not just to the living, but to their descendants. The duty is captured by President Theodore Roosevelt's famous speech given at the rim of the Grand Canyon in 1903 where he declared:

We have gotten past the stage, my fellow citizens, when we are to be pardoned if we treat any part of our country as something to be skinned for two or three years for the use of the present generation, whether it is the forest, the water, the scenery. Whatever it is, handle it so that your children's children will get the benefit of it.

As citizens face continual battles with their own government to protect scarce and crucial resources, more and more lawyers are now crafting cases that invoke the public trust, and the principle is coming out of a long period of dormancy to bear on modern ecological crises. Courts have repeatedly made clear that the trust stands apart from statutes, and some have made clear that the trust is at bottom a constitutional obligation binding governmental agencies at the state or federal level. In significant measure, the Sax scholarship poised this remarkable doctrine to transform environmental law and bring about a fundamental change in the underlying assumptions animating the law. Youth facing the prospect of runaway climate change have invoked the trust principle in a series of cases known as Atmospheric Trust Litigation, described more below. Others have invoked it to protect groundwater and wildlife that was otherwise subject to destruction under permit systems.

The potential of the trust revolves around the logic of democracy. Joseph Sax understood that to have any impact the trust would have to be enforced in courts against the other branches of government. He grappled deeply with the trust's role in American democracy, and his writings today continue to illuminate a path forward. In many respects, the trust scholarship of Sax leaves a legacy far greater than the environmental realm. It urges us to examine the essential role and purpose of government.

The Constitutional Trust and Democracy: A Saxian Vision

As we have pointed out, most legal observers would agree that credit for the resurrection of the modern public trust doctrine ought to be placed at the feet of one scholar: Professor Joseph Sax. Of course, even if the only contribution Professor Sax had made was either to the public trust doctrine or to the re-conceptualization of property law's takings jurisprudence, his place in the scholarly firmament would be secure. But he did much more. There are few people about whom it could be said-certainly in the law-that they were there at the beginning, when environmental law emerged as a field. Joe was one of those people.

His arguments all rely on a firm grounding in democratic political theory. He argued for an understanding of law that supports the democratic legitimacy of lawmaking. Professor Sax understood the relationship of property to the legitimate functioning of the state. Moreover, his work had a direct effect on the discursive field that defined the environmental movement. Aside from his explicitly scholarly work, more popular books like *Defending the Environment* and *Mountains Without Handrails* gave a theoretical framework and a language to the claims that environmentalists were making. His work also insulated environment in our democratic tradition and by reaffirming the public content of private rights.

A theory of law must justify the substantive conclusions as well as the process for resolving disputes over ends. By focusing on property-especially the constitutional dimension of property-Professor Sax had to immediately engage a particularly troublesome intersection of public and private law. The history of the common law shows that property ideas had as much to do with conceptions of the state as they did with the development of the market. Because of this, the changing conceptions of property constituted us as much as the overt political charters we adopted to regulate government or to secure rights. We occupy a seat at the end of a very long train of events that make up our understanding of the social functions of property. The democratizing currents in American social life could not help but influence our understanding of legal categories.

What Professor Sax did was to identify and question the role of the state in creating, defending, and regulating property-both private property in his analysis of the limits of regulation and public property in his work on the public trust. Yet he did not assert a normative vision of his own; instead, he excavated the traces of his argument from our legal and cultural traditions. Thus, he notes the Roman law and early English law roots of the public trust doctrine. In his book, *Playing Darts With a Rembrandt*, for example, he shows how a durable public claim to important cultural artifacts arose in the response to the revolutionary Terror in France of 1794.

This constitutive archeology is one of the foundations of Professor Sax's work, and while his arguments are commonly characterized as "novel," in fact

they are faithful to the democratizing forces that balanced the private needs of an emerging market economy with the continuing solidary functions of property. They are, in an important way, illustrations of the ways in which the social function of property constitute us as a people and as a polity. Of course, law-making reflecting as it does continuing struggles over power does not trace a straight line, but that is not the point of Professor Sax's work. He locates families of principles as a method of inquiry.

In exploring Professor Sax's contribution to environmental law, it is important to note that his article on the public trust doctrine focuses on "effective judicial intervention." While it is in the field of constitutional theory that the question of whether judicial intervention in controlling legislative prerogatives is legitimate, Professor Sax has illustrated that the role of the courts is often dispositive and often the only meaningful restraint on what would otherwise be illegitimate legislative action. He demonstrates that the checking function of courts increases the democratic legitimacy of the popularly elected branches of government. If the public trust doctrine is part of our constitutional tradition, the state has an obligation to create a mechanism to attend to that duty. What Professor Sax shows is that environmental law is the structural expression of that duty.

Professor Sax suggests that the public trust doctrine is a species of constitutional law. The exact method for protecting those natural resources that are part of the inalienable assets of the public is within the legislative domain, but the courts have a specific and important role to play in superintending that duty's actual fulfillment.

The claim that some public trust issues are not justiciable is untenable. The checking function that courts play in limiting overreach by the political branches of government is part of the proof of that. Reluctance to intervene in the administrative process is a common default position, but Sax provides a test for courts to apply to ensure that the resources that are endowed with the public interest are protected. Because the fundamental function of courts in the public trust area is one of democratization, the court must inquire, at a minimum, whether the processes that produced an administrative or legislative outcome are a function of political imbalance.

