PART III

DOMESTIC, TRANSNATIONAL AND PRIVATE INTERNATIONAL LAW

16. Atmospheric recovery litigation around the world: gaining natural resource damages against carbon majors to fund a sky cleanup for climate restoration[1]

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In this planetary climate emergency, the level of our ambition must match the scale of the threat.

1. INTRODUCTION

Stabilizing the planet's climate system requires a full transition off of carbon-intensive fossil fuels by at least mid-century, and perhaps much sooner. But, as ambitious as that is, decarbonization alone is not sufficient. The global mean temperature rise of almost one degree Celsius to date is the result of excess carbon emissions already flooding the atmosphere, due to roughly 150 years of industrial-scale greenhouse gas emissions. Scientists emphasize the importance of drawing down and sequestering 150 gigatons of "legacy" carbon—in essence, accomplishing a cleanup of the sky.[2] This chapter presents a meta-strategy for jumpstarting such a drawdown effort across the globe by creating a funding mechanism achieved through atmospheric natural resource damage litigation.

Scientists have developed a suite of methods to expand nature's own mechanisms of carbon sequestration through restoring degraded ecosystems. In 2017, a seminal scientific paper announced the potential to remove vast amounts of CO_2 though natural climate solutions

[1] This chapter is part of a larger work, 'Atmospheric Recovery Litigation Around the World: Funding Landscape Carbon Sequestration through Suits against the Fossil Fuel Industry for Climate Natural Resource Damages'. Excellent research assistance and analysis was provided by Callan Barrett and Zachary Griffith, Research Fellows, Global Environmental Democracy Project, and Charles W Woodward IV, Research Associate, University of Oregon School of Law Environmental and Natural Resources Law Center. Due to space constraints, this chapter omits multiple subsequent internal citations to discussed cases. For further reference and authorities, see Mary Christina Wood and Dan Galpern, 'Atmospheric Recovery Litigation: Making the Fossil Fuel Industry Pay to Restore a Viable Climate System' (2015) 45 *Environmental Law* 259; Michael C Blumm and Mary Christina Wood, '"No Ordinary Lawsuit": Climate Change, Due Process, and the Public Trust Doctrine' (2017) 67 *American University Law Review* 1; Katrina Fischer Kuh, 'Judicial Climate Engagement' (2019) 46 *Ecology Law Quarterly* 1.

[2] James Hansen and others, 'Assessing "Dangerous Climate Change": Requiring Reduction of Carbon Emissions to Protect Young People, Future Generations and Nature' (2013) 8(12) PLOS ONE 1; 'Expert Report of G. Philip Robertson' (*Juliana v. United States*, Doc. 263-1 June 28, 2018); Marlowe Hood, 'Climate Target Too Low, and Progress Too Slow: Top Scientist,' *Egypt Today* (11 November 2017) <www.egypttoday.com/Article/3/31978/Climate-target-too-low-and-progress-too-slow-top-scientist> accessed 5 October 2020 (quoting Dr James Hansen).

(NCS).[3] NCS methods to draw down and absorb carbon in the soil include: (1) reforestation; (2) conservation agricultural practices (such as no-till, non-chemical and cover crop techniques and use of weathered rock as a soil amendment[4]); (3) mangrove and wetlands restoration; and (4) regenerative grazing methods. A global atmospheric cleanup using NCS requires a spectacular "scaling up" of the present effort, which consists largely of scattered projects providing pilot experience. Scientists have mapped many areas of the globe to depict carbon sequestration potential, so sovereigns can plan and execute NCS drawdown programs across their jurisdictions. While some analysts have noted ongoing uncertainty about the capacity of NCS to achieve the necessary global sequestration,[5] much of the criticism reflects the reality that global projections are by their very nature abstract and disconnected from on-the-ground dynamics that vary markedly between regions. Customizing the NCS effort to the regional level enables teams to better assess actual sequestration potential and create tangible mechanisms to overcome land use impediments, maximize opportunity, promote accountability, and achieve permanence.[6] Deploying these projects would engage farmers, foresters, ranchers, and indigenous communities in restoration, thereby stimulating local economies and potentially boosting community adaptation efforts through achieving co-benefits such as enhanced food supply, flood mitigation, and water filtration. The ecosystem restoration at the heart of NCS not only stands as essential to climate system recovery, but also remains vital in responding to the global biodiversity crisis.[7]

The magnitude of necessary restoration through NCS is daunting, requiring the recruitment of nearly all available and suitable land across the world.[8] This requires massive funding. In a functional political world, national leaders around the globe would convene to create an organized and funded framework for global carbon drawdown. But in the present leadership vacuum, those corporations most responsible for creating this crisis—fossil fuel companies—have yet to pay a dime for cleaning up the atmosphere.

This chapter suggests a global campaign of Atmospheric Recovery Litigation (ARL) to hold fossil fuel companies and other large emitters liable for atmospheric natural resource damages (NRDs) to fund projects sequestering carbon in the soil. The legal framework looks to the same principle that holds companies responsible for cleaning up marine oil spills—the

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[3] Bronson W Griscom and others, 'Natural Climate Solutions' (2017) 114(44) *Proceedings of the National Academy of Sciences of the United States of America* 11645.

[4] David J Beerling and others, 'Potential for Large-Scale CO_2 Removal via Enhanced Rock Weathering with Croplands' (2020) 583 *Nature* 242 (rock weathered material for soil topping as a method for carbon sequestration); Benjamin Z Houlton, 'An Effective Climate Change Solution May Lie in Rocks Beneath Our Feet' (*The Conversation*, 22 July 2020).

[5] Mark Bradford, 'Soil Carbon Science for Police and Practice' (2019) 2 *Nature Sustainability* 1070. But see Joe Fargione and others, 'Natural Climate Solutions for the United States' (2018) 11(4) *Sciences Advances* 1, 1–2 <https://advances.sciencemag.org/content/4/11/eaat1869> accessed 5 October 2020; Griscom (n 3).

[6] Lucas Silva and others, **'**Landscape Carbon Sequestration for Atmospheric Recovery White Paper: A Perspective on Convergence to Accelerate Carbon Sequestration' (National Science Foundation, 10 December 2019) <https://law.uoregon.edu/sites/law1.uoregon.edu/files/white_paper_lcsar.pdf> accessed 6 October 2020.

[7] Stephen Leahy, 'One Million Species at Risk of Extinction, UN Report Warns' (*National Geographic*, 6 May 2019) <www.nationalgeographic.com/environment/2019/05/ipbes-un-biodiversity-report-warns-one-million-species-at-risk/> accessed 6 October 2020.

[8] Griscom (n 3) 11648.

public trust doctrine. Natural resource damage actions yield awards to fund restoration of the harmed resource. While the US federal government under President Trump was not inclined to lead a cleanup effort for the atmosphere, other sovereigns—states, tribes, counties, and foreign nations—are immediately positioned to do so. By setting forth a unifying liability framework, this chapter aims to catalyze a planetary effort that is uniquely localized, yet global in resolve. The ARL strategy can parallel and compliment the decentralized litigation strategy known as Atmospheric Trust Litigation (ATL) currently proceeding apace to force the other climate imperative, decarbonization. Of course, by depleting the assets of "carbon majors," ARL litigation would secondarily stimulate a wind-down of the fossil fuel industry, forcing a transition to clean renewable energy and contributing to the decarbonization side of the climate imperative as well.

The ARL contemplated in this chapter uses damages remedies (namely monetary awards) to a mitigation end—cleaning up the excess atmospheric carbon dioxide that is fueling climate disruption. As a strategy aimed at restoring the climate system through drawdown, it seeks to prevent further loss and damage to society as a whole. By seeking compensation for direct damage to the atmosphere itself, these envisioned cases veer away from cases seeking traditional damages for climate harm, and it is important to understand the distinction in order to assess litigation priorities across the field. There is simply not enough money in the world to pay for all of the harm unleashed by the fossil fuel industry. Choices must be made, either directly or by default, as to which forms of damage will be funded through strategic litigation. At least six categories of global climate harm are now manifest: (1) human death and injury; (2) property loss; (3) economic loss; (4) community relocation expense; (5) community adaptation costs; and (6) atmospheric damage and collateral ecological injury. Compensating for losses in the first five categories, though unquestionably compelling in human terms, achieves nothing in terms of climate system recovery. Moreover, these forms of damage will only worsen as the climate system spins out of control, leading to what scientists warn will be an "uninhabitable" planet.[9] Atmospheric NRDs are geared not toward compensating human loss or financing adaptation, but toward actually cleaning up legacy excess carbon before irrevocable climate thresholds make it impossible to regain climate stability.[10] Moreover, these lawsuits, as envisioned, will not seek NRDs for harm to corollary natural assets such as species, waterways, coastlines, oceans, and forests, because those resources cannot recover anyway until society addresses the underlying pollution syndrome causing such ecological upheaval.

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[9] David Wallace-Wells, *The Unhabitable Earth: Life after Warming* (Tim Duggan Books 2019).

[10] Because ARL lawsuits have the singular purpose of cleaning up the atmosphere of historic excess carbon dioxide, it is important to make clear that NRDs gained through these lawsuits may not be used to 'offset' further carbon dioxide pollution. 'Offsets' are controversial regulatory tools used in the realm of mitigation policy to legalize continued greenhouse gas pollution as long as the polluter buys some sort of carbon sequestration project (such as forest conservation) to 'offset' that pollution. The same sequestration projects can be used either as offsets or measures or to clean up the sky, but it is vital to differentiate the two. Offset programs remain fatally misguided, because they simply legalize continued pollution without making any dent in the legacy pollution that continues to destabilize the climate system. Moreover, offsets can monopolize key lands capable of sequestering carbon dioxide, thus competing with the sky cleanup. For discussion, see Christa M Anderson and others, 'Natural Climate Solutions Are Not Enough' (2019) 363 Science 933, 933–34. The ARL strategy presented in this chapter represents a damages action that is completely independent of any offset policies.

In contrast to the contemplated ARL suits, the climate liability cases already progressing through the courts seek monetary awards against the fossil fuel industry for adaptation costs. These suits, now numbering more than a dozen, have been filed by cities, counties, and one state against large corporate producers of fossil fuels, in what amounts to a second wave of climate lawsuits against the fossil fuel industry. The first wave primarily asserted federal common law nuisance claims, an avenue that was rejected by the US Supreme Court in *American Electric Power (AEP) v Connecticut*, on grounds that the federal Clean Air Act displaced such claims.[11] The first-generation cases ended without relief, either in the form of injunctive remedies or damages.

The second-generation cases were initiated in 2017 against fossil fuel producers. They seek "disgorgement of profits," or damages in unstated amounts, from the fossil fuel defendants to fund various municipal adaptation measures, such as replacement of infrastructure and construction of sea walls to hold back sea-level rise.[12] Carefully crafted to avoid the *AEP* displacement analysis that defeated the first-generation suits, these cases assert state (not federal) common law claims. All have a centerpiece public nuisance claim, and several present additional claims sounding in product liability and negligence.[13] They cast a broad moral indictment of the fossil fuel industry by presenting jaw-dropping factual characterizations of what the companies knew would be the damage likely set in motion by their continued fossil fuel production. Nevertheless, two federal district courts dismissed such cases on grounds of displacement and political question.[14] As Katrina Kuh observes in her summary of the field, "So far, the second-generation common law nuisance suits are struggling, as their predecessors did, to convince courts to open their doors to the merits of their claims."[15] Recently, however, three appellate courts have found that those cases could move forward in state (rather than federal) court,[16] dismantling a significant procedural hurdle for the plaintiffs.

