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# The Duty of Climate Care

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## Introduction

Eunice Newton Foote authored what is believed to be the first publication in a scientific journal by an American woman in the field of physics. Perhaps of even greater note, her paper is also regarded as the first scientific study identifying the greenhouse gas effect. Under the title "Circumstances Affecting the Heat of the Sun's Rays," Foote's paper was read by a male colleague to the tenth annual meeting of the American Association for the Advancement of Science and was subsequently published under her own name in the *American Journal of Science and Arts*.[1] The year was 1856.

Foote, a women's rights advocate who lived in Seneca Falls, New York, was also a scientist and inventor. She conducted an elegant experimental demonstration of climate change by sealing air with elevated levels of carbon dioxide in a glass jar and exposing the jar to sunlight. As compared with a control sample, the jar with higher carbon dioxide levels increased significantly in temperature. After reporting the results, Foote noted with respect to carbon dioxide that "[a]n atmosphere of that gas would give to our earth a high temperature."[2] Long overlooked in favor of more prominent male scientists who published after her, researchers have recently rediscovered her contributions such that Foote now holds her rightful place in history as the godmother of climate science.[3]

Neither Foote nor any other climate scientist has been able to become the godparent of climate action. It is not for lack of trying. Nearly a century after Foote's study was published, the famed geologist

* I am grateful to Varshini Parthasarathy for outstanding research assistance and to Andy Horowitz, Catherine Sharkey, Isabella Soparkar, and participants of the 29th Annual Clifford Symposium on Tort Law and Social Policy and a faculty workshop at the S.J. Quinney College of Law at the University of Utah for helpful comments and conversations.

1. Eunice Foote, *Circumstances Affecting the Heat of the Sun's Rays,* 22 Am. J. Sci. & Arts 382 (1856).

2. *Id.* at 383.

3. *See* John Schwartz, *Overlooked No More: Eunice Foote, Climate Scientist Lost to History*, N.Y. Times (Apr. 21, 2020), https://www.nytimes.com/2020/04/21/obituaries/eunice-foote-overlooked.html [https://perma.cc/VE2P-U4LE].

and geophysicist M. King Hubbert oversaw production of a high-level report on energy resources for the National Academy of Sciences. Released in 1962, the report addresses the problem of climate change with unblinking clarity:

> There is evidence that the greatly increasing use of the fossil fuels, whose material contents after combustion are principally $H_2O$ and $CO_2$, is seriously contaminating the earth's atmosphere with $CO_2$. Analyses indicate that the $CO_2$ of the atmosphere since 1900 has increased 10 per cent. Since $CO_2$ absorbs long-wavelength radiation, it is possible that this is already producing a secular climate change in the direction of higher average temperatures. This could have profound effects both on the weather and the ecological balance.[4]

In light of the dangers of continued use of fossil fuels, the report notes that ecologist G. Evelyn Hutchinson urged as a policy response "the maximum utilization of solar energy."[5]

President Lyndon B. Johnson in 1965 delivered to Congress a special "Message on the Natural Beauty of Our Country" in connection with his State of the Union Address. Already the Senate Public Works Committee had held hearings on the Clean Air Act (CAA) in 1963, during which climate change was treated in detail, including a warning that "[a]n increase in heat will lead to more violent air circulation and thus to more destructive storms."[6] President Johnson's message to the nation's legislative body in 1965 was unequivocal: "This generation has altered the composition of the atmosphere on a global scale through . . . a steady increase in carbon dioxide from the burning of fossil fuels."[7]

Later that same year, the White House issued a report entitled "Restoring the Quality of Our Environment," an entire appendix of which consisted of an overview of "Atmospheric Carbon Dioxide."[8] Chaired by Roger Revelle, and authored with other legendary climate scientists like Charles Keeling and Wally Broecker, the appendix warned that "[w]ithin a few short centuries, we are returning to the air a significant part of the carbon that was extracted by plants and buried in the sediments during half a billion years."[9] Carbon dioxide—which the scientists termed "the invisible pollutant"—and other harmful gases were now "accumulating in such large quantities that they may eventually

4. M. King Hubbert, Energy Resources—A Report to the Committee on Natural Resources of the National Academy of Sciences National Research Council 96 (1962).

5. *Id.*

6. *Field Hearings on Progress and Programs Relating to the Abatement of Air Pollution Before the Special Subcomm. on Air & Water Pollution of the S. Comm. on Pub. Works*, 88th Cong. 425 (1964).

7. President Lyndon B. Johnson, Special Message to the Congress on Conservation and Restoration of Natural Beauty (Feb. 8, 1965).

8. *See* The White House, Restoring the Quality of our Environment (1965).

9. *Id.* at 113.

produce marked climate change."[10] Looking forward, the scientists predicted that failure to change course would lead to a drastic situation in which only comprehensive global cooperation could address the problem and in which deliberate geoengineering might emerge as a desperate response of last resort:

> By the year 2000 there will be about 25% more $CO_2$ in our atmosphere than at present. This will modify the heat balance of the atmosphere to such an extent that marked changes in climate, not controllable through local or even national efforts, could occur. Possibilities of bringing about countervailing changes by deliberately modifying other processes that affect climate may then be very important.[11]

This 1965 White House report precisely captures the situation we find ourselves in today. Having failed to slow the growth in greenhouse gas emissions over the past sixty years, atmospheric concentrations of $CO_2$ are now consistently above 420 parts per million (ppm), a level roughly fifty percent greater than what prevailed prior to the Industrial Revolution. To put this number in perspective, one must look back four to four-and-a-half million years in the paleoclimate record to find a moment in earth's history when $CO_2$ levels were this high. At that time, sea levels were fifty to eighty feet higher than they are today.

Alternative paths were available. The oil and gas industry, which had set up a climate change research program through the American Petroleum Institute as early as 1958,[12] appeared for a time during the 1970s to be taking the problem seriously, imagining and planning for a future in which energy was provided through alternative sources. During the 1980s until today, however, the industry doubled down on fossil fuel production, seeking to maximize asset recovery by obfuscating public understanding of climate science and aggressively opposing all forms of regulation—a "burn 'em while you got 'em" business model that the industry knew entailed harmful future consequences of an existential magnitude.

Nations of the world did come together in 1992 at the Rio Earth Summit to sign the United Nations Framework Convention on Climate Change (UNFCCC), the express objective of which is "stabilization of greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate

10. *Id.* at 12.

11. *Id.* at 9.

12. *See* Geoffrey Supran, Stefan Rahmstorf & Naomi Oreskes, *Assessing ExxonMobil's Global Warming Projections*, 379 Sci. 1, 1 (2023); Charles Jones, *A Review of the Air Pollution Research Program of the Smoke and Fumes Committee of the American Petroleum Institute.* 8 J. Air Pollution Cont. Ass'n. 3 (1958).

system."[13] To implement this objective, parties to the UNFCCC negotiated the Kyoto Protocol in 1997, the effectiveness of which was hampered by the failure of the United States to participate, as well as by the Protocol's limited applicability to major developing country emitters like China, India, and Brazil. Domestically in the United States, periodic efforts to pass climate legislation fixated on a cap-and-trade regulatory design that ultimately proved politically infeasible, despite its purported bipartisan, industry-friendly approach.

Alarmed by continued inaction, a scrappy think tank in 1999 filed a petition with the Environmental Protection Agency (EPA), demanding that the agency fulfill its responsibility under the CAA to regulate the invisible pollutant. That petition would eventually make its way to the Supreme Court in 2007, where five justices ruled that the EPA was required to determine whether $CO_2$ is, in fact, a pollutant within the meaning of the CAA—a finding that in turn would trigger regulation of emissions in transportation, electricity, and other significant sectors of the economy.[14] Importantly, the justices emphasized that the EPA must make the determination based solely on scientific evidence showing whether $CO_2$ endangers human health and the environment, not on a policy analysis of whether the CAA is a good vehicle for addressing greenhouse gas emissions. Despite that clear instruction, the EPA as of this writing sixteen years later still has not imposed greenhouse gas controls on existing power plants in the United States. The agency's task in doing so has been made all the more difficult by a subsequent Supreme Court ruling in 2022 that invoked the so-called major questions doctrine to strike down President Obama's Clean Power Plan, which had never gone into effect, but nevertheless attracted six justices' skeptical attention.[15] The Clean Power Plan never went into effect because it was stayed by the Court itself in an unprecedented and unexplained order six years earlier.[16]

At the international level, the Paris Agreement in 2015 signaled a return to climate leadership by the United States under President Obama, albeit now under a purely voluntary mitigation commitment mechanism designed to bring China and other major developing countries into the collective effort to reduce emissions.[17] Hope for the voluntary pledge-and-review

13. United Nations Framework Convention on Climate Change (UNFCCC), May 9, 1992, 1771 U.N.T.S. 107 (entered into force Mar. 19, 1994).

14. *See* Massachusetts v. Env't Prot. Agency, 549 U.S. 497 (2007).

15. *See* West Virginia v. Env't Prot. Agency, 597 U.S. 697 (2022).

16. *See* West Virginia v. Env't Prot. Agency, 577 U.S. 1126 (2016).

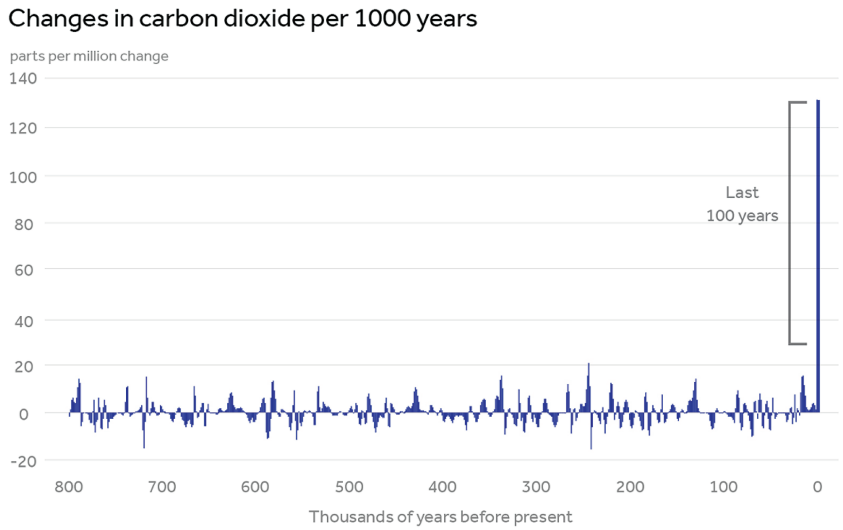
17. *See* Paris Agreement to the United Nations Framework Convention on Climate Change, Dec. 13, 2015, *in* Rep. of the Conference of the Parties on the Twenty-First Session, U.N. Doc. FCCC/CP/2015/10/Add.1, annex (2016).

model was initially high, but waned as President Trump withdrew the United States from the Paris Agreement and sought to undo whatever executive achievements on climate his successor had attained. Although President Biden would immediately rejoin the Agreement upon taking office, in the interim the world endured a pandemic-induced economic crisis that—like the global recession of 2008—seemed to destroy political appetite for limiting the use of fossil fuels to promote economic recovery. As a result, global anthropogenic greenhouse gas emissions from fossil use in 2022 were the highest ever recorded, despite everything that has been known about their effects since as early as Eunice Foote's pioneering research in 1856. According to the United Nations, even assuming that all nations meet their current pledged emissions reductions under the Paris Agreement, the world is still on track to experience 2.1 to 2.9 degrees Celsius of warming by the end of the century, a level of temperature increase that would entail catastrophic consequences, including potential triggering of tipping point scenarios that could lead to further warming through massive and uncontrollable natural releases of greenhouse gases.[18]

The takeaway from this breezy history is that the political branches at the national level, and the political processes at the international level, have utterly failed to arrest the growth in greenhouse gas emissions. This failure has occurred despite the U.S. president himself alerting Congress to the grave planetary risks of climate change as early as 1965. In the period from 1965 to 2022, atmospheric $CO_2$ concentrations rose from 320 ppm to 420 ppm as humanity entered what scientists have termed the Great Acceleration, a period of unprecedented rise in human population size and a corresponding surge in numerous socioeconomic and ecological measures of human activity and its impacts. As shown in Figure 1, the rate of increase in atmospheric $CO_2$ during the Great Acceleration has been around 100 times faster than prior naturally occurring increases, such as those that followed the end of the last ice age. Indeed, the rate of increase has been orders of magnitude faster than anything that has happened on earth during the several hundred thousand years in which *homo sapiens* evolved as a distinct species.

18. *See* U.N. Intergovernmental Panel on Climate Change, 2022 NDC Synthesis Report, https://unfccc.int/ndc-synthesis-report-2022 [https://perma.cc/T2CG-VBSF].