As he painstakingly demonstrates, the question of political imbalance is not one that merely reflects any particular judge's preference; it requires a searching inquiry into the process that produced the decision, and consideration of whether the public had an adequate opportunity to have its interest represented. This can also include an inquiry into the appropriate decisional authority. The proper constituency to decide is thus part of the review, and the remedy can include a movement from one level of decision-making to another. As mentioned earlier, Professor Sax suggests a remedy that has come to be described as a "legislative remand." This is the capacity for courts to influence the legislative

agenda in order to take better account of the public interests at stake in the management or protection of resources that are clothed with the public trust. Environmental challenges could have been characterized, as many commentators have suggested, by highlighting the gravity of the threat posed by environmental degradation, but that physical threat is as much a function of political and democratic degradation as it is a function of inattention to the external costs associated with modern industrial life. According to Sax, environmental law and the commitment to protect our natural resources and wild spaces are expressions of our commitment to a robust democratic life. It is a reaffirmation of our obligation as citizens who stand in relation to each other and to the future.

Essential attributes of sovereignty can be particularly imperiled by legislative inaction. This is true in the public trust context, where government's role as a trustee depends on the condition of essential natural resources. Natural resources, like the atmosphere, are complicated and delicate. Without proper care, these resources can deteriorate to a point where restoration is no longer possible. If the substance of the public trust is irreversibly destroyed or deteriorated, then government's essential attribute as a trustee over that substance has been eviscerated. Were government to attempt such an abdication, courts could enjoin government from doing so. In other words, courts can require legislatures to not act where it would have otherwise acted; yet, when the same result occurs through inaction, courts have been reluctant to place an affirmative duty on the legislature. The distinction is mere formalism, a principle untethered from its rationale.

Government defendants in public trust litigation tend to characterize their fundamental fiduciary obligations as "political questions" inappropriate for judicial review. This framing has dominated the government defendants' briefs in climate trust cases, for example. But whether government has a fundamental constitutional obligation to oversee the atmosphere as a sovereign trust resource does not implicate the political question doctrine. Such a determination is nothing more than the vindication of a constitutional right. A judicial determination of the existence of the trust obligation and whether rights protected by the public trust doctrine have been violated is merely the courts holding the legislature and executive branches to their respective constitutional duties.

Another obstacle that has arisen in public trust cases seeking action on climate change is the claim that statutes have displaced the trust duty. This is called the displacement doctrine. However, unlike other common law rights, the public trust doctrine is not subject to statutory displacement. The public trust doctrine is not supplanted by the mere existence of legislation which addresses public trust assets. No deference is owed to administrative or legislative bodies who interpret the public trust. Mere compliance by these bodies with their legislative authority is not enough to determine if their actions comport with the requirements of the public trust doctrine. The public trust doctrine, enforced by the courts, is an important check on how the political branches manage trust assets: the principle requires government trustees to protect trust assets for present and future generations and does not allow them to abdicate their fiduciary duty to prevent substantial impairment to the trust property. **In the words of one court**, "The check and balance of judicial review provides a level of protection against improvident dissipation of an irreplaceable public asset." Professor Sax explained that public trust law "is a technique by which courts may mend perceived imperfections in the legislative and administrative process."

Judicial inaction, on the other hand, effectively forecloses policy options for future legislatures. If the trust assets are completely and irreversibly depleted or destroyed, then the future legislature is denied its authority to ask and answer the questions related to trust management. If the substance of the trust is irreparably degraded, certain legislative policies are rendered obsolete. Appropriate judicial action preserves the constitutional role of the legislative branch by ensuring that a question not properly foreclosed is preserved for future legislatures.

As public trustees, government agencies and legislatures must manage public natural wealth for the *sole benefit* of the citizens, rather than to promote their own political interests or the singular interests of their allied industries. As the Supreme Court said long ago, "[T]he power or control lodged in the State, resulting from this common ownership, is to be exercised, like all other powers of government, as a trust for the benefit of the people, and not as a prerogative for the advantage of the government, as distinct from the people, or for the benefit of private individuals as distinguished from the public good." This rule carries out the basic assumption underlying American democracy: that government must exist only to serve the people. Professor Sax recognized the alignment between the public trust and popular sovereignty and explained the trust concept as rooted in basic democratic principles.

The Corpus of the Trust: Employing the Logic of Precedent

The public trust principle identifies some natural resources as belonging to the public, subject to such protection that they may endure and continue to support the survival and welfare of future generations. In other words, it puts some resources off limits to strictly private ownership and prohibits actions that lead to the destruction of the trust resource. Yet, as explored further below, the classic American property tradition viewed the balancing of property rights as purely artifacts of private law. The government would act as referee leading government officials to fall into the pattern of thinking that they must permit destructive private use so as not to interfere with private property "rights."

Professor Sax introduced a fuller paradigm to American law by unveiling a legal tradition of *public* property rights tracing back to ancient Rome and undergirding civilizations throughout the world. He showed, through meticulous compilation and analysis of cases, that the norm recognizing public property rights was incorporated into American jurisprudence through early decisions and remains to provide ecological protection. We explore in further detail below this *public* side of property law illuminated by Professor Sax, but first we ask what resources are subject to public trust protection?

In a trust construct, the wealth subject to protection is called the "*res*" or "corpus" of the trust. In a financial trust used for a college education, for example, the "*res*" or "corpus" consists of monetary wealth or other income-producing assets such as stocks, bonds, and rental properties that the trustee will use to pay tuition for the benefit of the student who is the beneficiary. In the case of a public trust, the wealth is ecological commonwealth needed to sustain society for the benefit of present and future generations who are, collectively, the legal beneficiaries of the public trust.