The atmospheric NRD action presented in this chapter remains fundamentally different in purpose from these second-generation climate suits, though both seek monetary damages against the same fossil fuel defendants. While the second-generation climate suits have a logical and laudable aim of compensating sovereigns for the costs of responding to climate disruption, this purpose nevertheless carries two drawbacks. First, it conjures a fundamental equity problem. Climate harms now pummel every corner of the world, saddling virtually all communities with soaring costs. The fossil fuel industry—even despite its vast holdings—will not be able to pay for even a fraction of the damage it has set in motion across the globe through its polluting products. If these American lawsuits win, they will drain the bank for

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[11] *American Electric Power v Connecticut*, 564 US 410, 424 (2011) (AEP).

[12] See for example, *County of San Mateo v Chevron et al*, 294 F Supp (3d) 934, para 186 (ND Cal 2018).

[13] One case filed in Vermont includes a claim for natural resource damages to drinking water, groundwater, surface water, wildlife, soil, and sediment. *State of Vermont v 3M Co*, No 2:19-cv-00134, para 7 (Vt Super Ct 2020).

[14] *City of New York v BP PLC*, 325 F Supp (3d) 466, 471–75 (SDNY 2018) (*Oakland v BP* ND Cal 2018); *City of Oakland v BP PLC*, 325 F Supp (3d) 1017, 1024-1028 (ND Cal 2018) (*Oakland v BP* SDNY 2018). For subsequent treatment of these issues, see n 16.

[15] Kuh (n 1) 11.

[16] *City of Oakland v BP PLC*, 960 F (3d) 570 (9th Cir 2020); *County of San Mateo v Chevron Corp*, 960 F (3d) 586 (9th Cir 2020); *Board of County Commissioners of Boulder County v Suncor Energy*, 2020 WL 3777996 (10th Cir); *Mayor of Baltimore v BP PLC*, 952 F (3d) 452 (4th Cir 2020).

the benefit of a few municipal litigants who positioned themselves first in line in the court system, leaving the great bulk of communities with no compensation. Second, the remedy does nothing to solve the climate crisis, because it does not fund methods to clean up the atmosphere. Until excess carbon is removed from the atmosphere (along with full decarbonization), the climate emergency will continue to intensify until it brings universal chaos and community collapse worldwide. Any conceivable adaptation measures will be for naught in a scenario of runaway heating.

Atmospheric recovery NRD suits seek to restore the climate system by cleaning up excess carbon dioxide in the sky. As explained below, nearly every sovereign is positioned to sue for costs to fund drawdown projects in its jurisdiction. While any one sovereign can achieve only a fractional share of the total carbon removal, virtually every successful project theoretically contributes to the overall planetary cleanup goal.[17] Thus, a win for any NRD suit may represent a win for all jurisdictions across the globe, in contrast to the second-generation climate adaptation lawsuits, which allow for only a few winners at best. Nevertheless, such suits have set important cornerstones of sky cleanup by amassing crucial evidence of industry culpability and crafting legal approaches to industry liability. The remainder of this chapter describes the ARL approach.

2. THE PUBLIC TRUST PRINCIPLE IN CLIMATE LITIGATION

Harnessing a damages remedy to achieve a mitigation goal (climate restoration), ARL goes hand in hand with another litigation campaign, Atmospheric Trust Litigation (ATL), aiming to achieve decarbonization. Together, the ATL and ARL campaigns represent converging litigation addressing both sides of the climate mitigation imperative: decarbonization and drawdown. Both campaigns rest on the venerable public trust principle, which obligates and empowers government to protect and restore crucial ecological assets such as the atmosphere.

The public trust principle is fundamental and ancient, reaching far greater depths than any statute.[18] Manifest in many countries throughout the world, it designates governments as trustees of public resources, including the waters, shorelines, fisheries, wildlife, and, by logic, air and atmosphere. As trustee, government must protect this vital ecological endowment for the continued survival and benefit of future generations. Government may not irrevocably convey these natural resources to private parties or allow their substantial impairment. Such obligations trace back to public rights announced in Roman law and are repeatedly recognized by modern courts in nations such as India, Pakistan, South Africa, Colombia, Canada, the Philippines, and elsewhere.[19] As several decisions have now elaborated, the public trust emanates from the "inherent and indefeasible" rights retained by the citizens when entering

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[17] Regional atmospheric recovery plans can help guide courts in ensuring that a particular sovereign does not recover more than its roughly proportionate share of damages for the sky cleanup.

[18] For discussion, see Gerald Torres and Nathan Bellinger, 'The Public Trust: The Law's DNA' (2014) 4(2) *Wake Forest Journal of Law & Policy* 281.

[19] See Michael C Blumm and Mary Christina Wood, *The Public Trust Doctrine in Environmental and Natural Resources Law* (3rd edn, Carolina Academic Press 2020) chs 11, 12 compiling materials in the US and other nations. Cases that impose sovereign obligations to protect future generations are categorized broadly as public trust cases even if they lack explicit trust language (ibid).

into a social compact forming government.[20] With constitutional force, the trust operates both as a restraint on government, disallowing substantial impairment to trust resources, and an affirmative obligation to protect those resources.[21]

The ATL campaign, spearheaded by the non-profit organization Our Children's Trust, invokes the public trust in multiple suits brought on behalf of youth against their governments and seeks judicial remedies requiring agencies to accomplish necessary greenhouse gas emissions reduction. While many early cases failed due to the sheer reluctance of courts to involve themselves in matters of climate crisis, a notable state case, *Foster v Wash. Dep't of Ecology*, explicitly found a public trust obligation constitutionally compelling government to restore a healthy climate system,[22] stating, "This is not a situation that these children can wait on."[23] In 2015 attorneys filed a federal case, *Juliana v United States*, on behalf of 21 youth against the US federal government that resulted in a landmark ruling handed down in 2016. The court found a federal public trust doctrine enforceable though the constitution's due process clause, declaring a federal obligation to protect a "climate system capable of sustaining human life."[24] On early appeal however, in January 2020, a two-judge majority of a Ninth Circuit panel overturned the district court's decision—though emphatically acknowledging the severity of climate emergency and going so far as to conjure the famous song "Eve of Destruction."[25] While Judges Anthony Hurwitz and Mary Marguia did not refute the constitutional rights of plaintiffs, they found that any form of relief was beyond the capacity of the courts to grant.[26] In a bitter dissent, the third judge on the panel, Judge Josephine Staton, stated:

> 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. My colleagues throw up their hands, concluding that this case presents nothing fit for the Judiciary […] [D]etermining when a court must step in to protect fundamental rights is not an exact science. In this case, my colleagues say that time is "never"; I say it is now.[27]

The youth plaintiffs filed a petition for *en banc* review before the full Ninth Circuit, and the petition remains undecided as of this publication. While notable cases in other countries have

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[20] *Pa Envtl Def Fund v Commonwealth*, 161 A (3d) 911, 88 (Pa Sup Ct 2017) (explaining rights reserved by citizens in state constitution); see also *Robinson Twp v Pennsylvania*, 83 A (3d) 901, 948 (Pa Sup Ct 2013) (plurality opinion).

[21] Douglas Quirke, 'The Public Trust Doctrine: A Primer' (University of Oregon School of Law Environmental and Natural Resources Law Center February 2016) <https://law.uoregon.edu/sites/law1.uoregon.edu/files/mary-wood_0/mary-wood/PTD_primer_7-27-15_EK_revision.pdf> accessed 6 October 2020.

[22] *Foster v Wash Dep't of Ecology*, No 14-2-25295-1 SEA 8 (Wash Super Ct 2016).

[23] Ibid 20.

[24] *Juliana v United States of America*, 217 F Supp (3d) 1224, 1250 (Dist Ct Or 2016) (Juliana 2016). Reversed, *Juliana v United States of America*, 947 F(3d) 1159 (9th Cir 2020) (Juliana 2020), petition for en banc review pending.

[25] Juliana 2020 (n 24) 1164.

[26] Ibid 1174 ('Not every problem posing a threat – even a clear and present danger – to the American Experiment can be solved by federal judges').

[27] Ibid 1175, 1191.

imposed climate obligations on their governments,[28] the US saga so far reflects an extraordinary reluctance of American courts to enter the climate realm, described by Professor Doug Kysar and James Weaver as "judicial nihilism." They observe that, "[d]enying [their] own expansive power, [courts have] cowered before catastrophe."[29]

While the bedrock public trust principle asserted in the ATL cases likewise grounds the atmospheric NRD actions contemplated by this chapter, such actions posture governments as plaintiffs, not defendants. All sovereign co-trustees—national governments, states and their political subdivisions, and indigenous sovereigns—are positioned to seek NRDs from fossil fuel industry defendants to fund cleanup of the atmosphere. Traditionally, sovereign trustees are obligated to seek recovery of natural resource damages and apply them toward restoration of the public resource.[30] Although the scale of ecological recovery needed to stabilize the climate system is unprecedented, nevertheless the basic legal paradigm is no different than the principle's regular application to more discrete contexts, such as an oil spill in marine waters.[31]

3. ANALOGOUS LITIGATION HOLDING CORPORATIONS LIABLE FOR POLLUTION

In the United States, NRD actions (not involving climate harm) are characteristically brought pursuant to statutes which expressly allow recovery of restoration costs resulting from the release of hazardous substances into the environment. Because there is as yet no statute expressly providing atmospheric NRDs for damage from fossil fuel pollution, the ARL approach must assemble common law principles (or general statutory provisions) to create a liability framework. This chapter suggests the public trust as a basis for NRD claims immediately available to government trustees. In constructing a liability framework, it will be useful to draw principles from three analogous areas of litigation (advancing in both federal and state courts) in which sovereign or municipal plaintiffs have sued major producers or emitters under common law for environmental damage.[32] All three areas manifest the crucial markers of an NRD action: a suit by a government trustee against a responsible party seeking money damages to clean up a contaminated public trust resource. Summarized briefly here, their prin-

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[28] *Maria Khan et al v Federation of Pakistan et al*, Writ Petition No 8960 of 2019 (Lahore High Court of Pakistan) (Pakistan ATL); *Center for Social Justice Studies et al v Presidency of the Republic et al*, Judgment T-622/16 Constitutional Court of Colombia (10 November 2016) (Colombia ATL); *The State of the Netherlands v Urgenda Foundation*, Supreme Court of the Netherlands, ECLI:NL:PHR:2019:102 (2019) (Netherlands ATL).

[29] R Henry Weaver and Douglas A Kysar, 'Courting Disaster: Climate Change and the Adjudication of Catastrophe' (2017) 93(1) *Notre Dame Law Review* 295, 329.

[30] Allan Kanner, 'The Public Trust Doctrine, Parens Patriae, and the Attorney General as the Guardian of the State's Natural Resources' (2005) 16 *Duke Environmental Law & Policy Forum* 57, 109.

[31] A panel of practitioners examined the concept as part of the University of Oregon's Public Interest Environmental Law Conference of 2020. See 'Holding Producers Accountable for Natural Resource Damages: PCB, MTBE, PFAS, and Climate Liability as Guidance for Atmospheric Recovery Litigation' (Public Interest Environmental Law Conference 11 May 2020) <www.youtube.com/watch?v=89oaVbC4NS0&feature=youtu.be> accessed 6 October 2020.

