Climate Change as Unjust Enrichment

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The climate crisis is the most significant challenge of our generation, with no satisfactory legal response in sight. Political polarization and influence from special interest groups have hindered effective regulatory action on both national and international fronts. Climate litigation through the court system, primarily based on tort principles, has also been largely unsuccessful.

In response to these legal failures, some courts and commentators have suggested that the law of unjust enrichment may provide the correct legal framework for addressing the climate crisis. This Article is the first to offer a general legal framework of climate change as unjust enrichment. This analysis is a necessary first step toward the adoption and success of unjust enrichment claims in climate litigation.

The Article provides a doctrinal and normative assessment of this legal innovation. First, doctrinally, we highlight some advantages of unjust enrichment doctrine as a vehicle for climate litigation. Mainly, a tort claim must be based on a clear showing of harm. This requirement is difficult to satisfy in climate litigation, which is based mostly on future, abstract, and highly dispersed harms. Conversely, a claim of unjust enrichment does not necessitate direct proof of harm but focuses on the unjust gains of the defendant. While the worst harms of climate change lie in the future, strong commercial actors benefit here and now.

Second, normatively, we highlight the compatibility of enrichment-based liability with the goals of climate litigation. If pollution remains profitable, it would be naïve to anticipate any significant progress in mitigating climate change. By making it possible to take away unjust gains, the law

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of unjust enrichment can offer a remedy that addresses this key feature of the crisis.

The Article also outlines the outer boundaries of liability in unjust enrichment and explains the conditions under which it should and should not apply. Defining a narrow scope of liability helps provide a tailored legal response, one that can be utilized by courts without overburdening defendants. Note that our goal is not to replace existing legal frameworks nor to offer unjust enrichment as a comprehensive and exclusive solution to the climate crisis. Rather, we aim to draw attention to this important option, hitherto understudied in legal scholarship and underutilized in practice, and to highlight some of its possible advantages.

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INTRODUCTION

The global legal system is struggling to respond effectively to the pressing issue of climate change.[1] The nature of the crisis, its global scope, and its far-reaching implications[2] require a broad and comprehensive approach involving both national regulations and international treaties.[3] But the political and economic landscape presents a complex array of challenges, including conflicting interests and difficulties in reaching a consensus on a unified legal response. Many countries prioritize short-term economic growth over the long-term commitment to stabilizing the climate, making it difficult to persuade them to comply with global regulations that may require costly concessions.[4]

1. *See* Victor B. Flatt, *Adapting Laws for a Changing World: A Systemic Approach to Climate Change Adaptation*, 64 FLA. L. REV. 269, 270 (2012) (explaining that the recent shift from climate change *mitigation* to climate change *adaptation* is based on the understanding that climate change impacts are inevitable).

2. Lisa Larrimore Ouellette, Comment, *Addressing the Green Patent Global Deadlock Through Bayh-Dole Reform*, 119 YALE L.J. 1727, 1727 (2010) ("Without a global commitment to dramatically reduce greenhouse gas emissions, climate change will very likely cause catastrophic damage in this century.").

3. *See* Eloise Scotford & Stephen Minas, *Probing the Hidden Depths of Climate Law: Analysing National Climate Change Legislation*, 28 REV. EUR. COMPAR. & INT'L ENV'T L. 67, 69 (2019).

4. *See infra* Section II.A.

Climate litigation, operating through the court system, seeks to fill the gaps left by national and international regulations.[5] First, climate litigation democratizes legal action by granting citizens direct access to lawmaking processes.[6] Second, litigation can be more resistant to lobbying and regulatory capture,[7] which too often hinder effective legal responses.[8] Third, litigation is decentralized in nature and does not require international or even national consensus. Thus, even a single state court allowing a claim to succeed is enough for multiple corporations to find it worthwhile to pay significant settlement sums rather than risk similar outcomes. This can offer some level of legal response when regulators are struggling to offer comprehensive solutions. Tobacco litigation is a classic example of this dynamic,[9] and climate litigation could potentially follow a similar path.

Yet despite its potential, climate litigation through the court system has so far proved largely ineffective. Climate litigation currently uses tort law as its main legal basis.[10] Intuitively, tort law, as the "law of harms," seems to be an appropriate framework for climate litigation; those who have been harmed because of climate change should be able to sue those who have caused these harms.[11] On closer examination, however, the legal framework provided by tort doctrine falls short of meeting the challenges presented by climate litigation.[12] There are two main reasons for this. First, tort law is not simply the law of harms, but the law of *wrongs*.[13] In the absence of wrongful behavior—that is, a breach of a particular

5. Jim Rossi & J.B. Ruhl, *Adapting Private Law for Climate Change Adaptation*, 76 VAND. L. REV. 827, 842 (2023) ("In contexts where there is no adequate collective public law solution to climate adaptation, private law can help to fill in the gaps, simultaneously providing a victim a remedy for harm while also producing forward-looking guidance for stakeholders as society is confronted with new forms of risk and harm.").

6. *See* J. Maria Glover, *The Structural Role of Private Enforcement Mechanisms in Public Law*, 53 WM. & MARY L. REV. 1137, 1140 (2012).

7. *See* Ernesto Dal Bó, *Regulatory Capture: A Review*, 22 OXFORD REV. ECON. POL'Y 203, 203 (2006) (defining regulatory capture broadly as "the process through which special interests affect state intervention in any of its forms," and more narrowly as "the process through which regulated monopolies end up manipulating the state agencies that are supposed to control them"). For discussion of regulatory capture in the context of the climate crisis, see Jessica Weinkle, *Experts, Regulatory Capture, and the "Governor's Dilemma": The Politics of Hurricane Risk Science and Insurance*, 14 REGUL. & GOVERNANCE 637, 640 (2020).

8. Richard A. Posner, *Regulation (Agencies) Versus Litigation (Courts): An Analytical Framework*, *in* REGULATION VS. LITIGATION: PERSPECTIVES FROM ECONOMICS AND LAW 11, 19 (Daniel P. Kessler ed., 2011).

9. *See* Elizabeth Dubats, *An Inconvenient Lie: Big Tobacco Was Put on Trial for Denying the Effects of Smoking; Is Climate Change Denial Off-Limits?*, 7 NW. J.L. & SOC. POL'Y 510, 512, 533–34 (2012).

10. Daniel A. Farber, *Basic Compensation for Victims of Climate Change*, 155 U. PA. L. REV. 1605, 1641 (2007) (proposing that greenhouse gas (GHG) emitters be held liable for the environmental damage they inflict as a matter of corrective justice). *See generally* David Hunter & James Salzman, *Negligence in the Air: The Duty of Care in Climate Change Litigation*, 155 U. PA. L. REV. 1741 (2007) (discussing the torts of negligence and public and private nuisance, and focusing on different paths for establishing a duty of care in climate litigation).

11. Harm and causation are two core elements in tort claims. *See infra* Sections II.B.2–3.

12. *See infra* Section II.B.

13. John C.P. Goldberg, *The Constitutional Status of Tort Law: Due Process and the Right to a Law for the Redress of Wrongs*, 115 YALE L.J. 524, 599 (2005) ("[T]o say that tort law is a law for the redress of private wrongs is to say that it empowers a victim to seek redress from a wrongdoer because that other

duty[14]—liability is typically unavailable in tort law.[15] In the context of the climate crisis, polluters who greatly contribute to global warming are not necessarily breaching any concrete legal duty.[16] Even those who strictly comply with all legal requirements and regulatory standards, and in this sense commit no discernible "wrong," contribute to global warming. The focus of tort law on wrongdoing therefore fails to capture the nature of the problem at hand.

Second, tort liability requires proof of harm and causation.[17] Tort law, as the law of harms, is obsessively focused on identifying and measuring concrete harms[18] and attributing them to specific actors in a but-for causal sense.[19] By nature, climate change harms are created simultaneously by many different actors. They are usually spread over large populations and generate ripple effects far into

has acted wrongfully toward him . . . ."); John C.P. Goldberg & Benjamin C. Zipursky, *Torts as Wrongs*, 88 TEX. L. REV. 917, 918 (2010) ("As its name indicates, tort law is about wrongs." (emphasis omitted)); ARTHUR RIPSTEIN, PRIVATE WRONGS, at ix (2016) (explaining that tort law articulates "norms of conduct by specifying rights, and fashioning remedies to give effect to those very rights").

14. *See* RESTATEMENT (THIRD) OF TORTS: LIABILITY FOR PHYSICAL AND EMOTIONAL HARM § 7(a) (AM. L. INST. 2010) ("An actor ordinarily has a duty to exercise reasonable care when the actor's conduct creates a risk of physical harm."); John C.P. Goldberg & Benjamin C. Zipursky, *The Moral of* MacPherson, 146 U. PA. L. REV. 1733, 1831 (1998) ("Duties of care enable us as actors to select courses of conduct for ourselves that are consistent with important aspects of others' well-being.").

15. *See* John C. P. Goldberg & Benjamin C. Zipursky, *The* Restatement (Third) *and the Place of Duty in Negligence Law*, 54 VAND. L. REV. 657, 658 & n.1 (2001) (collecting case law supporting the observation that almost all states adhere to "the four-element account" of negligence: duty, breach, causation, and injury).

16. *See* Maxine Burkett, *Duty and Breach in an Era of Uncertainty: Local Government Liability for Failure to Adapt to Climate Change*, 20 GEO. MASON L. REV. 775, 776–77 (2013) (acknowledging the difficulties in finding governments' activities wrongful when it comes to climate change harms, thus exploring "what reasonable conduct under climate-change circumstances might look like for local governments"); Hunter & Salzman, *supra* note 10, at 1748–49 (addressing the difficulty of identifying when a breach of duty (i.e., wrongdoing) occurs in the context of contributing to global warming: "Typically, as when Drunk drives into Bystander, we find that Drunk has violated her duty by acting unreasonably toward Bystander . . . . But how would we characterize the reasonableness of the behavior of energy utilities whose emissions contribute to an increase in temperature that reduces snowpack, or of a car company whose products do the same thing?").

17. RESTATEMENT (THIRD) OF TORTS: LIABILITY FOR PHYSICAL AND EMOTIONAL HARM § 26 (AM. L. INST. 2010) ("Tortious conduct must be a factual cause of harm for liability to be imposed.").

18. *See, e.g.*, TransUnion LLC v. Ramirez, 594 U.S. 413, 435 (2021) (recognizing that "a person exposed to a risk of future harm may pursue forward-looking, injunctive relief to prevent the harm from occurring, at least so long as the risk of harm is sufficiently imminent and substantial"); Spokeo, Inc. v. Robins, 578 U.S. 330, 341 (2016) (indicating that courts should assess whether an alleged injury to the plaintiff has "a close relationship to a harm that has traditionally been regarded as providing a basis for a lawsuit"); Clapper v. Amnesty Int'l USA, 568 U.S. 398, 409 (2013) ("'Although imminence is concededly a somewhat elastic concept, it cannot be stretched beyond its purpose, which is to ensure that the alleged injury is not too speculative for Article III purposes—that the injury is *certainly* impending.' . . . [W]e have repeatedly reiterated that 'threatened injury must be *certainly impending* to constitute injury in fact,' and that '[a]llegations of *possible* future injury' are not sufficient." (second alteration in original) (first quoting Lujan v. Defs. of Wildlife, 504 U.S. 555, 565 n.2 (1992); and then quoting Whitmore v. Arkansas, 495 U.S. 149, 158 (1990))).

19. *See* Richard W. Wright, *Causation in Tort Law*, 73 CALIF. L. REV. 1735, 1774–77 (1985) (delineating the doctrinal formulation of the but-for test and its limits).

the future.[20] Such harms are difficult to identify, quantify, and prove,[21] and are generally far too abstract to serve as a basis for a successful tort claim.[22] Therefore, scholars have repeatedly stressed the inadequacy of tort law as a legal foundation for climate litigation.[23] Similarly, plaintiffs have not experienced success when using tort doctrine as a basis for their climate suits.[24] Despite these clear difficulties, attempts to base climate litigation suits on other doctrinal foundations remain scant.[25]

Given the challenges of using tort law in climate litigation, some have proposed the application of the principle of unjust enrichment as an alternative doctrinal path.[26] This principle provides civil liability based on three key elements:

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20. *See* David A. Dana, *The Mismatch Between Public Nuisance Law and Global Warming*, 18 SUP. CT. ECON. REV. 9, 21 (2010) ("There is language in a Restatement comment suggesting an unusually broad conception of joint and several liability in the context [of] environmental public nuisance, but that is slim authority on which to set aside the enormous problems of allocating causal responsibility for global warming . . . ." (footnote omitted)).

21. Benjamin Ewing & Douglas A. Kysar, *Prods and Pleas: Limited Government in an Era of Unlimited Harm*, 121 YALE L.J. 350, 369 (2011) ("If the paradigmatic tort is one in which *A* hits *B*—a clear, direct, and unlawful action by one actor against another that gives rise to an isolated, retrospective harm—then climate change lies conspicuously far outside the paradigm.").

22. Maxine Burkett, *Litigating Climate Change Adaptation: Theory, Practice, and Corrective (Climate) Justice*, 42 ENV'T L. REP. NEWS & ANALYSIS 11144, 11145 (2012) ("[M]eeting each element of the tort of negligence—duty, breach, cause, and damages—would be a difficult task for any plaintiff, with establishing the causal link between a defendant's emissions and the alleged harms as the most challenging." (footnote omitted)).

23. *See, e.g.*, Ewing & Kysar, *supra* note 21, at 369, 370 n.64 (observing that "the fit between climate change and tort law seems poor" and that "at virtually every stage of the traditional doctrinal analysis, climate change plaintiffs will need to invoke novel, rare, or otherwise exceptional tort doctrines in order to pursue their claims"); Douglas A. Kysar, *What Climate Change Can Do About Tort Law*, 41 ENV'T L. 1, 4 (2011) ("[T]ort law is unlikely to play a substantial role in the ultimate effort to reduce greenhouse gas emissions."); Burkett, *supra* note 22, at 11144 ("[T]ort law is not a suitable or effective means to address climate change."); Tiantian Zhai, *Double-Faceted Environmental Civil Liability and the Separate-Regulatory Paradigm: An Inspiration for China*, SUSTAINABILITY, Apr. 1, 2022, at 1, 11 ("[W]hen the tort system is unequipped or ill-suited to provide a remedy for environmental damage, courts and legislators should understand and respect its limits instead of stubbornly relying on it.").

24. *See, e.g.*, Dubats, *supra* note 9, at 511.

25. For an attempt to approach climate change challenges through the lens of property law, see generally Yael R. Lifshitz, Maytal Gilboa & Yotam Kaplan, *The Future of Property*, 44 CARDOZO L. REV. 1443 (2023). For a project exploring how tort law, contract law, and property law can be adjusted to better confront the challenges that climate change entails, see generally Rossi & Ruhl, *supra* note 5.

26. *See* Daniel A. Farber, *The Case for Climate Compensation: Justice for Climate Change Victims in a Complex World*, 2008 UTAH L. REV. 377, 398 (mentioning in passing the possibility of using unjust enrichment law as a basis for climate litigation, but offering no further detail or doctrinal analysis); Aura Weinbaum, *Unjust Enrichment: An Alternative to Tort Law and Human Rights in the Climate Change Context?*, 20 PAC. RIM L. & POL'Y J. 429, 447–52 (2011) (analyzing a theory of unjust enrichment under international law in the context of small island developing states, but offering no broader framework of analysis generally applicable in climate litigation); David Heyd, *Climate Ethics, Affirmative Action, and Unjust Enrichment*, *in* CLIMATE JUSTICE AND HISTORICAL EMISSIONS 22, 23 (Lukas H. Meyer & Pranay Sanklecha eds., 2017) (studying the relevance of unjust enrichment claims for historical emissions); *see also* Ed Page, *Qui bono? Justice in the Distribution of the Benefits and Burdens of Avoided Deforestation*, 22 RES PUBLICA 83, 84 (2016) (analyzing from a moral rather than legal perspective in advocating for "a 'beneficiary pays' principle of climate change justice"); Edward A. Page, *Give It Up for Climate Change: A Defence of the Beneficiary Pays Principle*, 4 INT'L THEORY 300, 300 (2012) (same); Paul Bou-Habib, *Climate Justice and Historical Responsibility*, 81 J. POL. 1298, 1298 (2019)

when a party is (1) enriched (2) unjustly (3) at the expense of another.[27] In the case of climate change, the principle of unjust enrichment may allow for claims against polluting entities who have unjustly benefited from their actions at the expense of others. This approach provides a different framework for addressing the issue and may prove to be a useful complement to other legal strategies aimed at mitigating the effects of the crisis, such as regulation, international treaties, or tort liability. Indeed, some plaintiffs have approached courts with this type of claim.[28]

Yet, the application of the principle of unjust enrichment in climate litigation is still in its early stages. For such claims to be successful, a more solid theoretical and doctrinal foundation of "climate enrichment" must first be developed. This is the task we undertake here. This Article is the first to provide a general legal theory supporting the use of unjust enrichment as a doctrinal basis for climate litigation. Such analysis is essential for promoting the recognition and acceptance of these types of claims by the courts.

We show that the law of unjust enrichment can provide an effective mechanism for climate litigation where tort law struggles to do so. First, a claim of unjust enrichment is not based on the harm to the plaintiff but on the unjust gains obtained by the defendant.[29] And while the harms associated with the climate

(offering a theoretical rather than legal analysis from the perspective of climate justice); Santiago Truccone-Borgogno, *Climate Justice and the Duty of Restitution*, 10 MORAL PHIL. & POL. 203, 203 (2023) (same); Laura García-Portela, *Backward-Looking Principles of Climate Justice: The Unjustified Move from the Polluter Pays Principle to the Beneficiary Pays Principle*, 29 RES PUBLICA 367, 367 (2023) (same).

27. *See* RESTATEMENT (THIRD) OF RESTITUTION AND UNJUST ENRICHMENT § 1 (AM. L. INST. 2010) ("A person who is unjustly enriched at the expense of another is subject to liability in restitution."); WARD FARNSWORTH, RESTITUTION: CIVIL LIABILITY FOR UNJUST ENRICHMENT 1–2 (2014).

28. *See, e.g.*, Amended Complaint and Jury Demand at 110, Bd. of Cnty. Comm'rs of Boulder Cnty. v. Suncor Energy (U.S.A.), Inc., 405 F. Supp. 3d 947 (D. Colo. 2019) (No. 18-cv-01672) (explicitly incorporating a claim of unjust enrichment, alleging both that "it would be unconscionable and contrary to equity for Defendants to retain those benefits" and that "Defendants have profited at the expense of Plaintiffs and the Plaintiff communities who have been damaged and must abate the hazards created by Defendants' fossil fuel products"). The merits of these assertions have not yet been discussed by the court, which has thus far rejected the defendants' assertions for removal on appeal. *See* Bd. of Cnty. Comm'rs of Boulder Cnty. v. Suncor Energy (U.S.A.), Inc., 25 F.4th 1238, 1267–71 (10th Cir. 2022), *cert. denied*, 143 S. Ct. 1795 (2023). In a Mississippi case, plaintiffs alleged unjust enrichment as one of several legal foundations for a lawsuit against an oil company. Third Amended Class Action Complaint at 13–14, Comer v. Murphy Oil, U.S.A., No. 05-cv-00436 (S.D. Miss. Apr. 19, 2006), 2007 WL 6942285. The case went through several rounds in the Fifth Circuit, and a petition for a writ of mandamus to the Supreme Court was also denied. *See* Comer v. Murphy Oil USA, Inc., 585 F.3d 855 (2009), *mandamus denied*, 562 U.S. 1133 (2011); Comer v. Murphy Oil USA, Inc., 718 F.3d 460, 465 (5th Cir. 2013). The unjust enrichment claim in *Comer* was not fully analyzed by the court. For further discussion of the case in its early days, see Hunter & Salzman, *supra* note 10, at 1754–55.