As Professor Sax compiled and analyzed the early public trust cases in American law, he observed that most involved waterways and shorelines. For example, in the seminal American case, Illinois Central Railroad v. Illinois, decided in 1892, the U.S. Supreme Court conferred public trust protection to the shoreline of Lake Michigan. The circumstances leading to the case were rather shocking: the Illinois state legislature had conveyed the entire waterfront of Chicago to a private railroad company. Back then, the shoreline was needed by the citizens for fishing, navigation, and commerce, yet the legislature (likely under corrupt influence) basically transferred to the Illinois Central Railroad a private monopoly over this essential societal resource. The Supreme Court declared that the legislature had no power or authority to make such a conveyance, because the shoreline was held in public trust to serve the public. Describing the shoreline as property of a "special character," and "property in which the whole people are interested," the Court elaborated: "The ownership of the navigable waters of the harbor and of the lands under them is a subject of public concern to the whole people of the State." The Court's approach can be captured as the "public concern" test. As Professor Charles Wilkinson explained this focus on public concern: "The public trust doctrine is rooted in the precept that some resources are so central to the well-being of the community that they must be protected by distinctive, judge-made principles."

Based on the logic of *Illinois Central's* public concern test, more resources than just surface water and shorelands would appear to fall logically within the scope of trust protection. Certainly air, wildlife, forests, groundwater, oceans, soils, grasslands, and the full plethora of natural resources remain integral to society. Are any of those resources *not* a matter of "public concern," particularly

in a coming climate age that will deliver unprecedented challenges for community adaptation to new ecological realities? Drought, sea-level rise, flooding, fire, insect spread, disease, and crop loss seem to place a premium on *all natural resources*, making it hazardous to excise any from the trust's protection. The reality is that ecosystem components operate as one integral system supporting life. While courts have lagged far behind the scientific understanding of ecosystem dynamics, it is now broadly understood that we cannot simply sacrifice some key resources and expect the others to maintain their function. As Aldo Leopold famously said so long ago, "To keep every cog and wheel is the first precaution of intelligent tinkering."

With these concerns in mind, Professor Sax interpreted the public trust principle in broad fashion, characterizing it as a principle animated by the core logic of protecting ecosystem integrity. Not willing to confine the public trust and its relevance to historic conditions, he charted the principle in a way responsive to society's changing needs. While acknowledging, "The historical scope of public trust law is quite narrow," he wrote: "Certainly the principle of the public trust is broader than its traditional application indicates." Sax saw the public trust as a reservoir of principled logic that could be applied beyond the historic application to waterways. He wrote, "Of all the concepts known to American law, only the public trust doctrine seems to have the breadth and substantive content which might make it useful as a tool of general application for citizens seeking to develop a comprehensive legal approach to resource management

seeking to develop a comprehensive legal approach to resource management problems." He elaborated by giving examples to which this principle could be applied, stating:

[I]t seems that the delicate mixture of procedural and substantive protections which the courts have applied in conventional public trust cases would be equally applicable and equally appropriate in controversies involving air pollution, the dissemination of pesticides, the location of rights of way for utilities, and strip mining or wetland filling on private lands in a state where governmental permits are required.

The reach of the public trust depends on judicial interpretation. Like the great doctrines derived through our common law jurisprudence, the public trust is a principle devised by courts. Where there is no specific statute limiting their application of extant legal principles, judges have always created and interpreted legal principles using reasoned logic and relying on the authority of precedent (which means judgments and reasoning from past cases). Through careful assaying of judicial opinions, the judiciary can craft principles capable of being both faithful to tradition yet responsive to contemporary lived circumstances. This is the power of "common law" created by courts. As one court described the common law:

The very essence of the common law is flexibility and adaptability. It does not consist of fixed rules but it is the best product of human reason applied to the premises of the ordinary and extraordinary conditions of life.... If the common law should become ... crystallized ... it would cease to be the common law of history and would be an inelastic and arbitrary code. [O]ne of the established principles of the common law [is] that precedents must yield to the reason of different or modified conditions.

Despite the resistance of government officials to apply the public trust to 21st century problems, many if not most courts describe the doctrine as flexible, geared to accommodating new societal needs rather than confining the law to serve history's requirements. Even back in 1893, the Supreme Court of Minnesota set the tone for this judicial approach by finding that the public trust should protect not just the traditional interests of fishing, navigation and commerce, but should also protect the public's interest in "sailing, rowing, fishing, fowling, bathing, skating ... and *other public uses which cannot now be enumerated or even anticipated*."

This wisdom applied a century ago by judges who could not have possibly anticipated the potentially cataclysmic consequences of climate change holds even more force today. Modern courts describe the public trust as "not fixed or static," but a principle to "be molded and extended to meet changing conditions and needs of the public it was created to benefit." Many (though not all) courts have extended the trust to a broader array of natural resources, including dry sand beaches, fish and wildlife, air and atmosphere, and groundwater. Still, some judges are reluctant to modernize the trust. An Oregon county circuit court judge, for example, said that the public trust in that state extends only to the submerged lands along navigable waters. Taking a classic *private* property view, the judge found air and atmosphere could not be "property" subject to the public trust, because they were "not acquired or traded for economic value and hence [they are] not a commodity." To that judge, atmosphere was simply empty, uncontrolled, valueless space—not something that "can be measured or divided and used." Accordingly, he refused to extend public trust protection to air and atmosphere-not recognizing that the incapacity of the resource to be transformed into a commodity was the very essence of its public nature. Youth plaintiffs in that case appealed the decision to the Oregon Supreme Court, and the case is pending as of this writing.