[32] Some of the cases examined in this section also assert statutory claims, but those claims are beyond the scope of this chapter.

ciples are discussed in more detail below to reveal opportunities and pitfalls for atmospheric NRD litigation.

3.1 MTBE Lawsuits

One category involves suits by municipal and state governments against major gasoline producers for groundwater contamination resulting from the chemical MTBE, used as an additive by petroleum companies decades ago to reduce octane levels in gasoline. Due to its chemical properties, spilled MTBE spreads easily into groundwater supplies. These cases form a highly instructive body of caselaw because they represent, in effect, NRD actions without being so explicitly named. Several have met with remarkable success.

In New Hampshire, a jury held ExxonMobil liable for $236 million to fund groundwater cleanup.[33] In another case, the City of New York won a $104 million judgment against ExxonMobil for groundwater contamination.[34] Beyond court awards, plaintiff attorneys have gained huge settlements against producer corporations for MTBE contamination.[35] While initial lawsuits did not expressly assert the sovereigns' public trust authority, two later suits do.[36] The MTBE body of caselaw remains highly complex and is still evolving. While these cases use a variety of liability theories sounding in tort, they signal a willingness of many courts to hold producers responsible for contamination of a vital public resource.

3.2 PCB Suits

At least 15 lawsuits have been brought by government entities against Monsanto Corporation for ecological harm resulting from its manufacture of PCBs, highly toxic substances contaminating waters, sediments, fish, wildlife, and other natural resources.[37] These suits generally seek damages to fund cleanup. Like the MTBE suits, these are predicated on liability attaching to the producer of the toxin (here, Monsanto). The claims range widely from general statutory claims to state common law claims of public nuisance, negligence, trespass, product liability, and others. Like the MTBE suits, these are generally not called NRD recovery actions, but the public trust frame provides prominent grounding for some of the lawsuits. Complaints filed by the states of Oregon, Washington, and Ohio, for example, expressly assert public trust authority to sue polluters and recover damages to state public trust resources.[38]

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[33] *State of New Hampshire v Exxon Mobil Corp*, 126 A (3d) 266, 289 (NH Sup Ct 2015) (affirming jury verdict). Petition for writ of certiorari to the Supreme Court of New Hampshire denied, *Exxon Mobil Corp v New Hampshire*, 136 S Ct 2009 (2016).

[34] In re Methyl Tertiary Butyl Ether ('MTBE') Prods Liab Litig, 725 F (3d) 65, 91 (2nd Cir 2013) (MTBE Prods Liab Litig). See also *Tahoe Pub Utility District v Atlanta Richfield Co*, No. 999128 (Cal Super Ct 2002) (San Francisco County jury found manufacturer liable under defective product theory).

[35] *New Jersey Department of Environmental Protection v Exxon Mobile Corp*, 183 A (3d) 289 (NJ Super Ct Law Div 2015) ($350 million settlement).

[36] *State of Rhode Island v Atlanta Richfield Co*, 357 F Supp (3d) 129, 142 (RI Dist Ct 2018); *State v Hess Corp*, 20 A (3d) 212, 216-218 (NH Sup Ct 2011).

[37] Lawsuits have been filed by the states of Oregon, Washington, New Mexico and Ohio, and local governments, including Seattle, Spokane, Portland (City and Port of Portland), Berkeley, Oakland, San Jose, Long Beach, San Diego (City and Port) and Westport.

[38] *State of Oregon v Monsanto Co*, No 3:18-cv-00238, paras 9–11 (4 January 2018)); *State of Washington v Monsanto*, No 2:17-cv-00053, paras 12–20 (6 December 2016); *State of Ohio v Monsanto Co*, No A1801237, paras 26–32 (5 March 2018) (*State of Ohio v Monsanto Co* March 2018).

This vast and quickly evolving field has produced several early procedural victories.[39] In Washington, the federal district court rejected a motion to dismiss, allowing the City of Seattle's public nuisance and nuisance claims to proceed.[40] The court found that the claims were not time-barred under a state statute (as private claims would be), because they were carrying out the state's public trust duty to protect waters.[41] In Oregon, where the State framed the lawsuit predominantly as one to recover damages to clean up public trust assets, the court rejected defendant's motion to dismiss in part, allowing claims for public nuisance and trespass to public trust resources to proceed.[42] In Ohio, a court allowed several claims, including the public trust claim, to proceed.[43] Motions to dismiss have failed in several other cases as well.[44]

3.3 PFAS Litigation

Another area of litigation emerges over the near-ubiquitous contamination caused by toxic per- and polyfluoroalkyl substances (PFAS), known as "forever chemicals," used in the production of firefighting foams, stain- and water-resistant fabrics, Teflon, and many other products. Persisting in the environment indefinitely and causing serious health effects, PFAS chemicals contaminate surface waters, ground water, soils, fish, and wildlife.[45] While many suits have been filed against manufacturers (including Dupont Corporation) for private injury,[46] a second wave of litigation seeks funds to clean up the contamination. In 2015, the State of Vermont filed suit against several PFAS manufacturers, asserting, along with tort-based claims, a stand-alone claim for "Natural Resource Damages and Restoration," declaring, "The State, as trustee, may bring a cause of action to recover damages to and restoration of natural resources held in trust by the State."[47] In May 2020 the Vermont Superior Court denied the defendants' motion to dismiss the case, affirming the NRD claim and underscoring the state's public trustee role in many of its tort-based claims, as discussed further below. While this field of PFAS litigation remains nascent, the Vermont trial court's decision indicates early synchrony with the trending approach apparent in the PCB and MTBE litigation holding manufacturers liable for ecological cleanup costs.

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[39] Because the cases are moving quickly through the court system, this chapter does not present a comprehensive summary.

[40] *City of Seattle v Monsanto Co*, 237 F Supp (3d) 1096 (WD Wash Dist Ct 2017).

[41] Ibid 1104–05.

[42] *State of Oregon v Monsanto Co*, No 18CV00540, 13–14 (Or Cir Ct 2019).

[43] *State of Ohio v Monsanto Co*, March 2018 (n 38).

[44] *City of Spokane v Monsanto Co*, 2016 WL 6275164, 30 (Wash ED) denying Monsanto's motions to dismiss Spokane's public nuisance, negligence, Washington Product Liability Act and equitable indemnity claims; *City of Portland v Monsanto Co*, 2017 WL 4236583, 7 (Or Dist Ct) denying Monsanto's motion to dismiss Portland's public nuisance claim and granting leave to amend trespass, negligence and product liability claims; *City of San Diego v Monsanto Co*, 2017 WL 5632052, 33–34 (SD Cal Dist Ct) denying Monsanto's motion to dismiss San Diego's public nuisance and purpresture claims.

[45] *State of Vermont v 3M Co* (n 13) paras 10, 185.

[46] See Robert Bilott, *Exposure: Poisoned Water, Corporate Greed, and One Lawyer's Twenty-Year Battle Against Dupont* (Atria Books 2019); *Dark Waters* (Killer Films and Participant Media 2019).

[47] *State of Vermont v 3M Co* (n 13) para 228. The complaint also presented common law claims grounded in tort.

A similar case filed by the state of New Hampshire, which includes a self-standing public trust claim for restoration costs, is moving forward.[48] Chemical manufacturer-defendants in that case did not move to dismiss the public trust claim, though they succeeded in gaining dismissal of various other claims, including a trespass claim premised in part on public trust ownership of resources.

4. THE PUBLIC TRUST ATMOSPHERIC RECOVERY LITIGATION FRAMEWORK

The envisioned atmospheric recovery lawsuit finds a common law analog in litigation seeking recovery of NRDs following marine oil spills. The discussion below frames an approach, but does not purport to resolve or even identify every procedural impediment that may arise. Litigators must navigate specific rules and doctrines applicable in their jurisdiction.

4.1 The Atmosphere as a *Res*

By logic, atmospheric pollution qualifies for NRD recovery. Air has been considered a public asset since Roman times and remains a resource crucial to the survival of life on Earth. The Roman Institutes of Justinian, commonly identified as a wellspring of the public trust principle,[49] classified air—along with water, wildlife, and the sea—as *res communes* owned by the public as a whole.[50] In *Georgia v. Tennessee Copper Co.*, the Supreme Court essentially proclaimed air as the people's sovereign property, declaring: "[T]he state has an interest independent of and behind the titles of its citizens, in all the earth and air within its domain."[51]

While courts historically characterized the scope of the trust as encompassing navigable waters and wildlife (likely because they were frequently litigated), modern courts have made clear the trust's application to a broader array of natural resources crucial to society.[52] Courts emphasize that this doctrine is not "fixed or static," but instead "molded and extended to meet changing conditions and needs of the public it was created to benefit."[53] Indeed, the Vermont Superior Court in *Vermont v 3M* cited that rationale in holding that groundwater, fish, and wildlife are part of the public trust, squarely rejecting the defendants' argument that the doctrine is limited to navigable waters dominating the old cases.[54] The court also made clear that the public purposes protected by the trust constantly evolve and include modern interests such as public health and drinking water protection.[55]

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[48] *State of New Hampshire v 3M Co*, No 216-2019-CV-00445, para 5 (NH Super Ct 2020).

[49] Ibid 523.

[50] *Geer v Connecticut*, 161 US 519, 525 (1896) citing Roman law's public resources as including 'the air, the water which runs in the rivers, the sea and its shores [and] wild animals'.

[51] *Georgia v Tennessee Copper Co*, 206 US 230, 237 (1907).

[52] Kanner (n 30) 82.

[53] *Matthews v Bay Head Improvement Association*, 471 A (2d) 355, 365 (NJ Sup Ct 1984) (citation omitted).

[54] *State of Vermont v 3M Co* (n 13).

[55] Ibid ('Public health, as is clear from the current pandemic, is unquestionably of as much-if not more-public concern to the people of Vermont as is navigation').

These same rationales call for including the air and atmosphere in the realm of public trust assets and recognizing climate stability as a public trust interest. Indeed, several courts and commentators now include air and atmosphere within the ambit of public trust protection, and numerous constitutions and statutes in the United States do the same.[56] As the court in *Foster v Dep't of Ecology* recognized, the atmosphere is inextricably connected to the submerged lands that are traditionally and unequivocally subject to the trust ("[t]o argue that GHG emissions do not affect navigable waters is nonsensical […]").[57] The *Juliana* court adopted similar reasoning.[58]

But despite the essential role of air, litigation has not yet been brought to recover NRDs for air pollution. The obvious reason is that air pollution (unlike an oil spill) quickly and imperceptivity dissipates from the immediate area of impact, obviating a local cleanup.[59] *Atmospheric* GHG pollution, however, presents a different matter. The atmosphere accumulates GHGs, showing increasing concentrations that are precisely measurable.[60] The excess of atmospheric CO_2 (beyond pre-Industrial levels) requires drawdown of about 150 GtC.[61]

4.2 The Sovereign Co-Trustees

Because the atmosphere is a global resource, there is not one trustee, but rather co-trustees bearing responsibility to protect the ecological asset. All national, subnational, state, and tribal sovereigns effectively share this non-divisible global asset, so any trustee, in theory, has standing to sue for damage to the atmosphere.[62] The United Nations Framework Convention on Climate Change (UNFCC)—entered into in 1992 by most countries of the world—recognizes nations as co-trustees by stating a common duty to protect the atmosphere for future generations and to prevent "dangerous anthropogenic interference with the climate system."[63] Subnational sovereigns—such as states in the United States—are recognized as public trustees of ecological assets. American Indian tribes are also recognized as trustees of shared natural resources, expressly designated as such under environmental statutes.[64]

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[56] See for example, *Environmental Law Foundation v State Water Resources Control Bd*, 26 Cal App 5th 844, 856 (2018): 'From ancient Roman roots, the English common law has developed a doctrine enshrining humanity's entitlement to air and water as a public trust.' Gerald Torres, 'Who Owns the Sky?' (2001) 19 *Pace Environmental Law Review* 227; Carolyn Kelly, 'Where the Water Meets the Sky: How an Unbroken Line of Precedent from Justinian to Juliana Supports the Possibility of a Federal Atmospheric Trust Doctrine' (2019) 27 *New York University Environmental Law Journal* 183.