Figure 1[19]




Changes in carbon dioxide levels in the atmosphere during the past 1 million years. (Climate Central)

A motivational saying popular within the climate advocacy movement advises, "It's never too late to do as much as we can."[20] With respect to climate change, political representatives instead seem to have followed the adage, "It's always too soon to care." Is it any wonder, then, that advocates have turned to the courts in pursuit of meaningful declarations of climate responsibility? Across the world, litigants in numerous jurisdictions have filed actions against both public and private defendants, seeking to instantiate a duty of climate care. They have invoked constitutional and human rights claims, but also tort law to ground this duty. Indeed, some advocates have explicitly called for the creation of a new tort, seeking to invoke the centuries-long power of common law judges to fashion duties to address changing social circumstances. Never mind that the circumstances at issue involve the largest and most challenging collective action problem ever to face humanity. With the political branches failing their most basic obligation

19. *See* Benjamin Strauss, *The Carbon Skyscraper: A New Way of Picturing Rapid, Human-Caused Climate Change*, WASH. POST (Jan. 12, 2021), https://www.washingtonpost.com/weather/2021/01/12/carbon-skyscraper-rapid-climate-change/ [https://perma.cc/HLA6-KF4M].

20. *See* Andrew Marr, *Greta Thunberg: It's Never Too Late to Do as Much as We Can*, BBC (Oct. 31, 2021), https://www.bbc.com/news/av/science-environment-59110260 [https://perma.cc/CG5B-6NAD].

to preserve the ecological foundation of social order, courts are being called upon to fashion a jurisprudence of climate care.[21]

Rather than offer a comprehensive review of this rapidly growing body of case law, this Article instead will explore select conceptual issues raised by a duty of climate care.[22] As will be seen, regardless of how a climate responsibility cause of action is framed, courts must confront the difficult question of why the defendants named in any given action should be singled out for judicial scrutiny from among the many billions of present and past human emitters, whether individual or organizational, civilian or governmental. That question in turn raises issues regarding the institutional authority and competence of courts. It bears stressing that neither concern is insurmountable as a doctrinal and practical matter. As one judge pithily noted in denying a motion to dismiss the City of Honolulu's public nuisance suit against major fossil fuel companies: "This is an unprecedented case for any court, let alone a state court trial judge. But it is still a tort case."[23]

Notwithstanding such admirable judicial composure, the road to ultimate resolution of a climate accountability case is a rocky one and courts will face numerous tempting exit opportunities along the way. Will judges agree that it's never too late to do as much as they can?

## I. "Why Don't We Just Make Up a Tort?"

According to a leading research institute, climate change litigation has been on the rise worldwide, with cases totaling more than 2,000 as of 2022. This number has doubled since 2015, with approximately one-quarter of all cases being filed between 2020 and 2022.[24] A growing share of these cases seek to generate strategic impact for climate governance by prompting judicial orders that, for example, require national governments to adopt more ambitious climate mitigation and adaptation

21. *See* Karen C. Sokol, *Bringing Courts into Global Governance in a Climate Disrupted World Order*, 108 Minn. L. Rev. 163, 200 (2023) (emphasizing "the key role of courts in the context of climate-accountability litigation: determining, and potentially assigning, legal responsibility.").

22. For more comprehensive treatment of various doctrinal issues raised by climate change tort suits, see Douglas A. Kysar, *What Climate Change Can Do About Tort Law*, 41 Env't L. 1 (2011); R. Henry Weaver & Douglas A. Kysar, *Courting Disaster: Climate Change and the Adjudication of Catastrophe*, 93 Notre Dame L. Rev. 296 (2017). For an effort to encourage courts to adjudicate climate responsibility claims on the merits, rather than use preliminary avoidance devices such as standing, preemption, or political question doctrines, see Benjamin Ewing & Douglas A. Kysar, *Prods and Pleas: Limited Government in an Era of Unlimited Harm*, 121 Yale L.J. 350 (2011).

23. City & Cnty. of Honolulu & BWS v. Sunoco, LP, No. 1CCV-20-0000380, at *2 (Haw. Cir. Ct. Feb. 22, 2022).

24. *See* Joana Setzer & Catherine Higham, Global Trends in Climate Change Litigation: 2022 Snapshot 1.

plans, or impose a duty of climate vigilance on significant private emitters like fossil fuel, cement, and animal agriculture companies. As noted in the table below, one obvious way to categorize climate accountability suits is by the choice of defendant, public or private. To date, the most significant category of defendant has been governments, with as many as seventy-three countries around the world facing so-called "framework" cases that challenge the government's overall effectiveness at addressing climate change.[25] Private defendants have not escaped challenge, however, and numerous such actions around the world are inching toward potential contestation on the merits.[26]

Another important conceptual distinction for climate accountability litigation is whether the theory of the suit focuses primarily on the past conduct or future responsibility of the defendant. To be clear, this is not a question of remedy. Most climate accountability actions seek forward-looking relief, such as an injunctive award requiring the defendant to adopt a plan to achieve net zero decarbonization by a certain date. Few cases have sought damages for past injury,[27] and those suits that do seek monetary relief tend to ask for an equitable award, such as an abatement fund to address present and anticipated climate adaptation costs. Thus, rather than a question of remedy, the distinction being drawn here asks whether the theory of accountability in the case is primarily rooted in a normative evaluation of the defendant's past wrongful behavior or in an assessment of what the defendant owes moving forward given the climate crisis. As will be seen, this difference of focus reveals much about the underlying legal culture within which climate accountability plaintiffs operate. In the United States, the general absence of positive constitutional rights, the largely retrospective focus of tort law, and the continuing prevalence of a culture of "adversarial legalism"[28] all loom

25. *Id.* Government "framework" suits can be understood as an assertion of what Charles Sabel and William Simon called "destabilization rights"—that is, "rights to disentrench an institution that has systematically failed to meet its obligations and remained immune to traditional forces of political correction." Charles F. Sabel & William H. Simon, *Destabilization Rights: How Public Law Litigation Succeeds*, 117 Harv. L. Rev. 1016, 1016 (2004). *See also* Benoit Mayer, *Prompting Climate Change Mitigation through Litigation*, 72 Int'l & Comp. L. Q. 233, 234 (2022) (distinguishing between "holistic decisions" in which courts identify the level of mitigation a defendant must achieve, and "atomistic decisions" in which courts identify specific actions a defendant must undertake).

26. One case, discussed below, has resulted in an award of injunctive relief against a major oil producer. *See infra* text accompanying notes 98–99.

27. A notable recent exception is Multnomah County, Oregon's lawsuit against more than a dozen fossil fuel companies for an unprecedented heatwave in 2021. *See* Monica Samayoa, *Multnomah County Sues Fossil Fuel Companies for Nearly $52 Billion Over Heat Dome*, OPB (June 22, 2023), https://www.opb.org/article/2023/06/22/multnomah-county-oregon-plans-sue-fossil-fuel-companies-billions-heat-dome/ [https://perma.cc/5XQ9-FCUN].

28. *See* Robert Kagan, Adversarial Legalism: The American Way of Law (2019).

large, with significant implications for the kinds of actions and arguments climate accountability plaintiffs pursue.

TABLE 1

| | **Past Conduct** | **Future Responsibility** |
|---|---|---|
| **Public Defendant** | *Juliana* | *Urgenda*, *Leghari, Neubauer*, *Sharma* |
| **Private Defendant** | *Carbon Majors*, *RWE* | *Milieudefensie*, *Notre Affaire à Tous v. Total*, *Fonterra* |

As the most well-known and arguably successful government "framework" suit, the Dutch *Urgenda* litigation has come to be seen as the quintessential climate accountability case. In this litigation, the Urgenda Foundation, a not-for-profit organization that undertakes research and advocacy related to climate change, sued the Dutch government on behalf of itself and 886 individuals. The summons, filed on November 20, 2013, challenged the "unjustifiable negligence of the Dutch State in not adopting the necessary and proportionate level of ambition in its climate policy."[29] In a lengthy 2015 opinion, the Hague District Court summarized volumes of climate change science and recounted the disappointing history of international climate negotiations. Relying on findings of the Intergovernmental Panel on Climate Change (IPCC), the court announced that $CO_2$ concentrations must stabilize below 450 ppm "to prevent dangerous climate change." The court concluded that "the State . . . has acted negligently and therefore unlawfully towards Urgenda by starting from a reduction target for 2020 of less than 25% compared to the year 1990."[30] It ordered the government "to limit the joint volume of Dutch annual greenhouse gas emissions, or have them limited."[31] In a landmark 2019 opinion, the Supreme Court of the Netherlands affirmed this order, definitively establishing that the Dutch government is bound by a duty of climate care informed by general principles of negligence, as well as human rights law, and international environmental norms, such as the precautionary principle and intergenerational justice.[32]

29. Summons ¶ 32, 121, Rb.'s-Gravenhage 24 juni 2015, AB 2015, 336 m.nt. Ch.W. Backes (Stichting Urgenda/Staat der Nederlanden), https://www.urgenda.nl/wp-content/uploads/Translation-Summons-in-case-Urgenda-v-Dutch-State-v.25.06.10.pdf [https://perma.cc/YF3M-JJBZ].

30. Rb.'s-Gravenhage 24 juni 2015, AB 2015, 336 m.nt. Ch.W. Backes ¶ 4.93 (Stichting Urgenda/Staat der Nederlanden), https://climatecasechart.com/wp-content/uploads/non-us-case-documents/2015/20150624_2015-HAZA-C0900456689_decision-1.pdf [https://perma.cc/CQ4F-ANUY].

31. *Id.* ¶ 5.1.

32. HR [Supreme Court of the Netherlands] 20 december 2019, NJ 2020, 41 m.nt J. Spier (Staat der Nederlanden/Stichting Urgenda) [The State of the Netherlands/Urgenda Foundation] (Neth.),

Along the same timeframe as the *Urgenda* suit, an extraordinary case played out before now Pakistan Supreme Court Justice Syed Mansoor Ali Shah, in which Shah, as a judge for the Lahore High Court in Punjab, offered a "clarion call" to defend the "fundamental rights of the citizens of Pakistan" and "in particular, the vulnerable and weak segments of the society who are unable to approach this Court."[33] In this case, Ashgar Leghari, a law student whose family owns a farm in southern Punjab, sued the central government claiming that relevant agencies had failed to implement the country's National Climate Change Policy of 2012 and the subsequent Framework for Implementation of Climate Change Policy (2014–2030). These failures, the plaintiff claimed, resulted in numerous fundamental human rights and environmental obligation violations. Agreeing with the claims, now-Justice Shah ordered representatives from over twenty government bodies to appear in court as he announced his decision, which established a Climate Change Commission to be staffed by government officials and a handful of private individuals to "assist [the] Court to monitor the progress of the Framework."[34]

Cases such as *Urgenda* and *Leghari* have inspired similar lawsuits throughout the world. Government framework cases in Belgium, Colombia, France, Germany, Ireland, and Nepal all have resulted in orders finding that the challenged governments are presently failing to fulfill their duty of climate care. In most of these cases, courts have awarded injunctive relief requiring governments to strengthen the ambition level of their climate policies.[35] The government's responsibility in such cases is sometimes premised on a general civil code duty of care that obliges all actors in the relevant jurisdiction—public and private alike—to exercise prudence and diligence in the prevention of harms. Whether or not this tort lens is applied, the courts tend also to

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https://climatecasechart.com/wp-content/uploads/non-us-case-documents/2020/20200113_2015-HAZA-C0900456689_judgment.pdf [https://perma.cc/6FY8-TR34].

33. Leghari v. Fed'n of Pakistan, (2015) W.P. No. 25501/2015 ¶ 6 (Pak.), https://elaw.org/system/files/pk.leghari.090415_0.pdf [https://perma.cc/Y6VN-F7VW].

34. *Id.* at 7. In a subsequent judgment taking note of the achievements of the Commission between 2015 and 2017, Justice Shah wrote at length about the concept of climate justice and its mediating role between human rights and development. *See* Leghari v. Fed'n of Pakistan, (2019) W.P. No. 25501/2015 ¶¶ 20–23 (Pak.), https://climatecasechart.com/wp-content/uploads/non-us-case-documents/2018/20180125_2015-W.P.-No.-25501201_judgment.pdf [https://perma.cc/VJ59-52S4].