29. *See, e.g.*, RESTATEMENT (THIRD) OF RESTITUTION AND UNJUST ENRICHMENT § 1 cmt. d (AM. L. INST. 2010) ("The law of torts identifies those circumstances in which a person is liable for injury inflicted, measuring liability by the extent of the harm; the law of restitution identifies those circumstances in which a person is liable for benefits received, measuring liability by the extent of the benefit."); Maytal Gilboa & Yotam Kaplan, *The Mistake About Mistakes: Rethinking Partial and Full Restitution*, 26 GEO. MASON L. REV. 427, 430 (2018) (stating that the unique feature of a restitution claim is "its being based on the enrichment of the defendant"); Douglas Laycock, *The Scope and*

crisis are dispersed and occur in the future,[30] the gains of those who benefit from the climate crisis are immense and accrue in the present.[31] We show that because such gains are monetary in nature and held by concrete actors, it is easier to translate them into simple and effective remedies without the difficulties of proving harm in a tort claim. Admittedly, the *general* harmfulness of the defendant's conduct can be relevant for an unjust enrichment claim (for example, to support the injustice of the defendant's enrichment), but the claim does not require that the plaintiff prove, identify, and quantify a *specific* harm.

Second, a claim of unjust enrichment does not necessitate the commission of a wrong by the defendant.[32] We provide doctrinal and theoretical explanations allowing the application of liability in unjust enrichment not only when the defendant has breached a duty and committed a wrong, but also, subject to conditions we delineate,[33] when the defendant enjoyed an undeserved windfall.[34]

We show that the use of unjust enrichment principles is not only doctrinally sound but can also be supported as a matter of policy. First, the law of unjust enrichment provides the means of stripping polluters of their ill-gotten gains, thereby removing the incentive to act in an environmentally harmful manner. This is a crucial element in any legal response to the climate crisis: as long as the crisis remains so immensely profitable for key powerful commercial actors,[35] it would be naïve to expect sufficient improvement. Second, as a "theory of recovery [originated] to fill gaps left uncovered by traditional legal categories,"[36] and as a "popular vehicle for

Significance of Restitution, 67 TEX. L. REV. 1277, 1283 (1989) ("Restitution must be distinguished from compensation, either by its focus on restoration of the loss in kind or by its focus on defendant's gain as the measure of recovery."); Andrew Kull, *Rationalizing Restitution*, 83 CALIF. L. REV. 1191, 1200 (1995) (noting the conventional wisdom of the law of unjust enrichment "that the standard measure of recovery is the benefit to the defendant rather than the cost to the plaintiff"). In the context of climate litigation, this tort–unjust enrichment distinction may be referred to by the difference between the "polluter pays principle" and the "beneficiary pays principle." *See* García-Portela, *supra* note 26, at 367; Christian Baatz, *Climate Change and Individual Duties to Reduce GHG Emissions*, 17 ETHICS POL'Y & ENV'T 1, 1, 3 (2014).

30. *See infra* note 52 and accompanying text.

31. *See, e.g.*, Sam Meredith, *Big Oil Rakes in Record Profit Haul of Nearly $200 Billion, Fueling Calls for Higher Taxes*, CNBC (Feb. 8, 2023, 5:49 AM), https://www.cnbc.com/2023/02/08/big-oil-rakes-in-record-annual-profit-fueling-calls-for-higher-taxes.html [https://perma.cc/289R-8UXM]; Stanley Reed, *Oil Companies Ponder Climate Change, but Profits Still Rule*, N.Y. TIMES (Oct. 15, 2019), https://www.nytimes.com/2019/10/07/business/energy-environment/oil-companies-climate-change-profits.html.

32. *See* HANOCH DAGAN, UNJUST ENRICHMENT: A STUDY OF PRIVATE LAW AND PUBLIC VALUES 4 (1997) (noting one paradigm of unjust enrichment in which "the defendant is passive, and the plaintiff herself confers the benefit upon him").

33. We delineate and demonstrate the general framework of these conditions in Section III.B.2.

34. RESTATEMENT (THIRD) OF RESTITUTION AND UNJUST ENRICHMENT § 1 cmt. b (AM. L. INST. 2010) ("The substantive part of the law of restitution is concerned with identifying those forms of enrichment that the law treats as 'unjust' for purposes of imposing liability."). We address the "unjust" requirement at length in Part III.

35. *See, e.g.*, Meredith, *supra* note 31.

36. David N. Fagan, *Achieving Restitution: The Potential Unjust Enrichment Claims of Indigenous Peoples Against Multinational Corporations*, 76 N.Y.U. L. REV. 626, 629 (2001) (offering to harness the unique qualities of the law of unjust enrichment to develop a theory of recovery for indigenous peoples seeking redress for these actions in U.S. courts); *see also* Mitchell v. Riegel Textile, Inc., 259 F.2d 954, 956 (D.C. Cir. 1958) ("Equitable principles are not confined by rigid formulas.");

novel legal claims,"[37] the law of unjust enrichment can offer flexible solutions to problems that other areas of law fail to address effectively.

Of course, the law of unjust enrichment is not a panacea. We do not suggest that climate litigation based on unjust enrichment should replace other legal tools or can solve all aspects of the crisis. Rather, we argue it represents an important and underutilized legal opportunity that can offer some advantages. We also outline the outer limits of liability in unjust enrichment to offer a measured and structured legal instrument, rather than an open-ended form of liability. As unjust enrichment is first and foremost a common law doctrine, developed from case to case, we leave the fine-tuning of doctrinal details to the courts; our main aim is to provide the general framework for this type of decision-making.

The Article proceeds as follows. Part I provides the factual background for our analysis by reviewing the status quo of the climate crisis. The main theme of this review is that although scientific evidence regarding the harms of climate change is overwhelming, such harms are difficult to measure accurately, occur in the medium-to-far future, and are difficult to attribute to particular actors in a but-for test of causation. At the same time, commercial activities associated with the crisis remain immensely profitable.[38] Part II describes existing legal responses to the climate crisis in national regulation, international treaties, and tort-based litigation. This Part highlights key challenges currently hindering effective legal solutions to the crisis. Part III offers liability in unjust enrichment as a basis for climate litigation. This Part opens with a general overview of the law of unjust enrichment: its key doctrines and main elements. It then moves on to apply this general doctrinal structure to climate litigation and the problems presented by the climate crisis. Part III only offers the core principles, which are then further developed in Part IV. Part IV offers additional doctrinal details, including the measure of recovery and the identity of plaintiffs, and provides a normative evaluation of the proposal introduced in Part III.

I. THE CLIMATE CRISIS

There is broad scientific consensus that climate change has become the "defining issue of our time,"[39] a "super wicked" issue,[40] or a problem "from hell."[41]

RESTATEMENT (THIRD) OF RESTITUTION AND UNJUST ENRICHMENT § 4 cmt. b (AM. L. INST. 2010) ("It is fair to conclude that even the legal side of unjust enrichment had its origins in equitable principles, whether English or Roman or both.").

37. Emily Sherwin, *Reparations and Unjust Enrichment*, 84 B.U. L. REV. 1443, 1448 (2004).

38. *See, e.g.*, Meredith, *supra* note 31.

39. *E.g.*, *Global Issues: Climate Change*, U.N., https://www.un.org/en/global-issues/climate-change [https://perma.cc/UC58-QBPD] (last visited Apr. 10, 2024); Cynthia F. Bearer, Eleanor J. Molloy, Mesfin Teklu Tessema, Suzinne Pak-Gorstein, Desiree Montecillo-Narvaez, Gary L. Darmstadt, Vanitha Sampath, Sarah Mulkey & Kari C. Nadeau, *Global Climate Change: The Defining Issue of Our Time for Our Children's Health*, PEDIATRIC RSCH., Sept. 8, 2022, at 1, 1, https://www.nature.com/articles/s41390-022-02290-7 [https://perma.cc/FFU6-RQR3].

40. Richard J. Lazarus, *Super Wicked Problems and Climate Change: Restraining the Present to Liberate the Future*, 94 CORNELL L. REV. 1153 (2009).

41. AL GORE, THE FUTURE: SIX DRIVERS OF GLOBAL CHANGE 314 (2013).

Decades of research have led to the clear conclusion that human activity is the primary driver of many of the effects of climate change around the world.[42] Climate change substantially disrupts natural systems,[43] which, in turn, inevitably disrupts social and economic systems.[44] Among the damages of climate change documented in scientific evidence are shifts in seasonal timing,[45] loss of species,[46] severe crises in food supply and water scarcity,[47] and more frequent gastrointestinal infections due to higher temperatures and increased rain and flooding.[48] The social harms of the crisis include increased risk of displacement and involuntary migration,[49]

42. *See, e.g.*, Daniel Kim, Robert L. Glicksman & Keziah Groth-Tuft, *Judicial Review of Scientific Uncertainty in Climate Change Lawsuits: Deferential and Nondeferential Evaluation of Agency Factual and Policy Determinations*, 46 HARV. ENV'T L. REV. 367, 371 (2022) ("Certain aspects of climate change science are beyond dispute among the vast majority of reputable climate scientists. These include the existence of a warming planet and the acknowledgment that human activity—greenhouse gas ('GHG') emissions and deforestation in particular—is a contributing factor.").

43. *See* John Cook, Naomi Oreskes, Peter T Doran, William R L Anderegg, Bart Verheggen, Ed W Maibach, J Stuart Carlton, Stephan Lewandowsky, Andrew G Skuce, Sarah A Green, Dana Nuccitelli, Peter Jacobs, Mark Richardson, Bärbel Winkler, Rob Painting & Ken Rice, *Consensus on Consensus: A Synthesis of Consensus Estimates on Human-Caused Global Warming*, ENV'T RSCH. LETTERS, Apr. 2016, at 1, 1 (reporting a consensus of 97% in published climate research that humans are causing global warming); *see also* B Elijah Carter & Jason R Wiles, *Scientific Consensus and Social Controversy: Exploring Relationships Between Students' Conceptions of the Nature of Science, Biological Evolution, and Global Climate Change*, EVOLUTION: EDUC. & OUTREACH, Dec. 2014, at 1, 1 (studying the correlation between the increasing consensus among the scientific community about global climate change and the political controversy concerning global warming and its causes in the United States).

44. Hans-Otto Pörtner et al., *Summary for Policymakers*, *in* CLIMATE CHANGE 2022: IMPACTS, ADAPTATION AND VULNERABILITY 1, 11 (Hans-Otto Pörtner et al. eds., 2022), https://report.ipcc.ch/ar6/wg2/IPCC_AR6_WGII_FullReport.pdf [https://perma.cc/F3WJ-NRMB] ("Economic damages from climate change have been detected in climate-exposed sectors, with regional effects to agriculture, forestry, fishery, energy, and tourism . . . and through outdoor labour productivity . . . . Some extreme weather events, such as tropical cyclones, have reduced economic growth in the short-term . . . .").

45. *Id.* at 9.

46. *Id.*

47. *Id.*; *see also* Samuel T. Ayres, Note, *State Water Ownership and the Future of Groundwater Management*, 131 YALE L.J. 2213, 2213 (2022); Karrigan Börk & Sonya Ziaja, *Amoral Water Markets?*, 111 GEO. L.J. 1335, 1356 (2023).

48. *See, e.g.*, Pörtner et al., *supra* note 44, at 11; Aikaterini Zgouridou, Eirini Tripidaki, Ioannis A. Giantsis, John A. Theodorou, Maria Kalaitzidou, Dionysios E. Raitsos, Athanasios Lattos, Apostolia-Maria Mavropoulou, Sarantis Sofianos, Dimitrios Karagiannis, Ilias Chaligiannis, Andreas Anestis, Nikos Papadakis, Konstantinos Feidantsis, Dionysia Mintza, Alexandra Staikou & Basile Michaelidis, *The Current Situation and Potential Effects of Climate Change on the Microbial Load of Marine Bivalves of the Greek Coastlines: An Integrative Review*, 24 ENV'T MICROBIOLOGY 1012, 1022 (2022).

Other major damages associated with climate change are reduced snowpack and resulting water scarcity, regional changes in the type and extent of forest cover, increased desertification, biodiversity loss, ocean acidification, and increased frequency and intensity of storm events. *See, e.g.*, *Consequences of Climate Change*, EUR. COMM'N, https://climate.ec.europa.eu/climate-change/consequences-climate-change_en [https://perma.cc/42A4-G44H] (last visited Apr. 10, 2024); DAVID HUNTER, JAMES SALZMAN & DURWOOD ZAELKE, INTERNATIONAL ENVIRONMENTAL LAW & POLICY 622–28 (5th ed., W. Acad. 2015).

49. *See, e.g.*, Pörtner et al., *supra* note 44, at 11 (stating that climate change has the potential to generate and perpetuate social vulnerability by causing displacement and involuntary migration because of extreme weather and climate events).

exacerbated global income inequality,[50] and greater risk of violence.[51]

While some climate change harms are already taking place, many are estimated to occur far into the future with high probability.[52] The 2022 Intergovernmental Panel on Climate Change (IPCC)[53] report predicts high levels of global warming by the end of the twenty-first century in certain scenarios.[54] The following Sections describe three prominent, interconnected, future harms of climate change: temperature changes (and in particular climate heat waves), sea level rise, and marine-species extinction.[55] The purpose of this Article is to call attention to a key, common theme: the fact that the harms of climate change are dispersed, difficult to quantify and attribute to specific actors, and carry substantial effects mostly observable in the medium-to-far future. For all these reasons, tort law, insisting on a clear showing of specific harm, is largely ill-equipped to serve as a doctrinal framework for climate litigation. At the same time, the perpetuation of the climate crisis is immensely profitable for strong commercial actors.[56]

A. TEMPERATURE CHANGES

Recent scientific assessments suggest that the global average temperature increased by about 1.0°C from 1901 to 2016.[57] Evidence points to human activity,

50. Noah S. Diffenbaugh & Marshall Burke, *Global Warming Has Increased Global Economic Inequality*, 116 PNAS 9808, 9808 (2019) ("[G]lobal warming has very likely exacerbated global economic inequality, including ~25% increase in population-weighted between-country inequality over the past half century."); WORLD ECON. F., THE GLOBAL RISKS REPORT 2017 figs.2 & 3 (12th ed. 2017), https://www3.weforum.org/docs/GRR17_Report_web.pdf [https://perma.cc/R2WH-FNP5] (identifying extreme weather events, involuntary migration, and major natural disasters as the top global risks).

51. *See generally* Ole Magnus Theisen, Nils Petter Gleditsch & Halvard Buhaug, *Is Climate Change a Driver of Armed Conflict?*, 117 CLIMATIC CHANGE 613 (2013) (surveying evidence and theories concerning the connection between climate change and violence); Quansheng Ge, Mengmeng Hao, Fangyu Ding, Dong Jiang, Jürgen Scheffran, David Helman & Tobias Ide, *Modelling Armed Conflict Risk Under Climate Change with Machine Learning and Time-Series Data*, NATURE COMMC'NS, May 20, 2022, at 1.

52. Calvin Bryne, *Climate Change and Human Migration*, 8 U.C. IRVINE L. REV. 761, 762 (2018) ("Some consequences of climate change are already occurring, while others will inevitably be felt over the coming decades.").

53. *See* IPCC, https://www.ipcc.ch/ [https://perma.cc/K2YH-GKH6] (last visited Apr. 10, 2024) ("The Intergovernmental Panel on Climate Change (IPCC) is the United Nations body for assessing the science related to climate change.").

54. Pörtner et al., *supra* note 44, at 8 (identifying the risks projected for the years 2081–2100 as "long term" risks); *see also* INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE, CLIMATE CHANGE 2023 SYNTHESIS REPORT: SUMMARY FOR POLICYMAKERS 17–18 (2023), https://www.ipcc.ch/report/ar6/syr/downloads/report/IPCC_AR6_SYR_SPM.pdf [https://perma.cc/2CMM-PLVH] (providing similar estimates for 2023).

55. *See* Pörtner et al., *supra* note 44, at 8–15.

56. *See, e.g.*, Meredith, *supra* note 31.

57. Katharine Hayhoe, David R. Easterling, David W. Fahey, Sarah Doherty, Russell S. Vose, James P. Kossin, Michael F. Wehner, William V. Sweet & Donald J. Wuebbles, *Our Changing Climate*, *in* 2 IMPACTS, RISKS, AND ADAPTATION IN THE UNITED STATES: FOURTH NATIONAL CLIMATE ASSESSMENT 72, 76 (David Reidmiller et al. eds., 2018), https://nca2018.globalchange.gov/downloads/NCA4_2018_FullReport.pdf. Over the past 50 years, the increase in temperature has been the fastest in history. M.D. Mathew, *Nuclear Energy: A Pathway Towards Mitigation of Global Warming*, PROGRESS IN NUCLEAR ENERGY, Jan. 2022, at 1, 1; *see also* Hayhoe et al., *supra*, at 76 (noting that the period between 1986 and 2015 accounted for an increase of 1.2°F out of the total 1.8°F since 1901).

and in particular emission of greenhouse gases (GHGs), as the dominant cause of global warming.[58] Emission of carbon dioxide, methane, nitrous oxide, and fluorinated gases contribute to warming the atmosphere[59] "by absorbing energy and slowing the rate at which the energy escapes to space."[60] Carbon dioxide and methane released from thawing permafrost contribute to the warming of the atmosphere as well.[61] The fossil fuel industry, responsible for the bulk of GHG emissions, is now more profitable than ever.[62]

According to recent assessments, without a significant reduction in these emissions, the increase in average global temperatures could reach 5.7°C and higher by the end of this century.[63] Global warming resulting from current emissions will continue to affect future generations, leaving "a multi-millennial legacy, with a substantial fraction of the warming persisting for more than 10,000 years."[64]

Among the worrying influences of the climate-driven rise in temperature is its expected negative effect on human health and well-being.[65] Studies have found connections between higher temperatures and increases in the occurrence of diarrheal diseases, including cholera and other gastrointestinal infections.[66] The increase in heatwave intensity[67] is expected to significantly increase mortality

58. *See* Hayhoe et al., *supra* note 57, at 76; Mathew, *supra* note 57, at 1; *Sources of Greenhouse Gas Emissions*, EPA (Apr. 11, 2024), https://www.epa.gov/ghgemissions/sources-greenhouse-gas-emissions [https://perma.cc/X83T-86MN].

59. *Global Greenhouse Gas Emissions Data*, EPA (Apr. 11, 2024), https://www.epa.gov/ghgemissions/global-greenhouse-gas-emissions-data [https://perma.cc/D8FJ-DRTR].

60. *Understanding Global Warming Potentials*, EPA (Mar. 27, 2024), https://www.epa.gov/ghgemissions/understanding-global-warming-potentials [https://perma.cc/ATN8-8BEV].

61. *See* Hayhoe et al., *supra* note 57, at 74.

62. *See* Meredith, *supra* note 31.

63. *See* Richard P. Allan et al., *Summary for Policymakers*, *in* CLIMATE CHANGE 2021: THE PHYSICAL SCIENCE BASIS 1, 14 (Valérie Masson-Delmotte et al. eds., 2021), https://report.ipcc.ch/ar6/wg1/IPCC_AR6_WGI_FullReport.pdf [https://perma.cc/89U7-TARK] (presenting changes in global surface temperature, assessed based on multiple lines of evidence, for near, mid, and long terms, and showing that under some scenarios, the temperature may increase by as much as 3.3°C to 5.7°C by 2100); David Herring, *Climate Change: Global Temperature Projections*, CLIMATE.GOV (Mar. 6, 2012), https://www.climate.gov/news-features/understanding-climate/climate-change-global-temperature-projections [https://perma.cc/S5G4-QWQG] (predicting that the average global temperature could increase by 1.1–5.4°C (2–9.7°F) by 2100).