[57] *Foster v Washington Department of Ecology*, No 14-2-25295-1 SEA, 2, 4 (Wash Super Ct 15 November 2015).

[58] Juliana 2016 (n 24) 1274–6. Some other courts have refused to recognize air as a public trust asset. See, for example, *Chernaik v Brown*, No 16-11-09273, 2015 WL 12591229 at *11, n 7 (Or Cir Ct 2015), affirmed *Chernaik v Brown*, 367 Or. 143, 475 P.3d 68 (2020).

[59] David Hodas, 'Natural Resource Damages: A Research Guide' (1991) 9(1) *Pace Environmental Law Review* 107, 108.

[60] NASA Global Climate Change, 'Carbon Dioxide' (NASA) <https://climate.nasa.gov/vital-signs/carbon-dioxide/> accessed 6 October 2020.

[61] See n 2.

[62] For discussion of sovereign trustees, see Wood and Galpern (n 1) 128–30.

[63] United Nations Framework Convention on Climate Change (9 May 1992, Entered into force 21 March 1994, 1771 UNTS 107) 112.

[64] For discussion, see Mary Christina Wood and Zach Welcker, 'Tribes as Trustees Again (Part I), The Emerging Tribal Role in the Conservation Trust Movement' (2008) 32 *Harvard Environmental*

4.3 The Climate Liable Parties (CLPs)

Large classes of industrial actors have profited enormously from producing fossil fuels even in spite of longstanding knowledge that doing so imperils the planet's climate system and human survival. Because the major corporate fossil fuel producers hold immense assets and bear culpability for the climate crisis, ARL targets them to pay for cleanup of the atmosphere.[65] The climate adaptation cases already assert producer liability, similar to the focus of the PCB, MTBE, and PFAS cases. All four contexts require courts to push liability further up the chain of commerce from the actual parties that emit or dispose of the dangerous substances. Not surprisingly, the task of identifying liable parties intersects directly with causation issues (explored below).

A groundbreaking report released in 2014 blazed a trail leading to producer liability in the climate context.[66] The research team used production and supply records to correlate GHG emissions to specific companies (and predecessors) producing oil, gas, coal, and cement, dating back to the beginning of the Industrial Revolution. The report found that nearly two-thirds of GHG emissions generated since the beginning of the industrial age could be attributed to just 90 companies (dubbed the carbon majors).[67] This research has provided the platform for the ongoing climate adaptation liability suits against major producers such as Exxon, Chevron, BP, Shell, and others.

Producer liability is fast gaining ground as a result of all three categories of analogous litigation described above, as well as the second-generation climate liability suits. Though the climate suits have not yet gained a liability judgment against the carbon majors, neither has there been a decision finally absolving them of liability. Two notable dismissals so far (by federal Judge Alsup of California and federal Judge Keenan of New York) focused more on separation of powers issues than producer liability, although Judge Alsup (reversed on appeal) signaled discomfort with the "breathtaking" scope of plaintiffs' theory, which would "reach the sale of fossil fuels anywhere in the world, including all past and otherwise lawful sales, where the seller knew that the combustion of fossil fuels contributed to the phenomenon of global warming."[68] A recent ruling by Rhode Island Federal District Judge William Smith, remanding a suit back to state court, underscored the logic of holding fossil fuel producers liable for climate damage:

Law Review 373. Indigenous rights vary between nations, but where legal recognition of sovereignty exists, indigenous governments arguably have a claim to sue for restoration as primary trustees or as co-trustees of resources. Recent legal developments seemingly indicate a willingness to recognize such rights in countries outside of the United States. In New Zealand, the legislature accorded indigenous representatives a co-management role in restoring the Whanganui river system. And in Colombia, a court emphatically affirmed the rights of indigenous people to demand, and participate in, restoration of the severely degraded Atrato River watershed. For discussion of both, see Craig M Kauffman and Pamela L Martin, 'How Courts Are Developing River Rights Jurisprudence: Comparing Guardianship in New Zealand, Colombia, and India' (2019) 20 *Vermont Journal of Environmental Law* 261.

[65] Other categories of emitters, such as cement factories, are also liable, in theory, for emissions. This chapter focuses on the fossil fuel companies as a proxy for carbon majors more broadly.

[66] Richard Heede, 'Carbon Majors: Accounting for Carbon and Methane Emissions 1854–2010: Methods and Results Report' (Climate Mitigation Services 7 April 2014) 8–9, 25–30.

[67] Suzanne Goldenberg, 'Just 90 Companies Caused Two-Thirds of Man-Made Global Warming Emissions', *The Guardian* (20 November 2013).

[68] *Oakland v BP*, ND Cal 2018 (n 14) 1022; *Oakland v BP*, SDNY 2018 (n 14).

> Climate change is expensive, and the State wants help paying for it. Specifically from Defendants in this case, who together have extracted, advertised, and sold a substantial percentage of the fossil fuels burned globally since the 1960s. This activity has released an immense amount of greenhouse gas into the Earth's atmosphere, changing its climate and leading to all kinds of displacement, death (extinctions, even), and destruction. What is more, Defendants understood the consequences of their activity decades ago, when transitioning from fossil fuels to renewable sources of energy would have saved a world of trouble. But instead of sounding the alarm, Defendants went out of their way to becloud the emerging scientific consensus and further delay changes—however existentially necessary—that would in any way interfere with their multi-billion-dollar profits. All while quietly readying their capital for the coming fallout.[69]

Courts may be more comfortable holding fossil fuel companies liable for NRDs than for open-ended damages for adaptation and infrastructure repair.[70] NRD awards against fossil fuel companies have longstanding precedent as a result of numerous marine oil spills that are familiar to courts. But also, the equity concerns noted at the outset of this chapter may undermine open-ended liability for funding adaptation infrastructure, as fossil fuel industry coffers can likely fund only a fraction of the deserving communities that need financial assistance to adapt. NRDs hold the advantage of abating the underlying environmental problem (excess atmospheric carbon) causing global damage.[71] They are closely analogous to the three categories of litigation involving toxic chemicals, now proceeding apace to hold producers liable.

At least eight of the notable PCB suits against Monsanto have survived motions to dismiss.[72] In *San Jose v Monsanto*, a federal judge ruled that Monsanto may be liable for public nuisance as it failed to provide adequate instructions on how to dispose of PCBs properly.[73] In *Seattle v Monsanto*, the court refused to grant defendant's motion to dismiss, finding that "Seattle has sufficiently alleged that Monsanto produced and marketed certain toxic chemicals that now contaminate Seattle's streets, drainage systems, and [waterways]."[74] In *Oregon v Monsanto* the court squarely rejected Monsanto's position that a manufacturer could escape liability for trespass claims, stating, "Defendants cite no authority for the proposition that the general elements of trespass do not apply to a party whose relevant actions were in the context of manufacturing a product and/or placing that product into a stream of commerce."[75]

Similarly, in the MTBE context, several (though not all) cases have established producer liability for environmental contamination. In the Second Circuit's opinion in *In re MTBE*

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[69] *Rhode Island v Chevron Corp*, 393 F Supp (3d) 142, 146 (Dist Ct RI 2019).

[70] *State of Vermont v 3M*, No 547-6-19 Cncv, 8 (Vt Super Ct 2020) noting caselaw allowing state to recover damages for public nuisance claim only when funds used to actually abate the nuisance.

[71] Some courts limit the available recovery of damages in public nuisance claims brought by public entities to damages that seek abatement of the nuisance. See *US Masters Residential Property (USA) Fund v New Jersey Department of Environmental Protection*, 239 NJ 145 (2019). See also ibid. Under this approach, damages for adaptation costs may not be favored by courts.

[72] See *Oregon v Monsanto Co* (n 42); *State of Ohio v Monsanto Co*, No A1801237 (Ohio Ct Com Pl 19 September 2018) (*State of Ohio v Monsanto Co* September 2018); *City of Seattle v Monsanto Co* (n 40); *City of Spokane v Monsanto Co* (n 44); *Port of Portland v Monsanto Co*, 2017 WL 4236561 (Or Dist Ct); *City of Portland v Monsanto Co* (n 44); *City of San Jose v Monsanto Co*, 231 F Supp (3d) 357 (ND Cal Dist Ct 2017); *City of San Diego v Monsanto Co* (n 44). Notably, not all causes of action survive motions to dismiss. Because the suits are based in state common law, the success of individual claims vary.

[73] *City of San Jose v Monsanto Co* (n 72) 364–65.

[74] *City of Seattle v Monsanto Co* (n 40) 1105.

[75] *Oregon v Monsanto Co* (n 42) 18.

Products Liability Litigation, the court affirmed a jury's finding that ExxonMobil was liable for groundwater contamination based on theories of trespass, public nuisance, negligence, and failure to warn.[76] While Exxon argued that its actions as a "'mere refiner and supplier' of gasoline were 'too remote from any actual spills or leaks,'" the court found Exxon liable as a manufacturer, refiner, supplier, or seller, because the corporation knew that the gasoline it sold would be spilled.[77]

In *Vermont v 3M*, a court denied motions to dismiss against multiple manufacturers of the PFAS chemicals, finding that several claims could go forward, including ones for NRDs, product design defect, public nuisance, private nuisance, and trespass to state-owned lands. While the plaintiff state argued manufacturers were liable for placing their products into the "stream of commerce," the defendants argued against liability on the basis that they relinquished control over the chemicals once the products were sold. Rejecting the argument, the court cited MTBE litigation that holds manufacturers liable, indicating some cross-fertilization between these different areas of analogous litigation.[78]

Notably, in the PCB, MTBE, and PFAS cases, a common thread is alleged producer knowledge regarding the effects of the product in question. Apart from whether such knowledge is a required element in a particular claim, it puts defendant manufacturers in a particularly unfavorable, bad-faith, light that may sway courts toward imposing liability. In this regard, the ongoing climate adaptation liability cases, by amassing years of discovery documents against the fossil fuel industry, provide a robust evidentiary platform that solidifies producer knowledge of the harmful effects of fossil fuel emissions on the climate system.[79]

5. THE CLAIMS

The claims in an atmospheric NRD suit may be quite varied. The driving concept is simply that responsible industry parties should pay for the carbon release in the sky, just as they would be forced to pay for cleaning up a spill of oil or toxins in a waterway. In the water pollution context, sovereign trustees readily invoke statutory authority (such as the Oil Pollution Act and CERCLA) to seek NRDs. There is no such obvious statutory scheme for cleaning up the sky,[80] but common law claims and generic statutes exist as a basis for such litigation. CERCLA, in fact, was premised on the public trust doctrine's fiduciary duty to seek damages from third

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[76] *MTBE Prods Liab Litig* (n 34) 91.