Some courts, however, have moved public trust interpretation closer toward a full *ecological res* approach to bring the law more in compliance with the actual laws of Nature. Courts take a first step in that direction when they recognize the intertwined and indivisible nature of ecosystems—and the artificiality of the legal system's compartmentalization of them into neat cubbyholes of surface water, air, forests, wildlife, soils, groundwater, and the like. As an astute trial judge in Washington state noted, the public trust's required protection of navigable waterways equally requires protection of the atmosphere from greenhouse gas emissions, because atmosphere and submerged lands remain inextricably connected. Judge Hollis Hill said, "to argue that GHG emissions do not affect navigable waters is nonsensical...." A federal district court in a landmark climate public trust case, *Juliana v. United States*, referred broadly to the "natural resources trust," describing the scope of the doctrine as extending to "resources important enough to the people to warrant public trust protection."

Decisions such as these follow the path charted by Joseph Sax when he noted that the logic of the public trust decisions applied equally to other natural resources well beyond the streambeds and navigable waterways that were the focus of 18th and 19th century cases.

The Fiduciary Obligations of a Government Trustee

Professor Sax observed that citizens were increasingly seeking recourse in court to force legislatures and agencies to protect ecology. He viewed the public trust as the only principle both general enough and flexible enough to respond to the host of emerging environmental problems. He deemed that, for this principle to be an effective tool of judicial protection, "it must contain some concept of a legal right in the general public." Embedded in the structure of any trust is a legal right assertible by the beneficiaries against the trustee for mismanaging the trust. By describing natural resources as held in a public "trust," the courts of this country bring to bear a rich tradition of jurisprudence that holds trustees accountable to the beneficiaries.

A trust of any sort—whether public or private—divides ownership of the trust wealth between the trustee and the beneficiaries. The trustee is charged with managing the trust assets. The number-one rule of a trust is that the trustee must manage the trust assets for the benefit of the designated beneficiaries, rather than for the trustee's own benefit. While the beneficiaries have no authority to manage the property, they (and they alone) gain the clear benefit of the trust.

The law imposes a well-established set of requirements called fiduciary obligations on the trustee. These are basic standards of care and loyalty to ensure that the property is well managed and not used to benefit anyone other than the named beneficiaries. These fiduciary obligations are enforceable in court by the beneficiaries—which, in the public trust context, are present and future generations of citizens (while only live citizens can walk into court, they represent the interests of their posterity as well as themselves).

Many public trust cases have borrowed the fiduciary obligations enshrined in private trust law as it has developed over centuries. When Professor Sax wrote his article, he focused mainly on government's restrictions in alienating public trust property (putting it into private ownership). But by introducing and explaining the public trust as an entire framework, he gave the courts an analytical paradigm necessary to apply the full suite of fiduciary obligations that had been well-refined in private trust law. The list below gives a summary of the key duties assembled from some modern public trust cases decided since Professor Sax wrote his pioneering article (many of the cases rely extensively on his work). Together they form a coherent framework of government accountability in managing ecology.

As a preliminary matter, however, it is important to clarify the relationship of these basic fiduciary duties to statutory law. Courts have made clear that agencies are not excused from their public trust responsibility just because they met the terms of a statute. In fact, since legislatures are themselves deemed trustees, the statutes are measured according to whether they carry out the trust obligations. As one court said, "Mere compliance by [agencies] with their legislative authority is not sufficient to determine if their actions comport with the requirements of the public trust doctrine. *The public trust doctrine at all times forms the outer boundaries of permissible government action with respect to public trust resources.*" As you review these specific obligations, consider how differently the environment would be managed if courts forced government to abide by them.

Protect the Resources (the Trust Assets) from "Substantial Impairment"

The fiduciary obligation carrying the most practical importance is quite basic: the trustee has a firm duty to protect the wealth of the trust. As one federal district court made clear, "the natural resources trust operates according to basic trust principles, which impose upon the trustee a fiduciary duty to protect the trust property against damage or destruction." Because future generations are, without exception, recognized beneficiaries of the public trust, the principle aims to protect and sustain natural wealth for their inheritance. Applying this classic duty to public trustees, courts have said that agencies and legislatures must prevent "substantial impairment" of public trust resources. Courts emphasize that this duty is active, not passive: a trustee may not sit idle and allow the trust property to "fall into ruin on his watch." As one court put it, "The trust reposed in the state is not a passive trust; it is governmental, active, and administrative, requir[ing] the lawmaking body to act in all cases where action is necessary, not only to preserve the trust, but to promote it." Scores of other courts have described this duty as "affirmative," requiring the government's "continuous supervision and control" over the public's crucial resources.

Maximize the Societal Value of Natural Resources

Leading trust cases require government trustees to manage trust resources in a way that maximizes their benefits to the people. Most polluting uses of air, water, and soil would fail under a trust approach. Existing statutes allow a corporation to pollute these valuable resources to the extent that they do not force the internalization of all production costs—minimizing, rather than maximizing, the societal value of the resource.