64. Hayhoe et al., *supra* note 57, at 80.

65. *See generally, e.g.*, Jian Cheng, Zhiwei Xu, Hilary Bambrick, Vanessa Prescott, Ning Wang, Yuzhou Zhang, Hong Su, Shilu Tong & Wenbiao Hu, *Cardiorespiratory Effects of Heatwaves: A Systematic Review and Meta-Analysis of Global Epidemiological Evidence*, ENV'T RSCH., Oct. 2019, at 1 (finding a significant association between heatwaves and cardiovascular mortality); Zhiwei Xu, Gerard FitzGerald, Yuming Guo, Bin Jalaludin & Shilu Tong, *Impact of Heatwave on Mortality Under Different Heatwave Definitions: A Systematic Review and Meta-Analysis*, ENV'T INT'L, Apr.–May 2016, at 193 (analyzing the impact of heatwaves on mortality as defined in existing literature).

66. Pörtner et al., *supra* note 44, at 11.

67. For a description of trends of multiday extreme heat events across the United States by decade (1961–2021), see *Climate Change Indicators: Heat Waves*, EPA (Nov. 1, 2023), https://www.epa.gov/climate-indicators/climate-change-indicators-heat-waves [https://perma.cc/6S26-UQQH].

rates globally.[68] Temperature rise is also associated with many other potentially devastating outcomes, such as droughts[69] and tropical storms.[70] Temperature increases also cause sea level rise. We turn to discuss this issue next.

B. SEA LEVEL RISE

Studies show that between 1902 and 2020, sea levels rose by more than 6.3 inches.[71] As GHG emissions increase and global temperatures climb, sea levels will continue to rise.[72] Some projections indicate that by the end of this century, sea levels may rise by more than 6.5 feet.[73] The scientific community perceives the rise of sea

68. *See* Susana Clusella-Trullas, *The Point of No Return for Species Facing Heatwaves*, NATURE, Nov. 3, 2022, at 39, 39 (studying how quickly organisms succumb to stressful temperatures to predict how heat-failure rates vary across species); Pörtner et al., *supra* note 44, at 11 (noting, with a "very high" level of confidence, that "[i]n all regions extreme heat events have resulted in human mortality and morbidity"); Xu et al., *supra* note 65, at 193 ("Heatwave intensity plays a relatively more important role than duration in determining heatwave-related deaths.").

69. Pörtner et al., *supra* note 44, at 18 (noting the connection between increasing heat and drought and both crop production losses and tree mortality); *Climate Change Indicators: Weather and Climate*, EPA (July 26, 2023), https://www.epa.gov/climate-indicators/weather-climate [https://perma.cc/Y48D-7WED] ("The southwestern United States is particularly sensitive to changes in temperature and thus vulnerable to drought, as even a small decrease in water availability in this already arid region can stress natural systems and further threaten water supplies.").

70. Joshua Studholme, Alexey V. Fedorov, Sergey K. Gulev, Kerry Emanuel & Kevin Hodges, *Poleward Expansion of Tropical Cyclone Latitudes in Warming Climates*, 15 NATURE GEOSCIENCE 14, 14, 25 (2022) ("Observations and model projections for the twenty-first century indicate that [tropical cyclones] may again migrate poleward in response to anthropogenic greenhouse gas emissions, which poses profound risks to the planet's most populous regions."); T. Matthews, R. L. Wilby & C. Murphy, *An Emerging Tropical Cyclone–Deadly Heat Compound Hazard*, 9 NATURE CLIMATE CHANGE 602, 603 (2019) ("If global warming reaches 4°C (representing a high-emissions, end-of-century scenario), [tropical cyclones]–heat events could occur at least annually.").

71. *See* Michael Oppenheimer, Bruce C. Glavovic, Jochen Hinkel, Roderik van de Wal, Alexandre K. Magnan, Amro Abd-Elgawad, Rongshuo Cai, Miguel Cifuentes-Jara, Robert M. DeConto, Tuhin Ghosh, John Hay, Federico Isla, Ben Marzeion, Benoit Meyssignac & Zita Sebesvari, *Sea Level Rise and Implications for Low-Lying Islands, Coasts and Communities*, *in* THE OCEAN AND CRYOSPHERE IN A CHANGING CLIMATE 321, 334 (Hans-Otto Pörtner et al. eds., 2019) (referring to sixteen centimeters, which is approximately 6.3 inches); DAVOR VIDAS, DAVID FREESTONE & JANE MCADAM, INTERNATIONAL LAW AND SEA LEVEL RISE: REPORT OF THE INTERNATIONAL LAW ASSOCIATION COMMITTEE ON INTERNATIONAL LAW AND SEA LEVEL RISE 8 (2018) (referring to approximately 20 centimeters, which is about 7.8 inches).

72. *See* VIDAS ET AL., *supra* note 71, at 4–5. For a survey of recent studies predicting sea level rising in the coming decades, see Ori Sharon, *To Be or Not to Be: State Extinction Through Climate Change*, 51 ENV'T L. 1041, 1043–44 (2021).

73. *See, e.g.*, Leonardo Bernard, Michael Petterson, Clive Schofield & Stuart Kaye, *Securing the Limits of Large Ocean States in the Pacific: Defining Baselines Limits and Boundaries Amidst Changing Coastlines and Sea Level Rise*, GEOSCIENCES, Sept. 2021, at 1, 9 ("With respect to sea level rise in the Pacific Ocean, global sea level rise could exceed two meters by 2100 . . . ."); Scott A. Kulp & Benjamin H. Strauss, *New Elevation Data Triple Estimates of Global Vulnerability to Sea-Level Rise and Coastal Flooding*, NATURE COMMC'NS, Apr. 2019, at 1, 2 ("Under higher emissions scenarios, twenty-first century rise may approach or in the extremes exceed 2 m in the case of early-onset Antarctic ice sheet instability."); JOHN A. HALL, STEPHEN GILL, JAYANTHA OBEYSEKERA, WILLIAM SWEET, KEVIN KNUUTI & JOHN MARBURGER, REGIONAL SEA LEVEL SCENARIOS FOR COASTAL RISK MANAGEMENT: MANAGING THE UNCERTAINTY OF FUTURE SEA LEVEL CHANGE AND EXTREME WATER LEVELS FOR DEPARTMENT OF DEFENSE COASTAL SITES WORLDWIDE, at ES-1 (2016), https://apps.dtic.mil/sti/tr/pdf/AD1013613.pdf [https://perma.cc/3YPZ-5ZKA]. For a review of different scientific projections of sea level rise, see also

levels as a pressing threat,[74] with one estimate indicating that by the year 2100, over one billion people will be exposed to environmental and climatic risks caused by rising sea levels.[75] Perhaps the most pressing problem related to sea level rise is the existential threat to low-lying island states, whose land area will be rendered uninhabitable or overrun by seawater.[76] Many coastal areas will similarly disappear under water,[77] and their inhabitants will lose their homes, causing them to become climate refugees.[78] Currently, this problem has no clear legal solution.[79]

The devastating impact of sea level rise will not affect all people equally. Despite their relatively "infinitesimal contributions to the causal drivers of climate change," it is low-lying island states such as Tuvalu, Kiribati, or the Maldives that are most vulnerable to sea level rise.[80] The problem of climate refugees is also expected to influence states and regions in which refugees will

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Caleb Robinson, Bistra Dilkina & Juan Moreno-Cruz, *Modeling Migration Patterns in the USA Under Sea Level Rise*, PLOS ONE, Jan. 22 2020, at 2–3.

74. *See, e.g.*, David Freestone & Clive Schofield, *Sea Level Rise and Archipelagic States: A Preliminary Risk Assessment*, *in* 35 OCEAN YEARBOOK 340, 340 (Aldo Chircop et al. eds., 2021); K. M. Befus, P. L. Barnard, D. J. Hoover, J. A. Finzi Hart & C. I. Voss, *Increasing Threat of Coastal Groundwater Hazards from Sea-level Rise in California*, 10 NATURE CLIMATE CHANGE 946, 946 (modeling a range of the threat of sea-level rise scenarios according to recent predictions); VIDAS ET AL., *supra* note 71, at 16 (describing sea level rise of just one meter as a major threat to coastal states).

75. *See* Kulp & Strauss, *supra* note 73, at 3.

76. *See, e.g.*, Curt D. Storlazzi, Edwin P.L. Elias & Paul Berkowitz, *Many Atolls May Be Uninhabitable Within Decades Due to Climate Change*, SCI. REPS., Sept. 25, 2015, at 1, 1; Akiko Sakamoto, Koichi Nishiya, Xuanjin Guo, Airi Sugimoto, Waka Nagasaki & Kaito Doi, *Mitigating Impacts of Climate Change Induced Sea Level Rise by Infrastructure Development: Case of the Maldives*, 17 J. DISASTER RSCH. 327, 327 (2022) ("Most atoll countries are likely to become uninhabitable by the end of the 21st century.").

77. Some studies project that above thirteen million people in the United States alone would be living on land that will be considered flooded. *See, e.g.*, Mathew E. Hauer, Jason M. Evans & Deepak R. Mishra, *Millions Projected to Be at Risk from Sea-Level Rise in the Continental United States*, 6 NATURE CLIMATE CHANGE 691, 691 (2016).

78. For a discussion of possible legal approaches to climate refugees, see Timothy Doyle & Sanjay Chaturvedi, *Climate Refugees and Security: Conceptualization, Categories, and Contestations*, *in* THE OXFORD HANDBOOK OF CLIMATE CHANGE AND SOCIETY 278, 282 (John S. Dryzek et al. eds., 2011); Frank Biermann & Ingrid Boas, *Protecting Climate Refugees: The Case for a Global Protocol*, ENV'T, Nov./Dec. 2008, at 8, 11–14; and Derek R. Bell, *Environmental Refugees: What Rights? Which Duties?*, 10 RES PUBLICA 135, 137 (2004) (adopting Essam El-Hinnawi's definition for environmental refugees as the standard definition: "Environmental refugees are defined as those people who have been forced to leave their traditional habitat, temporarily or permanently, because of a marked environmental disruption (natural and/or triggered by people) that jeopardized their existence and/or seriously affected the quality of their life. By 'environmental disruption' in this definition is meant any physical, chemical and/or biological changes in the ecosystem (or the resource base) that render it, temporarily or permanently, unsuitable to support human life." (quoting ESSAM EL-HINNAWI, U.N. ENV'T PROGRAMME, ENVIRONMENTAL REFUGEES 4 (1985))).

79. Some scholars have suggested that such states may continue to exist post-submergence as nonterritorial states. *See, e.g.*, Emily Crawford & Rosemary Rayfuse, *Climate Change and Statehood*, *in* INTERNATIONAL LAW IN THE ERA OF CLIMATE CHANGE 243, 249–53 (Rosemary Rayfuse & Shirley V. Scott eds., 2012). *See generally* Milla Emilia Vaha, *Drowning Under: Small Island States and the Right to Exist*, 11 J. INT'L POL. THEORY 206 (2015) (providing a political theory justification for the nonterritorial state solution).

80. Michel Rouleau-Dick, *Sea Level Rise and Climate Statelessness: From 'Too Little, Too Late' to Context-Based Relevance*, 3 STATELESSNESS & CITIZENSHIP REV. 287, 288 (2021).

eventually resettle,[81] as those regions will need to provide their fast-growing populations with increasing amounts of housing, food, and jobs.[82]

C. SPECIES EXTINCTION

Not only humans are expected to suffer from climate change. Research shows that climate change is likely to lead to catastrophic outcomes for many other species as well. A recent study indicates the potential collapse of marine and amphibian populations as a result of temperature changes.[83] Such species cannot escape heat events and are therefore more sensitive to heat failure.[84] In addition to rising temperatures, sea level rise may also cause immense harm to animals, on top of the harm to humans.[85] In particular, sea level rise may cause flooding of intertidal areas, putting the existence of various species who reside in those areas at risk.[86]

Adding these projections to the declines in different marine species due to the expansion and overcapacity of many industrial fisheries,[87] some climate models show that by the year 2100, local species of fish and invertebrates will lose more than fifty percent of their animal population in many regions.[88]

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81. For the argument that the rate of migration significantly changes as a function of the destination states' population and distance, see Robinson et al., *supra* note 73, at 7.

82. *See id.* at 2 (exploring the "indirect effects" of sea level rise).

83. *See* Clusella-Trullas, *supra* note 68, at 39–40.

84. *Id.* at 40; *see* H. O. Pörtner & M. A. Peck, *Climate Change Effects on Fishes and Fisheries: Towards a Cause-and Effect Understanding*, 77 J. FISH BIOLOGY 1745, 1757 (2010).

85. *See, e.g.*, Alaa E. Eissa & Manal M. Zaki, *The Impact of Global Climatic Changes on the Aquatic Environment*, 4 PROCEDIA ENV'T SCIS. 251, 256 (2011) ("Sea level rise with the subsequent coastal erosions is one major influential factor in the damage of breeding habitats of so many migratory aquatic species including fishes, shellfishes and birds."). For a general analysis of the adverse effects of climate change on animal life, see generally Wayne Hsiung & Cass R. Sunstein, *Climate Change and Animals*, 155 U. PA. L. REV. 1695 (2007).

86. *See generally* Vera Rullens, Stephanie Mangan, Fabrice Stephenson, Dana E. Clark, Richard H. Bulmer, Anna Berthelsen, Josie Crawshaw, Rebecca V. Gladstone-Gallagher, Sam Thomas, Joanne I. Ellis & Conrad A. Pilditch, *Understanding the Consequences of Sea Level Rise: The Ecological Implications of Losing Intertidal Habitat*, 56 N.Z. J. MARINE & FRESHWATER RSCH. 353 (2022) (studying the implications of the loss of intertidal areas resulting from sea level rise through focusing on two ecologically and culturally important shellfish species).

87. For evidence of such decline, see Dirk Zeller & Daniel Pauly, *Viewpoint: Back to the Future for Fisheries, Where Will We Choose to Go?*, 2 GLOB. SUSTAINABILITY, 2019, at 1, 4–5 and Boris Worm, Ray Hilborn, Julia K. Baum, Trevor A. Branch, Jeremy S. Collie, Christopher Costello, Michael J. Fogarty, Elizabeth A. Fulton, Jeffrey A. Hutchings, Simon Jennings, Olaf P. Jensen, Heike K. Lotze, Pamela M. Mace, Tim R. McClanahan, Cóilín Minto, Stephen R. Palumbi, Ana M. Parma, Daniel Ricard, Andrew A. Rosenberg, Reg Watson & Dirk Zeller, *Rebuilding Global Fisheries*, 325 SCI. 578, 578 (2009).

88. *See* Rebecca G. Asch, William W.L. Cheung & Gabriel Reygondeau, *Future Marine Ecosystem Drivers, Biodiversity, and Fisheries Maximum Catch Potential in Pacific Island Countries and Territories Under Climate Change*, 88 MARINE POL'Y 285, 285 (2018); Elizabeth L. McLean, *Impacts of Climate Change on Global Fisheries*, INT'L ENV'T F. (Sept. 16, 2019), https://iefworld.org/dmclean2019 [https://perma.cc/QV2D-4T2C] ("Although declines have long been attributed to overfishing, the added stress of climate change will challenge our ability to protect and sustain global fisheries." (footnotes omitted)).

II. STATE OF THE LAW

The immense harms of the climate crisis, as described in Part I, give rise to a tragic puzzle. Namely, if overwhelming scientific evidence so strongly suggests the harmful nature of current production and consumption activities, why have existing legal frameworks failed to stop the foreseeable adverse outcomes described above?

This Part reviews existing legal frameworks currently used in the governance of the climate crisis, with an emphasis on domestic regulation, international treaties, and tort litigation. It shows that existing legal tools fail to offer effective solutions for two main reasons. First, short-term monetary incentives, coordination problems, and free-rider effects make climate change particularly difficult to regulate, thereby contributing to its status as a "super wicked" problem.[89] Second, the harms associated with the climate crisis are mostly future harms with complicated causal histories,[90] while incentives to profit are immense, immediate, and direct.[91] By clarifying these points, this Part serves as a background for our argument in Parts III and IV, where we show the promising potential of the doctrine of unjust enrichment as a response to the tragic puzzle of the current legal treatment of the climate crisis.

A. REGULATION

Current legal responses to the climate crisis are focused on regulatory schemes and public law solutions through national law as well as public international law.[92] At first glance, this focus seems obvious from an economic perspective. Climate stability is a classic case of a "public good"[93]: it is *non-excludable* (no single entity can prevent others from enjoying the benefits of a stable climate) and *non-rivalrous* (a stable climate benefits everyone simultaneously).[94] Classic examples of public goods are national security, public broadcasting, public parks, and clean air.[95] It is well-known that private markets tend to undersupply public

89. *See* Lazarus, *supra* note 40, at 1159.

90. *See, e.g.*, Kysar, *supra* note 23, at 42 ("For tort law, no harm generally means no foul. A basic problem for plaintiffs and their lawyers in the climate change context is that the most devastating impacts of greenhouse gas emissions are not expected to begin until later this century or afterward." (footnote omitted)).

91. *See, e.g.*, *Oil Giants Rake in Record Profits as Energy Prices Remain High*, CBS NEWS: MONEYWATCH (Oct. 28, 2022, 12:21 PM), https://www.cbsnews.com/news/big-oil-profits-2022-joe-biden-exxon-chevron-soaring-gas-energy-prices/ [https://perma.cc/VCG8-PQGV] (quoting Joe Biden saying that "Exxon made more money than God this year"); Meredith, *supra* note 31.

92. *See generally, e.g.*, Martin Jänicke, *The Multi-Level System of Global Climate Governance – The Model and Its Current State*, 27 ENV'T POL'Y & GOV. 108 (2017) (offering a general overview of climate regulation); MICHAEL BURGER & JUSTIN GUNDLACH, UNITED NATIONS ENV'T PROGRAMME, THE STATUS OF CLIMATE CHANGE LITIGATION: A GLOBAL REVIEW (2017), https://wedocs.unep.org/handle/20.500.11822/20767 [https://perma.cc/MU4G-4S24].

93. *See* ROBERT COOTER & THOMAS ULEN, LAW AND ECONOMICS 105, 114 (6th ed. 2012).

94. *See* Roee Sarel, Hadar Y. Jabotinsky & Israel Klein, *Globalize Me: Regulating Distributed Ledger Technology*, 56 VAND. J. TRANSNAT'L L. 435, 455–60 (2023).

95. *See* Aziz Z. Huq, *The Social Production of National Security*, 98 CORNELL L. REV. 637, 638 (2013) ("National security bears all the hallmarks of a quintessential public good. Once provided,

goods[96] because of the free-rider problem involved in supplying them: every beneficiary prefers that the goods are supplied but no one wants to invest private resources to supply them.[97] In the context of the climate crisis, everyone prefers that GHG emissions would be lowered, but each country or firm wishes to avoid the costs this goal entails and prefers that others bear them.

Since markets tend to undersupply public goods, a common solution is to supply them through a public authority, which (hopefully) takes into account the public interest.[98] In the case of climate change, a public authority could take various measures, including engaging in enforcement (for example, by prosecuting polluters under criminal law),[99] subsidizing private litigation,[100] imposing a tax on production, or regulating production (for example, intervening in the actions of polluters more directly).[101] Such endeavors may take place at both the national and international levels.

1. Domestic Regulation in the United States

Until the 1960s, responsibility for climate change policies in the United States resided with the states rather than with the federal government, leading to jurisdictional variation in the degrees of environmental protection between states.[102]

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individuals cannot be excluded from its benefits. One person's enjoyment also leaves the balance undiminished for others." (footnote omitted)); Craig D. Parks, Jeff Joireman & Paul A. M. Van Lange, *Cooperation, Trust, and Antagonism: How Public Goods Are Promoted*, 14 PSYCH. SCI. PUB. INT. 119, 121 (2013) ("There are many examples of public goods. Public broadcasting (financial contributions create programming for all), government (votes create governance for all), and public works (tax dollars create open-use parks, bridges, roads, etc.) are clear examples, but so are clean air (toward which people contribute by reducing production of air pollutants) and nature preserves (through donation of land)."). The stability of the financial system is another close example. *See* Hadar Y. Jabotinsky & Roee Sarel, *How Crisis Affects Crypto: Coronavirus as a Test Case*, 74 HASTINGS L.J. 433, 453–54 (2023).