35. Despite acknowledging a violation of the duty of climate care, the court of the first instance in Belgium declined to award injunctive relief, citing separation of powers concerns. That aspect of the ruling is being challenged on appeal by plaintiffs. *See* Tribunal de Première Instance [Civ.] [Tribunal of First Instance] Brussels, 2016, VZW Klimatzaak v. Kingdom of Belgium, (Belg.), http://climatecasechart.com/non-us-case/vzw-klimaatzaak-v-kingdom-of-belgium-et-al/ [https://perma.cc/2KG7-GTJ6].

rely heavily on affirmative government obligations to safeguard fundamental human and environmental rights, such as those contained in the European Convention on Human Rights or in national constitutions, such as Colombia's, which the nation's supreme court described as an "Ecological Constitution" that elevates environment protection to the category of fundamental rights.[36]

An interesting departure from this trend is the German case of *Neubauer*, in which the country's Federal Constitutional Court rested the government's duty on a negative liberty interest more familiar to the classical liberal tradition that undergirds United States constitutionalism.[37] The twist added by the *Neubauer* court is that the pertinent liberty interest belongs to *future* generations and is being infringed upon by the government's *present* failure to adopt an appropriately robust climate policy which will result in a curtailment of life opportunities for individuals born in the future. This intertemporal shuffling results from the fact that many greenhouse gases, including $CO_2$, are extremely long-lived and remain harmful in the atmosphere for decades, or even centuries. Thus, the *Neubauer* court held that "one generation must not be allowed to consume large portions of the $CO_2$ budget while bearing a relatively minor share of the reduction effort, if this would involve leaving subsequent generations with a drastic reduction burden and expose their lives to serious losses of freedom."[38]

In addition to the *Neubauer* case, another government framework case of particular interest to U.S. lawyers is the *Sharma* litigation in Australia. In this suit, youth plaintiffs challenged a decision by the Federal Minister for the Environment to approve a new coal project that

36. Corte Suprema de Justicia [C.S.J.] [Supreme Court], abril 5, 2018, STC4360-2018, No. 11001-22-03-000-2018-003119-01 at 27 (Colom.), https://elaw.org/system/files/attachments/publicresource/Colombia%202018%20Sentencia%20Amazonas%20cambio%20climatico.pdf [https://perma.cc/MK6P-YS54] (original Spanish decision); *see also id.*, https://www.dejusticia.org/wp-content/uploads/2018/04/Tutela-English-Excerpts-1.pdf [https://perma.cc/L33T-2FKJ] (English translation).

37. Bundesverfassungsgericht [BVerfG] [Federal Constitutional Court] Neubauer v. Germany, 1 BvR 2656/18 et al., Mar. 24, 2021, ¶ 192 (Ger.), https://climatecasechart.com/wp-content/uploads/non-us-case-documents/2021/20210324_11817_order-1.pdf [https://perma.cc/2292-BAKG].

38. *Id*. ¶193. The *Neubauer* court's "liberty in the future" approach may have subtle but significant advantages over the "duty to protect" approach of cases like *Urgenda* or *Leghari*. The latter approach emphasizes state responsibility in a way that may unwittingly enhance state power to classify, control, and condemn. Many illiberal regimes have used ideas of naturalism and ecology to justify egregious and expansive uses of state power. *See* Luc Ferry, The New Ecological Order (Carol Volk trans., 1995). The urge toward authoritarianism in the climate century will be strong and political leaders will, with justification, argue that societies exist in a now permanent state of emergency. Rather than emboldening state power, the "liberty in the future" approach works to constrain its harmful exercise.

would result in an additional 100 million tons of $CO_2$ being released.[39] The project required review and approval by the minister under the Environment Protection and Biodiversity Conservation Act 1999 (the EPBC) to ensure, among other factors, that it was consistent with a policy of "ecologically sustainable use." The plaintiffs argued that the minister owed a common law duty of care to Australian children to avoid causing climate harms through the exercise of statutory powers. The Federal Court denied injunctive relief but held based on extensive review of scientific evidence that the minister did have a duty to take reasonable care to avoid causing personal injury or death to Australian children: "By reference to contemporary social conditions and community standards, a reasonable minister for the Environment ought to have the Children in contemplation when facilitating the emission of 100 Mt of $CO_2$ into the Earth's atmosphere."[40] The presiding judge premised this duty on the reasonable foreseeability of risk of death or personal injury through such climate impacts as heat waves and bushfires, along with the special position of vulnerability of children and their reliance on the government for protection. Other key factors supporting the duty were the government's substantial and direct control over significant sources of climate harm, such as the coal mine and its knowledge and awareness of the grave risks posed by greenhouse gas emissions.

The initial *Sharma* decision was hailed by many as a breakthrough precedent with special significance due to its Anglo-American common law jurisprudential setting.[41] However, an appeal was taken to the full Federal Court and a panel of three justices unanimously overturned the imposition of a duty of climate care. Each justice authored their own opinion, with the resulting 272 pages of analysis comprising a laundry list of doctrinal and policy-based objections to the deployment of common law obligations in the context of climate change. Chief Justice Allsop questioned whether the youth plaintiffs had sufficiently established a special relationship with the minister, but seemed to principally

39. In Australia, government officials do not enjoy broad, sweeping immunity from tort liability for policy decisions akin to the "discretionary function" exception to the U.S. Federal Tort Claims Act's waiver of sovereign immunity. Instead, Australian courts engage in a case-by-case analysis to determine whether a purported tort duty overlay to a statutory obligation would be inconsistent with the purpose of the statute. For helpful discussion, see Ellen Rock, *Superimposing Private Duties on the Exercise of Public Powers:* Sharma v Minister for the Environment, AUSTL. PUB. L. (Nov. 8, 2021), https://www.auspublaw.org/blog/2021/08/superimposing-private-duties-on-the-exercise-of-public-powers-sharma-v-minister-for-the-environment [https://perma.cc/V58D-8FCT].

40. *Sharma v Minister for the Environment* [2021] FCA 560 ¶ 491 (Austl.), https://climate-casechart.com/wp-content/uploads/non-us-case-documents/2021/20210527_VID-389-of-2021-2021-FCA-560-2021-FCA-774-2022-FCAFC-35-2022-FCAFC-65_judgment.pdf [https://perma.cc/ZU79-HBNC].

41. *See* Jacqueline Peel & Rebekkah Markey-Towler, *A Duty to Care: The Case of* Sharma v Minister for the Environment *[2021] FCA 560*, 33 J. ENV'T L. 727 (2021).

rely on political question concerns, arguing that "the content and scope of the duty would call forth at the point of assessment of breach the need to re-evaluate, change or maintain high public policy, the assessment of which is unsuited to decision by the judicial branch in private litigation."[42] Justice Wheelan likewise doubted the foreseeability of harm to the children stemming from the minister's particular challenged act under standard tort law principles of causation, but primarily argued that imposition of a common law duty would be incoherent with the purposes of the EPCB Act.

The third justice—Justice Beach—rejected political question concerns but concluded that there was a "lack of sufficient closeness" and directness between the Minister and the youth plaintiffs to support a common law duty. Justice Beach emphasized, however, that the court's decision did not preclude establishment of a duty of care in future litigation, should "one or more members of the claimant class [] suffer damage" and "have an apparently complete cause of action."[43] In a suggestive aside, Justice Beach stated that these doctrinal technicalities "may have reached their shelf life," and that the common law might be ready for updating given the challenges posed by climate change. The justice, however, felt that the High Court of Australia would be the appropriate judicial body to "engineer new seed varieties for sustainable duties of care, modifying concepts such as 'sufficient closeness and directness' and indeterminacy to address the accelerating complexity, multiple links and cross-links of causal relations."[44]

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42. *Sharma v Minister for the Environment* [2022] FCAFC 35 (Austl.), https://jade.io/article/908789 [https://perma.cc/W7GY-5UXE].

43. *Id.* ¶ 749.

44. *Id.* ¶ 754. No appeal to the High Court of Australia was taken by the youth plaintiffs in *Sharma*. A separate pending lawsuit filed by Torres Strait Islanders against the Commonwealth government of Australia also seeks to instantiate a duty of climate care. This case is thought to have a greater chance of success due to a differing statutory context and established affirmative duties of environmental protection owed by the government to the indigenous Melanesian population under the Torres Strait Treaty. *See Daniel Billy and others v Australia (Torres Strait Islanders Petition)*, Climate Case Chart (2019), https://climatecasechart.com/non-us-case/petition-of-torres-strait-islanders-to-the-united-nations-human-rights-committee-alleging-violations-stemming-from-australias-inaction-on-climate-change/ [https://perma.cc/PL89-5RM6].

In 2022, the U.N. Human Rights Committee found that Australia's failure to adequately protect Torres Islanders against adverse impacts of climate change violated their rights to enjoy their culture and be free from arbitrary interferences with their private life, family and home. In keeping with the distinction between backward-looking and forward-looking climate duty analyses, the Committee's analysis focused on the Australian government's failure to adequately assist Torres Islanders in adapting to the impacts of climate change, and rejected without discussion the claimants' argument that Australia's failure to mitigate emissions also violated fundamental rights. *See* Hum. Rts. Comm., CCPR/C/135/D/3624/2019 (2022), https://tbinternet.ohchr.org/_layouts/15/treatybodyexternal/Download.aspx?symbolno=CCPR%2fC%2f135%2fD%2f3624%2f2019&Lang=en [https://perma.cc/ZR7C-38LU].

Within the United States, the most prominent government framework lawsuit is *Juliana v. United States*, a long-waged challenge by youth plaintiffs against the national government for its deliberate and extensive support of fossil fuel production notwithstanding the grave known dangers associated with greenhouse gas emissions. The plaintiffs in *Juliana* allege that the government actions in this regard constitute a violation of the public trust doctrine since, they contend, atmospheric stability is a shared commons resource that the government is obliged to protect. Although not formally a cause of action, the *Juliana* plaintiffs do evoke tort by frequently referencing a "duty of care" on the part of the trustee governments.[45] In addition, the plaintiffs offer arguments under the Fifth and Fourteenth Amendments of the U.S. Constitution. Citing *Obergefell v. Hodges*,[46] which recognized marriage equality as an individual right fundamental to a scheme of ordered liberty, the plaintiffs assert that substantive due process should be further expanded to include the right to a stable climate: "Defendants have violated and are violating Plaintiffs' fundamental constitutional rights to life, liberty, and property by substantially causing or contributing to a dangerous concentration of $CO_2$ in the atmosphere."[47] After all, the youth plaintiffs impliedly contend, what good are any other rights if the government can knowingly undermine the conditions necessary for stable social order to exist at all?

In two memorable opinions, the *Juliana* plaintiffs found receptive audiences. First, on November 10, 2016—just one day after Donald Trump was elected president—Judge Aiken of the District of Oregon denied the defendants' motions to dismiss in no uncertain terms:

> [W]here a complaint alleges governmental action is affirmatively and substantially damaging the climate system in a way that will cause human deaths, shorten human lifespans, result in widespread damage to property, threaten human food sources, and dramatically alter the planet's ecosystem, it states a claim for a due process violation.[48]

On interlocutory appeal to the Ninth Circuit, Judge Staton of the Central District of California, sitting by designation, issued an equally powerful statement in support of the plaintiffs' case, the opening paragraph of which is worth quoting in full:

> In these proceedings, the government accepts as fact that the United States has reached a tipping point crying out for a concerted

45. *See* Complaint for Declaratory and Injunctive Relief ¶¶ 13, 98, 286, 309, Juliana v. United States, 947 F.3d 1159 (2020).

46. 576 U.S. 644 (2015).

47. *See* Complaint for Declaratory and Injunctive Relief ¶¶ 1, *Juliana*, 947 F.3d 1159; *see also id*. ¶¶ 277–89.

48. Juliana v. United States, 217 F. Supp. 3d 1224, 1250 (D. Or. 2016).

> response—yet presses ahead toward calamity. It is as if an asteroid were barreling toward Earth and the government decided to shut down our only defenses. Seeking to quash this suit, the government bluntly insists that it has the absolute and unreviewable power to destroy the Nation.[49]

Notwithstanding Judge Staton's compelling opinion, two other Ninth Circuit judges ruled that the youth plaintiffs lacked standing to pursue their claims given that, in those judges' view, no judicially conferrable remedy would provide meaningful redress. Strikingly, the judges even discounted the importance of declaratory relief, reasoning that judicial acknowledgment of a constitutional rights violation could only benefit the plaintiffs "psychologically," which the panel majority did not believe was a weighty enough interest to support redressability.[50] Although formally framed in terms of Article III standing doctrine, the majority opinion sounds very much in the register of political question doctrine, expressing concern over a purported lack of judicially manageable standards and institutional competence to address the vast problem of climate change. It is noteworthy in that regard that the two U.S. federal judges who did *not* see the case as exceeding the capacity of courts—Judge Ann Aiken and Judge Josephine Staton—are both trial judges.