Scrutiny of Private Use

Government trustees may not manage public natural commonwealth for the primary purpose of serving private interests. The trust's basic purpose is to reserve resources for public use, access, and benefit. The trust does not altogether prohibit private use of public trust resources, but rather aims to harness private interests to promote the public good. A trustee may privatize public trust assets only when doing so (1) clearly aids a public trust purpose; and (2) does not cause "substantial impairment" to the public's interest in the remaining lands and waters.

Keep the Trust Resources in Public Ownership

The public trust principle imposes strict limitations on when the government can privatize a resource held in public trust. It can only do so if the conveyance (1) furthers the public's interest in the trust resource; and (2) does not cause substantial impairment to the remaining resources. Many courts have applied this test to bar the state from conveying tidelands to private parties, in order to protect the public's interest in fishing, navigation, commerce, and recreation. Some courts have said that the government cannot fully convey private title to dry sand beaches, because doing so would allow private owners to exclude citizens from this area that serves important public needs, including recreation. Even where a state did convey private title to such areas in the past, courts find that private landowners do not have complete title, but rather share their title (called *jus privatum*) with the public (which holds an interest called *jus publicum*).

Restore the Trust

A trustee must restore a trust asset that has been damaged. This basic principle seeks to return the beneficiaries to their rightful position by making

the trust whole again. Trustees have an affirmative obligation to recoup monetary damages against third parties that harm or destroy trust assets. In the public trust context, for example, the duty demands recovery of natural resource damages against oil companies that cause spills in the ocean.

The Duty of Loyalty

Trustees may not manage public commonwealth for their own political or private gain. The trust imposes steadfast, undivided loyalty towards the designated beneficiaries and prohibits conflicts of interest that could engender even the possibility for the trustee to self-deal. The fiduciary duty of loyalty remains exacting and rigorous, "not the duty to resist temptation, but to eliminate temptation, as the former is assumed to be impossible...." This duty of loyalty is the primary tool to ensure that government works for the benefit of the people, as a true democracy requires. While Professor Sax did not analyze this duty in his scholarship, it comes directly from his premise that government must manage ecosystems for the benefit of citizens.

Professor Sax identified a serious, deep-seated problem with the growing field of environmental law. He observed that legislatures and agencies often took actions contrary to the public's best interests, due to inordinate political pressure imposed by powerful private interests. This fundamental duty of loyalty, if enforced by courts, could perhaps root out the core problem with government today: the corruptive influence of campaign contributions on the part of private interests who stand to benefit from legislative and executive branch decisions on environmental issues. Campaign financing creates exactly the kind of temptation that the trust abhors. Self-dealing, which is strictly prohibited by the trust's duty of loyalty, manifests habitually when legislators or political appointees in the executive branch make decisions to reward their industry campaign funders.

The problem is not that this corruption goes unrecognized, but that it has become institutionalized, and greatly exacerbated by the U.S. Supreme Court's *Citizens United v. Federal Election Commission* decision, which treats corporations as natural persons for purposes of direct contributions to political campaigns. The *Citizens United* opinion remains difficult to legally dislodge, because the Court categorically held that corporations have constitutionally protected First Amendment rights to make such campaign contributions. But the fiduciary duty of loyalty at the core of the trust structure that Sax identified can delegitimize this political behavior, not by contesting the right of the corporations to make the contributions, but by challenging the ability of officials to involve themselves in decisions that are tainted by campaign contributions. The fiduciary duty of loyalty would require lawmakers to recuse themselves from decisions in which a corporate-affiliated campaign donor has a significant interest. This would not

require the showing of a corrupt *quid pro quo*. The trust paradigm of loyalty to citizens would seemingly steer American government back towards the democratic ideals that the Founders aimed to secure in establishing the United States government.

In sum, the public trust repositions all players in their relationship to natural resources and natural systems. The doctrine makes government officials fiduciary trustees rather than mere political actors, and it bears no tolerance toward disloyal public servants. Nature is a priceless public endowment consisting of tangible and quantifiable assets, instead of a vague "environment" with amorphous value. Citizens stand as beneficiaries holding a clear public property interest in crucial natural resources, rather than as weak political actors. The approach does not view the polluters as equal claimants to the trust assets. They may have more political power, but the role of our political institutions is to safeguard democracy rather that to give it over to the most powerful members of the political sphere. But this paradigm requires enforcement of fiduciary obligations, for without a rigorous judicial role, a "trust" is not a trust at all.

The Court's Role in Enforcing the Trust

Professor Sax determined that, for the public doctrine to provide a satisfactory tool, it must be enforceable against the government. His scholarship thus delved deeply into the role of courts, as enforcers of the trust, "shaping public policy with respect to a wide spectrum of resource interests." This was a truly a pioneering endeavor. Sax wrote at the dawn of modern environmental era at a time in which Congress was actively passing statutes such as the Clean Air Act, the Clean Water Act, the National Environmental Policy Act, and many others. The American public had fought hard to get these environmental laws passed by Congress. Twenty million Americans participated in peaceful demonstrations on the first Earth Day, April 22, 1970, to make the environment a national priority, and there was great faith that these laws would work to improve the doleful environmental conditions facing the nation. The focus of this era was on the two political branches of government—the legislature and executive branch agencies—and not yet on the courts.

Professor Sax illuminated the necessary role of the judiciary in environmental policy, showing that the courts could and did enforce the trust, and that such enforcement served as a vital check in the system of democracy. But the full impact of his judicial analysis is now just being realized. For decades, environmental litigation consisted almost exclusively of statutory claims, not public trust claims, and created a framework of judging that relegated the judicial branch to a passive position.