[77] But see *Commonwealth of Pennsylvania v Exxon Mobil Corp*, 2015 WL 4469247, 14–15 (SDNY Dist Ct) applying Pennsylvania law that limits public nuisance liability to those who owned or operated the sites where the release of hazardous substances occurred.

[78] *State of Vermont v 3M Co* (n 13) 10–11.

[79] See *Rhode Island v Chevron Corp* (n 69).

[80] While statutory NRD provisions characteristically include air as a trust asset, they do not extend to CO_2 pollution.

parties to restore a polluted trust asset.[81] Commentators have long urged government trustees to assert common law claims premised on the public trust and/or nuisance law to seek NRDs.[82]

The discussion below illuminates two possibilities. The first is a stand-alone public trust claim for NRDs. The second is a public nuisance and/or trespass claim seeking relief for interference with public trust property. This common law claim might be accompanied by other tort claims relevant to the situation (sounding in negligence, defective product liability, and manufacturer's failure to warn). The three categories of relevant and analogous litigation highlighted above (the PCB, MTBE, and PFAS litigation) assert some or all of these common law claims in various cases.[83] And of course, while not discussed below, sovereigns may have generic statutes or may pass climate-specific legislation allowing recovery of atmospheric NRDs.

5.1 Public Trust Claim for Natural Resource Damages

A straightforward public trust claim should support recovery of NRDs. Where third parties have harmed trust assets, the trustee has the affirmative duty to recoup monetary damages to restore such assets. The duty remains a classic obligation in the private sphere, and it is well established in the sovereign context as well. In an extensive article on the subject, Allan Kanner asserts: "[U]nder the public trust doctrine, a state AG [attorney general] can sue, as trustee, for damages to natural resources that are held in the public trust."[84] In his leading treatise on environmental law, Professor William Rodgers explains that the public trust "can be invoked offensively by the government as in a suit to collect damages to trust property."[85] Another commentator observes that case law "clearly affirm[s] that a state, as trustee for certain natural resources, has the power to recover damages for injuries to these natural resources" and that the public trust doctrine "supplies the state with a cause of action in natural resource damage cases."[86] The public trust, where recognized, may provide a basis for atmospheric NRD actions outside of the US as well.

American courts have established the authority to recover NRDs as a matter of both state and federal common law.[87] In *State v Gillette*, the Washington Court of Appeals ruled that the State Department of Fisheries was entitled to recover NRDs for loss of fisheries habitat even absent a statutory provision allowing recovery, explaining, "[T]he state, through the

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[81] Cynthia Carlson, 'Making CERCLA Natural Resource Damage Regulations Work: The Use of the Public Trust Doctrine and Other State Remedies' (1988) 18 *The Environmental Law Reporter* 10299, 13303.

[82] Ibid 10299; Kanner (n 30) 58 (common law claims are 'immediately available' to recover natural resource damages).

[83] It is well beyond the scope of this chapter to provide comprehensive discussion of the claims in these three areas. Notably, this chapter does not delve into the procedural reasons why some claims have failed in particular cases. Instead it highlights the potential strength of those that have survived motions to dismiss.

[84] Kanner (n 30) 59 (also suggesting *parens patriae* doctrine as basis for suits).

[85] William H Rodgers, *Handbook on Environmental Law* (West Publishing Company 1977) 176.

[86] Edward HP Brans, *Liability for Damage to Public Natural Resources* (Springer 2001) 55.

[87] Some state constitutions and statutes also express the public trust and may be considered for a stand-alone PTD claim. For general discussion, see John C Dernbach, Kenneth Kristl and James May, 'Recognition of Environmental Rights for Pennsylvania Citizens: Pennsylvania Environmental Defense Foundation v. Commonwealth of Pennsylvania' (2018) 70 *Rutgers University Law Review* 803.

Department, has the fiduciary obligation of any trustee to seek damages for injury to the object of its trust."[88] In *In Re Steuart Transportation Co.*,[89] a federal district court held that the federal government and the state of Virginia could recover under the public trust doctrine for the loss of migratory waterfowl resulting from an oil spill, absent any statutory basis.[90] In Maryland, a federal district court imposed common law (pre-statutory) liability for a tanker's release of oil, stating, "[I]f the State is deemed to be the trustee of the waters, then, as trustee, the State must be empowered to bring suit to protect the corpus of the trust—i.e., the waters—for the beneficiaries of the trust—i.e., the public."[91] And in *State v City of Bowling Green*, the Ohio Supreme Court found a municipality potentially liable under the PTD for a fish-kill caused by its negligent discharge of sewage, reasoning: "An action against those whose conduct damages or destroys [trust] property, which is a natural resource of the public, must be considered an essential part of a trust doctrine, the vitality of which must be extended to meet the changing societal needs."[92]

In the PCB litigation, at least one state has invoked the PTD as a stand-alone cause of action against Monsanto. Ohio's first cause of action asserted: "Ohio, in its capacity as trustee over its public natural resources, has suffered and continues to suffer monetary losses in amounts to be proven at trial."[93] Monsanto filed a motion to dismiss, claiming that the PTD could not form the basis of a stand-alone claim. Denying the motion and deferring the final decision for a later time, the court said: "The public trust doctrine, however, may yet prove to stand as its own cause of action as society's needs change."[94]

In MTBE litigation, the State of Rhode Island's case against industry defendants included a stand-alone public trust claim asserting "[i]mpairment of [p]ublic [t]rust [n]atural [r]esources."[95] While the claim was dismissed, the federal court seemingly did not question the state's ability to assert such a claim but rather found that public trust law of the state had not yet been extended to groundwater.[96] The court left open the possibility that the state could extend the PTD to include groundwater in the future through legislation or decisional law. Moreover, the court allowed other claims to go forward, including a trespass claim that was premised largely on the state's *parens patriae* interest (closely related to the public trust) in its natural resources.[97] In another MTBE case, the Supreme Court of New Hampshire clearly indicated the viability of a public trust claim (though the state plaintiff did not fashion one), in the context of groundwater contamination, stating:

> The doctrine allows a state attorney general, as trustee, to bring a cause of action for damages to natural resources held in trust by the State. To bring a successful claim, the State must prove an

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88 *State v Gillette*, 621 P (2d) 764, 820 (Wash Ct App 1980).

89 In re Complaint of Steuart Transp Co, 495 F Supp 38 (ED Va Dist Ct 1980).

90 Ibid 40.

91 *Maryland Department of Natural Resources v Amerada Hess Corp*, 350 F Supp 1060, 1067 (Md Dist Ct 1972).

92 *State v Bowling Green*, 38 Ohio St (2d) 281, 283, 313 NE (2d) 409, 411 (1974) (internal citations omitted).

93 *State of Ohio v Monsanto Co*, March 2018 (n 38) paras 160–72.

94 *Entry Denying Defendants' Motion to Dismiss, State of Ohio v Monsanto Co*, September 2018 (n 72) slip op 7.

95 *State of Rhode Island v Atlantic Richfield Co* (n 35) para 75.

96 Ibid 144.

97 Ibid 143–44.

> unreasonable interference with the use and enjoyment of trust rights […] [T]he public trust doctrine is its own cause of action […].[98]

Of the second-generation climate cases, one brought by Rhode Island included a stand-alone public trust claim premised on the state's constitution, asserting damages necessary to "restore injuries to public trust resources."[99] The requested relief, however, does not aim to restore climate stability but rather seemingly ties to infrastructure damages and restoration of localized natural resources. The case has been remanded from federal court back to state court with no disposition of the claim yet.[100]

And in recent PFAS litigation, a Vermont court allowed a stand-alone claim by the state for NRDs to fund the state's cleanup.[101] The complaint labeled the cause of action a "civil action for natural resource damages and restoration"[102] (rather than entitling it a "public trust claim"), grounding it in the state's duties as a public trustee. The complaint alleged strict, joint, and several liability among the defendants. Rejecting the defendants' motions to dismiss this claim, the court's discussion focused primarily on recognizing the flexibility of the public trust to encompass resources such as groundwater and wildlife and extend beyond the traditional scope of the doctrine applicable to navigable waters. Notably too, the court cited Vermont law cautioning against dismissing claims "when the asserted theory of liability is novel or extreme." Curiously, however, in the closing part of the opinion when addressing Dupont's arguments, the court agreed with Dupont that the public trust doctrine does not present a self-standing, substantive cause of action, stating: "The doctrines [public trust and *parens patriae*] at issue give the State the right to assert the substantive claims raised in other counts of the complaint-such as nuisance or trespass-but they do not create new substantive claims […] The doctrines, however, properly underly the State's other claims."

Thus, while the court squarely upheld a claim for NRDs, it seemingly distinguished such a claim from a stand-alone public trust claim, despite saying at the outset of its opinion, "The State's claim for 'natural resources damage' is a claim brought under the common law 'public trust doctrine' to protect surface waters, groundwater, and wildlife."[103] The court's confusion reflects the novelty of a public trust claim to some courts (unlike familiar claims grounded in nuisance and trespass, and design defect). The court asked: "[W]hat would the elements of

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[98] *State of New Hampshire v Amerada Hess Corp*, 161 NH 426, 431–32 (Sup Ct 2011). The complaint had asserted a property interest, as trustee, over 'waters of the state, whether located above or below ground […]' to ground claims in both public nuisance and trespass. *State of New Hampshire v Amerada Hess Corp*, 2003 WL 22469979, para 2, Count III, IV. See also *San Diego Unified Port District v Monsanto Co*, 2016 WL 5464551, 11 (SD Cal Dist Ct) (finding that a Port District could maintain action under public trust for 'damages for the injury to and loss of use of natural resources deriving from the presence of PCBs in and around the Bay, including the cost of restoring those natural resources') (internal quotation omitted).

[99] See *Rhode Island v Chevron Corp* (n 69) paras 302, 312.

[100] Ibid 142.

[101] *State of Vermont v 3M Co* (n 13).

[102] Ibid para 10 ('First Cause of Action: Civil Action for Natural Resource Damages and Restoration', stating, at para 228, 'The State, as trustee, may bring a cause of action to recover damages to and restoration of natural resources held in trust by the state').

[103] Ibid slip op 2. In a very confusing part of the opinion, the court indicated that, 'to the extent that the State seeks to assert a freestanding cause of action in Count 1, the motion to dismiss that count is granted'. Ibid 14.