For present purposes, *Juliana* is also noteworthy for its emphasis on evidence of the federal government's past conduct as part of the effort to establish a constitutional obligation of climate stewardship. This retrospective focus is understandable given that constitutional litigation in the United States typically requires a showing of state action which affirmatively works to deprive individuals of a recognized right. State-level government framework cases are also being pursued in a number of U.S. states, including Montana and Hawaii, where the pertinent state constitution contains an affirmative environmental rights provision that might enable plaintiffs to argue in the more forward-looking tenor adopted in framework cases in Europe and elsewhere. For the *Juliana* plaintiffs, however, the federal right itself first needs to be established, and the milieu of U.S. constitutionalism has required them to frame the narrative of the case very much with emphasis on gross *past* misconduct of the national government.

Turning to private defendants, a similar contrast between cases focused primarily on past conduct and those emphasizing future responsibility appears. Most prominently, a number of suits in the United States seek to hold major fossil fuel companies responsible for present and anticipated costs relating to climate change using a variety of common law and statutory claims, including public nuisance, negligence, products

49. *Juliana*, 947 F.3d at 1175 (Staton, J., dissenting).
50. *Id.* at 1170. *See also* Sagoonick v. State, 503 P.3d 777 (Alaska 2022).

liability, and consumer protection. These lawsuits—which are commonly known as "carbon majors" suits—argue that the fossil fuel industry has known for decades that its products contribute to global climate change while simultaneously foiling government action through misrepresentation, deceit, and aggressive lobbying tactics.[51] The plaintiffs in these cases have included governments, such as cities and states, as well as private plaintiffs, such as a fishing industry trade group. To date, these suits have been mired in disputes over venue and other preliminary and procedural matters.[52] Fossil fuel defendants uniformly sought removal to federal court despite the complaints asserting exclusively state law claims. Defendants anticipated a friendlier reception in federal court because of stringent Article III requirements on standing and justiciability, as well as a sense that federal judges are more likely to view state tort law as a poor vehicle for addressing climate change.[53] However, with the federal courts of appeal uniformly ruling that removal of the cases from state court has been improper, and with the Supreme Court denying certiorari in a series of cases this term, the carbon majors suits are finally poised to advance to more substantive adjudication in state tribunals.[54]

Like the *Juliana* plaintiffs, the plaintiffs in these suits have needed to frame their theories of liability with a heavy focus on past misconduct by the fossil fuel defendants, given the general absence within U.S. tort law of redress for future injury. Although injunctive relief can have a forward-looking aspect, particularly in the case of ongoing wrongful behavior such as a continuing nuisance, the anchor for liability in U.S. tort law typically remains a factual and normative assessment of a defendant's past conduct in relation to a present injury. In contrast, the plaintiffs in the Dutch case of *Milieudefensie* were able to bring a forward-looking action against Shell based on the broadly worded duty of care in the Dutch Civil Code, particularly as that duty was read in light of Articles 2 and 8 of the European Convention on Human Rights (ECHR) which guarantee, respectively, rights to life and privacy.[55] Although the complaint in *Milieudefensie* details Shell's longstanding

51. For an overview of the carbon majors lawsuits, see Maximillian Scott Matiauda, Note, *Rising Tide: The Second Wave of Climate Torts*, 30 U. Mia. Int'l & Comp. L. Rev. 194 (2023).

52. *See id*. at 218–221.

53. *See U.S. Climate Change Litigation Update: The Supreme Court Greenlights State Court Adjudication of Climate Claims*, Jones Day (May 2023), https://www.jonesday.com/en/insights/2023/05/us-climate-change-litigation-update-the-supreme-court-greenlights-state-court-adjudication-of-climate-claims [https://perma.cc/KTA5-R7JX].

54. *See id*.

55. *See* Complaint (Summons) at 158–176, Rechtbank Den Haag 26 mei 2021 (Milieudefensie/Royal Dutch Shell plc.) (Neth.), https://climatecasechart.com/wp-content/uploads/non-us-case-documents/2019/20190405_8918_summons.pdf [https://perma.cc/FS3Q-HZ9R].

knowledge of climate risks and arguable deceptive behavior, the major argument of the case is that Shell's continued pursuit of fossil fuel production is inconsistent with the goals of the Paris Agreement. In May of 2021, the Hague District Court ordered Shell to reduce its emissions by 45% by 2030 relative to a base year of 2019, fully acknowledging that "[a] consequence of this significant obligation may be that [Shell] will forgo new investments in the extraction of fossil fuels and/or will limit its production of fossil resources."[56] Although Shell has appealed the ruling, the District Court made its order immediately enforceable pending appeal.

Another significant corporate accountability action is a case in France against the major oil company Total. In this action, a coalition of environmental organizations and local governments allege that Total has violated the "duty of vigilance" law that was added to the French commercial code in 2017. This law obligates large French companies to produce a "plan of vigilance" that identifies and seeks to mitigate risks to human rights and the environment within their supply chains.[57] A similar supply chain due diligence law is under consideration by the European Commission for all large European Union companies, thus making it likely that "duty of vigilance" suits will become a fixture of climate change litigation in that region.[58]

Both *Milieudefensie* and *Total* arise in civil law jurisdictions with strong affirmative statutory hooks for the establishment of a duty of climate care. The New Zealand case of *Smith v. Fonterra Co-operative Group Ltd.* is worth highlighting as the final example of this Section, as it offers more direct lessons for Anglo-American tort law. In this case, the plaintiff Michael John Smith, a Māori elder and the climate change spokesperson for the Iwi Chairs Forum, brought suit against seven companies that constitute major emitting entities within New Zealand. In the words of the New Zealand appellate court, Smith's complaint "contends that too little is being done in the political sphere and that the crisis calls for a bold response from the common law."[59] As summarized by the appellate court, the complaint:

56. Rechtbank Den Haag 26 mei 2021 ¶ 4.4.39 (Milieudefensie/Royal Dutch Shell plc.) (Neth.), https://climatecasechart.com/wp-content/uploads/non-us-case-documents/2021/20210526_8918_judgment-1.pdf [https://perma.cc/92LZ-XTRE].

57. *Notre Affaire à Tous and Others v. Total*, Climate Case Chart (2023), https://climatecasechart.com/non-us-case/notre-affaire-a-tous-and-others-v-total/ [https://perma.cc/KP8Z-B5KH].

58. *Corporate Sustainability Due Diligence*, Eur. Comm'n (Feb. 23, 2022), https://commission.europa.eu/business-economy-euro/doing-business-eu/corporate-sustainability-due-diligence_en].

59. Smith v. Fonterra Co-operative Group Ltd. [2021] NZCA 552 ¶ 3 (N.Z.), https://climatecasechart.com/wp-content/uploads/non-us-case-documents/2021/20211021_2020-NZHC-419-2021-NZCA-552-2022-NZSC-35_appeal.pdf [https://perma.cc/WQE9-635H].

> pleads three causes of action in tort: public nuisance, negligence and a proposed new tort described as breach of duty. The remedies sought in respect of each cause of action are declarations that each of the respondents has unlawfully caused or contributed to the effects of climate change or breached duties said to be owed to Mr Smith. Mr Smith also seeks injunctions requiring each respondent to produce or cause zero net emissions from their respective activities by 2030.[60]

One of the plaintiff's attorneys in the case, David Bullock, has written significant scholarly articles detailing the historical pedigree and doctrinal coherence of public nuisance as a tort cause of action that is appropriate for assertion *even* by private plaintiffs and *even* in the context of a sprawling global ill such as climate change.[61] For American torts scholars influenced by Thomas Merrill's more skeptical view,[62] Bullock's work is well worth consulting.

Notwithstanding those powerful academic arguments in support of the public nuisance claim, plaintiff's counsel in *Fonterra* also included a general negligence count as well as a third count explicitly calling upon common law judges' historical power to devise new torts for new social circumstances.[63] Felicitously described by scholar Geoff McLay as "an innominate tort of uncertain elements,"[64] this third cause of action came about as something of a backstop measure. In Bullock's recollection, the thinking of plaintiff's counsel was, if judges might determine contrary to plaintiff's advocacy that extant torts do not offer recourse in the face of anthropogenic climate change—one of the most consequential and harmful acts ever committed by humanity—then, well, "why don't we just make up a tort?"[65]

At the trial court level, *Fonterra* generated an enticing outcome: The judge struck the public nuisance and negligence counts but ruled that the third count—the "innominate tort of uncertain elements"—deserved fuller evidentiary exploration in light of the possibility that tort law could and should be modified to take account of the magnitude

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60. *Id.* ¶ 6.

61. *See* David Bullock, *Public Nuisance is a Tort*, 15 J. Tort L. 137 (2022); David Bullock, *Public Nuisance and Climate Change: The Common Law's Solutions to the Plaintiff, Defendant and Causation Problems*, 85 Modern L. Rev. 1136 (2022).

62. *See* Thomas W. Merrill, *Is Public Nuisance a Tort?*, 4 J. Tort L. ii (2011).

63. *See* Robert F. Blomquist, *Comparative Climate Change Torts*, 46 Val. U. L. Rev. 1053, 1074 (2012) (imagining "a future climate change tort lawsuit, conceived and initiated by creative plaintiffs' lawyers who boldly argue for the judicial recognition . . . of a '[n]ew [t]ort[]' cause of action").

64. Email from Geoff McLay, Professor, Victoria University of Wellington, to obligations@uwo.ca (Aug. 19, 2022), https://www.stevehedley.com/odg/messages_new/2022/19_08_2022_b%20-%20Hearing%20of%20Climate%20Change%20tort%20case%20in%20the%20NZ%20Supreme%20Court.html [https://perma.cc/V5ZZ-SUNN].

65. Personal Communication from David Bullock to Author (Feb. 20, 2023) (on file with author).

of the climate crisis.[66] On interlocutory appeal, however, the intermediate New Zealand court ruled that all three causes of action should be stricken. The court offered a variety of doctrinal and pragmatic arguments, but the overarching theme of its analysis raised concerns over the court's institutional role: "In our view, the magnitude of the crisis which is climate change simply cannot be appropriately or adequately addressed by common law tort claims pursued through the courts. It is quintessentially a matter that calls for a sophisticated regulatory response at a national level supported by international co-ordination."[67] With respect to the novel cause of action, the court curtly stated, "[i]n our view, the fundamental reasons set out above for not extending tort law to a claim of the kind pleaded by Mr Smith apply equally to . . . the proposed new tort."[68]

Oral argument before the New Zealand Supreme Court in *Fonterra* was heard over three days in August of 2022 and on February 7, 2024 the Court reinstated all three of the plaintiff's causes of action, including what the Court described as "a proposed new tort involving a duty, cognisable at law, to cease materially contributing to: damage to the climate system; dangerous anthropogenic interference with the climate system; and the adverse effects of climate change."[69] Because the decision was released as this Article was going to press it will not be analyzed in depth here. One clear implication of the *Fonterra* litigation to date, however, is that the unusually direct request by plaintiff for declaration of a new tort has had the effect of centering questions about the role and responsibility of courts. As McLay put it in response to questioning from the press following the high court oral argument, "[i]f courts aren't going to do this, what are they going to do? What're you here for, if you're not here for the biggest crisis of our time?"[70]

## II. "I've Got a Land Rover. Why Don't You Sue Me?"

In the early days of climate litigation, actual causation was thought to be a potential barrier to liability as courts and scholars questioned

66. Smith v. Fonterra Co-operative Group Ltd. [2020] NZCA 419 ¶ 107 (N.Z.), https://climatecasechart.com/wp-content/uploads/non-us-case-documents/2020/20200306_2020-NZHC-419-2021-NZCA-552-2022-NZSC-35_opinion.pdf [https://perma.cc/JEM3-K2D3].

67. Smith v. Fonterra Co-operative Group Ltd. [2021] NZCA 552 ¶ 16 (N.Z.), https://climatecasechart.com/wp-content/uploads/non-us-case-documents/2021/20211021_2020-NZHC-419-2021-NZCA-552-2022-NZSC-35_appeal.pdf [https://perma.cc/WQE9-635H].

68. *Id.* ¶ 125.

69. Smith v. Fonterra Co-operative Group Ltd. [2024] NZSC 5 ¶ 4 (N.Z.).

70. Emile Donovan, *Catching Climate Change Through the Courts*, RNZ (Aug. 19, 2022), https://www.rnz.co.nz/programmes/the-detail/story/2018854137/catching-climate-change-through-the-courts [https://perma.cc/G7YQ-F5HS] (quoting Geoff McLay).

whether litigants would ever be able to trace a physical connection from anthropogenic warming to discrete climate-related harms.[71] Today, climate modeling has become vastly more precise and rapid, such that scientists can conduct attribution analyses immediately following a potentially climate-related event's occurrence.[72] When severe heat struck Asia in April of 2023, for instance, scientists working in the World Weather Attribution network estimated that anthropogenic climate change made the event thirty times more likely to have occurred.[73] Likewise, extreme heat events in Siberia and Pacific Northwest America, as well as a prolonged and devastating drought in the Horn of Africa, all have been found by scientists to have been virtually impossible without the influence of human-caused climate change.[74] Given tort law's preponderance of the evidence actual causation standard, such attribution analyses seem tailor-made to support causal attribution of a harmful event to anthropogenic climate change.