Over time, courts applying the statutes have developed a strong "deference doctrine" that gives tremendous latitude to agency decisions. Judges uncritically presume that agencies will faithfully carry out their statutory commands, and their deference to agencies often precludes effective and probing review. This restrained attitude has greatly diminished the judicial branch as a vital check in the three-branch system of government. In retrospect, the statutes dramatically shifted the balance of power between the three branches of government. One federal appellate judge recently announced a "Wake Up Call for Judges," objecting that an "enfeebled" judicial branch contributes to a "wholesale failure of the legal system to protect humanity from the collapse of finite natural resources by the uncontrolled pursuit of short-term profits."

Recently environmental litigants have turned to the public trust to seek redress in court when agencies allow broadscale environmental damage. The public trust puts the courts in a much different posture and summons judicial capacity in ways that statutory claims tend not to, for several reasons. First, public trust claims can be macro in scope. They seek to hold agents of the state to the fiduciary responsibility of protecting ecological assets. Second, trust claims seek to hold public officials accountable to *substantive* fiduciary obligations, not just procedural formalities. Substantive fiduciary performance looks to actual protection of the asset, regardless of whether government followed correct statutory procedures in resource management. Third, a trust claim may assert breach of the duty of loyalty to public beneficiaries. Fourth, a trust claim does not trigger judicial deference to agency technical decisions. Courts typically approach a trustee's fiduciary performance with a strict evidentiary review. Finally, a trust claim may challenge legislative action as well as agency action. Statutory claims never address legislative dysfunction, because the bounds of review are set by the statute. If a court finds a law in violation of the public trust duty to citizens, it may not rewrite the law itself, but it can send the matter back to the legislature as a "legislative remand," a tool that Professor Sax described in his landmark article.

What is the remedy in a public trust case? First, the court may order an "accounting" of the resource which informs the beneficiaries of the condition of the trust. An accounting for a river held in trust might require a full disclosure of all of the pollution in the river (and its sources), the water levels and withdrawals from the river, other threats, and uses and other ecological resources supported by the river (fish and wildlife for example). The second feature is an enforce-able plan to stop the damage to the trust and restore the ecological wealth that has been lost by the public trustees. For a river, this might take the form of an enforceable cleanup plan and a plan to change the water permitting system to allow enough water in the river to maximize the public uses. The courts typically maintain continuing supervision over these processes. A final trust remedy is the "backstop injunction," which is an order from the court to keep the situation

from getting worse. In the river context, for example, the court may enjoin a damaging water diversion or to prevent an agency from issuing a permit to pollute the river. While the features of a trust remedy may be complex, the tools used by courts in fashioning such relief are hardly unknown to judges. They are the common tools with which every judge has great familiarity. While environmental statutes introduced a host of narrow procedural remedies to the field of environmental law, these fundamental remedial tools remain available to courts deciding public trust claims.

Lawyers craft the cases that they bring to court. Professor Sax's article contained wisdom for lawyers seeking to apply the public trust. He cautioned against "extreme and doctrinaire positions" and wrote, "A litigation theory which begins with a sophisticated analysis of public trust principles-setting out alternatives for the achievement of a reasonable development of trust lands with minimal infringement of public use-is likely to obtain a far more sympathetic response from the bench than is one which takes a rigorous legal principle and squeezes it to death." In this vein, it is important for lawyers to map out a reasonable and feasible remedy for the court to impose if it finds a trust violation.

One of the most practical tools is a supervised remedy structure in which the parties devise a solution within the framework defined by the court. In this way, the court itself does not fashion the remedy, but rather scrutinizes a proffered solution for consistency with the legal rights and duties and supervises its enforcement. This model has widely been used in complex litigation. It positions the court in a way that does not usurp the executive branch's authority yet enables judges to ensure compliance with the law that they define through their holdings.

As the nation enters a radically different ecological age, courts are increasingly called upon to grasp their constitutionally appointed role in governance. In one groundbreaking public trust case protecting public rights to water resources, the Hawaiian Supreme Court emphasized, "The check and balance of judicial review provides a level of protection against improvident disposition of an irreplaceable *res.*" At this perilous moment defined by climate crisis, youth have invoked the ancient public trust to protect ecological stability which is the condition necessary for human survival.

Applying the Public Trust to the Climate Emergency: Atmospheric Trust Litigation

It would be hard to dream up an environmental catastrophe with more dire consequences to more people than the climate crisis. Scientists are clear that runaway heating threatens human lives and the welfare of global civilization. The time remaining in which to slash carbon emissions is frighteningly narrow due

to "tipping point" thresholds of nature. These are feedback processes capable of flooding the atmosphere with carbon emissions. For example, when trees die in a heating world, they burn and release the carbon they have stored, further increasing the atmosphere's load of carbon dioxide. When human-caused warming melts the permafrost situated across the northern latitudes, vast amounts of greenhouse gasses release into the atmosphere. There are many such feedback processes that threaten to send the climate situation spiraling out of control. Breach these tipping points, scientists warn, and we will trigger runaway planetary heating *regardless* of any subsequent decarbonization of the economy or society. No one suggests that civilization can survive runaway planetary heating.

In 2011, the non-profit organization, Our Children's Trust, launched a bold campaign known as Atmospheric Trust Litigation (ATL) on behalf of youth to force climate protection. This unprecedented legal strategy consists of lawsuits or administrative petitions filed against every state government as well as a lawsuit against the federal government. The youth plaintiffs and petitioners assert that the atmosphere is held in public trust and that their government has a fiduciary duty to protect and restore it.