96. COOTER & ULEN, *supra* note 93, at 115.

97. Jan-Philip Elm & Roee Sarel, *No Policy is an Island: Mitigating COVID-19 in View of Interaction Effects*, 48 AM. J.L. & MED. 7, 15 (2022) ("Public goods typically suffer from undersupply because people who produce (or consume) them have an incentive to free ride on other people's effort . . . .").

98. *See, e.g.*, COOTER & ULEN, *supra* note 93, at 41 ("If private profit-maximizing firms are the only providers of national defense, too little of that good will be provided. How can public policy correct the market failure in the provision of public goods? There are two general correctives. First, the government may undertake to subsidize the private provision of the public good, either directly or indirectly through the tax system. An example might be research on basic science. Second, the government may undertake to provide the public good itself and to pay the costs of providing the service through the revenues raised by compulsory taxation. This is, in fact, how national defense is supplied." (emphasis omitted)).

99. For example, some scholars have proposed to initiate proceedings of those responsible for climate change in the international criminal court. *See generally* Nema Milaninia & Jelena Aparac, *Climate Change Litigation Before the International Criminal Court: Prospects in Theory and Practice*, *in* CLIMATE CHANGE LITIGATION: GLOBAL PERSPECTIVES 481 (Ivano Alogna et al. eds., 2021).

100. *See* COOTER & ULEN, *supra* note 93, at 412–14; Judith Resnik, *Money Matters: Judicial Market Interventions Creating Subsidies and Awarding Fees and Costs in Individual and Aggregate Litigation*, 148 U. PA. L. REV 2119, 2125 (2000) ("[B]ecause civil justice is a special service that offers a unique outcome—a court's power of judgment—government should ease access (in at least some contexts) either by government subsidies or by requiring economic transfers among litigants.").

101. For a discussion of regulation versus litigation generally, see Posner, *supra* note 8, at 13.

102. *See* Lawrence H. Goulder & Robert N. Stavins, *Challenges from State-Federal Interactions in US Climate Change Policy*, 101 AM. ECON. REV. 253, 253 (2011).

The Clean Air Act (CAA), enacted in 1963,[103] was first established as a federal framework for air pollution control and is now administered by the Environmental Protection Agency (EPA).[104] The fundamental problem with this regulatory framework is that the CAA has not been amended since the 1990s and did not explicitly authorize the EPA to regulate GHG emissions. In response, in 2007, the Supreme Court decided the landmark case of *Massachusetts v. EPA*, holding that the EPA not only has the authority to regulate GHG emissions, but has an obligation to do so.[105] In 2021, the EPA issued a set of new GHG emission standards involving cars and light trucks.[106] However, the Supreme Court severely limited the ability of the EPA to regulate GHG emissions in the recent case of *West Virginia v. EPA*.[107] In response to this decision, Congress strengthened the ability of the EPA to regulate GHG emissions,[108] although scholars debate whether or not this response effectively repealed *West Virginia v. EPA*.[109]

As this brief review illustrates, the history of environmental regulation in the United States has been rocky and likely will continue to be so. So far, the EPA has had little success in reducing GHG emissions sufficiently to satisfy the United States' climate obligations.[110] Politicization of the issue together with increasing polarization hinder decisive regulatory action, and lobbying efforts seem all too effective in preventing a consistent regulatory response.

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103. Clean Air Act, Pub. L. No. 88-206, 77 Stat. 392 (1963) (codified as amended at 42 U.S.C. §§ 7401–7675).

104. Clean Air Amendments of 1970, Pub. L. No. 91-604, sec. 15(c), 84 Stat. 1676, 1713.

105. 549 U.S. 497, 532–35 (2007). For an overview of the case, see Alexa Austin, *Cleaning up the Confusion: Climate Change Litigation and Preemption*, 10 JOULE 6, 13–16 (2022).

106. News Release, U.S. EPA, EPA Finalizes Greenhouse Gas Standards for Passenger Vehicles, Paving Way for a Zero-Emissions Future (Dec. 20, 2021), https://www.epa.gov/newsreleases/epa-finalizes-greenhouse-gas-standards-passenger-vehicles-paving-way-zero-emissions [https://perma.cc/8YQQ-W28C].

107. 597 U.S. 697, 734–35 (2022) (holding that the EPA was not authorized to set emission caps).

108. *See* Nicholas S. Bryner, *The Once and Future Clean Air Act: Impacts of the Inflation Reduction Act on EPA's Regulatory Authority*, 65 B.C. L. REV. 1, 5 (2024).

109. *See, e.g.*, Halina R. Bereday, Note, West Virginia v. EPA*: Majorly Questioning Administrative Agency Action & Authority*, 82 MD. L. REV. 820, 847–48 (2023) (demonstrating the high bar imposed on Congress by the *West Virginia* ruling, in requiring Congress, *inter alia*, "to write statutes with extremely specific language to meet the Court's strict requirements," and explaining that "[t]his high bar is impracticable to meet since statutes will have to be potentially thousands of pages in length and specific in wording to meet the Court's scrupulous standard").

110. *USA*, CLIMATE ACTION TRACKER, https://climateactiontracker.org/countries/usa/ [https://perma.cc/CYG2-D749] (last visited Apr. 11, 2024) (stating that as of November 2023, the Climate Action Tracker "rates the combination of the US 2030 climate targets, policies, and climate finance as 'Insufficient'. The 'Insufficient' rating indicates that the totality of the US policies and proposals need substantial improvements to be consistent with the Paris Agreement's 1.5°C temperature limit. The US 2030 domestic emissions reduction target (NDC) is consistent with 2°C of warming when compared to modelled domestic emissions pathways, but not yet consistent with the Paris Agreement's 1.5°C temperature limit. US policies and action lead to falling emissions in 2030 but not by enough to meet its targets or the 1.5°C limit.").

More broadly, public choice theory readily explains the inability of national regulatory frameworks to offer effective solutions to the climate crisis.[111] Public officials, including regulators, strive to maximize their own utility,[112] and the pursuit of selfish interests often interferes with the choice of an optimal policy for society as a whole.[113] Thus, lobbying by polluters may hinder the effectiveness of reaching coordinated environmental regulations.[114] In the context of climate change, even if regulators faithfully represent the interests and wishes of their constituencies, regulatory policy greatly diverges from the social optimum. Regulators, guided by elected public officials, respond to interests and problems that concern and affect the constituents in their jurisdiction.[115] There is no reason to believe that the interest of future generations and the long-term sustainability of environmental systems are fully represented within this framework. Future generations, by definition, are at a disadvantage in the political field and cannot express their interests in the political system.[116] It is therefore unsurprising that the interests of future generations are underrepresented in current political and regulatory systems.

Regulatory focus on short-term goals may also be driven by behavioral effects, such as overoptimism and myopia, or "present bias."[117] Specifically, regulators may be overconfident in their ability to solve the climate crisis quickly and therefore do not feel the need to consider the fate of future generations, mistakenly assuming that these generations will not face the problem at all.[118] Moreover, behavioral economics literature has repeatedly shown that individuals are "myopic" and may systematically prefer short-term benefits over long-term gains.[119] This

111. *See* Richard L. Revesz, *Federalism and Environmental Regulation: A Public Choice Analysis*, 115 HARV. L. REV. 553, 555 (2001); Lionel Orchard & Hugh Stretton, *Public Choice*, 21 CAMBRIDGE J. ECON. 409, 410 (1997).

112. *See* Revesz, *supra* note 111, at 561; Nuno Garoupa & Daniel Klerman, *Optimal Law Enforcement with a Rent-Seeking Government*, 4 AM. L. & ECON. REV. 116, 116 (2002).

113. Posner, *supra* note 8, at 19 (explaining the phenomenon of regulatory capture in terms of the incentives of public regulators).

114. *See generally* Andreas Polk & Armin Schmutzler, *Lobbying Against Environmental Regulation vs. Lobbying for Loopholes*, 21 EUR. J. POL. ECON. 915 (2005) (analyzing the detrimental effects of lobbying by polluters on regulation resistance).

115. *See* Bruce R. Huber, *Temporal Spillovers*, *in* ENVIRONMENTAL LAW AND ECONOMICS 43, 44 (Klaus Mathis & Bruce R. Huber eds., 2017) ("The more distant the harms in time, . . . the less likely that presently elected officials may feel obligated to address them.").

116. *See id.*

117. Overoptimism is closely related to overconfidence. *See* Stephen J. Choi & A.C. Pritchard, *Behavioral Economics and the SEC*, 56 STAN. L. REV. 1, 38 (2003). One form of myopia is sometimes called "present bias." *See* Andrew T. Hayashi, *Myopic Consumer Law*, 106 VA. L. REV. 689, 692 (2020) (defining "present bias" as "a sort of myopia that causes people to focus on the present and neglect the future").

118. *See* Marina Farr & Natalie Stoeckl, *Overoptimism and the Undervaluation of Ecosystem Services: A Case-Study of Recreational Fishing in Townsville, Adjacent to the Great Barrier Reef*, 31 ECOSYSTEM SERVS. 433, 433 (2018) ("[I]t is clear that under conditions of uncertainty – such as climate change – overly optimistic visions of the future will likely lead us to undervalue (and thus potentially degrade) key ecosystem services – perhaps substantially.").

119. *See, e.g.*, Samuel Issacharoff, *Behavioral Decision Theory in the Court of Public Law*, 87 CORNELL L. REV. 671, 671–73 (2002); William N. Eskridge, Jr. & John Ferejohn, *Structuring Lawmaking to Reduce Cognitive Bias: A Critical View*, 87 CORNELL L. REV. 616, 616 (2002) (explaining the problem in terms of public choice theory, and noting that "selfish interest groups and

might be caused by "hyperbolic discounting," where individuals place extremely low weights on future outcomes.[120] The problem is further exacerbated in the context of the climate crisis, due to people's systematic tendency to underestimate exponential growth.[121] Policymakers and regulators are not immune to such cognitive biases and are therefore prone to ignore or downplay the risks associated with the climate crisis.[122]

2. Regulation at the International Level

The climate crisis is difficult to tackle at the level of individual countries. In a classic free-rider dynamic, each country has a strong incentive to allow corporations to pollute, rather than adopt restricting environmental regulations. Supposedly, the solution can be found in international coordination, allowing countries to jointly commit to battling the crisis.

Indeed, a series of international treaties have been established as a framework for cooperation in the fight against climate change. The United Nations Conference on the Human Environment was held in 1972 in Stockholm, Sweden, and was the first world conference to focus primarily on environmental issues.[123] This conference yielded the Stockholm Declaration, a document containing twenty-six principles on safeguarding the earth and the environment for the benefit of mankind and future generations.[124] The Declaration was accompanied by an "Action Plan" and led to the establishment of the United Nations Environmental Programme (UNEP).[125] Alas, the declaration proved largely ineffective.[126] Twenty years later, a climate-focused convention took place as part of the United Nations Conference on Environment and Development (UNCED), colloquially known as the "Earth

public officials highjack the governmental process for their private gain, thereby undermining the public interest in efficient rules and distributions").

120. Christine Jolls, Cass R. Sunstein & Richard Thaler, *Theories and Tropes: A Reply to Posner and Kelman*, 50 STAN. L. REV. 1593, 1596 (1998) (discussing hyperbolic discounting, and arguing against the view that it is about the need for cash at the present).

121. *See generally* Doron Teichman & Eyal Zamir, *Exponential Growth Bias and the Law: Why Do We Save Too Little, Borrow Too Much, and Fail to React on Time to Deadly Pandemics and Climate Change?*, 75 VAND. L. REV. 1345 (2022) (explaining the concept of "exponential growth bias").

122. *See* Timur Kuran & Cass R. Sunstein, *Availability Cascades and Risk Regulation*, 51 STAN. L. REV. 683, 705–11 (1999); W. Kip Viscusi & Ted Gayer, *Behavioral Public Choice: The Behavioral Paradox of Government Policy*, 38 HARV. J.L. & PUB. POL'Y 973, 988–96 (2015) (applying behavioral insights to state policy).

123. *United Nations Conference on the Human Environment, 5-16 June 1972, Stockholm*, UNITED NATIONS, https://www.un.org/en/conferences/environment/stockholm1972 [https://perma.cc/Z737-Q6EF] (last visited Apr. 10, 2024).

124. *See* U.N. Conference on the Human Environment, *Stockholm Declaration and Action Plan for the Human Environment*, at 4–5, U.N. Doc. A/CONF.48/14/Rev.1 (June 5–16, 1972). *See generally* Louis B. Sohn, *The Stockholm Declaration on the Human Environment*, 14 HARV. INT'L L.J. 423 (1973).

125. Rebecca Bratspies, *"In Countless Ways and on an Unprecedented Scale": Reflections on the Stockholm Declaration at 50*, 50 GA. J. INT'L & COMPAR. L. 754, 757, 763 (2022).

126. *See id.* at 767 ("The international environmental law system that emerged from the Stockholm Conference neither halted nor reversed the degradation of the planet's life support systems. Even as global, regional, and multilateral agreements proliferated, the global environmental situation worsened. The international legal system is clearly better at producing environmental agreements than at solving environmental problems. Over those 50 years, a huge implementation and accountability gap accumulated, and environmental injustices compounded.").

Summit," in Rio de Janeiro, Brazil.[127] Following this conference, the 1992 United Nations Framework Convention on Climate Change (UNFCCC) was established.[128] The UNFCCC strived for a more modest goal—stabilizing GHG concentrations by lowering emissions and focusing on industrialized countries.[129] These countries accepted a nonbinding commitment to reduce emissions by the year 2000,[130] yet it quickly became apparent that this goal was not to be achieved. In 1997, another UNFCCC conference took place in Kyoto, Japan, and yielded the Kyoto Protocol.[131] The Kyoto Protocol sets binding emission reduction goals for industrialized countries, but has also been heavily criticized and widely considered to be a failure.[132] Over the following years, meetings of the parties to the UNFCCC—the Conference of the Parties (COP)—continued taking place.[133] A high-profile convention took place in Paris in 2015, yielding the Paris Agreement.[134] The Paris Agreement, adopted

127. *United Nations Conference on Environment and Development, Rio de Janeiro, Brazil, 3-14 June 1992*, UNITED NATIONS, https://www.un.org/en/conferences/environment/rio1992 [https://perma.cc/4F7U-KHFY] (last visited Apr. 15, 2024).

128. Daniel Bodansky, *The United Nations Framework Convention on Climate Change: A Commentary*, 18 YALE J. INT'L L. 451, 453–54 (1993). The conference in Rio also led to the signing of two other conventions, one on biological diversity and one on combating desertification. *See The Rio Conventions*, CONVENTION ON BIOLOGICAL DIVERSITY (Nov. 17, 2023), https://www.cbd.int/rio/ [https://perma.cc/QQN4-E76X].

129. *See What Is the United Nations Framework Convention on Climate Change?*, UNITED NATIONS CLIMATE CHANGE, https://unfccc.int/process-and-meetings/what-is-the-united-nations-framework-convention-on-climate-change [https://perma.cc/SVR9-E8KD] (last visited Jan. 4, 2023). The countries are referred to as "developed countries" and are listed in Annex I of the UNFCCC. *See* U.N. Framework Convention on Climate Change, at 27, May 9, 1992, 1771 U.N.T.S. 107 [hereinafter UNFCCC].

130. *See* UNITED NATIONS CLIMATE CHANGE, *supra* note 129; *see also* UNFCCC, *supra* note 129, ¶ 2(a) ("The developed country Parties and other Parties included in Annex I commit themselves specifically as provided for in the following: . . . Each of these Parties shall adopt national policies and take corresponding measures on the mitigation of climate change, by limiting its anthropogenic emissions of greenhouse gases and protecting and enhancing its greenhouse gas sinks and reservoirs." (footnote omitted)).

131. Kyoto Protocol to the United Nations Framework Convention on Climate Change, Dec. 11, 1997, 2303 U.N.T.S. 162.

132. *See* Dieter Helm, *The Kyoto Approach Has Failed*, 491 NATURE 663, 663–64 (2012) (arguing that the main problem is that the Protocol does not address the carbon footprint and neglects coal burning and free-rider problems); Alexandre Durand, *Common Responsibility: The Failure of Kyoto*, HARV. INT'L REV., Summer 2012, at 8, 8–9 (stating that the main criticism is that the Kyoto Protocol is "not far-reaching enough in its restrictive measures" because it accounted for only 30% of the world's GHG emissions); Christopher Napoli, *Understanding Kyoto's Failure*, SAIS REV. INT'L AFFS., Summer–Fall 2012, at 183, 183 (arguing that the protocol created long-term benefits but short-term costs, reducing the incentive to comply); Amanda M. Rosen, *The Wrong Solution at the Right Time: The Failure of the Kyoto Protocol on Climate Change*, 43 POL. & POL'Y 30, 40–44 (2015) (listing various reasons for the protocol's failure, including the creation of undesirable path-dependent behavior on the part of states).

133. *See Conference of the Parties (COP)*, UNITED NATIONS CLIMATE CHANTE, https://unfccc.int/process/bodies/supreme-bodies/conference-of-the-parties-cop [https://perma.cc/E3PR-TAGS] (last visited Apr. 15, 2024).

134. *See generally, e.g.*, Daniel Bodansky, *The Paris Climate Change Agreement: A New Hope?*, 110 AM. J. INT'L L. 288 (2016) (describing the background and historical context that led to the Agreement and its overarching issues).

by 196 parties,[135] is a legally binding agreement that strives to limit global warming by keeping temperature rise to well below 2°C, and preferably only 1.5°C, compared to preindustrial levels.[136] It is not yet clear whether this framework is effective.[137] The Paris Agreement has been criticized as "a dangerous form of incrementalism" because it "repackages existing rules that have already proven inadequate."[138]

Recent attempts at international consensus can be found in the COP meetings in Glasgow, Scotland, and Sharm el-Sheikh, Egypt, in 2021 and 2022, respectively. The "Glasgow Climate Pact" focuses on work programs, agendas, and dialogue,[139] with some new provisions such as a call for countries to reduce the use of coal power and to avoid inefficient subsidies for fossil fuels.[140] More importantly, in the more recent Sharm el-Sheikh meeting, general drafts of decisions were released concerning "loss and damage" for vulnerable countries that are hit the hardest by climate disasters.[141] However, these decisions do not seem to have concrete content at the moment, so it remains unclear who needs to compensate whom and under what conditions. John Kerry, who currently serves as the United States Special Presidential Envoy for Climate, has already declared publicly that the United States would not accept an "imposed standard of liability" that

135. Joby Warrick & Chris Mooney, *196 Countries Approve Historic Climate Agreement*, WASH. POST (Dec. 12, 2015, 3:38 PM), https://www.washingtonpost.com/news/energy-environment/wp/2015/12/12/proposed-historic-climate-pact-nears-final-vote.

136. Raymond Clémençon, *The Two Sides of the Paris Climate Agreement: Dismal Failure or Historic Breakthrough?*, 25 J. ENV'T & DEV. 3, 9 (2016).