The difficulty for plaintiffs, however, is that such analyses identify anthropogenic climate change—and therefore all of humanity—as the causal culprit. For purposes of fixing a duty of climate care, more discrete and manageable sub-groups of humanity must somehow be identified as holding responsibility that is distinct from, or greater than, everyone else. To respond to this challenge, many lawsuits against major fossil fuel companies draw on a field of research known as source attribution, which aims to calculate shares of responsibility among major corporate entities for historical greenhouse gas emissions.[75] Most notably, a groundbreaking study by Richard Heede in 2013 concludes that

71. *See* Comer v. Murphy, 839 F. Supp. 2d 849, 868 (S.D. Miss. 2012).

72. *See* Isabelle Gerretsen, *How the Science Linking Climate Change to Extreme Weather Took Off*, Climate Home News (Aug 4, 2021), https://www.climatechangenews.com/2021/08/04/timeline-science-linking-climate-change-extreme-weather-took-off/ [https://perma.cc/PFE4-LRQ2].

73. *Extreme Humid Heat in South Asia in April 2023, Largely Driven by Climate Change, Detrimental to Vulnerable and Disadvantaged Communities*, World Weather Attribution (May 17, 2023), https://www.worldweatherattribution.org/extreme-humid-heat-in-south-asia-in-april-2023-largely-driven-by-climate-change-detrimental-to-vulnerable-and-disadvantaged-communities/ [https://perma.cc/97S8-NCAK].

74. *See* Quirin Schiermeier, *Climate Change Made North America's Deadly Heatwave 150 Times More Likely*, Nature (July 8, 2021), https://www.nature.com/articles/d41586-021-01869-0 [https://perma.cc/C4ND-8EWA]; Andrew Ciavarella, Daniel Cotterill, Peter Stott, Sarah Kew, Sjoukje Philip, Geert Jan van Oldenborgh, Amalie Skålevåg, Philip Lorenz, Yoann Robin, Friederike Otto, Mathias Hauser, Sonia I. Seneviratne, Flavio Lehner & Olga Zolina, *Prolonged Siberian Heat of 2020 Almost Impossible Without Human Influence*, 166 Climatic Change 1 (2021); Joyce Kimutai, Clair Barnes, Mariam Zachariah, Sjoukje Philip, Sarah Kew, Izidine Pinto, Piotr Wolski, Gerbrand Koren, Gabriel Vecchi, Wenchang Yang, Sihan Li, Maja Vahlberg, Roop Singh, Dorothy Heinrich, Carolina Marghidan Pereira, Julie Arrighi, Lisa Thalheimer, Cheikh Kane & Friederike E. L Otto, Human-Induced Climate Change Increased Drought Severity in Horn of Africa (2023).

75. *Carbon Majors*, Climate Accountability Inst. (Oct. 8, 2019), https://climateaccountability.org/carbonmajors.html [https://perma.cc/6B2T-SKW3].

nearly two-thirds of $CO_2$ emitted since the 1750s can be traced to the ninety largest fossil fuel and cement producers, most of which still operate today.[76]

Source attribution researchers subsequently have built on Heede's work to allocate shares of responsibility for specific climate impacts. One study, for instance, finds that more than half of ocean acidification can be traced to the eighty-eight largest industrial carbon producers.[77] Another analysis divvies up shares of responsibility for surface temperature increase and sea level rise among major corporate carbon producers.[78] A very recent study examined the increase in wildfires in western North America over the past century. The study ran highly sophisticated climate models with and without the emissions attributed through Heede's work to the eighty-eight largest industrial carbon producers, finding that the carbon majors' emissions were responsible for nearly one-half of the water vapor deficit experienced over the past century and more than one-third of the area burned by wildfires in the western United States and southwestern Canada since 1986.[79]

At times, climate advocates seem to espouse the view that both event attribution and source attribution studies offer scientific demonstrations of climate responsibility that courts should greet with deference. Indeed, it is striking that the recent wildfire attribution paper includes the statement, "[t]he question of who bears responsibility for climate change and impacts such as increases in [wildfire burn area] is being actively explored in both scientific and legal realms."[80] What does it mean for questions of responsibility to be explored in the scientific realm?

76. *See* Richard Heede, *Tracing Anthropogenic Carbon Dioxide and Methane Emissions to Fossil Fuel and Cement Producers, 1854–2010*, 122 Climatic Change 229 (2013). Though not yet as prominently targeted by climate change lawsuits, the industrial animal agriculture industry has also been subject to source attribution analysis. Researchers estimate that the five largest global meat and dairy companies are collectively responsible for more annual greenhouse gas emissions than Exxon, Shell, or BP; twenty companies contribute more annual emissions together than Germany, Canada, Australia, the United Kingdom, or France. *See Emissions Impossible*, Inst. Agric. & Trade Pol'y (July 18, 2018), https://www.iatp.org/emissions-impossible [https://perma.cc/K2HU-UACV].

77. *See* Rachel Licker, Brenda Ekwurzel, Scott C. Doney, Sarah R. Cooley, Ivan D. Lima, Richard Heede & Peter C. Frumhoff, *Attributing Ocean Acidification to Major Carbon Producers*, 14 Env't Rsch. Letters 1 (2019). The number of carbon majors identified in this paper went down from the ninety in Heede's study to eighty-eight due to mergers and acquisitions.

78. *See* Brenda Ekwurzel, James Boneham, M. W. Dalton, Richard Heede, Roberto J. Mera, Myles R. Allen & Peter C. Frumhoff, *The Rise in Global Atmospheric $CO_2$, Surface Temperature, and Sea Level from Emissions Traced to Major Carbon Producers*, 144 Climatic Change 579 (2017).

79. *See* Kristina A. Dahl, John T. Abatzoglou, Carly A. Phillips, J. Pablo Ortiz-Partida, Rachel Licker, L. Delta Merner & Brenda Ekwurze, *Quantifying the Contribution of Major Carbon Producers to Increases in Vapor Pressure Deficit and Burned Area in Western US and Southwestern Canadian Forests*, 18 Env't Rsch. Letters 1 (2023).

80. *Id.* at 2.

Scientists have often vehemently disclaimed engagement with explicitly normative domains like responsibility. Yet here, as elsewhere, climate change is upending stable expectations. To be clear, the archival and empirical work that source attribution researchers undertake to determine shares of historical climate change responsibility is immensely difficult and worthy of treatment as expert knowledge.[81] Source attribution studies, however, also raise morally-inflected conceptual questions that distinguish them from other categories of attribution science—a fact that Heede and other source attribution researchers are careful to emphasize.[82]

By way of illustration, consider the fact that some researchers in the climate attribution field disaggregate historical responsibility for an extreme climate event among *governments* rather than companies, raising the question of which responsibility framing is more normatively compelling.[83] A recent study admirably includes multiple categories of potentially culpable actors in the process of allocating responsibility for the trillions of dollars of climate damages predicted to occur during the years 2025 to 2050.[84] The study first allocates equal one-third shares of responsibility to governments and end users, and then subdivides the remaining one-third share of responsibility among several carbon majors. The reasoning for this Solomonic approach is straightforward: "There is no objective basis to disentangle the different weight of these three groups and for the sake of simplicity we propose that producers, emitters, and political authorities have equal one-third shares of responsibility, and thus an equal quota of climate damages of $23.2 trillion."[85] The largest investor-owned carbon major within the producer category—Exxon—is charged in the study with annual climate damage payments of $18.4 billion, a number that sounds impracticably large until it is recalled that Exxon earned $56 billion in profits during 2022.[86]

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81. For a fascinating account of the challenging and inspiring research journey Heede undertook over several years prior to publishing his groundbreaking study, see Douglas Starr, *Just 90 Companies Are to Blame for Most Climate Change, this 'Carbon Accountant' Says*, Sci. (Aug. 25, 2016), https://www.science.org/content/article/just-90-companies-are-blame-most-climate-change-carbon-accountant-says [https://perma.cc/5UG7-NU4Y].

82. *See, e.g.*, Jessica A. Wentz, Delta Merner, Benjamin Franta, Alessandra Lehmen & Peter C. Frumhoff, *Research Priorities for Climate Litigation*, 11 Earth's Future 1, 5 (2023) ("With regard to corporations, litigation-relevant questions may arise regarding the relative responsibility of various actors in the fossil fuel supply chain.").

83. *See, e.g.*, Friederike E. L. Otto, Ragnhild B. Skeie, Jan S. Fuglestvedt, Terje Berntsen & Myles R. Allen, *Assigning Historic Responsibility for Extreme Weather Events*, 7 Nature Climate Change 757 (2017).

84. *See* Marco Grasso & Richard Heede, *Time to Pay the Piper: Fossil Fuel Companies' Reparations for Climate Damages*, 6 One Earth 459 (2023).

85. *Id.* at 460.

86. *Id.* at 461.

Not to be outdone, British Petroleum (BP) and the advertising firm Ogilvy and Mather, through a now notorious early-2000s public relations campaign, developed and promoted the concept of individual carbon footprints in an effort to deflect blame and responsibility for climate change away from the fossil fuel industry and onto individuals whose capacity to influence policy and infrastructure is far more limited than the industry.[87] While this latter example was a defensive ploy and the former examples were earnest academic exercises, the pertinent point for present purposes is that each example illustrates the malleability of conceptions of climate responsibility. The conundrum for tort law becomes how to implement duties of climate care when so much of basic moral responsibility for climate change remains contested.

A particularly important aspect of this conundrum concerns whether fossil fuel defendants should be held legally accountable for emissions occurring throughout the entirety of their company value chain or only for emissions more directly under their control. For those not versed in climate change law and policy, some background may be helpful. Through a variety of national, international, and civil society mechanisms, climate change disclosure has emerged as a de facto obligation for responsible multinational enterprises. Under this emerging hard and soft law regime, emissions from owned or controlled sources such as oil and gas production equipment are considered Scope 1 emissions.

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87. *See* Mark Kaufman, *The Carbon Footprint Sham*, MASHABLE (July 2020), https://mashable.com/feature/carbon-footprint-pr-campaign-sham [https://perma.cc/XW22-Q2FP]. Strikingly, two leading behavioral science researchers recently qualified their former support for policy interventions focused on shifting individual behaviors, such as carbon footprint calculators or home energy comparisons, for precisely this reason:

> Many behavioral scientists propose and test policy interventions that seek to 'fix' problems with individual behavior (adopting an "i-frame") rather than addressing the system in which individuals operate (an "s-frame"). The impact of such i-frame interventions has been disappointing and can reduce support for much-needed systemic reforms. Highlighting individual responsibility for societal problems is a long-established objective of corporate opponents of s-frame policies such as regulation and taxation. Thus, researchers advocating i-frame solutions may have unwittingly promoted the interests of the opponents of systemic change. Behavioral scientists can best contribute to public policy by employing their skills to develop and implement value-creating system-level change.

Nick Chater & George Loewenstein, *The I-Frame and the S-Frame: How Focusing on Individual-Level Solutions Has Led Behavioral Public Policy Astray*, 46 BEHAV. & BRAIN SCI. 147, 147 (2022). With respect to climate change particularly, the two researchers conclude:

> [W]e now doubt that carbon emissions can be substantially reduced by i-level interventions such as providing small incentives, better (or more transparent) information, more feedback, more awareness of social norms, or greener "defaults." Having a real impact will require systemic transformation on a huge scale: changing how we heat our homes, travel, ship goods, and produce and consume food; rethinking manufacturing; and vastly expanding the production, storage and transmission of green electricity.

*Id.* Systemic transformation is precisely what BP sought to obstruct by crafting a climate policy tool focused on individual consumption choices and behaviors.

Greenhouse gas releases attributable to purchased electricity, heating and cooling, and other energy services consumed by a reporting company are considered Scope 2 emissions. All other indirect emissions occurring along a company's value chain are considered Scope 3 emissions, including those releases that occur when an end user burns coal to run their power plant or gas to drive their car, even if the reporting corporate entity did not emit the greenhouse gases directly. For fossil fuel companies, Scope 3 emissions are especially significant since the overwhelming majority of their value chain emissions fall into this category.[88]

Like the duty of vigilance law adopted in France, Scope 3 emissions reporting standards represent an effort to overcome global governance gaps, attaching responsibility to actors in a value chain that are thought to have more capacity and responsiveness to regulatory incentives than downstream emitters.[89] Whether similar reasoning should lead courts to see Scope 3 emissions as falling within the scope of liability of fossil fuel companies for purposes of tort law poses a separate question with much higher stakes.[90] Even simple Scope 3 *reporting* obligations under corporate and securities laws have become a matter of great controversy within the United States.[91] Attaching broader legal responsibility for such emissions would generate even more vociferous resistance.