The crux of the matter boils down to something quite simple. Government has known about this growing crisis for decades and has continued to subsidize and perpetuate a fossil fuel energy system despite the danger it poses to the future. Since the early 1970s, the Clean Air Act and other major environmental statutes provided the authority to regulate greenhouse gas emissions and phase out fossil fuel extraction. Nonetheless, the government promoted the fossil fuel energy system despite the environmental laws and the knowledge of the harms being created. The United States is now the leading oil producer in the world. The youth have invoked the public trust to slam the brakes on a heedless energy policy before the world plunges over the climate cliff. Plaintiffs seek court-supervised, science-based, enforceable plans to reduce carbon emissions at a rate necessary to restore a safe climate system.

The ATL campaign has its origins in Professor Sax's seminal work. Indeed, the ATL story shows how one scholar can set a pioneering pathway for others to follow and build upon as society encounters new threats. Professor Sax suggested applying the public trust to air and atmosphere in his famous 1969 article but did not develop the idea. For 30 years, the concept rested there, largely dormant.

In 2001, Professor Gerald Torres (one of the co-authors of this essay) gave a groundbreaking lecture that later became an article entitled "*Who Owns the Sky*." He compiled exhaustive legal research and provided cogent reasoning to argue that the public trust logically applied to air for the same reasons it applied to the other traditional water-based resources. Indeed, air was one of the public resources expressly identified by the influential Institutes of Justinian in its ancient delineation of public rights to crucial resources. Now, nearly five decades after Sax first suggested the trust's application to air, the idea is solidifying in many courts. A California court recently stated, "From ancient Roman roots, the English common law has developed a doctrine enshrining humanity's entitlement to air and water as a public trust."

The next step was to develop a full litigation strategy through which the public trust principle could be invoked to confront climate crisis and hold governments accountable for transitioning away from dangerous fossil fuels. The other co-author of this essay, Professor Mary Christina Wood, took on that challenge and wrote a series of book chapters and articles outlining the strategy of "Atmospheric Trust Litigation." She developed a framework through which youth could invoke the public trust in every state in America and conceivably in many other nations as well. The trust concept, having such ancient legal roots, is integral to governments worldwide. In scores of opinions drawing on Professor Sax's scholarship, courts of several other countries—most notably India and the Philippines—had already characterized the trust as an attribute of sovereignty enforceable by citizens against their governments. Professor Wood suggested a model of domestic climate litigation that could be adapted worldwide.

In 2010, Julia Olson, an accomplished environmental litigator who had achieved notable success in the areas of wilderness and forest preservation, decided to bring the ATL strategy to court. She formed the non-profit organization Our Children's Trust, and in 2011, that organization launched the ATL campaign, consisting of lawsuits and administrative petitions on behalf of youth in every state in the United States. It was an unprecedented legal crusade: all of the petitions and lawsuits asserted the same duty to protect the atmosphere held in trust. Since those initial legal proceedings, the global legal campaign has accelerated and includes lawsuits filed or planned in partnership with other attorneys operating in the Netherlands, France, Canada, England, Belgium, Australia, Pakistan, Colombia, Norway, Ukraine, Uganda, India, the Philippines, and elsewhere. The suits reflect laws that are unique to each nation, but the underlying thread of governmental duty to citizens remains constant in all cases, unifying the cases in a coherent legal framework.

The youth gained early backing for the ATL campaign by leading scientist experts from around the world, including Dr. James Hansen, the famous scientist who was serving as the nation's chief climate scientist at NASA's Goddard Institute of Space Studies. In a brief supporting the youth, Dr. Hansen and other scientists said, "failure to act with all deliberate speed in the face of the clear scientific evidence of the danger functionally becomes a decision to eliminate the option of preserving a habitable climate system." Dr. Hansen resigned from his top position at NASA in 2013 partly in order to support the young climate advocates, and he became a key scientific expert providing declarations against the federal government in Atmospheric Trust Litigation cases.

The youth also gained early support from many law professors nationwide. Because Professor Sax was widely regarded as the leading expert on the public trust, his backing was crucial. Amicus briefs ("friend of the court" briefs) were filed—and are still being filed—on behalf of law professors in many of the ATL cases. While he was alive (during the first three years of the ATL campaign, from 2011-2014), Joseph Sax was the lead signatory to all those briefs. In his final illness, Joe Sax's last decisive action as a legal scholar was signing his name to an amicus brief filed in support of the youth in a lawsuit challenging the federal government's failure to protect the atmosphere so crucial to their survival.

Building a new area of law is not an easy matter. The first round of ATL cases were mixed. While some judges ruled that the atmosphere was held in public trust, many dismissed these early cases based on the overriding sentiment that the courts should have no role in the climate crisis. To their thinking, climate was a problem for the other branches of government. That, of course, was the point of the litigation: to hold the other branches accountable for addressing this problem. They were instead fueling the emergency through their affirmative fossil fuel policy. In this early round of cases, climate became the hot potato tossed between the three branches, never lingering long enough for the sustained attention justice demanded.