137. *See* Oran R. Young, *The Paris Agreement: Destined to Succeed or Doomed to Fail?*, 4 POL. & GOVERNANCE, no. 3, 2016, at 124, 131 (stating that while there is no basis for making firm predictions about such matters, "it would not be surprising if the Paris Agreement becomes another in a long list of failed attempts to come to terms with the problem of climate change"). *See generally* Francisco Estrada & W. J. Wouter Botzen, *Economic Impacts and Risks of Climate Change Under Failure and Success of the Paris Agreement*, ANNALS N.Y. ACAD. SCIS., Nov. 2021, at 95 (analyzing empirical evidence on the effect of the Paris Agreement); Noah M. Sachs, *The Paris Agreement in the 2020s: Breakdown or Breakup?*, 46 ECOLOGY L.Q. 865 (2019) (expressing concern regarding the effectiveness of the Paris Agreement).

138. Jen Iris Allan, *Dangerous Incrementalism of the Paris Agreement*, GLOB. ENV'T. POL., Feb. 2019, at 4, 4; *see also* Alice Larkin, Jaise Kuriakose, Maria Sharmina & Kevin Anderson, *What if Negative Emission Technologies Fail at Scale? Implications of the Paris Agreement for Big Emitting Nations*, 18 CLIMATE POL'Y 690, 691 (2018); Clémençon, *supra* note 136, at 9–11 (pointing at problems such as the lack of binding emission targets, lack of specifics regarding finances, and lack of change in the basic policy); Shelley Welton, *Neutralizing the Atmosphere*, 132 YALE L.J. 171, 173–177 (2022) (outlining several risks of the net-zero framework).

139. *See* Joanna Depledge, Miguel Saldivia & Cristina Peñasco, *Glass Half Full or Glass Half Empty?: The 2021 Glasgow Climate Conference*, 22 CLIMATE POL'Y 147, 149 (2022); Mitchell Lennan & Elisa Morgera, *The Glasgow Climate Conference (COP26)*, 37 INT'L J. MARINE & COASTAL L. 137, 138–40 (2022).

140. *See The Glasgow Climate Pact – Key Outcomes from COP26*, UNITED NATIONS CLIMATE CHANGE, https://unfccc.int/process-and-meetings/the-paris-agreement/the-glasgow-climate-pact-key-outcomes-from-cop26 [https://perma.cc/6JT2-EMYX] (last visited Apr. 15, 2024).

141. United Nations Framework Convention on Climate Change Decision, *Report of the Conference of the Parties on its Twenty-Seventh Session, Held in Sharm el-Sheikh from 6 to 20 November 2022, Sharm el-Sheikh Implementation Plan*, U.N. Doc. -/CP.27 (Nov. 20, 2022), https://unfccc.int/sites/default/files/resource/cp2022_L19_adv.pdf [https://perma.cc/FF5F-577H].

generates a legal duty to help countries vulnerable to climate change.[142] Furthermore, the "loss and damage fund" agreed upon in Sharm el-Sheikh could "take years to pay out."[143]

More broadly, this review illustrates the continuous inability to achieve consensus and an effective legal response to the climate crisis at the international level. Countries, even when coordinating under international law, struggle to give up the competitive advantage and short-term benefits of environmentally harmful policies.[144] Thus, the same difficulties that hinder regulation at the national level are also present at the international level.

A prime example of this dynamic can be found in Donald Trump's decision in 2017 to withdraw from the Paris Agreement[145] because it supposedly imposes unfair environmental standards on American businesses (a decision later overturned by President Biden, who rejoined the Agreement).[146] Trump's actions perfectly reflect the free-rider problem: environmental policies are costly at the country level, so there is insufficient incentive to adopt them. In other words, so long as pollution remains immensely profitable,[147] the failure of regulatory efforts to reduce it is unsurprising.

B. TORT LITIGATION

Faced with a dead end at the regulatory level, private citizens have been attempting to battle the climate crisis through the courts, using private litigation.[148] Turning to litigation is a sensible response to regulatory and political deadlock. When regulators fail to act, private individuals and organizations can call for legal action by approaching the courts. Even if most courts reject the claim, it is enough that some courts accept it to create significant pressure on relevant industry players. Thus, even if governmental consensus on environmental policies cannot be reached due to regulatory and legislative capture, litigation can provide a push in the right direction.

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142. Kelsey Warner, *John Kerry: US Will Not Accept 'Loss and Damage' Liability*, NAT'L NEWS: ROAD TO NET ZERO (Jan. 15, 2023), https://www.thenationalnews.com/climate/road-to-net-zero/2023/01/15/john-kerry-us-will-not-accept-a-bill-for-loss-and-damage [https://perma.cc/H2X3-Y466].

143. Elisabeth Mahase, *Climate Change: "Loss and Damage" Fund Payouts Could Take Decades, Scientists Warn*, BMJ, Dec. 21, 2022, at 1, 1.

144. For a similar argument in the context of global regulation of distributed ledger technology, see Sarel et al., *supra* note 94, at 435.

145. *See* Michael D. Shear, *Trump Will Withdraw U.S. from Paris Climate Agreement*, N.Y. TIMES (June 1, 2017), https://www.nytimes.com/2017/06/01/climate/trump-paris-climate-agreement.html.

146. *See* Press Release, Antony J. Blinken, Sec'y of State, The United States Officially Rejoins the Paris Agreement (Feb. 19, 2021), https://www.state.gov/the-united-states-officially-rejoins-the-paris-agreement/ [https://perma.cc/75DT-VFZD].

147. *See* Meredith, *supra* note 31.

148. David Markell & J.B. Ruhl, *An Empirical Assessment of Climate Change in the Courts: A New Jurisprudence or Business as Usual?*, 60 FLA. L. REV. 15, 27–28 (2012) (defining climate change litigation as "any piece of federal, state, tribal, or local administrative or judicial litigation in which the party filings or tribunal decisions directly and expressly raise an issue of fact or law regarding the substance or policy of climate change causes and impacts").

Litigation can also offer inroads when political deadlock hinders effective legal action at the international level. For instance, an American citizen can sue a foreign company (say a Chinese corporation) in an American court. If the foreign company operates in the United States or if its actions affect American nationals, a decision by the American court, based on American law, will be binding against the Chinese company as a matter of conflict of law rules, or private international law. This is true even if on the level of international treaty law, the American and Chinese governments cannot agree on desired levels of GHG emissions. Finding the correct doctrinal hook for climate litigation is therefore important to unlock the institutional advantages of this legal course of action.

Unfortunately, current litigatory attempts, focusing on tort law claims,[149] have largely proven unsuccessful. As Douglas Kysar observed more than a decade ago,

> [T]ort law seems fundamentally ill-equipped to address the causes and impacts of climate change: diffuse and disparate in origin, lagged and latticed in effect, anthropogenic greenhouse gas emissions represent the paradigmatic anti-tort, a collective action problem so pervasive and so complicated as to render at once both all of us and none of us responsible.[150]

In what follows, we demonstrate the difficulties in advancing climate litigation based on the four traditional elements of tort law: duty, breach, harm, and causation.[151] The purpose of this demonstration is not to provide a general review of the intersection of tort law and environmental litigation;[152] rather, it is intended to serve as background for our proposal in Part III, highlighting the structural advantages of unjust enrichment doctrine as a vessel for climate litigation.

1. Duty and Breach

As John Goldberg and Benjamin Zipursky rightly observe, tort law is not just the law of harms, but is more accurately understood as the "law of wrongs."[153] That is, a successful tort claim must demonstrate some wrongful conduct, or a breach of duty by the defendant, as defined under tort doctrine.[154]

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149. *See* Hunter & Salzman, *supra* note 10, at 1752 (noting the four doctrinal categories of tort liability used in climate litigation: negligence, products liability, private nuisance, and public nuisance); *see also* Farber, *supra* note 26, at 391.

150. Kysar, *supra* note 23, at 3–4.

151. *E.g.*, Goldberg & Zipursky, *supra* note 15, at 658.

152. For examples of studies that provide such a general review of tort law in climate litigation, see generally Hunter & Salzman, *supra* note 10 and Kysar, *supra* note 23.

153. Goldberg & Zipursky, *supra* note 13, at 918; *see* Scott Hershovitz, *Treating Wrongs as Wrongs: An Expressive Argument for Tort Law*, 10 J. TORT L. 405, 405 (2017).

154. In their recent book, Goldberg & Zipursky further clarify the relational nature of legal wrongs under their theory, depicting the unifying concept of all torts as a breach of a duty not to injure. *See* JOHN C. P. GOLDBERG & BENJAMIN C. ZIPURSKY, RECOGNIZING WRONGS 186–87 (2020). For an example of criticism of the definition of wrongdoing in terms of breach of "injury inclusive duty," see Maytal Gilboa, *Duty of Noninjury, Duty of Care, and Guidance Rules: A Comment on* Recognizing Wrongs, JERUSALEM REV. LEGAL STUD., June 2023, at 51, 55.

In the case of climate litigation, however, the conduct causing the harm is often not wrongful in the sense required under tort doctrine. Admittedly, in some instances, contribution to global warming can be characterized as a wrong, for example, if a producer violates environmental regulations or otherwise creates a "'substantial and unreasonable interference with public rights,' in violation of the federal common law of interstate nuisance, or, in the alternative, of state tort law."[155] Yet, this is not always the case, and climate change is also caused through activities entailing high levels of GHG emissions that do not necessarily violate existing regulatory standards. Thus, heavy reliance on fossil fuels, even to the degree currently legal, is known to be the chief cause of the crisis.[156] The centrality of the duty and breach requirements, therefore, make tort claims a relatively ineffective legal response to the climate crisis.

2. Harm

Tort law compensates for harms.[157] If no harm was caused, a tort remedy is unavailable.[158] This is a major challenge in the context of climate litigation, which is primarily concerned with *future* harms—that is, estimated harms that have not yet occurred and that may not occur at all.[159] Tort damages are meant to place the injured party "as nearly as possible in the condition he would have occupied if the wrong had not occurred."[160] This conceptual legal mechanism loses much of its internal coherence in cases in which the harms in question are primarily future harms.[161]

The recent litigation in the matter of *Conservation Law Foundation, Inc. v. Shell Oil Co.* demonstrates this incompatibility of compensatory damages to

155. Am. Elec. Power Co. v. Connecticut, 564 U.S. 410, 418 (2011).

156. *See, e.g.*, *Secretary-General's Video Message on the Launch of the World Meteorological Organization's State of the Global Climate 2021 Report*, UNITED NATIONS (May 18, 2022), https://www.un.org/sg/en/content/sg/statement/2022-05-18/secretary-generals-video-message-the-launch-of-the-world-meteorological-organization%E2%80%99s-state-of-the-global-climate-2021-report-scroll-down-for-languages [https://perma.cc/V7E9-VF69] (explaining that the problem of fossil fuel GHG emissions is not primarily related to violations of existing legal standards, but rather to the governmental policies that "still favour deadly fossil fuels"); *Landmark United in Science Report Informs Climate Action Summit*, IPCC (Sept. 22, 2019), https://www.ipcc.ch/2019/09/22/united-in-science-report-climate-summit/ [https://perma.cc/64GC-FUHH] ("Despite extraordinary growth in renewable fuels over the past decade, the global energy system is still dominated by fossil fuel sources.").

157. *See, e.g.*, CHARLES T. MCCORMICK, HANDBOOK ON THE LAW OF DAMAGES § 137 (1935).

158. *See id.*

159. *See* Pörtner et al., *supra* note 44, at 5 n.4 (noting that factual evaluations used to make the IPCC's key findings use the following terms "to indicate the assessed likelihood of an outcome or a result: virtually certain 99–100% probability, very likely 90–100%, likely 66–100%, as likely as not 33–66%, unlikely 0–33%, very unlikely 0–10%, exceptionally unlikely 0–1%").

160. MCCORMICK, *supra* note 157, § 137; *see also* ERNEST J. WEINRIB, CORRECTIVE JUSTICE 118 (2012) ("Because corrective justice views damages as undoing an injustice, it is particularly sensitive to the connection between the remedy that the plaintiff can claim and the injustice that is imputed to the defendant.").

161. The ability to claim damages for future harm is generally quite limited. *See, e.g.*, Kysar, *supra* note 23, at 42.

climate litigation.[162] This case was brought by an environmental group claiming that the defendant oil company did not protect its fuel terminals located in New Haven, Connecticut, from risks of climate change in violation of the Clean Water Act and the Resource Conservation and Recovery Act.[163] In the case, the federal court explicitly acknowledged the fundamental incompatibility of the remedy of compensatory damages with the types of claims brought before it, focusing on future harms.[164]

This incompatibility between the remedy of compensatory damages and the unique characteristics of climate litigation is not merely conceptual or theoretical but has immediate practical implications. First, future harms are difficult to prove. Once the plaintiff cannot show that future harm will indeed occur, the force of a harm-based claim is incredibly diminished. This is a tragic and paradoxical outcome. Scientific evidence shows that global warming is a major threat and horrifically harmful.[165] But these future harms are too abstract and insufficiently clear for tort doctrine, with its focus on harms and compensation. These conceptual difficulties alone may spell the failure of tort-based climate litigation.

Future harms are not only difficult to prove; they are also difficult to measure accurately. For instance, ample scientific evidence projects catastrophes resulting from expected heat waves, such as enhanced mortality rates of humans and animals, droughts, and tropical storms.[166] Yet, putting an exact dollar sum on such future harms, even if we can prove they will indeed occur, is nearly impossible. As the magnitude of the harm is impossible to determine, it is also impossible to offer a convincing measure for compensatory damages. Such difficulties in determining remedy measures are important. If damages are set too low, defendants receive a free pass for polluting, and the legal regime provides insufficient incentives to avoid high GHG emissions.

3. Causation

To establish a tort claim, it is not enough to show that the defendant acted wrongfully and that some harm occurred; it must also be shown that the harm is a but-for result of the defendant's actions, meaning a plaintiff is required to preponderantly prove that its harm would not have occurred absent the defendant's

162. 628 F. Supp. 3d 416 (D. Conn. 2022).

163. *Id.* at 426. The court denied the defendant's motion to dismiss and held that the plaintiffs met the thresholds of Article III and thus had constitutional standing. *See id.* at 436–37; *see also* McCrory v. Adm'r of the Fed. Emergency Mgmt. Agency of the U.S. DHS, 600 F. App'x 807, 808 (2d Cir. 2015) ("As a threshold inquiry, a federal court must determine that the plaintiff has constitutional Article III standing prior to determining . . . the subsequent merits of the case.").

164. *See Conservation L. Found., Inc.*, 628 F. Supp. 3d at 433 (noting that "in suits for damages plaintiffs cannot establish Article III standing by relying entirely on a statutory violation or risk of future harm" (quoting Maddox v. Bank of N.Y. Mellon Tr. Co., 19 F.4th 58, 64 (2d Cir. 2021))). However, the federal judge also distinguished between damages and civil penalties designed to "encourag[e] defendants to discontinue current violations and deter[] them from committing future ones." *Id.* at 435.

165. *See supra* Part I.

166. For scientific references regarding three prominent, interrelated future harms of climate change (temperature changes, sea level rise, and marine-species extinction), see *supra* Part I.

wrongdoing.[167] The nature of climate litigation makes it difficult for plaintiffs to overcome the tort requirements of causation.[168] It is difficult to attribute the future harms of global warming to specific defendants in terms of proving a causal link.[169]

Climate change is not a result of any single polluting activity, but rather a complex result of actions taken over years by multiple entities. Douglas Kysar points out the following difficulties: first, some climate events (such as hurricanes and droughts) do occur irrespective of climate change;[170] second, the "extraordinary numerosity of greenhouse gas emitters" might give rise to a tort defense of "consequentialist alibi" by showing that any polluter's emissions are so small in comparison to total emissions that the effect is negligible.[171]

To illustrate these difficulties, consider a recent case in which the city of Hoboken, New Jersey, filed a lawsuit against a group of oil and gas companies, led by Exxon Mobil Corp., demanding compensation for harms caused by sea

167. The causation requirement, typically operated via the but-for test, significantly limits tort liability. The but-for test also introduces significant analytical and doctrinal difficulties. For discussion of some of these difficulties, see Wright, *supra* note 19, at 1775–77 and Maytal Gilboa, *Multiple Reasonable Behaviors Cases: The Problem of Causal Underdetermination in Tort Law*, 25 LEGAL THEORY 77, 85–89 (2019). Courts and scholars alike have attempted to grapple with the limitations of the but-for test. A classic example of such an attempt is *Sindell v. Abbott Laboratories*. 607 P.2d 924 (Cal. 1980); *see also* ARIEL PORAT & ALEX STEIN, TORT LIABILITY UNDER UNCERTAINTY 58 (2001). Diethylstilbesterol (DES) was a drug prescribed to pregnant women between 1941 and 1971 to prevent miscarriages and was manufactured by multiple companies. *Sindell*, 607 P.2d at 925. Many of the daughters of DES users were later diagnosed with uterine cancer, but none of them could prove which particular manufacturer had sold her mother the drug. *See id.* at 925 & n.1. The Supreme Court of California famously resolved this problem of causation by applying what has since become known as the "market share liability doctrine," which imposed tort liability on manufacturers according to their respective shares in the DES drug market due to improper testing and failure to address known cancer risks. *See id.* at 937; PORAT & STEIN, *supra*, at 61–62, 61 n.14; *see also id.* at 185–93 (discussing the problem of unidentifiable wrongdoers, and offering to shift the costs of uncertainty to the wrongdoer by applying what they term "the evidential damage doctrine"—to impose liability on the each manufacturer precisely for causing the uncertainty).

168. Melissa Farris, *Compensating Climate Change Victims: The Climate Compensation Fund as an Alternative to Tort Litigation*, SEA GRANT L. & POL'Y J., Winter 2009/2010, at 49, 53 ("Even if courts are willing to grant standing to climate-injured plaintiffs, proving causation and establishing damages will remain significant obstacles.").

169. For a discussion of why causation is difficult to establish in climate litigation, see, for example, Martin Spitzer & Bernhard Burtscher, *Liability for Climate Change: Cases, Challenges and Concepts*, 8 J. EUR. TORT L. 137, 167–74 (2017).

170. *See* Kysar, *supra* note 23, at 31 ("[M]ost climate-related harms—such as those resulting from hurricanes, heat waves, droughts, seasonal allergies, pest invasions, or disease infections—already have a nontrivial background rate of occurrence, separate and apart from anthropogenic global warming.").