Some published opinions in the climate litigation space appear to recognize this attribution conundrum. In *City of New York v. Chevron*, the panel noted pointedly that "every single person who uses gas and

88. Specifically, as little as fifteen percent of oil and gas industry emissions are Scope 1, with the remainder being almost entirely Scope 3. *See* Bill Holland, *Path to Net-Zero: European, US Oil and Gas Companies Split On Scope 3 Emissions*, S&P Global (June 8, 2022), https://www.spglobal.com/marketintelligence/en/news-insights/latest-news-headlines/path-to-net-zero-european-us-oil-and-gas-companies-split-on-scope-3-emissions-70485873 [https://perma.cc/4JV6-AHUB].

89. In the meat and dairy context, plaintiffs face an upstream emissions attribution challenge that is similar to the downstream emissions challenge in the case of fossil fuel producers. Most of the emissions associated with a pound of beef happen before a meat processing conglomerate actually owns the cow, just as most of the emissions associated with a gallon of gas are released after a fossil fuel company has sold it. *See* Richard Waite, Tim Searchinger, Janet Ranganathan & Jessica Zionts, *6 Pressing Questions About Beef and Climate Change, Answered*, World Res. Inst. (Mar. 7, 2022), https://www.wri.org/insights/6-pressing-questions-about-beef-and-climate-change-answered [https://perma.cc/9TPC-DB37].

90. *See generally* David Hunter & James Salzman, *Negligence in the Air: The Duty of Care in Climate Change Litigation*, 155 U. Pa. L. Rev. 1741 (2007). *See also* Smith v. Fonterra Co-operative Group Ltd. [2020] NZHC 419 ¶ 107 (N.Z.), https://www.justice.govt.nz/jdo_documents/workspace___SpacesStore_7dca8173_8e4b_4642_b98b_3c75052efa74.pdf [https://perma.cc/S97F-MF6P] (expressing judicial reluctance to award injunctive relief because "[t]he Court would have to consider the extent to which each defendant should be responsible for supply chain emissions for which it is not directly responsible").

91. Chris O'Malley, *SEC Keeps Delaying Rollout of Controversial Climate Disclosure Rules*, Law.Com (May 24, 2023), https://www.law.com/corpcounsel/2023/05/24/sec-keeps-delaying-roll-out-of-controversial-climate-disclosure-rules/ [https://perma.cc/9843-KHG5].

electricity—whether in travelling by bus, cab, Uber, or jitney, or in receiving home deliveries via FedEx, Amazon, or UPS—contributes to global warming."[92] The court seemed to be asking why the City of New York singled out five multinational oil companies for climate responsibility when all humans have been participating in the fossil fuel economy that those companies enable. Similarly, during oral argument before the Supreme Court of New Zealand in the *Fonterra* case, at least two of the justices seemed to seize upon the Scope 3 emissions attribution issue as a potential barrier to establishing well-bounded tort duties. In particular, one justice echoed the *City of New York* opinion by asking rhetorically, "Well, I've got a Land Rover. Sue me! Why don't you sue me?"[93]

All humans are indeed enmeshed in systems that give rise to greenhouse gas emissions. Moreover, as the youth plaintiffs in *Juliana* have powerfully demonstrated, the United States government at the highest levels has promoted and supported those systems despite knowing for decades of the catastrophic risks they entail. Why, then, are the corporate carbon majors more causally responsible for climate change than the governments that authorize and subsidize their activities, the manufacturers of vehicles, plants, and other machinery that utilize their products, or the consumers and other end users who benefit from those products?

To anyone versed in the history of efforts by carbon majors to distort climate science and policy, this question may seem facetious. For lawsuits seeking to establish climate responsibility, however, the question cannot be avoided. Plaintiffs in the carbon majors lawsuits respond with evidence of fraudulent and deceptive practices by fossil fuel defendants in order to lessen the perceived causal responsibility of other actors.[94] Just as smokers became seen as less responsible for the health hazards of tobacco use in light of industry efforts to manipulate public awareness and government policy, carbon majors plaintiffs hope to portray Scope 3 emissions as the natural and proximate effect of manipulative behavior by the fossil fuel industry. Indeed, some recent carbon majors complaints have included explicit conspiracy and racketeering counts

92. City of New York v. Chevron, 993 F.3d 81, 86 (2d Cir. 2019). *See also* Native Vill. of Kivalina v. ExxonMobil Corp., 663 F. Supp. 2d 863, 876–77 (N.D. Cal. 2009), *aff'd*, 696 F.3d 849 (9th Cir. 2012).

93. Donovan, *supra* note 70 (quoting Justice Stephen Kós).

94. *See* Michael Burger, Jessica Wentz & Radley Horton, *The Law and Science of Climate Attribution*, 45 COLUM. J. ENV'T L. 57, 133–34 (2020).

because, as the City of Hoboken's complaint puts it, "[d]efendants have conspired to deceive the world for decades."[95]

Despite the startling similarity of tactics used by harm producers across industries to ward off accountability,[96] climate change presents distinct challenges. The pathway from deception to harm for climate change is far more complex than in other contexts like cigarettes. Misrepresentations by tobacco companies were made directly to end users and concerned the immediate dangers of smoking to those users. Misrepresentations about climate change work more diffusely to influence public opinion and lower pressure for political representatives to address greenhouse gas emissions. The challenge for plaintiffs is that this pathway of deceit begins to look more like a fraud on democracy than the kind of discrete, relational fraud that tort and consumer protection law customarily address. To be sure, by arguing that industry defendants "concealed and/or misrepresented the dangers associated with the burning of fossil fuels despite having been aware of those dangers for decades,"[97] plaintiffs in carbon majors suits have identified arguably the most damaging misrepresentation campaign by any industry in history. But courts may be reluctant to find liability under circumstances that necessarily imply their sister branches have been duped or corrupted for the better part of six decades.

It is worth noting that such concerns are lessened in climate lawsuits focused on future responsibility rather than on culpability for past conduct. In the *Milieudefensie* case against Shell, for instance, plaintiffs sought only forward-looking injunctive relief requiring Shell to conform its global operations to a scientifically advised emissions reduction pathway. This requested order is similar in form to the relief sought successfully against the Dutch government in the earlier *Urgenda* litigation. Because both actions were framed around the question "who owes what going forward?" rather than "who did this to us?" the *Milieudefensie* court had more latitude to impose injunctive relief in a way that would force Shell to sort out how to achieve compliance, including negotiating the balance of responsibility between the company and

95. Amended Complaint ¶ 1, City of Hoboken v. Exxon Mobil Corp., No. 003179-20 (N.J. Super. Ct. Law Div. Apr. 21, 2023). In November, cities across Puerto Rico accused Chevron, ExxonMobil, Shell, and other fossil fuel companies of violating the federal RICO law. The towns seek to make companies pay billions of dollars for the extensive damages suffered during hurricanes Maria and Irma in 2017. *See Municipalities of Puerto Rico v. Exxon Mobil Corp.*, Climate Case Chart (2022), http://climatecasechart.com/case/municipalities-of-puerto-rico-v-exxon-mobil-corp/ [https://perma.cc/7J5C-RXQP].

96. *See Drilled*, *Widening the Lens of Accountability, with Naomi Oreskes, Jennifer Jacquet, Dr. David Michaels, Geoffrey Supran, and Jessica Wentz*, Critical Frequency (Oct. 7, 2022).

97. Bd. of Cnty. Comm'rs of Boulder Cnty. v. Suncor Energy (U.S.A.) Inc., 25 F.4th 1238, 1247 (10th Cir. 2022).

the government.[98] Similarly, the Hague District Court felt comfortable holding Shell responsible for reducing not only the direct emissions of its 1,100 wholly or partially owned subsidiaries, but also the indirect emissions of end users of those companies' products—in other words, Scope 3 emissions.[99] The court could more easily impose stringent supply chain-wide standards of responsibility on Shell because it was not required to address backward-looking questions about who bears more blame for past emissions: the company, its customers, or the royal government which chartered the company back in 1890 to develop an oil field in Northern Sumatra, thereby creating what would become one of the world's carbon majors.

Plenty of blame for the climate crisis exists to go around, but lawsuits focused on responsibility for past conduct require plaintiffs to position their defendants as somehow more or differently responsible than other actors. In contrast to *Urgenda* and *Milieudefensie*, the *Juliana* and carbon majors suits in the United States have a distinctive focus on past conduct as part of their theory of the case, notwithstanding the fact that their prayers for relief are carefully crafted to avoid damages for prior injury. As such, a certain amount of narrative inconsistency exists between *Juliana*, with its focus on the government's willful promotion of a fossil fuel economy notwithstanding awareness of the grave dangers entailed, and the carbon majors suits, with their emphasis on deceptive and manipulative practices by the industry as amounting to an elaborate fraud on democracy. The Dutch cases, in contrast, can sit comfortably beside one another because they are focused only on whether the defendants have an adequate mitigation plan looking forward. That forward-looking focus in the Dutch cases is made possible by the existence of theories of liability premised on human rights protections which

98. Shell attempted to argue that "states determine the playing field and the rules for private parties"; "private parties cannot take any steps until states determine the frameworks"; "government policy is needed to bring about the required change of the energy market"; and "the energy transition must be achieved by society as a whole, not by just one private party." Rechtbank Den Haag 26 mei 2021 ¶ 4.4.51 (Milieudefensie/Royal Dutch Shell plc.) (Neth.), https://climatecasechart.com/wp-content/uploads/non-us-case-documents/2021/20210526_8918_judgment-1.pdf [https://perma.cc/92LZ-XTRE]. The *Milieudefensie* court waved aside these arguments: "[T]he not-disputed responsibility of other parties and the uncertainty whether states and society as a whole will manage to achieve the goals of the Paris Agreement, do not absolve [Shell] of its individual responsibility regarding the significant emissions over which it has control and influence." *Id.* ¶ 4.4.52.

99. To be precise, the Dutch court ordered Shell

> both directly and via the companies and legal entities it commonly includes in its consolidated annual accounts . . . to limit or cause to be limited the aggregate annual volume of all $CO_2$ emissions into the atmosphere (Scope 1, 2 and 3) due to the business operations and sold energy-carrying products of the Shell group to such an extent that this volume will have reduced by at least net 45% at end 2030, relative to 2019 levels.

*Id.* ¶ 5.3.

informed both the government's constitutional duty in *Urgenda* and the content of Shell's general tort duty of care in *Milieudefensie*.

Without such natural anchors for establishing an affirmative, forward-looking duty of climate care on the part of defendants—public or private—plaintiffs in the United States are forced instead to focus on alleged past climate misfeasance in an effort to motivate a duty of repair through moral outrage. To be sure, the effort might work: Anyone who reads Gus Speth's expert report in *Juliana*, or the factual allegations in the various carbon majors' complaints, can justifiably feel outraged. But the path to a duty of climate care in the United States is undoubtedly a harder one than in those jurisdictions that recognize environmental human rights, a duty of corporate vigilance, or other affirmative caretaking responsibilities.

## III. "It Makes No Difference Whether or Not I Do It"

Source attribution studies take anthropogenic climate change—the "mother of all collective action problems"[100]—and reduce it from a problem caused by several billion past and present individuals to one driven by a few dozen companies. As such, they make climate change appear more amenable to traditional tort law adjudication. Rather than "the greatest market failure the world has seen,"[101] climate change becomes a pollution problem similar in scope to the kinds of multiple defendant cases courts have handled before—not always with enthusiasm, to be sure, but also not with a sense of insurmountable institutional deficiency.[102]

In many jurisdictions, for instance, it is clear that any contribution to a pollution nuisance above a de minimis threshold can give rise to damages liability or injunctive relief, notwithstanding the presence of numerous other contributors to the harm.[103] Recognizing the proof challenges posed by the traditional but-for test in complex causal contexts, courts instead have developed a substantial factor test which requires only that the "contribution of the individual cause [of a defendant] be more

100. Megan McArdle, *Why We Should Act to Stop Global Warming—And Why We Won't*, Atlantic (Feb. 28, 2012), https://www.theatlantic.com/business/archive/2012/02/why-we-should-act-to-stop-global-warming-and-why-we-wont/253752/ [https://perma.cc/RH5N-CQTA].

101. *See* Alison Benjamin, *Stern: Climate Change a 'Market Failure'*, The Guardian (Nov. 29, 2007), https://www.theguardian.com/environment/2007/nov/29/climatechange.carbonemissions [https://perma.cc/8ALP-EU8R].