[a free standing public trust claim] be?" As pled in the complaint, the state never included an express "public trust claim," opting instead to call it a claim for NRDs. The elements to this claim asserted by the state were that the defendants "unreasonably interfered with the use and enjoyment of public trust rights, and have injured the natural resources of the State of Vermont through [their] acts and omissions."[104] Accepting a common law claim for NRDs styled in this manner, the Vermont PFAS opinion suggests that it may be important for state litigators to consider framing their claims as NRD claims rather than "public trust claims," even though the matter is simply one of semantics. On the other hand, a recent decision in a case brought by New Hampshire against the PFAS manufacturer 3M did not disparage a stand-alone public trust claim brought in that case, noting:

> Defendants are not challenging the State's ability generally to pursue remedies for the alleged contamination of its resources on behalf of the public as a public trustee or whether it has standing to maintain its other claims as *parens patriae*. Indeed, the State is pursuing a public trust doctrine claim in Count V of its complaint, which Defendants have not moved to dismiss.[105]

5.2 Nuisance, Trespass, and Other Common Law Claims

State tort law provides another set of possible claims. Notably, all three categories of analogous litigation (PCB, MTBE, and PFAS cases) assert state public nuisance claims, and many include trespass, negligence, and product liability claims as well. The public nuisance claims warrant special description. Generally speaking, the law of public nuisance casts a wide net, covering "an unreasonable interference with the rights common to the general public."[106] Extending far beyond public property rights in ecology, nuisance claims can reach to matters of public health, safety, morals, and public peace, addressing even tobacco sales and opioid addiction.[107] But invoked in the PCB, MTBE, and PFAS cases, the claim narrows to a clear public property interest in trust resources (such as groundwater in the MTBE cases, and a broader array of natural resources in the PCB and PFAS cases) and presents something of a hybrid public trust/public nuisance claim quite distinct from social nuisance claims—as the Vermont court said, the public trust (and parens *patriae*) "properly underly" other tort claims.[108] Government lawyers may ground their cases in nuisance to present something recognizable and conventional to courts that may be unfamiliar with the public trust.

The PCB, MTBE, and PFAS litigation all show some notable success where hybrid public trust/public nuisance claims have been implicitly or explicitly tied to the sovereign's trust duty to restore the natural resources damaged by the toxic pollution.[109] An early victory resulted

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[104] Ibid para 230.

[105] *State of New Hampshire v 3M Co* (n 48).

[106] See Carlson (n 80) 10299, 10302, n 42 and accompanying text.

[107] Ibid; See also *State v Purdue Pharma*, No CJ-2017-816, 22–3 (Okla Dist Ct. 2019) (upholding public nuisance claim against drug manufacturer).

[108] *State of Vermont v 3M Co* (n 13) slip op 14. Notably, the second-generation climate liability cases do not present this hybrid public trust/public nuisance claim, as they seek compensation for repairing or building infrastructure, not public trust property. The one exception is the State of Rhode Island case against carbon majors asserting one public trust claim but without specifically seeking NRDs to fund restoration (*Rhode Island v Chevron Corp* (n 69)).

[109] Some cases or claims have been dismissed or have received adverse rulings on other grounds not relevant to this discussion. This chapter does not contain an exhaustive review.

in *Oregon v Monsanto*, where the state asserted a *per se* nuisance claim explicitly tied to its public trust responsibility, claiming, "The continuous presence of PCBs on lands and in rivers, waterways, and lakes that [the state] owns or holds in trust for the benefit of the public constitutes a *per se* public nuisance."[110] Rejecting Monsanto's motion to dismiss, the trial judge not only found this *per se* nuisance claim viable (citing a state statute prohibiting the pollution of state waters), but also found all elements of a common law public nuisance claim satisfied.[111] Likewise, in a PCB case brought by the City of Seattle, a federal district court judge rejected the defendant's motion to dismiss a public nuisance claim.[112] Though the complaint failed to mention the public trust, the court framed Seattle's claims in public trust terms, stating:

> In this action to restore the purity of its waterways, Seattle acts in its sovereign capacity […] This authority derives from the state's duty to hold all navigable waters within the state in trust for the public […] Harm to the environment from the continued production, marketing, and routine use of PCBs was thus foreseeable to Monsanto, giving rise to a duty to avoid that harm.[113]

In *Washington v Monsanto* the State invoked its role as public trustee to frame its nuisance claims and remedy seeking cleanup costs for PCBs, stating: "The injury to public natural resources is especially injurious to the state in its proprietary and natural resource trustee capacities."[114] The case, removed to federal court and then remanded back to state court,[115] has no dispositive orders yet, but should prove enlightening to lawyers considering atmospheric NRD litigation.

In the MTBE context, public nuisance and/or other common law claims (primarily negligence and product liability) have supported both large court awards and settlements. In a Rhode Island case brought by the state against MTBE producers, the court upheld the state's public nuisance claim, declaring: "Widespread water pollution is indeed a quintessential public nuisance."[116] But because these claims are premised on state laws, results differ between states. A federal court dismissed a similar public nuisance claim brought by the State of Pennsylvania, because the law of that state limits liability to owners or operators of the site upon which the offending release occurs.[117] Though the common law claims asserted in early MTBE cases usually failed to mention the public trust,[118] their aim was decidedly a public trust objective of cleaning up public groundwater sources. The stunning success of some cases signals a willingness of many (though not all) courts to hold producers responsible for con-

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[110] *Oregon v Monsanto Co* (n 42).
[111] Ibid 13–14.
[112] *City of Seattle v Monsanto Co* (n 40) 1107.
[113] Ibid 1104. The analysis involved questions of standing, statute of limitations, and causation.
[114] *Washington v Monsanto* (n 38) para 97.
[115] *Washington v Monsanto*, 274 F Supp (3d) 1125 (WD Wash Dist Ct 2017).
[116] *State of Rhode Island v Atlanta Richfield Co* (n 36).
[117] Commonwealth of Pennsylvania v Exxon Mobil Corp (n 77).
[118] See, for example, *MTBE Prods Liab Litig* (n 34) (listing tort causes of action on which plaintiff prevailed, including negligence, trespass, public nuisance and failure to warn); but, see *State of Maryland v Exxon Mobil Corp*, No 1:18-cv-00459 (D Md 13 December 2017), using public trust to frame common law claims in pending MTBE case.

tamination of this vital public resource, and several other cases have produced multi-million dollar settlements out of court.[119]

In the PFAS litigation, a Vermont court allowed the state to pursue a public nuisance claim where the state had alleged that the defendants placed their products into the stream of commerce with knowledge that they would escape and contaminate state natural resources and property (including soils, groundwater, surface waters, wildlife, and drinking water supplies), posing "substantial risks to human health."[120] The court made clear that "[i]f the State expended funds to clean up a nuisance, it may potentially recover for those expenditures."[121]

As to the trespass claims asserted in many of these cases, the results are varied, turning largely on how the court views the exclusivity requirement of trespass law. The Vermont PFAS court allowed a trespass claim to go forward with respect to property owned by the state, but precluded the state's trespass claim as to groundwater. Despite the state's role as trustee for such groundwater resources, the court found the state could not assert the "exclusive possession" needed to ground a trespass claim.[122] A Superior Court in New Hampshire PFAS case agreed with the analysis and dismissed the trespass claim brought by the state against a manufacturer, stating, "The State's complaint does not well fit the legal construct of trespass."[123] A federal judge handling multi-district MTBE litigation in Southern District of New York arrived at the same conclusion.[124] In New Jersey, in two different cases in which the state asserted common law trespass claims to recover damages for cleaning up oil and other substances on privately owned land, one court rejected the claim based on the exclusivity factor, in reasoning upheld by an appellate court,[125] but another lower court in New Jersey found that the public trust trumps the exclusivity factor altogether.[126] Similarly, in Rhode Island, a federal court found that a trespass claim could go forward in a MTBE suit because the state was suing in its capacity as *parens patriae* to clean up the pollution.[127] Another MTBE case filed in 2017 by the State of Maryland against major fossil fuel companies (with no dispositive rulings yet) relied explicitly on the public trust to frame its trespass and other common law tort claims,

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[119] Brian J Clark, 'Articles & Advisories: MTBE Litigation Update: South Tahoe and Beyond' (Buchanan Ingersoll & Rooney, PC 5 April 2011). It is beyond the scope of this chapter to discuss in detail various impediments that have caused tort claims against producers to fail.

[120] *State of Vermont v 3M Co* (n 12) (citing complaint).

[121] Ibid.

[122] Ibid 11–12 ('If the groundwater is held in trust for all the people of the State, and all may use it, it cannot be said to be "exclusively possessed" by the State itself. Although the State argues that someone must be able to bring this claim, the court does not agree. There is no requirement that every situation fit into the box of "trespass"').

[123] *State of New Hampshire v 3M* (n 48). The court also rejected the state's premise of *parens patriae* to support its trespass claim, but the analysis was tangled with the court's finding of factual deficiencies in the complaint. Ibid 17–18.

[124] In re MTBE Prods Liab Litig, 2015 WL 4092326, slip op 4 (SD NY 2 July 2015) (MTBE Prods Liab Litig) (2015).

[125] *New Jersey Department of Environmental Protection v Hess Corp*, Mid-l- 4579-18 (NJ Super Ct Law Div 21 December 2018); *New Jersey Department of Environmental Protection v Hess Corp*, No A-2893-18T2, 2020 NJ Super Unpub LEXIS 622 (Super Ct App Div 7 April 2020) (affirming dismissal of trespass claim).

[126] *New Jersey Department of Environmental Protection v Deull Fuel*, no aTl-l-1839-18 (NJ Super Ct Law Div 8 August 2019). Presumably, this decision no longer has controlling force due to the appellate court's opinion in Hess (n 125) reaching a contrary result.

[127] *State of Rhode Island v Atlanta Richfield Co* (n 36) 143–44.

stating in the complaint: "The state, as the public trustee, is empowered to bring suit to protect the corpus of the trust—*i.e.* the waters—for the beneficiaries of the trust, *i.e.,* the public." The public trust property interest formed the core of the trespass claim, asserting interference with "the State's possessory interest as the trustee of the State's natural water resources."[128] Suffice it to say, the hybrid public trust/trespass claim for NRDs remains at a crossroads.

In summary, the PCB, MTBE, and PFAS cases have met with substantial (though not universal)[129] success so far, asserting primarily common law claims to achieve a public trust objective. They are the closest analogues to the atmospheric NRD litigation suggested by this chapter, as they seek recovery of damages against manufacturers for cleanup of contaminated public ecological resources. The challenge will be to convince judges and juries to apply the same or similar claims to fund cleanup of the atmosphere. The second-generation climate adaptation cases, though similar in their claims and defendants, are fundamentally different as they have no obvious public trust component;[130] most remain mired in jurisdictional battles and have not been the subject of dispositive rulings on motions to dismiss.

6. CAUSATION AND JOINT AND SEVERAL LIABILITY

Causation forms a standard part of any lawsuit. Notably, the causation hurdle is more straightforward in a suit for atmospheric NRDs than for secondary damages resulting from climate disruption. Courts and commentators have pointed out the difficulty of attributing isolated climate harm—damage from flooding, fires, droughts, and the like—to human-caused emissions, though the science of attribution is rapidly developing and forms the crux of second-generation climate liability cases. A lawsuit for *primary* damage to the atmosphere (as suggested by this chapter) involves direct causation, because all fossil fuel emissions since the Industrial Revolution theoretically hold potential to raise the concentration of atmospheric CO_2 beyond the natural baseline of 280 ppm (the level prior to the Industrial Revolution), thereby disrupting the balance of Earth's climate system.[131]

Two matters remain, however. First, manufacturer-defendants in analogous cases argue that they are not the proximate cause of the harm, because consumers are the actual emitters. Several key cases in all three analogous contexts have soundly rejected this argument. The court in *San Jose v Monsanto*, applying California law in a PCB case, held that intervening acts by third parties do not break the causal chain where the acts are "reasonably foreseeable,

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[128] *State of Maryland v Exxon Mobil Corp* (n 118) para 350; See also ibid para 20 ('The state has a […] natural-resource-trustee interest in protecting the waters of the state from contamination […]').