171. *Id.* at 35 ("A second causation challenge facing plaintiffs has to do with the extraordinary numerosity of greenhouse gas emitters . . . . [T]his numerosity spells trouble for the establishment of duty. It also has profound implications for causation, as any individual defendant can quite plausibly offer the 'consequentialist alibi' that its emissions are simply too small of a share of global emissions to cause a discernible difference."). This "act of god defense" simply reflects the general rule that "an actor's liability is limited to those harms that result from the risks that made the actor's conduct tortious." RESTATEMENT (THIRD) OF TORTS: LIABILITY FOR PHYSICAL AND EMOTIONAL HARM § 34 (AM. L. INST. 2010).

level rise.[172] In its decision, the New Jersey district court stated that "[a]lthough it is more than plausible that fossil fuels . . . led to the effects of global warming that Hoboken is now facing, this does not amount to but-for causation."[173] This statement shows that not much has changed in the way courts approach the difficulties in establishing the requirement of causation in climate litigation, as there exist "daunting evidentiary problems for anyone who undertakes to prove . . . the degree to which the actions of any individual oil company, any individual chemical company, or the collective action of these corporations contribute, through the emission of greenhouse gasses, to global warming."[174] The problem that these statements address is straightforward. Even if all scientists generally agree that GHG emissions cause global warming in the long run, it is very difficult to identify the amount that each specific emitter contributes to, for example, the global processes of melting glaciers and resulting sea level rise.[175] This is especially true given that many of these massive losses are expected to materialize in the far future. Tort doctrine and compensatory damages, with their strong emphasis on harms, cannot overlook these difficulties and therefore fail to provide a remedy when the causal link to a concrete harm cannot be established. Proposals for more relaxed theories of causation[176] have not been accepted in climate litigation and are largely considered controversial by tort scholars.[177]

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172. City of Hoboken v. Exxon Mobil Corp., 558 F. Supp. 3d 191, 196 (D.N.J. 2021). Climate change litigation for compensatory damages often faces procedural and jurisdictional hurdles. *See* Sean Lyness, *Tangled Up in Procedure: The State and Local Climate Cases After* Baltimore *and* Ford, HARV. ENV'T L. REV. ONLINE, Oct. 8, 2021, at 2–4, https://journals.law.harvard.edu/elr/wp-content/uploads/sites/79/2021/10/46_Online_Lyness.pdf [https://perma.cc/5KG3-V6HK]. These hurdles may derive, for example, from alleged ambiguity as to whether the pleaded climate litigation falls under federal or state jurisdiction or whether the claim is preempted by Congress. *See* Jonathan H. Adler, *Displacement and Preemption of Climate Nuisance Claims*, 17 J.L. ECON. & POL'Y 217, 223 (2022) (suggesting that "state-law based climate nuisance claims should not be preempted, even if federal common law actions should be displaced"); Natalie Poirier, *Wishing to Be Part of that Court: How the Supreme Court's Decision in* BP P.L.C. v. Mayor of Baltimore *Lets Energy Companies Wander Free and Drown the Shore up Above*, 33 VILL. ENV'T L.J. 221, 221–22 (2022) ("A longstanding question exists regarding whether federal or state court is the proper venue for climate change litigation. Arguments on either side generally proceed as follows: proponents of cases being in federal court believe climate change is an inherently federal issue, whereas those favoring review in state court argue state court is the more appropriate venue to recover monetary damages." (footnote omitted)); *see also* Austin, *supra* note 105, at 8 (noting that the Supreme Court has not addressed whether federal law preempts state law tort claims against fossil fuel corporations). The concern is that procedural wrangling has become a smokescreen that prevents the substantive law from developing. In this Article, we focus on the substantive law.

173. *City of Hoboken*, 558 F. Supp. 3d at 206.

174. Comer v. Nationwide Mut. Ins. Co., No. 05 CV 436, 2006 WL 1066645, at *4 (S.D. Miss. Feb. 23, 2006).

175. For a description of these effects and the likelihood of their occurrence, see *supra* Section I.B.

176. Over the years, scholars have suggested to contend with the lack of conclusive scientific evidence of causation and general factual uncertainty, placing an impossible burden on plaintiffs, through the adoption of special rules. For a review of such rules, see Heidi Li Feldman, *Science and Uncertainty in Mass Exposure Litigation*, 74 TEX. L. REV. 1, 45 (1995) (proposing that if plaintiffs can demonstrate strong uncertainty regarding causation, the burden of proof should be shifted to the defendants or plaintiffs should be awarded proportional recovery) and PORAT & STEIN, *supra* note 167, at 186–93 (discussing the evidential damage doctrine in the context of unidentifiable wrongdoers). *See generally* SANDY STEEL, PROOF OF CAUSATION IN TORT LAW 139–369 (2015) (examining the departure from the "general proof of causation rules").

177. *See* RESTATEMENT (THIRD) OF TORTS: LIABILITY FOR PHYSICAL AND EMOTIONAL HARM § 26 cmt. j (AM. L. INST. 2010) (describing the controversy surrounding the use of the substantial factor

Against this backdrop, it is unsurprising that courts have been reluctant to accept climate litigation claims based in tort law, at times even considering climate change as lying outside the scope of adjudication given its complexity.[178] Note that these difficulties are not only applicable for negligence, but also for strict liability, which also requires proof of causation and harm.[179]

III. FROM TORT TO UNJUST ENRICHMENT

This Part explores the use of unjust enrichment doctrine as a basis for climate litigation. In this Part, we focus on introducing only the core concept of climate enrichment; further doctrinal details, including remedy measures, are introduced in Part IV. This Part is divided into two Sections. The first offers a general overview of the elements of a claim of unjust enrichment. The second Section then explains why these elements might fit the structure of climate litigation claims. We also explain the outer boundaries of liability in unjust enrichment to avoid overly broad application of the doctrine.

A. THE LAW OF UNJUST ENRICHMENT

A person unjustly enriched at the expense of another must make restitution of any undeserved benefits.[180] Subject to some interjurisdictional variation,[181] this is

doctrine to resolve causal difficulties, and noting that the doctrine "has proved confusing and been misused"); Kysar, *supra* note 23, at 29–41 (discussing the difficulty of effectively establishing causation in the context of climate litigation, despite the existence of more flexible doctrines of causation).

178. *See* Dubats, *supra* note 9, at 520, 525.

179. *See* Steven Shavell, *Strict Liability Versus Negligence*, 9 J. LEGAL STUD. 1, 1–6 (1980).

180. RESTATEMENT (THIRD) OF RESTITUTION AND UNJUST ENRICHMENT § 1 (AM. L. INST. 2011) ("A person who is unjustly enriched at the expense of another is subject to liability in restitution."); *see* FARNSWORTH, *supra* note 27, at 1–2; PETER BIRKS, UNJUST ENRICHMENT 39–40 (2d ed. 2005) (stating that an additional element to consider is the lack of applicability of defenses, which may limit or outright deny a claim of unjust enrichment).

181. For example, in New York, a claim of unjust enrichment includes the following elements: "(1) the defendant was enriched; (2) the enrichment was at plaintiff's expense; and (3) the circumstances were such that equity and good conscience require defendant to make restitution." Grund v. Del. Charter Guarantee & Tr. Co., 788 F. Supp. 2d 226, 251 (S.D.N.Y. 2011); *see also* Citibank, N.A. v. Brigade Cap. Mgmt., LP, 49 F.4th 42, 76 (2d Cir. 2022) ("The principle that a party who pays money, under a mistake of fact, to one who is not entitled to it should, in equity and good conscience, be permitted to recover it back . . . rests 'upon the equitable principle that a person shall not be allowed to enrich himself unjustly at the expense of another.'" (quoting Mfrs. Hanover Tr. Co. v. Chem. Bank, 559 N.Y.S.2d 704, 707 (App. Div. 1990))). In Ohio, a claim of unjust enrichment requires "facts satisfying the following elements: '(1) a benefit conferred by a plaintiff upon a defendant; (2) knowledge by the defendant of the benefit; and (3) retention of the benefit by the defendant under circumstances where it would be unjust to do so without payment.'" Hobart Corp. v. Waste Mgmt. of Ohio, Inc., 758 F.3d 757, 776 (6th Cir. 2014) (quoting Johnson v. Microsoft Corp., 834 N.E.2d 791, 799 (Ohio 2005)). In Massachusetts, restitution is defined as "an equitable remedy by which a person who has been unjustly enriched at the expense of another is required to repay the injured party." Keller v. O'Brien, 683 N.E.2d 1026, 1029 (Mass. 1997). In North Carolina, "[u]nder a claim for unjust enrichment, a plaintiff must establish . . . (1) a measurable benefit was conferred on the defendant, (2) the defendant consciously accepted that benefit, and (3) the benefit was not conferred officiously or gratuitously." Primerica Life Ins. Co. v. James Massengill & Sons Constr. Co., 712 S.E.2d 670, 677 (N.C. Ct. App. 2011). In Pennsylvania, "[w]here one party has been unjustly enriched at the expense of another, he is required to make restitution to the other. In order to recover, there must be both (1) an enrichment, and (2) an injustice resulting if recovery for the

the general maxim of the law of unjust enrichment, at times also referred to as the law of restitution.[182] This maxim is typically divided into three key elements: (1) the defendant's benefit or enrichment, (2) the key normative requirement of the *injustice* of that enrichment, and (3) the fact that the enrichment is at the expense of another.[183]

The legal categories associated with the law of unjust enrichment allow for some degree of judicial discretion, as this area of law is often considered a flexible residual category,[184] meant to provide equitable solutions where more established legal categories run out.[185] In particular, there is some flexibility in the factors that can render the defendant's enrichment "unjust" in different situations.[186] This flexibility makes the law of unjust enrichment a promising avenue for climate litigation, as we discuss below.[187]

In preparation for this argument, we first introduce the two central lanes through which a plaintiff can establish a claim of unjust enrichment. One requires the plaintiff to show that the defendant obtained their benefit through committing a wrong, while the other does not include such a requirement. Through this analytical juxtaposition, we further explain the different doctrinal elements of an unjust enrichment claim.

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enrichment is denied." Ira G. Steffy & Son, Inc. v. Citizens Bank of Pa., 7 A.3d 278, 283 (Pa. Super. Ct. 2010) (quoting Meehan v. Cheltenham Twp., 189 A.2d 593, 595 (Pa. 1963)).

182. For the conceptualization of restitution as "merely a description of the end result, not a reference to the basis of liability," see Kull, *supra* note 29, at 1219. *See also* Maytal Gilboa, *Linking Gains to Wrongs*, 35 CAN. J.L. & JURIS. 365, 365 (2022) (noting that throughout the common law, a debate has developed as to whether the terms restitution or unjust enrichment are limited to cases referring to the reversal of unjustified transfers between parties or rather encompass all types of cases in which the remedial obligation is based on the defendant's gain rather than on the plaintiff's loss); Francesco Giglio, *Gain-Related Recovery*, 28 OXFORD J. LEGAL STUD. 501, 501 (2008) (considering the two propositions of gain-related recovery—the first describes restitution as a legal response of giving back, and the second as a mechanism of taking away the defendant's benefit without a reference to the purpose of the award—and maintaining that the right to restitution, as applied in court, "transfers to the claimant wealth up to the level of the defendant's benefit").

183. The second unjust criterion is considered by contemporary scholars as unclear and a source of confusion. *See, e.g.*, Sherwin, *supra* note 37, at 1452 ("Most of the established grounds for restitution against defendants who are not wrongdoers can be explained by reading the term 'unjust enrichment' to mean enrichment that lacks legal justification, without reference to injustice in a purely moral sense."); Mark P. Gergen, *What Renders Enrichment Unjust?*, 79 TEX. L. REV. 1927, 1947 (2001) ("A strong objection to defining a precept of law in such broad terms is that it does almost no normative work. Too much is left to be done to distinguish meritorious claims from unmeritorious ones. Another way of putting this objection is that a broad precept of enrichment by impoverishment puts too many dispositions of wealth into question."); *cf.* Maytal Gilboa & Yotam Kaplan, *The* Other Hand *Formula*, 26 LEWIS & CLARK L. REV. 883, 892 (2022) (proposing "a simple mathematical criterion explaining the requirement for the injustice of the defendant's gain").

184. *See* Emily Sherwin, *Restitution and Equity: An Analysis of the Principle of Unjust Enrichment*, 79 TEX. L. REV. 2083, 2106–08 (2001) (noting the multiplicity of legal categories cohabiting under the broad title of "unjust enrichment"); CHARLIE WEBB, REASON AND RESTITUTION: A THEORY OF UNJUST ENRICHMENT 34 (2016) ("The starting point for accounts of the law of unjust enrichment was the observation that there existed a collection of cases and doctrines, traditionally scattered over a range of categories and falling under a variety of headings, which imposed liability which was . . . gain-based.").

185. *See* Sherwin, *supra* note 184, at 2107; Peter Jaffey, *Classification and Unjust Enrichment*, 67 MOD. L. REV. 1012, 1020 n.40 (2004) (referring to mistaken payments, a core category of unjust enrichment, as "tertium quid" since these cases neither encompass claims in contract nor tort).

186. *See infra* Section III.A.2.

187. *See infra* Section III.B.

1. Unjust Enrichment Through a Wrong

In some restitutionary claims, the doctrinal requirement of the "injustice" of the defendant's enrichment can be satisfied by the finding that this enrichment was obtained through the defendant's crime or wrong[188]—for example, securities fraud;[189] patent[190] or copyright infringements;[191] and, under certain conditions, opportunistic breach of contract.[192] This makes intuitive sense. After all, if a benefit is obtained through a civil wrong or a crime, it would seem bizarre to consider such a benefit justly obtained. The role of unjust enrichment doctrine in such cases is primarily remedial. Thus, other areas of law inform us that the defendant is a wrongdoer (or a criminal), and the law of unjust enrichment simply introduces an additional remedy. This type of restitutionary remedy, often termed "disgorgement of profit," is designed to strip the wrongdoer of any gains obtained through the wrong in order to remove perverse incentives and ensure that wrongdoing and crime are not profitable endeavors.[193]

188. *See* RESTATEMENT (THIRD) OF RESTITUTION AND UNJUST ENRICHMENT § 51(4) (AM. L. INST. 2011) (defining disgorgement as a restitution remedy of eliminating the profit attributable to the defendant's misconduct). Note that a civil wrong, such as copyright infringement or a breach of contract, is not usually a crime punishable by the criminal law system. Rather, it gives rise to civil liability through litigation.

189. Liu v. SEC, 140 S. Ct. 1936, 1940 (2020) (holding that the Securities and Exchange Commission may pursue disgorgement of illegally obtained profits as an equitable remedy in civil cases); Cameron K. Hood, Note, *Finding the Boundaries of Equitable Disgorgement*, 75 VAND. L. REV. 1307, 1309 (2022) (exploring the boundaries of the *Liu* ruling, and suggesting limiting disgorgement in accordance with "its equitable boundary").

190. *See* 35 U.S.C. §§ 283–284, 289 (2018) (enabling courts in design patent infringement cases to issue injunctions and award either a disgorgement of the infringer's profits or the patentee's loss of profits, but not both). For a critical review of the disgorgement remedy in design patent law, see Pamela Samuelson & Mark Gergen, *The Disgorgement Remedy of Design Patent Law*, 108 CALIF. L. REV. 183, 185–86 (2020) (discussing the jury verdict in the matter of *Samsung Electronics Co. v. Apple Inc.*, No. 11-CV-01846 (N.D. Cal. 2018), which awarded Apple $533 million in disgorged profits for infringement of Apple's design patents, and arguing that this verdict is inconsistent with the normative goal that underlies the disgorgement remedy).

191. Petrella v. Metro–Goldwyn–Mayer, Inc., 572 U.S. 663, 686–87 (2014) (considering disgorgement as an equitable remedy for copyright infringement, which thus enables courts to consider not only the defendant's but also the plaintiff's misconduct when determining the appropriate award). For a thorough study of disgorgement in intellectual property cases, see generally Pamela Samuelson, John M. Golden & Mark P. Gergen, *Recalibrating the Disgorgement Remedy in Intellectual Property Cases*, 100 B.U. L. REV. 1999 (2020).

192. *See* RESTATEMENT (THIRD) OF RESTITUTION AND UNJUST ENRICHMENT § 39 (AM. L. INST. 2011) ("(1) If a deliberate breach of contract results in profit to the defaulting promisor and the available damage remedy affords inadequate protection to the promisee's contractual entitlement, the promise has a claim to restitution of the profit realized by the promisor as a result of the breach. . . . (2) A case in which damages afford inadequate protection to the promisee's contractual entitlement is ordinarily one in which damages will not permit the promisee to acquire a full equivalent to the promised performance in a substitute transaction. (3) Breach of contract is profitable when it results in gains to the defendant . . . greater than the defendant would have realized from performance of the contract.").

193. *See id.* at § 51 cmt. a ("The principal focus of § 51 is on cases in which unjust enrichment is measured by the defendant's profits, where the object of restitution is to strip the defendant of a wrongful gain.").

A paradigmatic example of enrichment through a wrong comes from the infamous *Riggs v. Palmer* case, which incorporates both criminal and private law aspects.[194] *Riggs v. Palmer* is an all-time classic, fundamental to any study of unjust enrichment law and theory. The defendant in this case, Elmer Palmer, was to receive the bulk of his grandfather's estate.[195] Elmer feared his grandfather might change his will, and decided to poison him preemptively.[196] After he was caught and prosecuted, Elmer was facing prison time,[197] but state law still permitted Elmer to inherit his grandfather's estate.[198] Following a civil lawsuit, the New York Court of Appeals saw this outcome as offensively unjust and "an offense against public policy."[199] The court therefore decided that Elmer's share of the estate constituted unjust enrichment and must be given to his two aunts, the plaintiffs in the case.[200] Primarily, this outcome was deemed necessary to prevent Elmer from benefiting from his crime.[201] *Riggs* is illustrative of a core principle in the law of unjust enrichment, according to which a person cannot be allowed to retain gains obtained through their wrongdoing.[202]

In *Riggs*, both the defendant's enrichment and its injustice are easy enough to show, as the defendant benefited through a horrific crime. The doctrinal element of the enrichment being at the expense of the plaintiff merits further attention. Thus, in this case, there was no clear showing of harm to the plaintiffs (the defendant's aunts), or of a causal link between any harm and the wrong, as would be required in a tort claim.[203] The reason for this is that there was no proof in this case that but for Elmer's crime, his aunts would actually have inherited the estate: it was not proven the will would have been changed but for the murder, and in what way.[204] In this sense, the court considered the defendant's enrichment to be "at the expense" of the plaintiff, but not because the benefit correlated with some identifiable loss to the plaintiff. Rather, Elmer's enrichment in this case was considered to be at the expense of his aunts since his abhorrent actions violated their rights or were *wrongful* towards them (even if not directly *harmful* in the monetary sense).[205] In actuality, the plaintiffs in *Riggs* serve as "an imputed beneficiary"

194. 22 N.E. 188 (N.Y. 1889).
195. *Id.* at 188–89.
196. *Id.* at 189.
197. *Id.* at 191 (Gray, J., dissenting).
198. *Id.* at 189–90 (majority opinion).
199. *Id.* at 190.
200. *Id.* at 188, 191.
201. *Id.* at 190–91.
202. *See id.*
203. Harm and causation are two central elements of tort law. *See* RESTATEMENT (THIRD) OF TORTS: LIABILITY FOR PHYSICAL AND EMOTIONAL HARM § 28 cmt. a (AM. L. INST. 2010) ("Consistent with the burden of proof in civil actions, plaintiff must demonstrate by a preponderance of the evidence that a defendant's tortious conduct was a factual cause of harm."); *see also, e.g.*, Goldberg & Zipursky, *supra* note 15, at 658; Gilboa, *supra* note 167, at 77–78.
204. *See Riggs*, 22 N.E. at 192 (Gray, J., dissenting).
205. *See id.* at 191 (majority opinion).

who are allowed to bring forth a claim for unjust enrichment.[206] The court allowed the aunt's monetary recovery in order to achieve the public policy goal of stripping the defendant of the profits obtained through his crime.[207] The "imputed" plaintiff in such cases is allowed access to the court not because they were directly harmed, but because they are the closest private actor to the wrong that was committed.[208] Such plaintiffs are allowed to recover from the wrongdoer and are entrusted with the task of pursuing a sanction against the wrongdoer through civil liability in unjust enrichment.[209] This is meant to achieve the goal of ensuring that wrongdoing is not profitable.

This important point can be further illustrated through another case, *Olwell v. Nye & Nissen Co*.[210] Compared to *Riggs*, *Olwell* offers a mundane set of facts but is nevertheless an unjust enrichment classic. In this case, the defendant took machinery belonging to the plaintiff out of storage and used it in its manufacturing process.[211] The defendant argued that even if it was indeed enriched, and even if this enrichment was unjust and wrongful (as it was derived from the knowingly unauthorized use of another's asset), it was not at the expense of the plaintiff.[212] The reason for this was that the plaintiff kept the machine in storage, had not used it for years, and had no use for it or intention to use it.[213] Therefore, the defendant reasoned that the plaintiff suffered no harm, and the defendant's enrichment was not at its expense. The court rejected this claim, explaining that the defendant's enrichment must be considered at the plaintiff's expense even absent a specific monetary harm to the plaintiff, simply because it came through the defendant's wrong, which was directed at the plaintiff and was in violation of the plaintiff's rights.[214]

More broadly, both *Riggs* and *Olwell* illustrate a general principle, according to which enrichment can be considered "at the expense" of the plaintiff even absent a clear showing of monetary or physical harm to the plaintiff when it can be shown that the enrichment was derived through a wrong directed at the plaintiff and that violated the plaintiff's rights.[215] This fundamental doctrinal structure

206. *See* Nili Cohen, *The Slayer Rule*, 92 B.U. L. REV. 793, 806 (2012) ("In the past the issue was dealt with by public law, and the state was the beneficiary. The current rule located in private law searches for a close enough substitute, an imputed beneficiary, in the private sphere." (footnote omitted)).