102. *See generally* Douglas A. Kysar, *The Public Life of Private Law: Tort Law as a Risk Regulation Mechanism*, 9 Eur. J. Risk Regul. 48 (2018).

103. *See* Restatement (Second) of Torts § 840E (Am. L. Inst. 1965) (stating with respect to both private and public nuisance that "the fact that other persons contribute to a nuisance is not a bar to the defendant's liability for his own contribution").

than negligible or theoretical."[104] In a landmark California lead paint public nuisance suit, the intermediate appeals court stressed that even "a very minor force that does cause harm is a substantial factor," so long as it does not play only an "infinitesimal" role in bringing about harm.[105] Moreover, many courts have held that, where apportionment among multiple contributors is practically infeasible, plaintiffs may instead hold defendants jointly and severally liable or may shift the burden of proof onto defendants to disaggregate their respective contributions.[106]

Of course, the key analytical contribution of source attribution studies is to make apportionment of responsibility for climate change appear to be quite feasible, irrespective of who bears the burden of proof. Percentage shares of responsibility for the anthropogenic increase in greenhouse gas concentrations are nothing if not a measure of responsibility for climate change itself. Thus, if courts are persuaded by the analysis provided in source attribution studies, they could use the field's calculations as a basis for apportionment either of damages for climate-caused harms or of burden-sharing responsibilities for forward-looking remedies like an abatement fund. The approach would be conceptually similar to market share liability, which was developed for generically defective products, but which has been utilized more recently in groundwater contamination scenarios involving large numbers of defendants.[107] Rather than relying on corporate market share as the basis for liability allocation, courts would instead utilize the metric of attributed responsibility for greenhouse gas emissions.[108]

A conceptual approach along these lines is being taken by Saúl Luciano Lliuya, a Peruvian farmer and mountain guide, who has sued Germany's largest electric utility in a German court for the company's contributions to climate change. Glacier melt linked to human warming has caused dangerously increasing water levels in Lake Palcacocha, which lies several thousand feet above Lliuya's home city of Huaraz

104. People v. ConAgra Grocery Prods. Co., 227 Cal. Rptr. 3d 499, 543 (Ct. App. 2017).

105. *Id.*

106. *See* Restatement (Second) of Torts § 875 (Am. L. Inst. 1965) ("Each of two or more persons whose tortious conduct is a legal cause of a single and indivisible harm to the injured party is subject to liability to the injured party for the entire harm."); *id.* § 433B(2) ("Where the tortious conduct of two or more actors has combined to bring about harm to the plaintiff, and one or more of the actors seeks to limit his liability on the ground that the harm is capable of apportionment among them, the burden of proof as to the apportionment is upon each such actor . . . .").

107. *See*, *e.g.*, State v. Exxon Mobil Corp. 126 A.3d 266 (N.H. 2015); Suffolk Cnty. Water Auth. v. Dow Chem. Co., 987 N.Y.S.2d 819 (Sup. Ct. 2014); *In re* Methyl Tertiary Butyl Ether (MTBE), 175 F. Supp. 2d 593 (S.D.N.Y. 2001).

108. *See* Landgericht Essen [LG] [Regional Court] [Luciano Lliuya v. RWE AG] Dec. 15, 2016, 2-O-285/15 (2016) (Ger.). *See also* Burger et al., *supra* note 94, at 238–39 (discussing market share and related proportionate liability approaches in the context of climate change attribution science).

and threatens to cause significant loss of life and property damage if it floods.[109] The farmer is suing for a declaratory judgment and 0.47% of the expected costs that he and his community face in addressing risks from glacier melt—precisely the same percentage that the defendant, RWE, is estimated to have contributed to anthropogenic greenhouse gas emissions since the beginning of industrialization.[110] As discussed in the previous Section, it remains uncertain whether courts will accept the way in which RWE's contribution has been calculated, given that other actors like governments and end users could also be attributed shares of the emissions occurring along RWE's value chain.[111] This Section addresses the separate question whether, assuming 0.47% is an appropriate characterization of RWE's contribution to anthropogenic climate change, that number might nevertheless spell trouble for the plaintiff's claim given its apparent slightness.

It should be stressed that, despite being less than half of one percent of accumulated emissions, RWE's share remains massive in absolute terms. From 1854 to 2010, RWE's share of global emissions amounted to 6.84 gigatons of $CO_2$ equivalent releases. For perspective, a gigaton is one billion tons, which is roughly equal to the mass of 200 million elephants.[112] RWE's share of cumulative greenhouse gas emissions is therefore well over one billion elephants' worth of gases. RWE's use of the global carbon budget to date also seems significant when it is

109. *See* Rupert F. Stuart-Smith, Gerard H. Roe, Sihan Li & Myles R. Allen, *Increased Outburst Flood Hazard from Lake Palcacocha Due to Human-Induced Glacier Retreat*, 14 Nature Geosci. 85 (2021). The threat to the town is not speculative: "In 1941, a flood from the same lake killed 1,800 people and destroyed a large portion of the city. Today, Huaraz is much larger and 50,000 residents live within the flood path. Additionally, the lake's volume is 34 times larger than it was in 1970." Aliyah Elfar, *Landmark Climate Change Lawsuit Moves Forward as German Judges Arrive in Peru*, State of the Planet (Aug. 4, 2022), https://news.climate.columbia.edu/2022/08/04/landmark-climate-change-lawsuit-moves-forward-as-german-judges-arrive-in-peru/ [https://perma.cc/HW2R-W9X6]. In addition to the swelling of the lake due to glacier melt, the likelihood of a climate-related flood event is also increased by potential trigger events such as avalanches or landslides that might cause the lake to overtop. *See id*.

110. Plaintiff's Claim at 18, Landgericht Essen [LG] [Regional Court] [Luciano Lliuya v. RWE AG] Dec. 15, 2016, 2-O-285/15 (2016) (Ger.), https://climatecasechart.com/wp-content/uploads/non-us-case-documents/2015/20151123_Case-No.-2-O-28515-Essen-Regional-Court_complaint-1.pdf [https://perma.cc/K99L-KPGH].

111. *See* Defendant's Submission at 4, Landgericht Essen [LG] [Regional Court] [Luciano Lliuya v. RWE AG] Dec. 15, 2016, 2-O-285/15 (2016) (Ger.), https://climatecasechart.com/wp-content/uploads/non-us-case-documents/2017/20171030_Case-No.-2-O-28515-Essen-Regional-Court_na-1.pdf [https://perma.cc/2ZPH-TY3A] (Defendant's submission: "Only the Scope 1 emissions can be used to calculate the defendant's share, because the defendant cannot be liable for emissions from upstream and downstream companies. On this basis, the defendant's share would be 0.06%.").

112. *See* Interview with John Deutch, Professor Emeritus, Mass. Inst. Tech. & Arun Majumdar, Jay Precourt Professor, Stanford Univ., MIT Energy Initiative (Aug. 21, 2018), https://energy.mit.edu/news/podcast-1-negative-carbon-emissions/ [https://perma.cc/Q2K4-YQF9].

recalled that scientists estimate humanity only has 250 gigatons of allowable emissions remaining in order to stay within a fifty percent change of limiting warming to 1.5° C.[113] In considering why 1.5° C is a critical temperature threshold, recall also that numerous catastrophic tipping points exist within planetary systems, many of which already are estimated to be within the range of potentially irreversible activation and many others of which loom only a degree or two beyond.[114] In that sense, any additional gigaton emitted by any actor such as RWE might be conceptualized—at least hypothetically—as "the one" that triggers the dieback of the Amazon, breakdown of the ocean's conveyer belt, or loss of the Greenland or Antarctic Ice Sheets. Rather than a mere drop in the bucket, the emissions become the straw that broke the camel's back.[115]

Finally, it also must be borne in mind that the need to drain a dangerously expanding glacier lake in the Peruvian Andes is but one discrete example of the trillions of dollars of loss and adaptation costs being imposed throughout the world due to climate change. For instance, researchers have shown that increased extreme heat from human-caused climate change caused between $5 trillion and $29.3 trillion in lost economic growth globally from 1992 to 2013, with the majority of losses concentrated in poor tropical regions that are least responsible for climate change.[116] Taking $5 trillion as a conservative estimate of this harm, RWE's responsible share at 0.47% would amount to $23.5 billion—hardly an "infinitesimal" amount. In that sense, RWE's alleged share of responsibility for the costs of abating one particular flood risk no longer seems trivial when it is recalled that the claim is but one of millions if not billions of additional would-be plaintiffs facing climate-related harms. Indeed, the suit against RWE can be understood as a sort of shadow class action in which Lliuya is a representative plaintiff without a class. If Lliuya establishes his claim and damages are imposed, one can be sure that the case's practical impact on corporate accountability

113. *See* Robin D. Lamboll, Zebedee R. J. Nicholls, Christopher J. Smith, Jarmo S. Kikstra, Edward Byers & Joeri Rogelj, *Assessing the Size and Uncertainty of Remaining Carbon Budgets*, 13 Nature Climate Change 1360 (2023).

114. *See* David I. Armstrong Mckay, Arie Staal, Jesse F. Abrams, Ricarda Winkelmann, Boris Sakschewski, Sina Loriani, Ingo Fetzer, Sarah E. Cornell, Johan Rockström & Timothy M. Lenton, *Exceeding 1.5°C Global Warming Could Trigger Multiple Climate Tipping Points*, 377 Sci. 1 (2022).

115. The lower court in *Sharma* did not accept the government's argument that approving a coal mine extension would be a "de minimis" or "negligible" action. Instead, the court reasoned that even a fractional increase could cross a tipping point and precipitate a warming cascade. *Sharma v Minister for the Environment* [2021] FCA 560 ¶ 88 (Austl.), https://climatecasechart.com/wp-content/uploads/non-us-case-documents/2021/20210527_VID-389-of-2021-2021-FCA-560-2021-FCA-774-2022-FCAFC-35-2022-FCAFC-65_judgment.pdf [https://perma.cc/ZU79-HBNC].

116. *See* Christopher W. Callahan & Justin S. Mankin, *Globally Unequal Effect of Extreme Heat on Economic Growth*, 8 Sci. Advances 1, 5 (2022).

and decision-making will vastly exceed whatever number of euros are formally awarded. For this reason, it is rather extraordinary that Lliuya has been able to invoke the jurisdiction of the German courts, that the trial court's dismissal was overturned, and that German judges have now travelled to Peru to conduct a fact investigation of the plaintiff's claim.[117]

Wittingly or not, RWE's defense resembles a classic problem in modern moral philosophy explored by Jonathan Glover in his 1975 paper, "It Makes No Difference Whether or Not I Do It."[118] In this paper, Glover imagines one hundred villagers each with a lunch consisting of one hundred beans. One hundred bandits nearby steal the lunches, *not* by each bandit targeting a specific lunch, but instead by each bandit taking a single bean from each villager. In the end, each villager loses their lunch, and each bandit steals one hundred beans, but no individual bandit causes appreciable harm to any individual villager.[119]

Scaled up for the global nature of climate change, this purported "consequentialist alibi" is analytically similar to the defense that RWE and other carbon majors offer in opposition to climate accountability when they argue that their contributions to the climate crisis are de minimis. The German appeals court was remarkably non-plussed by such arguments, concluding that "in the case of multiple 'disturbers', each participant must eliminate its own contribution," and that dismissal of the case would not be appropriate even "if, in the end, the plaintiff were indeed able to demand only €0.33 from the defendant."[120] One has to imagine that the judges issuing this pronouncement are keenly aware of the impact the case may have beyond Lake Palcacocha. Importantly, the judges are able to achieve this impact precisely by focusing narrowly on the case at hand, rather than by becoming cowed or overwhelmed by the enormity of climate *qua* climate. Seeing even €0.33 of climate damages as worthy of judicial attention, the court ensures that those beans—while well short of a hill—might still make a difference.

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117. *See also Asmania et al. vs Holcim*, Climate Case Chart (2022), http://climatecasechart.com/non-us-case/four-islanders-of-pari-v-holcim/ [https://perma.cc/A5ZK-QY4Q] (four inhabitants of the Indonesian island of Pari have sued the Swiss-based materials company Holcim, seeking greenhouse gas abatement as well as compensation for climate-related damages).

118. *See* Jonathan Glover & M. J. Scott-Taggart, *It Makes no Difference Whether or Not I Do It*, 49 Proc. Aristotelian Soc'y 171 (1975).

119. *Id.* at 174.

120. Landgericht Essen [LG] [Regional Court] [Luciano Lliuya v. RWE AG] Dec. 15, 2016, 2-O-285/15 (2016) ¶ 4 (Ger.), https://www.germanwatch.org/sites/default/files/announcement/21168.pdf [https://perma.cc/GPQ4-L8PB].