[129] See, for example, MTBE Prods Liab Litig (2015) (n 124) (dismissing trespass claim for state's lack of exclusive possession of groundwater and dismissing public nuisance claim because defendants did not own the property from which the nuisance arose, as required for liability under Pennsylvania law).

[130] Though the State of Rhode Island included a stand-alone PTD claim in its complaint, it failed to assert any relief specifically tied to damage of public trust assets.

[131] A significant share of CO_2 emissions remains in the atmosphere for centuries, even though a portion is also relatively quickly absorbed by terrestrial systems and the ocean. See Alan Buis, 'The Atmosphere: Getting a Handle on Carbon Dioxide' (NASA, 9 October 2019) <https://climate.nasa.gov/news/2915/the-atmosphere-getting-a-handle-on-carbon-dioxide/> accessed 8 October 2020.

and should have been anticipated."[132] It noted: "Here, the Cities allege that Monsanto was aware of the dangers of PCBs, the likelihood of widespread contamination, and the difficulties of disposal and containment – and that, despite those risks, Monsanto continued to promote the sale of PCBs and continued to encourage third parties to use them in their products."[133] Similarly, the court in the Oregon PCB case found causation established through plaintiff's allegation that "[d]efendants knew that the PCBs would inevitably wind up polluting Oregon's waters through the normal, ordinary use of Defendants' customers."[134] The federal district court in *Seattle v Monsanto* adopted a similar approach.[135] An Ohio court found causation could be established by showing Monsanto's knowledge that high levels of PCBs would inevitably enter Ohio waterways "*notwithstanding* any intervening acts by third parties," noting, "Monsanto [allegedly] knew that the contaminant *eventually* would enter the waterways by their very nature. Here, since Ohio claims Monsanto did nothing to stop the foreseeable risk, the resulting harm may be causally connected."[136] Similar to these PCB cases, the Vermont court in the PFAS context found producers liable despite relinquishing control of the product after sale, relying on the Restatement's position that a defendant may be held liable for harm that continues after that defendant's actions have ceased, and that "substantial participation" in a chain of actions can be sufficient.[137]In the MTBE context, the Second Circuit affirmed producer liability as well.[138]

A second matter arises when there are multiple producers of the harmful substance, as is the case with fossil fuels. The issue becomes whether a court will require plaintiffs to trace CO_2 emissions to particular defendants. Courts are unlikely to require plaintiffs to engage in the impossible task of "fingerprinting" carbon molecules remaining in the atmosphere and tracing them back to particular producers. In the CERCLA context, for example, courts rejected any fingerprinting requirement, opting for a nearly "causation-free" liability scheme.[139] The causation hurdle also appears quite low in cases brought against oil companies in both the MTBE and PCB contexts. In *In re MTBE Products Liability Litigation* the court applied the New York state law test of tort causation, which holds that "an act or omission is regarded as a legal cause of an injury if it was a substantial factor in bringing about the injury," and found Exxon liable for groundwater contamination based in part on its 25 percent market share of gasoline.[140] A more recent MTBE ruling by Federal District Judge William Smith reasoned that a conventional causation test would leave the public without recourse. Noting that the task of tracing MTBE molecules to particular defendants "will always be in vain" due to the commercial practice of co-mingling supplies,[141] he adopted an expanded approach to causation,

[132] *City of San Jose v Monsanto Co* (n 72).

[133] Ibid.

[134] *Oregon v Monsanto Co* (n 42).

[135] *City of Seattle v Monsanto Co* (n 40) (noting Seattle's allegation that 'PCBs foreseeably leached into Seattle's waterways through the routine use of PCB products') (emphasis in original).

[136] *State of Ohio v Monsanto Co*, September 2018 (n 72) 5–6 (emphasis in original).

[137] *State of Vermont v 3M Co* (n 13) 6 (citing Restatement (Second) of Torts § 834 and cmts (1979)).

[138] MTBE Prods Liab Litig (n 34) (but also relying on Exxon's involvement in the Queens gasoline market).

[139] Craig Johnston, William Funk and Wictor Flatt, *Legal Protection of the Environment* (3rd edn, West Academic 2010) 563.

[140] MTBE Prods Liab Litig (n 34) 116 (internal quotations omitted).

[141] *State of Rhode Island v Atlanta Richfield Co* (n 36) 137 ('When some volume of MTBE is found in the environment, chemical tests attempting to trace it back to its source always will be in vain […] Turtles all the way up, as far as the state can tell') (citations to complaint omitted).

noting that other jurisdictions had done the same so as not to impose an "impossible burden of proof."[142] These MTBE cases offer a close analog to the proposed ARL as they target the same fossil fuel industry defendants.

Where multiple actors contribute to contamination and the harm is indivisible, courts may impose joint and several liability to hold any one defendant, or subset of defendants, liable for the entire harm (sometimes depending on whether they are responsible for a threshold amount of harm).[143] The liable defendants may sue the other parties for contribution, but the onus of doing so, along with the litigation costs, falls on the liable defendants rather than the government representing the public. The approach can greatly expedite the process of securing funding for a cleanup—needed in the face of climate urgency—because it saves the government pursuing litigation against all parties and proving their proportionate share of responsibility. Courts have imposed joint and several liability in the CERCLA context,[144] even in the face of congressional silence on the matter, and several courts in toxic tort litigation have taken the same approach.[145] But if a defendant can prove a "reasonable basis" for apportioning harm, that defendant's liability may be limited to the amount of harm attributable to his or her actions.[146] Applying this rule to the climate context, a court could theoretically find each defendant corporation responsible for the amount of emissions attributable to its fossil fuel production, as detailed in the Carbon Majors report described above.

7. DEFENSES

Industry defendants typically assert many defenses to liability claims. Most are quite case-specific and well beyond the scope of this chapter. Two deserve brief mention here, however, because they are nearly ubiquitous: standing and displacement.

7.1 Standing (Including Redressability)

The doctrine of standing requires a litigant to demonstrate (1) a "concrete and particularized injury" that is "actual or imminent" and "fairly traceable" to the defendant, and (2) that a favorable decision will redress that injury.[147] In the context of ARL suits, government trustees should be able to show the concrete, actual injury from climate disruption traceable (per the causation analysis above) to the fossil fuel defendants. Sovereigns are appropriate litigants for injury to the climate system, as they generally have standing to sue for injury to public

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[142] Ibid (quoting *State of New Hampshire v Exxon Mobil Corp* (n 33)).

[143] Restatement (Third) of Torts, Apportionment of Liability 160-264 (2000) (noting many variations of the rule).

[144] For the EPA's description of the CERCLA liability scheme, see 'Superfund Liability' (EPA) <www.epa.gov/enforcement/superfund-liability> accessed 8 October 2020.

[145] See, for example, *People v Atlantic Richfield Company*, Case No 1-00-CV-788657, slip op 84–85 (Cal Santa Clara County Sup Ct 7 January 2014) (defendants jointly and severally liable for lead paint abatement in homes).

[146] See *Washington v United States*, 922 F Supp 421, 424–26 (WD Wash Dist Ct 1996) (discussing apportionment of harm in CERCLA context).

[147] *Massachusetts v EPA*, 549 US 497, 517 (2007).

trust assets,[148] and the *parens patriae* doctrine (closely related to the public trust) provides an additional "mechanism of standing."[149] But sovereign litigants must educate judges that they are the *correct sovereign* before the court. With respect to the atmospheric trust, there is no overarching global trustee but rather multiple co-trustees, connected through a parallel order of trust relationships in which nations and sub-sovereigns share the benefits and obligations relating to the common atmospheric trust. In theory, each sovereign trustee has standing to sue for restoration costs of the shared asset, the atmosphere.

The other main component of standing, redressability, requires judicial understanding of the carbon cycle. In the case of an oil spill or land-based hazardous waste dump cleanup, the remediation is quite obvious to courts. Sovereign trustees remove the contamination from the site in a direct and easily observable manner. Sky cleanup of carbon dioxide is less obvious. The natural climate solutions (NCS) projects that scrub the atmosphere of CO_2 and sequester carbon in the soil remain (as yet) the only feasible projects to accomplish a sky cleanup. The importance of a scientifically produced Atmospheric Recovery Plan cannot be overestimated, because it serves as the framework providing evidence of redressability, making clear the connection between soils, plants, and cleanup of atmospheric carbon pollution. Courts able to comprehend the carbon cycle should find redressability satisfied.

Beyond this, there remains the matter of proportionate contribution to a global sky cleanup. In cases seeking to abate carbon pollution, government or industry defendants often make the claim that climate crisis is a global phenomenon, and that a court order requiring action on the part of one nation, or one state, will not solve the problem—thus failing to meet the redressability element of standing. In *Massachusetts v EPA*, the US Supreme Court squarely rejected this argument, reasoning that such a premise would "doom most challenges to regulatory action," as such challenges tend to address harm that is by nature "incremental."[150] Increasingly, courts hold individual sovereigns accountable for the pollution coming from their jurisdiction. In the Netherlands, the Supreme Court rejected the government's argument that the nation's emissions were so small as to be non-redressable, stating, "Acceptance of these defenses would lead to a country simply being able to escape its partial responsibility by pointing to other countries or to its small share."[151]

The redressability argument, of course, takes a slightly different twist in ARL cases as distinguished from ATL cases. In the latter, government defendants emphasize the small proportionate share of emissions in attempting to defeat the redressability element of standing. In ARL, the argument focuses on cleanup. It is certainly true that all jurisdictions can only accomplish a fractional share of atmospheric cleanup. But by the same token, the global effort requires *all situated jurisdictions* (those with land sequestration potential) to participate. Environmental law already has the tools for a multi-jurisdictional approach to restoration. In the context of species recovery, it is often the case that, because no one sovereign can recover the species, full recovery requires cross-participation by multiple sovereigns. The same is

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[148] Characteristic of language in a complaint is Maryland's assertion in an MTBE case: 'The State, as the public trustee, is empowered to bring suit to protect the corpus of the trust—i.e., the waters—for the beneficiaries of the trust—i.e., the public.' *State of Maryland v Exxon Mobil Corp* (n 119) para 21, see also *Washington v Monsanto Co*, No 16-2-29592-6 SEA, para 14 (WD Wash 2017) ('The State has standing to bring this lawsuit as trustee of all aforementioned public natural resources').

[149] *State of Ohio v Monsanto Co*, September 2018 (n 72) 5–6.

[150] *Massachusetts v EPA* (n 147) 524.

[151] *Netherlands ATL* (n 28) para 5.7.7.

true with an oil spill that migrates between jurisdictional borders. In the atmospheric cleanup context, the contribution of any one region will be limited—yet each is instrumental to full drawdown of excess atmospheric carbon. Judges understanding the realities of climate science should eschew rigid approaches and interpret the redressability requirement within the constraints that nature's laws impose on human society. Failure to hold responsible corporations financially liable for atmospheric cleanup perpetuates a status quo that rapidly veers toward a scenario of uncontrollable planetary heating.