207. *See Riggs*, 22 N.E. at 191.

208. *See* Cohen, *supra* note 206, at 798.

209. *See id*.

210. 173 P.2d 652 (Wash. 1946).

211. *Id*. at 652–53.

212. *Id*. at 653–54.

213. *Id*. ("It is argued by appellant that since the machine was put into storage by respondent, who had no present use for it, and for a period of almost three years did not know that appellant was operating it and since it was not injured by its operation and the appellant never adversely claimed any title to it, nor contested respondent's right of repossession upon the latter's discovery of the wrongful operation, that the respondent was not damaged because he is as well off as if the machine had not been used by appellant.").

214. *See id*. at 654.

215. *See* Daniel Friedmann, *Restitution of Benefits Obtained Through the Appropriation of Property or the Commission of a Wrong*, 80 COLUM. L. REV. 504, 548–49, 551 (1980).

will prove crucial below when we turn to discuss climate enrichment and the use of unjust enrichment doctrine as a basis for climate litigation.

2. Unjust Enrichment Without a Wrong

The defendant's enrichment can be considered unjust for a wide variety of factors[216] and not necessarily owing to the defendant's wrongdoing.[217] Thus, a payment made by mistake is typically considered unjust enrichment,[218] and the recipient of such payment is under a duty to return it to the payer,[219] subject to some defense rules.[220] This is the case even if the mistake was caused by the negligence of the payer and through no fault of the recipient.[221] Liability in such cases does not signify any wrongful conduct by the recipient, but simply the fact they received a benefit they had no right to receive.[222] Note that in such a case, the requirement for the enrichment being "at the expense" of the plaintiff is simply satisfied by the fact the defendant's gain correlates to the plaintiff's loss—the payment.[223] Thus, the "at the expense" requirement *can* be satisfied by the fact that the enrichment comes from the plaintiff's loss; yet, as explained above, it can also be satisfied in other ways.[224]

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216. *See* Peter Birks, *Unjust Enrichment and Wrongful Enrichment*, 79 TEX. L. REV. 1767, 1791–92 (2001) (discussing and illustrating the notion of an "unjust factor"); Sherwin, *supra* note 184, at 2106–08 (noting the multiplicity of legal categories cohabiting under the broad title of "unjust enrichment").

217. DAGAN, *supra* note 32, at 3–4 (distinguishing cases where "the defendant is passive, and the plaintiff herself confers the benefit upon him (due to altruistic motives, in order to serve her self-interest, or simply by mistake)" from cases where the enriched party is an invader, who "appropriates, i.e., takes or acquires in order to use or exploit [the plaintiff's] interest without [her] consent" (emphasis omitted)).

218. BIRKS, *supra* note 180, at 3.

219. *See* RESTATEMENT (THIRD) OF RESTITUTION AND UNJUST ENRICHMENT § 57 (AM. L. INST. 2011); HANOCH DAGAN, THE LAW AND ETHICS OF RESTITUTION 11, 40 (2004); Andrew Burrows, *Restitution of Mistaken Enrichments*, 92 B.U. L. REV. 767, 767 (2012); *see also* BIRKS, *supra* note 180, at 3 (highlighting that mistaken payments give rise to a "right of restitution").

220. For example, the doctrine of change of position is one central defense in such cases. This doctrine is used to limit restitution when the recipient of a mistaken payment relied on the mistaken payment in good faith, so that returning it to the payer would cause her loss. *See* RESTATEMENT (THIRD) OF RESTITUTION AND UNJUST ENRICHMENT § 65 cmt. a, d (AM. L. INST. 2011). The doctrine of discharge for value, on the other hand, exempts the recipient of a mistaken payment from restitution, even if there is no proof of detrimental reliance, when two conditions are met: first, the transfer of payment was made as payment of an existing debt, and second, the recipient had no notice of the mistake. *See, e.g.*, Banque Worms v. BankAmerica Int'l, 570 N.E.2d 189, 192 (N.Y. 1991) (citing RESTATEMENT (FIRST) OF RESTITUTION § 14(1) (AM. L. INST. 1937)); RESTATEMENT (THIRD) OF RESTITUTION AND UNJUST ENRICHMENT § 67 cmt. a (AM. L. INST. 2011). For a review of the discharge for value doctrine, see Andrew Kull, *Defenses to Restitution: The Bona Fide Creditor*, 81 B.U. L. REV. 919, 928–29 (2001) and Maytal Gilboa & Yotam Kaplan, *The Costs of Mistakes*, 122 COLUM. L. REV. F. 61, 77–78 (2022). *See also* Citibank, N.A. v. Brigade Cap. Mgmt., LP, 49 F.4th 42, 85–87 (2d Cir. 2022) (Park, J., concurring in judgment) (delineating the doctrine's boundaries in the case where plaintiffs did not rely on the sum transferred by mistake).

221. *See, e.g.*, RESTATEMENT (THIRD) OF RESTITUTION AND UNJUST ENRICHMENT § 6 cmt. a (AM. L. INST. 2011) ("As in other cases of benefit conferred by mistake, the fact that the claimant may have acted negligently in making a mistaken payment is normally irrelevant to the analysis of the claim.").

222. *See id.*

223. *See id.* § 2 cmt. a ("[T]he receipt of a benefit at the expense of the claimant is a necessary but not a sufficient condition of liability in restitution.")

224. *See supra* Section III.A.1.

The case of emergency medical services is another similar example and a core category of liability in unjust enrichment. A patient can be considered unjustly enriched if they received life-saving treatment while unconscious in an emergency for which they did not pay. The seminal case of *Cotnam v. Wisdom* demonstrates this rule.[225] In this classic case, two physicians provided medical aid (surgery) to an unconscious person thrown out of a streetcar without receiving payment for the service they provided.[226] The Supreme Court of Arkansas awarded restitution.[227] The ruling in *Cotnam* has been reaffirmed and has become the general rule when physicians provide emergency services to unconscious patients.[228] In such cases, restitution is available without any type of wrongdoing by the defendant, simply because the defendant was enriched, at the expense of the plaintiff, with no justification.

In other types of cases, a defendant might be considered unjustly enriched if they derived benefits from a valid court decision, such as a preliminary injunction,[229] that was later reversed.[230] Again, even if the enrichment is not obtained through a wrong and is not in this sense unlawful, the principles of the law of unjust enrichment require the restitution of such benefits.

225. 104 S.W. 164 (Ark. 1907) (holding that the act of physicians providing medical services to unconscious patients constitutes unjust enrichment).

226. *Id.* at 165.

227. *Id.* at 167.

228. *See, e.g.*, K.A.L. v. S. Med. Bus. Servs., 854 So. 2d 106, 107–08 (Ala. Civ. App. 2003) (holding that a hospital was entitled to restitution for reasonable costs after saving the life of an unconscious patient brought to the hospital after a failed suicide attempt); *In re* Est. of Boyd, 8 P.3d 664, 666, 669 (Idaho Ct. App. 2000) (granting restitution to hospital after a patient was admitted by his wife and stepson, but patient's son refused to pay medical bills after patient died); *In re* Est. of Crisan, 107 N. W.2d 907, 908 (Mich. 1961) (reaffirming the general restitutionary rule that, in emergency cases where the patient is unable to express a medical need, consent is not required to establish a duty to pay). It should be noted that in nonemergency situations, if the service provider neglects to secure the patient's consent to pay for medical service, they might be considered to have volunteered the medical services free of charge. In such a case, restitution will be denied. *See* RESTATEMENT (THIRD) OF RESTITUTION AND UNJUST ENRICHMENT § 2(3) (AM. L. INST. 2011) ("There is no liability in restitution for an unrequested benefit voluntarily conferred, unless the circumstances of the transaction justify the claimant's intervention in the absence of contract.").

229. *See* Dass v. Tosco Corp., 280 F. App'x 571, 571 (9th Cir. 2008) (affirming the district court's summary judgment, and awarding Tosco Corporation damages in the amount that it could have reasonably made had it not been compelled otherwise by a wrongful injunction that was later revoked).

230. *See, e.g.*, Laycock, *supra* note 29, at 1284 (noting that a defendant may be unjustly enriched even without having committed a civil wrong "by compliance with a judicial order later modified"); *see also* Ofer Grosskopf & Barak Medina, *Remedies for Wrongfully-Issued Preliminary Injunctions: The Case for Disgorgement of Profits*, 32 SEATTLE U. L. REV. 903, 912 (2009); Douglas Lichtman, *Irreparable Benefits*, 116 YALE L.J. 1284, 1286 (2007) (arguing that when deciding whether to issue preliminary injunctions, courts should consider the possibility that the plaintiff will obtain "irreparable benefits" as a result of a wrongfully issued preliminary injunction).

In all of these cases, enrichment is unjust simply because the defendant enjoyed a benefit that did not belong to them and not because the defendant's conduct was in some way wrongful or illegal.[231] Thus, in the mistaken payment scenario, the recipient's enrichment is unjust because the mistaken payer had no intention to make a payment.[232] In the case of emergency medical services, the patient is unjustly enriched because they enjoyed a windfall;[233] the recipient of a preliminary injunction that was later reversed is considered unjustly enriched for the benefits "obtained at the expense of the defendant as a result of the wrongfully-issued preliminary injunction."[234]

In conclusion of this very brief review, unjust enrichment doctrine offers two key doctrinal advantages that are worth exploring in the context of climate litigation. First, when enrichment is obtained through a wrong, liability may be available even when harm cannot be clearly attributed to specific actions (as would be required under tort doctrine). Plaintiffs can bring claims even if they cannot show they suffered a direct and clear harm, as long as they can show they are, in some other way, the targets of the defendant's wrongful conduct. Second, liability in unjust enrichment can be available also absent a wrong (which is, again, not the case in tort law) when a defendant enjoyed a benefit not properly owed to them.

B. CLIMATE ENRICHMENT

This Section outlines the use of unjust enrichment as a doctrinal basis for climate litigation. The motivation for this move is simple: while the harms of climate change are future abstract harms, profits exist in the here and now.[235] These profits are easier to identify and measure and can serve as the basis for a claim of unjust enrichment. It is crucial to have such profits taken away. As long as global warming remains profitable for strong commercial actors,[236] we can expect it to persist (and even escalate). Therefore, to offer effective legal solutions, we must develop the legal tools to ensure that global warming does not remain profitable.

In what follows, we develop the concept of climate enrichment in the two charters of liability described above: unjust enrichment through a wrong and unjust enrichment without a wrong. In discussing each of the two categories, we further detail the operation of the three key elements of unjust enrichment doctrine in the context of climate litigation.

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231. RESTATEMENT (THIRD) OF RESTITUTION AND UNJUST ENRICHMENT § 1 cmt. a (AM. L. INST. 2011) (noting the flexibility of the requirement for the "unjust" enrichment of the defendant); *see* Gergen, *supra* note 183, at 1947; Lionel Smith, *Restitution: A New Start?*, *in* THE IMPACT OF EQUITY AND RESTITUTION IN COMMERCE 91, 95, 101 (Peter Devonshire & Rohan Havelock eds., 2019).

232. *See* Hanoch Dagan, *Mistakes*, 79 TEX. L. REV. 1795, 1809–10 (2001); Ernest J Weinrib, *Correctively Unjust Enrichment*, *in* PHILOSOPHICAL FOUNDATIONS OF THE LAW OF UNJUST ENRICHMENT 31, 32 (Robert Chambers et al. eds., 2009).

233. *See* RESTATEMENT (THIRD) OF RESTITUTION AND UNJUST ENRICHMENT § 20 cmt. c (AM. L. INST. 2011).

234. Grosskopf & Medina, *supra* note 230, at 905.

235. *See supra* notes 90–91 and accompanying text.

236. *See* Meredith, *supra* note 31.

Note that the analysis offered here should not be taken to mean that all profitable activities can be a cause of civil action. A key point in developing our proposal, therefore, lies in offering criteria for determining when enrichment, in specific cases, is unjust. We outline several such possibilities below, offering categories of cases in which polluters' profits can be considered unjust enrichment.

1. Climate Enrichment Through a Wrong

In some cases, defendants contribute to the climate crisis through activities and conduct that can be classified as wrongful. This can be the case when defendants: (1) benefited while acting in violation of environmental regulations; (2) benefited while operating in an environmentally unreasonable manner, thereby committing a tort of gross negligence; or (3) benefited while maliciously circumventing regulatory efforts or deceiving regulators. We detail these categories below.

Note that in all such cases, sanctions from other areas of law, including regulatory fines or tort damages, are supposedly available, since the requirement of "wrong" is satisfied.[237] Yet, these sanctions often prove insufficient.[238] Thus, pollution in violation of regulatory standards is often profitable for companies because regulatory penalties for such violations are set too low.[239] An added remedy coming from the law of unjust enrichment can therefore be beneficial. In particular, a sanction based on the disgorgement of profits can prove helpful in such cases to eliminate the monetary incentive to violate regulatory standards. Similarly, tort suits can also be based on a scenario in which commercial actors acted in violation of environmental regulations. Despite the clear wrongfulness of the action, in such cases, the resulting harm may be difficult to measure and attribute to the specific action. Therefore, a tort action is very likely to prove ineffective due to a failure at the causation stage.[240] Enrichment-based liability can sometimes overcome these hurdles.

If the defendant acted while violating environmental regulations, any gain made through that activity can be considered unjust.[241] Such gains exist in the present and are therefore relatively easy to measure. Taking away such gains is necessary to ensure deterrence. Note that in such cases, the reason the defendant's activity is considered unjust is probably related in some indirect way to its

237. *See* Nathan Atkinson, *Profiting from Pollution*, 41 YALE J. ON REG. BULL. 1, 2 (2023) (discussing the responsibility of the EPA to establish emission standards and impose fines for noncompliance with such standards).

238. *See id.* at 3.

239. *See id.* at 2 (discussing that if companies pay only nominal fines after harmful emissions, they can "profitably emit, and treat the fine as a cost of doing business").

240. *See, e.g.*, Ewing & Kysar, *supra* note 21, at 352 (mentioning climate change effects as an example of a source of injuries that are "so numerous and dispersed, or so unpredictable and evasive, as to be unregulable in any traditional fashion").

241. Such an action may be perceived as wrongful enrichment. *See, e.g.*, RESTATEMENT (THIRD) OF RESTITUTION AND UNJUST ENRICHMENT § 3 (AM. L. INST. 2011) ("A person is not permitted to profit by his own wrong."); *see also supra* note 188 and accompanying text.

harmfulness.[242] Yet it is not required as part of a claim of unjust enrichment to prove a specific harm, as would be required under a tort action.[243] Similarly, a showing of harm is not required to establish the "at the expense" element. To see why, recall the *Riggs* case described above.[244] In *Riggs*, restitution was available because the wrongdoer benefited from a wrong and the court needed to decide upon "an imputed beneficiary" who could have a valid legal action for this benefit.[245] Likewise, suppose a polluter benefited while violating environmental regulations. In this case, any citizen or governmental body that can be construed as having its rights violated (such as local communities[246] or municipalities[247]) may have a cause of action against the polluter, even if it is not possible to identify and measure concrete harms and attribute them to the violation of environmental regulations. More generally, recall that in cases of wrongful enrichment, disgorgement can be available even if the defendant's benefit is different from the plaintiff's harm,[248] and even if no harm to the plaintiff can be proven.[249] Of course, this type of liability has its natural limits. Specifically, it will depend on the court's willingness to recognize, in a specific case, that the plaintiff's right was violated through the defendant's violation of environmental regulations.

In other cases, the defendant's enrichment can be considered wrongful not because it violates some explicit environmental regulation, but because it is grossly unreasonable or negligent, meaning that the defendant was able to operate its business in a way that is less environmentally harmful without incurring high costs for doing so. In such cases, again, the injustice of the defendant's action closely relates to its harmfulness. Yet a tort claim may not be available under such circumstances: Even though it is clear that the defendant's conduct was unreasonable and unnecessarily harmful, it is difficult to preponderantly prove the magnitude of the harm when its occurrence or magnitude can only be assumed at the time of litigation. Such proof is, however, required to sufficiently

242. By addressing the idea of harmfulness here we do not necessarily refer to harm in the factual sense. Rather, the idea of harmfulness relates first and foremost to the injustice caused to the plaintiff by the defendant's behavior. *See, e.g.*, WEINRIB, *supra* note 160, at 118–19.

243. Recall that "harm" is not one of the elements a plaintiff is required to prove to establish a claim in unjust enrichment. Rather, the three key elements for such a claim are: (1) the defendant's enrichment, (2) a normative requirement of the injustice of that enrichment, and (3) the fact that the enrichment is at the expense of another. *See supra* notes 180–83 and accompanying text.

244. Riggs v. Palmer, 22 N.E. 188 (N.Y. 1889); *see supra* notes 194–209.

245. *See Riggs*, 22 N.E. 188; *see also* Cohen, *supra* note 206, at 806 ("In the past the issue was dealt with by public law, and the state was the beneficiary. The current rule located in private law searches for a close enough substitute, an imputed beneficiary, in the private sphere." (footnote omitted)).

246. *See* Conservation L. Found., Inc. v. Shell Oil Co., 628 F. Supp. 3d 416, 427 (D. Conn. 2022) (discussing how defendant oil company did not protect fuel terminals from climate change, causing an increased risk of flooding at the Port of New Haven, Connecticut).

247. *See* City of Hoboken v. Exxon Mobil Corp., 558 F. Supp. 3d 191, 196–97 (D.N.J. 2021) (rejecting the City of Hoboken's allegation that oil and gas companies' production of fossil fuels was a "substantial factor" in climate damage throughout Hoboken).

248. Friedmann, *supra* note 215, at 548–49, 551.

249. *See id.*

establish a tort action.[250] However, it is not required for a claim of unjust enrichment.[251] Thus, if the defendant's conduct is wrongful, any gain obtained through this conduct can be considered unjust enrichment, even if the future harms caused by this conduct are yet to materialize and are currently unknown.

Yet in other cases, the defendant's enrichment can be considered wrongful because they acted to hide the environmental harms they caused.[252] This form of liability might prove especially relevant in the case of key industry players in the energy sectors, as those are increasingly being blamed for hiding information regarding the climate crisis from both regulators and the public.[253] If such allegations prove credible, a remedy based on unjust enrichment can offer an important venue for recovery and sanction, since despite the immense harm represented by such deceptive practices, it is not clear what other legal response is available.

The common thread in the three aforementioned categories—violation of environmental regulations, clearly unreasonable levels of precautions, and attempts to conceal environmental harms—is that wrongful conduct is identifiable, and yet a harm-based remedy or sanction may be insufficient. In all such cases of enrichment through a wrong, the tortious conduct needed to establish a tort is usually easily recognized. However, a full tort action may not be possible since the elements of harm and causation might be difficult to prove. In such cases, where tort law may fail to provide a remedy and yet the enrichment of the defendant can be much more easily proved, the law of unjust enrichment offers an important avenue for plaintiffs in climate litigation through the remedy of disgorgement of profit.[254]

To see why this is a dramatic difference, consider the 2021 claim filed by a group of nongovernmental organizations (NGOs) representing Indigenous people in the Amazon against Casino, a French supermarket chain.[255] The standing lawsuit is based on Casino's connection to slaughterhouses that are linked to illegal

250. The requirement of proximate causation reflects this notion, providing that "[a] defendant is liable only for the injuries that he could reasonably have foreseen." Benjamin C. Zipursky, *Rights, Wrongs, and Recourse in the Law of Torts*, 51 VAND. L. REV. 1, 11 (1998) (discussing the classic ruling in the matter of *Palsgraf v. Long Island Railroad Co.*, 162 N.E. 99 (N.Y. 1928)).