## IV. "If I Don't Do It, You Know Somebody Else Will"

Two years before Glover's paper was published, blues singer Mac Rebennack released "Such a Night," a modern New Orleans classic that explored another manifestation of the consequentialist alibi. To justify absconding with a friend's love interest at a party, the funky and flamboyant pianist better known as Dr. John sang, "You came here with my best friend Jim, and here I am trying to steal you away from him. Oh, but if I don't do it, you know somebody else will."[121] Rather than denying causal responsibility based on the apparent slightness of an actor's contribution to an aggregate harm, Dr. John's version of the consequentialist alibi trades on the supposed inevitability of a discretely caused harm due to the anticipated intervention of alternative causal agents.

Fifty years after "Such a Night" was released, fossil fuel majors and recalcitrant governments are singing the same tune to disclaim climate responsibility. Specifically, climate defendants frequently argue that if they are held to a prescribed mitigation pathway through judicial order, then other less-regulated actors will step in to offset whatever emissions reductions occur due to the compliant defendant's actions. As Shell argued in *Milieudefensie*, any judicially imposed "reduction obligation will have no effect, or even be counterproductive, because the place of the Shell group will be taken by competitors." In other words, if we don't burn 'em, you know somebody else will.

This version of the consequentialist alibi is especially important in the climate change context because, from the perspective of the atmosphere, all that matters is whether greenhouse gases are released, not who released them. And it must be conceded that the argument is not without some factual basis. As widespread concern over the phenomenon of leakage attests, unless and until a robust global emissions regime is in place, capital will relentlessly seek out opportunities throughout the world to exploit fossil fuel assets with least regulatory oversight.[122] Given the globally integrated nature of the climate, no greenhouse gas emitter can contain the harmful effects of its actions to a single locality. Conversely, given the globally fractured nature of the legal order, no jurisdiction can ensure that its norms will bind actors throughout otherwise integrated systems of trade and finance.

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121. Dr. John, *Such a Night*, *on* In the Right Place (1973).

122. *Cf.* Alexander Zahar, *The Missing Relational Element in Tort Cases on Greenhouse Gas Emissions*, 12 Climate L. 216 (2022) (discussing what the author terms the "market substitution" concern in climate litigation and arguing that it stems from a mismatch between systemic issues such as economy-wide dependency on coal for electricity and the limited capacity of individual suits to address those issues and bind all non-parties).

The consequentialist alibi stems from the idea that the rightness or wrongness of an action depends entirely on the consequences it brings about in the world—on the differences it makes. Attention in consequentialist moral theory is restricted to the effects an act may have, somehow divorcing that act and the actor behind it from their own moral significance. But if one is not to be blamed for the consequences of an action simply because the action otherwise would have been taken by someone else, then deductively that someone else would not be blamed for the consequences either—blame, it would seem, is relegated to the consequences themselves. While this philosophical approach has some undeniable value, the *exclusive* focus on consequences rather than on a relationship of moral identity between act and actor tends to founder in the case of causally over-determined harms such as climate change. Consequences are not agents which can be held accountable within legal systems. Thus, through a consequentialist lens, climate change would appear to be the responsibility of no one.

Perhaps cognizant of this accountability gap, the two Dutch climate courts roundly rejected both versions of the consequentialist alibi. With respect to the Netherlands government, the *Urgenda* court stressed that "a country cannot escape its own share of the responsibility to take measures by arguing that compared to the rest of the world, its own emissions are relatively limited in scope and that a reduction of its own emissions would have very little impact on a global scale."[123] With respect to Shell, the *Milieudefensie* court acknowledged that "the place of the Shell group [may] be taken by competitors," but concluded that, "[d]ue to the compelling interests which are served with the reduction obligation, this argument cannot justify assuming beforehand there is no need for [Shell] to not meet this obligation."[124] More to the point, the court recognized that Shell "cannot solve this global problem on its own" but concluded that "this does not absolve [Shell] of its individual partial responsibility to do its part regarding the emissions of the Shell group, which it can control and influence."[125]

123. HR [Supreme Court of the Netherlands] 20 December 2019, NJ 2020, 41 m.nt J. Spier (Staat der Nederlanden/Stichting Urgenda) [The State of the Netherlands/Urgenda Foundation] (Neth.), https://climatecasechart.com/wp-content/uploads/non-us-case-documents/2020/20200113_2015-HAZA-C0900456689_judgment.pdf [https://perma.cc/6FY8-TR34]. Similarly, the *Neubauer* court stressed that, although "no state can resolve the problems of climate change on its own [that fact] does not invalidate the national obligation to take climate action." Bundesverfassungsgericht [BVerfG] [Federal Constitutional Court] Neubauer v. Germany, 1 BvR 2656/18 et al., Mar. 24, 2021, ¶ 2.c (Ger.), https://climatecasechart.com/wp-content/uploads/non-us-case-documents/2021/20210324_11817_order-1.pdf [https://perma.cc/2292-BAKG].

124. Rechtbank Den Haag 26 mei 2021 ¶ 4.4.49 (Milieudefensie/Royal Dutch Shell plc.) (Neth.), https://climatecasechart.com/wp-content/uploads/non-us-case-documents/2021/20210526_8918_judgment-1.pdf [https://perma.cc/92LZ-XTRE].

125. *Id.*

An extremely important metaethical proposition is at work in these opinions. While acknowledging that "other companies will also have to make a contribution," the *Milieudefensie* court did not linger on the empirical question of whether those companies will actually join the cause. What mattered instead was whether the specific party before the court would be ordered to do the right thing, even if the order requested by plaintiffs "is highly unusual and has no precedent" and, indeed, even if it required "private companies . . . to take drastic measures and make financial sacrifices to limit $CO_2$ emissions to prevent dangerous climate change."[126]

When one uses the defense, "[i]f I don't do it, you know somebody else will," one creates a self-fulfilling prophesy. Sure enough, the action is performed, the harm is caused. But in the process one forgets that the "somebody else" causing harm is them. Pondering the horrors of the twentieth century, and the questions they raised about humanity and the power of any individual to do anything against seemingly inevitable collective atrocities, Alexandr Solzhenitsyn in his Nobel lecture said memorably: "[T]he simple step of a simple courageous man is not to take part in the lie, not to support deceit. Let the lie come into the world, even dominate the world, *but not through me*."[127]

This focus on the particularity of the relationship between a moral agent and the limited influence or control any individual agent has on actual consequences in the world is essential to understanding—and perhaps resolving—climate change. It explains why scholars are too narrow when they attempt to hinge responsibility purely on dismal game theoretic predictions of collective action, making assertions such as "it is not negligent to fail to contribute to a public good if not enough others are doing similarly, so that the public good would not be created even if one did contribute."[128] No one of us can solve climate change. But each one of us, including judges, can commit to address it through our limited spheres of influence: "It's never too late to do as much as we can."[129] Critically, such commitments do not happen in a social vacuum, in stark contrast to game theoretic depictions of the collective action problem. Instead, our beliefs, values, and choices are always embedded in social systems that are influenced by, and that influence in turn, other actors.

Therein lies hope.

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126. *Id.* ¶ 4.4.53.

127. Glover, *supra* note 118, at 184 (emphasis added).

128. Eric A. Posner & Cass R. Sunstein, *Global Warming and Social Justice*, REGULATION, Spring 2008, at 19.

129. Marr, *supra* note 20.

## Conclusion

The Hague District Court issued its ruling in *Milieudefensie* in May of 2021. Later that year, Shell dropped "Royal Dutch" from its name and moved the company's global headquarters from the Netherlands to London, steps that were explained as operational streamlining by the company but that were seen by many commentators as direct responses to the Dutch court ruling.[130] Also in the wake of *Milieudefensie*, Shell sold $9.5 billion worth of oil and gas production assets in the Permian Basin to ConocoPhillips, a move described by industry observers as "the latest sign that Shell, like other European oil companies, is under pressure to sell off oil and gas production and move toward producing cleaner energy in response to growing concerns about climate change among investors and the general public."[131]

Revealingly, both Shell and U.S.-based ConocoPhillips saw their stock prices jump following announcement of the sale. As the Wall Street Journal's headline cheekily summarized: "Conoco Kicks Off Oil Industry's Carbon Shell Game: Purchase of Shell's Permian oil fields heralds trend of transfers of good assets from environmentally challenged producers to those with a free hand."[132] To be clear, divestment of the Permian assets by Shell will not result in any reduction of greenhouse gas emissions, even though the company's own climate change report card might now look more compliant with the *Milieudefensie* ruling. Indeed, the deal might result in *more* greenhouse gas emissions being released over the long run, given ConocoPhillips's comparatively weaker corporate reputation on environmental matters.[133] As for the responsibility of ConocoPhillips itself, the company's board members must have contented themselves with a variation on Dr. John's classic chorus: "If we don't burn 'em, you know somebody else will." Given the less stringent regulatory context of the United States and the mounting

130. *See* Laura Hurst, *Shell Investors Back Headquarters Move to U.K.*, Bloomberg (Dec. 10, 2021), https://www.bloomberg.com/news/articles/2021-12-10/shell-investors-look-set-to-back-move-from-netherlands-to-u-k [https://perma.cc/9TJK-YXWQ] (calling the Netherlands "a country with which relations [for Shell] have become increasingly strained due to environmental concerns").

131. Clifford Krauss, *Royal Dutch Shell Sells Permian Basin Oil Holdings for $9.5 Billion*, N.Y. Times (Sept. 20, 2021), https://www.nytimes.com/2021/09/20/business/energy-environment/shell-conoco-permian-sale.html [https://perma.cc/2KDC-TX7D].

132. Jinjoo Lee, *Conoco Kicks Off Oil Industry's Carbon Shell Game*, Wall St. J. (Sept. 21, 2021), https://www.wsj.com/articles/conoco-kicks-off-oil-industrys-carbon-shell-game-11632244220 [https://perma.cc/83SX-RK2D].

133. *See* James Mackintosh, *Shell Is the Greenest Big Oil Company. Look What That Got It.*, Wall St. J. (Oct. 31, 2021), https://www.wsj.com/articles/shell-is-the-greenest-big-oil-company-look-what-that-got-it-11635698403 [https://perma.cc/D49W-3Y7A].

flood of nontransparent private equity money into fossil fuel markets even in Europe,[134] they likely would have been right in that prediction.

The "mother of all collective action problems" turns out to contain nested within it myriad smaller collective action problems that stymie actors who might otherwise be well positioned to influence change. Courts are no exception. Despite limited jurisdictional authority and institutional competence, the *Urgenda* and *Milieudefensie* courts attempted to model the change they hoped to see in the world, gambling that their bold rulings might prompt an upward spiral of legal accountability for governments and corporations as other courts join the effort and give rise to a global tapestry of interweaving duties of climate care. After all, had courts in the United Kingdom and the United States been developing comparable climate obligations, Shell might not have fled the Netherlands and ConocoPhillips might not have been such an eager buyer of destructive energy assets.

This is not to suggest that judicial action alone is an adequate response to climate change. Judges in cases like *Juliana*, *Sharma*, and *Fonterra* are undoubtedly right that climate change must ultimately be addressed by the political branches and through international negotiation. But success in those spheres is made more likely by the simultaneous development of legally enforceable duties of climate care. As seen in the Netherlands, Pakistan, France, Germany, and elsewhere, political actors can take stronger positions on climate action when they are able to point to judicial rulings obligating them to do so. In that sense, "rather than potentially serving as a mechanism for impacting 'governance' from the outside, [climate] litigation has already made a large network of courts and other adjudicatory bodies *part* of global climate governance."[135]

Less visionary judges may satisfy themselves with the thought that the other branches will surely step up, but that rationale leads those judges to not step up themselves. They become bystanders to a crisis, modeling and making more likely the kind of official passivity that will doom us all.

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134. *See* Gautam Naik & Petra Sorge, *Elusive Billionaire Bets Against Europe's Green Plans—And Mints a Fortune*, Bloomberg (Apr. 6, 2023), https://www.bloomberg.com/news/features/2023-04-06/daniel-kretinsky-eph-group-builds-17-billion-fossil-fuel-empire?in_source=embedded-checkout-banner [https://perma.cc/5PX3-23CW]. *See also* Benoît Morenne, *How a Houston Oilman Confounded Climate Activists and Made Billions*, Wall St. J. (July 11, 2023), https://www.wsj.com/articles/wealthiest-oilman-houston-hildebrand-climate-activism-32bb8aec [https://perma.cc/8FTW-8Y3H] (observing that "[pressure on] big oil companies isn't necessarily leading to less pumping, but rather pumping by less-accountable players.").

135. Sokol, *supra* note 21, at 29.