7.2 Displacement

Defendants in climate cases perpetually raise another defense—displacement—asserting that a statute (typically the Clean Air Act) has "displaced" common law, rendering the latter ineffectual as a basis for a claim. In the leading *American Electric Power* case, the US Supreme Court found that the Clean Air Act, which authorized the US Environmental Protection Agency (EPA) to regulate CO_2 emissions, displaced a suit asserting common law nuisance claims against major CO_2 emitters despite the fact that EPA had not actually regulated the CO_2 emissions.[152] Several climate cases, including some of the second-generation nuisance cases described above, have fallen into the displacement trap, and several appeals are pending. As Professor Katrina Kuh observes, dismissals on the basis of displacement represent fundamental "judicial climate avoidance."[153]

Notably, however, the *AEP* decision did not suggest that displacement could extend to another, entirely separate, cause of action. Sovereigns seeking damages for cleanup of the atmosphere should distinguish NRD claims from the common law climate nuisance claims that have encountered obstacles, for the two stand in stark contrast. The interests of future generations—forming the core of a public trust action—are never captured in a nuisance test, which focuses on present interference with a particular right held by the citizens. More fundamentally, the public trust represents a sovereign obligation that cannot be displaced by statute. As the *Juliana* court observed:

> In *AEP*, the Court did not have public trust claims before it and so it had no cause to consider the differences between public trust claims and other types of claims. Public trust claims are unique because they concern inherent attributes of sovereignty. The public trust imposes on the government an obligation to protect the *res* of the trust. A defining feature of that obligation is that it cannot be legislated away. Because of the nature of public trust claims, a displacement analysis simply does not apply.[154]

8. THE REMEDY AND IMPORTANCE OF A REGIONAL PLAN

The essential backdrop to any atmospheric NRD lawsuit is a regional plan setting forth a framework from which to organize drawdown projects. A plan places the sky cleanup effort

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[152] AEP (n 11) 423.

[153] Kuh (n 1) 4.

[154] *Juliana* 2016 (n 24); Contra *Alec L v Jackson*, 863 F Supp (2d) 11 (DC Dist Ct 2012) (adopting displacement theory to dismiss ATL claim). Another related defense, beyond the scope of this chapter, is the 'political question' defense, which limits courts from hearing issues that are fundamentally committed to the political branches of government.

at a tangible level that courts will understand and provides a structure that courts can fund through atmospheric NRD awards. Scientists and professionals are positioned to design a plan that matches the sequestration capacity of a region with the resources, needs, and incentives of the local communities.[155] It must clearly explain the Earth's carbon cycle, identify the "engines" of sky cleanup as land-based methods, and delineate the restoration potential of the particular sovereign(s) suing for NRDs.

A plan must delineate an administrative structure that can solicit drawdown projects, evaluate proposals, receive damages, administer the funding, and supervise the completion of work. Sovereign plaintiffs (even prior to the litigation) may establish a "Sky Trust" for this purpose, in which case the court's role is simply to approve such trust as a recipient of atmospheric damage awards. Alternatively, the court may set up its own judicial trust, either through settlement processes or through direct order. Three prominent models illuminate various possibilities.

VW Settlement. In litigation brought by the US Department of Justice against Volkswagen (VW) for installing defective pollution control equipment in its automobiles,[156] the court approved a settlement creating an Environmental Mitigation Trust Fund to mitigate millions of tons of NO_x pollution that had been emitted into the nation's airshed. A $2.9 billion fund financed by VW and administered by a court-appointed trustee allocated money to states and Indian Tribe "beneficiary funds" based on the number of illegal vehicles sold in their jurisdictions. The sovereign beneficiaries developed plans, subject to trustee approval, to reduce NO_x pollution in their jurisdictions, and their agencies supervised the projects.

BP Settlement. In litigation brought by the US Department of Justice against BP for discharging millions of barrels of oil into the Gulf of Mexico (after a drilling rig exploded in 2010), BP agreed to pay $7.1 billion to the Deepwater Horizon Oil Spill NRD Fund, managed by the Department of the Interior, for the joint benefit of the five Gulf state trustees.[157] The Fund distributes money to projects aimed toward cleanup and ecosystem recovery across an area larger than the state of Idaho.

California Lead Abatement. In litigation brought by the state of California and several counties against three major lead paint manufacturers, a 2014 trial court judgment found the companies liable for the cost of removing lead paint in more than 3.5 million residences. A $305 million settlement funds a court-ordered lead abatement program administered by the state of California and the counties over a four-year period.[158]

All three cases above involve massive funds and multi-stage implementation aimed at remediating contamination. While each required some amount of judicial supervision and ongoing jurisdiction, the primary administrative apparatus relied on sovereigns or an inde-

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[155] Lucas Silva and others, 'Landscape Carbon Sequestration for Atmospheric Recovery White Paper: A Perspective on Convergence to Accelerate Carbon Sequestration' (Submitted to National Science Foundation Convergence Accelerator, University of Oregon, 10 December 2019) <https://law.uoregon.edu/sites/law1.uoregon.edu/files/white_paper_lcsar.pdf> accessed 8 October 2020.

[156] See 'Volkswagen Clean Air Act Civil Settlement' (EPA) <www.epa.gov/enforcement/volkswagen-clean-air-act-civil-settlement> accessed 8 October 2020.

[157] See 'Deepwater Horizon Oil Spill Settlements: Where the Money Went' (National Oceanic Atmospheric Administration) <www.noaa.gov/explainers/deepwater-horizon-oil-spill-settlements-where-money-went> accessed 8 October 2020.

[158] *People v ConAgra Grocery Products*, 17 Cal App 5th 51 (2017).

pendent court-appointed trustee to administer the funds. Similarly, a "Sky Trust" may finance sequestration projects funded by liability awards to clean up the contaminated atmosphere.[159]

9. CONCLUSION

The narrow window of time to prevent uncontrollable planetary heating is closing rapidly, and if the law is to be constructive it must address both sides of the climate imperative—decarbonization and drawdown of massive amounts of CO_2. Atmospheric Trust Litigation is under way to force the first, and the ARL described in this chapter aims to spur the latter. ARL envisions NRDs suits brought by sovereign trustees—states, tribes, counties, and foreign nations—against fossil fuel carbon majors to fund landscape carbon sequestration projects in their jurisdictions. Based on the model of cleaning up an oil spill, such a litigation strategy is likely anticipated by the fossil fuel corporations themselves. As industry lawyer Ira Gottlieb acknowledged in 2008, "[I]t may only be a matter of time before natural resource trustees file actions for NRD[s] based on climate change effects."[160]

The approach developed in this chapter lends itself to various scales of litigation. The public trust principle exists not only in every state, but on the federal level (assuming *Juliana*'s recognition of the federal trust is upheld) and in many other nations as well,[161] presenting potential litigation on both national and sub-sovereign levels in various parts of the globe. At one end of the spectrum, a consortium of states could bring a massive nationwide suit to force funding of restoration across the United States (capitalizing on perhaps 20 percent of the global potential).[162] On the other end of the spectrum, an ARL effort (not unlike the ATL campaign) could proliferate through multiple parallel suits at the state level and in domestic courts of other nations. Such suits could be brought simultaneously in various jurisdictions, modeled on a shared framework but adapted to unique legal requirements of the various jurisdictions. Sovereign co-trustees may bring new lawsuits, or they may intervene in existing climate damages suits, pressing public trust claims that fund carbon sequestration (rather than local adaptation measures currently sought by climate plaintiffs). It may be that the global leaders best positioned to pull legal systems toward atmospheric drawdown are in those nations that do not contribute much in terms of proportionate emissions, but hold tremendous capacity for sequestration—such as countries in the Amazon Region, or Indonesia, or the drowning island nations.

Any litigation strategy should proceed in sync with the other components of atmospheric recovery. Sovereign leaders should waste no time initiating plans for tapping and maximizing their sequestration potential across landscapes, enlisting scientists to identify spatially explicit opportunities and create tangible guidelines for projects. They should also begin devising Sky Trust institutions for administering drawdown projects across their jurisdictions. To meet the

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[159] Remedies in NRD actions are often the subject of settlement negotiations and consent decrees. Cases make clear 'trustees can settle suits with far less than a full damages picture'. *New Jersey Department of Environmental Protection v Exxon Mobile Corp* (n 35) 318.

[160] Ira Gottlieb, J Wylie Donald and Jameson AL Tweedie, 'Natural Resource Damages for Climate Change – An Idea Whose Time Has Not Yet Come, Part I: NRD Claims Are Not Currently Viable under CERCLA' (2008) 20(4) *Environmental Claims Journal* 256, 257.

[161] See Pakistan ATL (n 28); Colombia ATL (n 28); Netherlands ATL (n 28).

[162] Robertson (n 3) 29.

atmospheric recovery challenge on the necessary scale, sovereigns should collaborate and unify into coalitions spanning shared ecosystems.

In order for atmospheric NRD litigation to succeed, judges must embrace a role that might be thought of as global rescue. If there is one major lesson from the US climate litigation so far, it is that American courts have positioned themselves as wallflowers in this intensifying climate emergency, even though they constitute a third branch of government with tremendous—and singular—power to force the other branches to de-escalate the perilous fossil fuel energy policy positioned to push the world over the edge of the climate cliff. The passivity of US courts is perhaps no more dramatically exemplified than by the opinion of the two Ninth Circuit judges forming the panel majority in *Juliana v United* States. While acknowledging in the most explicit terms that climate destabilization could bring about the end the nation, they refused to entertain any possible configuration of a judicial remedy. At this eleventh hour, judicial intervention may be the only recourse to break a political stalemate threatening life, liberty, and civilization itself.

For US climate litigation to succeed, judges must be willing to craft remedies that protect young people's rights to a stable climate system. Judges can readily find tools and precedent, but they must be willing to engage that work. Courts from other nations now lead the way in an emerging global jurisprudential movement, creating climate commissions, requiring climate plans, and holding their governments to quantitative standards.[163] In this tenuous and epic moment—with irrevocable tipping points temporarily staved off only due to economic collapse resulting from the COVID-19 pandemic—courts have a fleeting chance to meaningfully act before nature's own laws preclude climate recovery altogether. With no precedent for our situation, judicial leadership, profound professional courage, and a stirring sense of duty carry as much consequence as black letter law. Those few luminaries on the bench who have written pathbreaking climate opinions[164]—carefully justifying sovereign legal obligations and calling their colleagues to perform their constitutional role—might still persuade their colleagues on the bench to hold government accountable for restoring the climate system. Hawaii Supreme Court Associate Justice Michael Wilson writes: "As the archetypal peril of earth with collapsing ecosystems approaches, legal narratives limiting judicial review [of] carbon-caused global warming will become anachronisms."[165]

> It is not enough that we do our best; sometimes we must do what is required.
> Winston Churchill

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[163] See Pakistan ATL (n 28); Colombia ATL (n 28); Netherlands ATL (n 28).

[164] See (n 22)–(n 27) describing opinions by Hon. Hollis Hill, Hon. Ann Aiken, and Hon. Josephine Staton. See also The Honorable Magistrate Judge Thomas Coffin, 'Bungling the Trial of the Century' (Presidential Climate Action Project, 4 February 2020) <https://pcap2020.org/bungling-the-trial-of-the-century/> accessed 8 October 2020.

[165] Michael D Wilson, 'Climate Change and the Judge as Water Trustee' (2018) 48 *Environmental Law Reporter* 10235, 10240.