Many judges approached these cases as if they were ordinary lawsuits. Seeking perhaps to simply rid themselves of the controversy, some characterized climate as a "political question" not suited to judicial resolution. These early decisions placed unwarranted confidence in the political branches of government to prevent the very danger that agency actions were continuing to perpetuate. The decisions succumbed—as did several notable climate tort cases before them—to what Professor Douglas Kysar and Henry Weaver identify as judicial nihilism—"[d]enying [their] own expansive power, [these courts] cowered before catastrophe." As Kysar and Weaver point out, judicial inaction is far from neutral. The failure of courts to carry out their constitutional role enables growing climate violence carried out by the other branches. Hawaii Supreme Court Associate Justice Michael Wilson writes, "As the archetypal peril of earth with collapsing ecosystems approaches, legal narratives limiting judicial review of carbon-caused global warming will become anachronisms."

The tide began to turn when a Washington court judge found a state constitutional public trust right to a protected atmosphere, saying that the children's "very survival depends upon the will of their elders to act now, decisively and unequivocally, to stem the tide of global warming...." Courts in other countries began to hand down notable victories for citizens in climate cases, some holding their governments accountable for hard-number emissions reduction. In 2015, the historic *Juliana v. United States* case was filed on behalf of 21 youth plaintiffs against the federal government. The plaintiffs were young people in states across the nation who were suffering intense climate harm, including loss of homes from sea level rise, loss of food supply, extreme flooding, wildfires, crop failures, exacerbated asthma, and a myriad of other harms. Scientist James Hansen joined as a plaintiff guardian representing future generations. The *Juliana* case challenged, quite literally, the entire fossil fuel policy of the United States and has often been called "the biggest case on the planet."

The *Juliana* case incorporates two claims against the federal government. One asserts the youth's public trust rights to a stable atmosphere, and the other asserts the due process right to be free from affirmative government action endangering the lives, liberty, and property of the 21 young people. Supported by thousands of pages of documentation, the plaintiffs showed that the government had known for decades of the growing climate emergency and yet perpetuated a fossil fuel energy policy that could only exacerbate it. The alleged, "Defendants have acted with deliberate indifference to the peril they knowingly created."

An early victory in the case happened in November 2016, when presiding Judge Ann Aiken issued a groundbreaking decision affirming that the youth's claims had a basis in law. Recognizing that this was "no ordinary lawsuit" and that it was a civil rights action rather than a standard environmental action, the court denied the government's and industry's motions to dismiss the case. Judge Aiken stated, "*I have no doubt that the right to a climate system capable of sustaining human life is fundamental to a free and ordered society.*" The ruling swept the globe and inspired a growing wave of international cases.

The case then headed to trial, scheduled for October 29, 2018. Building upon 20 depositions and thousands of pages of expert declarations and supporting documents, the much-anticipated trial promised to be the "trial of the century," because it represented the very first time the nation's fossil fuel policy would meet climate science in court. In an astonishing turn of events in June 2018, the fossil fuel industry, which had intervened in the case early on, withdrew *en masse* from the lawsuit when faced with requests for discovery and admissions. The monumental nature of the case caused the Trump government lawyers to double down their efforts to resist trial, using serial motions and other tactics designed to force an early appeal and derail the normal judicial process. Though initially such efforts repeatedly failed at all levels of the judicial system (including twice in the U.S. Supreme Court), the case finally went up on early appeal to the Ninth Circuit where it now stands.

Due to the dangerous proximity of climate tipping points, attorneys for the youth plaintiffs took the unusual step in February, 2019 of filing an Urgent Motion for Preliminary Injunction to stop 100 projects that the Trump Administration had poised for release before the youths' appeal could even be heard. These projects could use up much or all of the remaining narrow budget necessary to keep the planet from heating over 1.5 degrees C (the science-based limit for catastrophic heating). As Dr. Hanson declared in an amicus brief in one

atmospheric trust case, judicial relief "may be the best, the last, and, at this late stage, the only real chance to preserve a habitable planet for young people and future generations."

Conclusion

Despite the good intentions, high aspirations, and hard work of many citizens, lawyers, and government officials, modern environmental law has turned into a system that permits wholesale destruction and pollution of crucial natural resources—exactly the opposite of its laudable purposes. This dysfunction is rooted in a fundamental breakdown of democracy that Professor Sax observed long ago. A discrete and insular minority—powerful private interests—maintain illegitimate power over government agencies and legislatures while the public, diffused and not organized, proves a weak counterweight.

Professor Sax identified, explained, and brought to modern environmental law a principle that drills to the core of government purpose. It defines an enduring government obligation to protect the ecological resources needed by the citizens, today and tomorrow. It prevents monopolization of crucial resources by private property interests. It demands government loyalty to the public in decision-making. Strict fiduciary obligations require care and caution in managing the invaluable natural wealth. The principle remains the bedrock obligation, with constitutional force as an attribute of sovereignty that government cannot alienate.

The public trust pulls environmental law out of deep statutory canyons where it has languished for decades and situates it in a fundamental rights framework, one in which citizens can hold their government officials accountable for representing their interests, as the promise of democracy has always purported to do. These reserved public trust rights held by the people are the same ones that animated the Magna Carta and Gandhi's famous Salt March to the sea.

As has always been the case, the public trust comes to life only through the work of many people. Professor Sax was the pioneering pathbreaker. In this time of historic danger, citizens all over the world are using the trust he illuminated to appeal to courts to force their governments to protect and restore the climate system necessary to support all life on Earth. If there is a habitable planet at the end of this century, it may well be because courageous judges stepped up at this pivotal moment to safeguard the crucial resources that have always been necessary for the endurance of humanity and civilization.