251. *See supra* note 243 and accompanying text.

252. As a recent example, ExxonMobil has reportedly hidden the fact that their own experts predicted an adverse effect on climate stability. *See* G. Supran, S. Rahmstorf & N. Oreskes, *Assessing ExxonMobil's Global Warming Projections*, SCI., Jan. 13, 2023, at 379, 379.

253. *See id.*

254. *See* Friedmann, *supra* note 215, at 548–49, 551.

255. For a thorough review of this case, see CTR. FOR CLIMATE CRIME ANALYSIS, CASINO CASE: THE CONNECTIONS BETWEEN THE CASINO GROUP'S MEAT SUPPLY, DEFORESTATION AND VIOLATIONS OF THE RIGHTS OF THE PEOPLES INHABITING THE URU-EU-WAU-WAU INDIGENOUS LAND IN THE BRAZILIAN AMAZON 5 (2022), https://climatecrimeanalysis.org/wp-content/uploads/2022/06/casino_case_-_english.pdf [https://perma.cc/8PUP-9WXP]. *See also* Envol Vert et al. v. Casino, SABIN CTR. FOR CLIMATE CHANGE L., http://climatecasechart.com/non-us-case/envol-vert-et-al-v-casino/ [https://perma.cc/QKJ3-72C6] (last visited Apr. 15, 2024); *Amazon Indigenous Groups Sue Casino Chain Over Deforestation*, FRANCE 24 (Mar. 3, 2021, 9:40 PM), https://www.france24.com/en/live-news/20210303-amazon-indigenous-groups-sue-casino-chain-over-deforestation [https://perma.cc/753T-N3G7].

deforestation in the Amazon[256] and is formally based on violations of human rights and environmental laws[257] rather than unjust enrichment. The plaintiffs demanded compensation in the sum of $3.7 million for "damages done to their customary lands and the impact on their livelihoods,"[258] but the revenues of Casino in 2020, according to Joana Setzer and Catherine Higham, were a staggering $15 billion just in Latin America.[259] Even if a small fraction of this amount can be credibly attributed to unjust enrichment, it is clear why disgorgement of profits in this case would be far more meaningful in terms of deterrence rather than compensation for the harm.[260] Compensation measured according to harms will be ineffective as a deterrent, as the defendant will continue the socially wrongful activity in the future as long as it is privately profitable.[261]

The straightforward doctrinal analysis we propose here, if adopted by courts, can lead to more just litigation outcomes. Consider, for example, the recent decision in the matter of *State v. Tobin*.[262] In this case, the defendant was criminally charged for illegally harvesting crab and geoduck.[263] Along with restitution for the authorities' expenses in surveying the illegal harvest and documenting evidence, the state also claimed a remedy measured according to the profit the defendant made from selling the illegally harvested crab and geoduck.[264] The state presented evidence indicating that it may take thirty-nine years (and possibly more) for the geoduck population to recover from the defendant's excessive harvest.[265] The Supreme Court of Washington determined that the defendant must only pay for the state's expenditures, but that he may keep his additional

256. *See* JOANA SETZER & CATHERINE HIGHAM, GLOBAL TRENDS IN CLIMATE CHANGE LITIGATION: 2021 SNAPSHOT 34 (2021), https://www.lse.ac.uk/granthaminstitute/wp-content/uploads/2021/07/Global-trends-in-climate-change-litigation_2021-snapshot.pdf [https://perma.cc/2ZKF-6G6A].

257. FR. 24, *supra* note 255 ("The lawsuit alleges systemic violations of human rights and environmental laws in Casino's supply chains in Brazil and Colombia.").

258. *Id.*

259. SETZER & HIGHAM, *supra* note 256, at 34. Note that the profits are still likely smaller than the total amount of harm caused to all victims, that is, the actions of Casino were inefficient from a cost–benefit perspective. Thus, as compensation is determined based on *measurable* harm to the plaintiff rather than *actual* overall harm, *see supra* Section II.B.2, it is likely to be set too low and result in underdeterrence.

260. In the Casino example, disgorgement leads to higher levels of deterrence compared to compensation. Yet, as compensation leads to *underdeterrence*, disgorgement does not necessarily result in *overdeterrence*. More specifically, disgorgement can lead to efficient deterrence assuming that the *actual* (rather than *measurable*) harm is higher than the defendant's profits. For an explanation of the concept of efficient deterrence, see Yotam Kaplan, *In Defense of Compensation*, 70 ALA. L. REV. 573, 589–95 (2018).

261. *See* SETZER & HIGHAM, *supra* note 256, at 34. In economic terms, the problem is one of externalities: when the action is profitable, causes harm to a third party, and not internalized by the tortfeasor. *See, e.g.*, Roee Sarel, *Restraining ChatGPT*, 75 U.C. L.J. 115, 128 (2023) ("Externalities are a typical justification for tort law.").

262. 166 P.3d 1167 (Wash. 2007) (en banc). Note that *Tobin* is a criminal case, and not a tort case; yet it fits our analysis, illustrating the importance of measuring remedies based on gains and not only harms.

263. *Id.* at 1168.

264. *Id.* at 1169.

265. *Id.* at 1172.

profits.[266] As the defendant's profit was higher than the portion of the state's direct expenditure he was required to pay,[267] this unfortunate decision sends a clear signal to other potential wrongdoers: climate crime pays.[268] We argue not only that this decision is objectionable as a matter of policy but also that a correct application of unjust enrichment doctrine could obtain a better outcome.

2. Climate Enrichment Without a Wrong

Some commercial activities greatly contribute to global warming without constituting a wrong under current definitions. That is, some profitable undertakings entail high levels of GHG emissions even when they involve no violation of any specific environmental regulation or standard. Can gains obtained through such activities be considered unjust enrichment, and if so, under what circumstances?

As explained above, the law of unjust enrichment recognizes the possibility of liability even when the defendant committed no wrong.[269] Such liability attaches in cases in which the defendant enjoyed a windfall they did not pay for or held assets that did not rightfully belong to them.[270] This applies, for instance, in the cases of mistaken payment,[271] medical treatment in an emergency,[272] and a temporary injunction that was ultimately reversed.[273] In all of these cases, the defendant unjustly benefited at the expense of others, even though they did not act in violation of any specific legal standard.[274]

This mode of liability may prove applicable, in some circumstances, to climate enrichment. This may be the case when a particular defendant enjoys resources that rightfully belong to others. This form of legal argument can be advanced in relation to the resource of climate stability.

As explained above, climate stability is a global public good.[275] Resources such as breathable air, reasonable temperature, and inhabitable environments

266. *See id.* at 1169 (ordering defendant to pay "the amount of loss to the State rather than the amount that [he] profited").

267. The state claimed to have spent $462,750 on expenditures for the geoduck case and $49,500 for the crab case, and the defendant was ordered to pay the full $49,500 for the crab but only $115,000 of the geoduck expenditure (totaling $164,500), compared to the defendant's geoduck profits of $508,438. *See id.*

268. Note that the calculation of damages in this case included only the state's financial losses resulting from the illegal actions of the defendant. It did not reflect the loss caused to marine species. *See id.* This discussion also only accounts for the financial implications of this case—Tobin was sentenced to a combined 15 years in total confinement. *See id.*

269. For this reason, the normative source of liability in these cases has been a matter of debate. *See, e.g.*, Smith, *supra* note 231, at 103 (maintaining there is a range of causes of action to cases of unjust enrichment, whether they are originated through wrongdoing or not). *See generally, e.g.*, Dagan, *supra* note 232 (examining the core case of unjust enrichment, restitution for mistaken payments, through the normative lenses of autonomy and efficiency); WEBB, *supra* note 184 (presenting a theory of unjust enrichment as morally related to private property).

270. *See* DAGAN, *supra* note 32, at 3–4.

271. *E.g.*, BIRKS, *supra* note 180, at 3.

272. Cotnam v. Wisdom, 104 S.W. 164, 167 (Ark. 1907).

273. Laycock, *supra* note 29, at 1284.

274. In all of these cases, the defendants did not commit a wrong in the conventional tortious sense.

275. *See supra* Section II.A.

belong to all people.[276] Yet in practice, through a series of practical limitations, the distribution of these resources does not reflect the rights of all stakeholders in those resources.[277] Due to obvious limitations, future generations cannot act to secure their part of the asset for themselves. In this vacuum, some current stakeholders, with strong commercial interests, enjoy assets that rightfully belong to others.

This means that we are currently witnessing unjust enrichment through massively disproportional consumption of climate stability.[278] Climate stability is a finite resource in the sense that the atmosphere can only absorb a limited amount of GHG emissions without climate conditions being irrevocably destabilized. Currently, a small number of large firms—strong commercial actors in the energy sector—benefit immensely through activities involving extremely high GHG emissions.[279] This limited resource, the environmental capacity to absorb GHG emissions, is being depleted to the benefit of specific, identifiable actors, with nothing left for subsequent stakeholders. This type of enrichment is unjust, as future generations also have an entitlement to the common good of climate stability,[280] which is a necessary condition to a peaceful and safe existence.

Doctrinally, climate enrichment can only be established in cases in which plaintiffs can show that profits are concentrated in the hands of a select few. Conversely, if *everyone* is benefiting, it cannot be said that a particular plaintiff is enriched at the expense of another. Therefore, the fact that climate winners and climate losers can be identified[281] is crucial for any claim based on unjust

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276. *See* Mary Christina Wood & Charles W. Woodward, IV, *Atmospheric Trust Litigation and the Constitutional Right to a Healthy Climate System: Judicial Recognition at Last*, 6 WASH. J. ENV'T L. & POL'Y 634, 645, 674 (2016) (describing judicial recognition of public trust in the atmosphere).

277. The unequal distribution of planet resources is manifested in the overconsumption of these resources by few at the expense of billions of people who consume considerably less. *See, e.g.*, JOSIE LEE & DAVID TRAN, EMBEDDING EQUALITY IN THE NEW LOSS AND DAMAGE FUND: LESSONS FROM THE PACIFIC AND ASIA 6 (2023), https://unfccc.int/sites/default/files/resource/Oxfam-Australia_Loss-and-Damage-Report-1_July-2023.pdf [https://perma.cc/A5KN-R9VB] ("At a global population level, almost half of all greenhouse gas emissions can be attributed to the top 10% of global emitters."); Matthew Taylor & Jonathan Watts, *Revealed: The 20 Firms Behind a Third of All Carbon Emissions*, GUARDIAN (Aug. 25, 2021, 9:48 AM), https://www.theguardian.com/environment/2019/oct/09/revealed-20-firms-third-carbon-emissions [https://perma.cc/5FPP-YMFD] (portraying the climate crisis as a tragedy wherein "seven and a half billion people must pay the price - in the form of a degraded planet - so that a couple of dozen polluting interests can continue to make record profits").

278. We address the idea of unjust enrichment and disproportionality below. *See infra* note 283 and accompanying text.

279. *See, e.g.*, Taylor & Watts, *supra* note 277; *see also, e.g.*, Meredith, *supra* note 31; Oliver Milman, *'Monster Profits' for Energy Giants Reveal a Self-Destructive Fossil Fuel Resurgence*, GUARDIAN (Feb. 9, 2023, 11:37 AM), https://www.theguardian.com/environment/2023/feb/09/profits-energy-fossil-fuel-resurgence-climate-crisis-shell-exxon-bp-chevron-totalenergies [https://perma.cc/96F9-RHU2].

280. We abstract away from the philosophical question of whether one has to consider a concrete human being that has not yet been born for the question of equal distribution. It seems sufficient to say that if climate change makes the planet unlivable, this is undesirable from the perspective of the survival of mankind and other species.

281. *See* Michael H. Glantz, *Assessing the Impacts of Climate: The Issue of Winners and Losers in a Global Climate Change Context*, *in* CLIMATE CHANGE RESEARCH: EVALUATION AND POLICY IMPLICATIONS 41, 42–45 (S. Zwerver et al. eds., 1995).

enrichment. Without committing to the analysis of any specific case, it seems that this type of doctrinal pattern can be found in contemporary markets, where strong commercial interests benefit immensely through activities that perpetuate the climate crisis.[282]

Based on this analysis, we propose that a defendant's enrichment be considered unjust, absent wrongdoing, under the following conditions, together manifesting the idea of unjust climate enrichment[283]: when (1) the defendant's activity makes an oversized contribution to climate change, meaning that it is related to a significant share of worldwide GHG emissions, (2) the same activity is highly profitable for the defendant, and (3) the defendant is an exceptional profits center, in the sense that the gains from its activity are not equally enjoyed by the population as a whole. When these conditions are met, climate enrichment is both "at the expense of another" and "unjust," as a select few profit at the expense of the many through activities that render future prosperity virtually impossible.

These three conditions fit well with the internal logic of a claim in unjust enrichment and also ensure a limited and narrow scope of liability. Under the conditions we delineate, consumers, small and medium firms (manufacturers and service providers), employees, etc., will never be held liable for contributions to climate change, as they are not making exceptional profits and are not acting as concentrated profit centers of climate enrichment. Rather, this form of liability may pertain, if at all, only to the clearest examples of large multinational corporations that make immense profit through activities that are responsible for large shares of worldwide GHG emissions.[284] This outcome is also normatively appealing. If the biggest winners of the climate crisis are made to forgo their profits, or some significant part of those profits, this may finally pave the way for the systematic changes necessary for addressing the crisis.

IV. COMPARATIVE INSTITUTIONAL ANALYSIS

This Part offers a discussion and analysis of the basic concept of climate enrichment introduced in Part III and compares some of the details of unjust enrichment doctrine and tort law as possible bases for climate litigation. Note that

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282. *See, e.g.*, Evan Halper, *Shell Adds to Oil Industry's Record Profits, with $41.6 Billion*, WASH. POST (Feb. 2, 2023, 9:06 AM), https://www.washingtonpost.com/business/2023/01/31/oil-profits-chevron-exxonmobil-earnings/ ("Big oil companies continued to smash their profit records . . ., with Shell reporting it made $41.6 billion in 2022. It is the latest in a procession of earnings reports from an industry enjoying massive windfalls while ordinary drivers strain to afford high prices at the pump.").

283. The idea of disproportionality as such that can meet the "unjust requirement" brings distributive considerations into the formula of unjust enrichment. For a perception of distributive justice based on an idea of proportional distribution of recourses, see, for example, James Gordley, *Equality in Exchange*, 69 CALIF. L. REV. 1587, 1589 (1981). Gordley embraces a perception of distributive justice according to which "ideally" each citizen should receive a share that is proportional to their merit or desert. *See id.* at 1614. He further explains that, in a democracy, such a share would amount to an equal share. *See id.* We do not specifically propose to endorse Gordley's approach to distributive justice as a theoretical basis for our analysis. Our goal here is much more modest. It is to demonstrate the theoretical tenability of perceiving disproportionality of recourses as injustice or unfairness.

284. *See, e.g.*, Halper, *supra* note 282.

we do not argue that unjust enrichment is overall better than other legal alternatives or that it should replace other legal methods. Rather, we argue that it is an important addition to the legal toolkit; since the challenges presented by the crisis are so great, any such addition is welcome, and the law of unjust enrichment is, therefore, surely an option worth exploring. Moreover, we argue that the use of unjust enrichment doctrine in the context of climate litigation can offer some unique advantages.

Thus, we argue that our proposal fits with the prevalent understanding of the law of unjust enrichment as a "popular vehicle for novel legal claims."[285] Our proposal also fits with the common understanding of the nature of the climate crisis. Scholars agree that the responsibility for climate change must follow benefits, not harms. As put forth by Michael Christopher Sardo, "Agents bear responsibility not in virtue of their individual causal contribution or capacity, but because they participate in and benefit from the carbon-intensive structures, practices, and institutions that constitute the global political and economic system."[286] The doctrine of unjust enrichment expresses the legal manifestation of these ideas.

In this Part, we first offer a detailed comparison between harms and gains in the context of climate litigation as a basis for the comparison between tort law and unjust enrichment doctrine. We then move on to discuss the identity of plaintiffs able to bring a claim based on the notion of climate enrichment. Finally, we offer an account of the incentives created under climate enrichment lawsuits and detail the measure of remedies employed in this framework.

A. HARMS V. GAINS

The law of unjust enrichment focuses not on harms but on gains.[287] Under unjust enrichment doctrine, proof of harm is not a central doctrinal element.[288] The core element of a claim in unjust enrichment is a benefit to the defendant.[289] Unjust enrichment is therefore advantageous whenever harms are difficult to measure and gains are more easily identifiable and quantifiable.[290] This advantage is especially relevant in the context of climate litigation for several reasons. In the case of GHG emissions, harms are largely nonmonetary, continue far into the distant future, and are spread across large segments of the population.[291] Such

285. Sherwin, *supra* note 37, at 1448.

286. Michael Christopher Sardo, *Responsibility for Climate Justice: Political Not Moral*, 22 EUR. J. POL. THEORY 26, 26 (2023).

287. *See* Laycock, *supra* note 29, at 1283 (explaining that restitution may differ from compensatory damages through a focus on the defendant's gains); Gilboa & Kaplan, *supra* note 29, at 430.

288. *See, e.g.*, WEINRIB, *supra* note 160, at 118–19.

289. *See id.*

290. For an explanation of the prevalence of gains-based remedies in contract law, see Steve Thel & Peter Siegelman, *You* Do *Have to Keep Your Promises: A Disgorgement Theory of Contract Remedies*, 52 WM. & MARY L. REV. 1181, 1184–85 (2011).

291. *See, e.g.*, VED P. NANDA & GEORGE (ROCK) PRING, INTERNATIONAL ENVIRONMENTAL LAW AND POLICY FOR THE 21ST CENTURY 404–05 (2d rev. ed. 2013) (stating that "the time lag between the GHG emissions and their adverse effects makes attribution and allocation of responsibility extremely difficult" and that monetary damages will not always be adequate, since "no amount of money will

harms are extremely difficult to identify, quantify, and attribute to specific polluters. By comparison, the gains associated with high emissions are monetary, occur in the present, and are concentrated in the hands of identifiable actors.

Of course, measuring *gains* in the context of climate litigation can also present difficulties. Yet, these difficulties are qualitatively different from the difficulties of measuring *harms* associated with GHG emissions. Determining how GHG emissions are translated to harms, and putting a monetary evaluation on these harms, is a completely different exercise in terms of the scientific evidence required and the level of uncertainty involved.

1. Nonmonetary Harms v. Monetary Gains

Harms associated with the climate crisis are difficult to measure and quantify. The precise dollar value of the extinction of a species or a two-inch rise in sea levels is extremely difficult to evaluate accurately. This should not be taken to mean that such evaluation is impossible, yet a legal framework that requires such evaluation as a central doctrinal requirement puts plaintiffs at a structural disadvantage. When harms are extremely difficult to quantify, tort plaintiffs in climate litigation face an uphill battle. Tort remedies, typically compensatory damages awards, are monetary in nature.[292] When harms are nonmonetary, translating them into monetary values presents a nontrivial challenge, a challenge that often suffices to hinder successful litigation and can be susceptible to judicial bias.[293]

Conversely, the gains associated with the climate crisis are monetary in nature and thus more readily measurable. High GHG emissions and other environmentally harmful activities proliferate because they produce monetary gains for strong commercial actors. By definition, even if measuring unjust enrichment can involve some difficulties, it avoids the thorny problem of translating abstract

allow a nation to purchase more favorable weather, a cooler climate, or adequate rainfall, after the fact"); Laurens M. Bouwer, *Observed and Projected Impacts from Extreme Weather Events: Implications for Loss and Damage*, *in* LOSS AND DAMAGE FROM CLIMATE CHANGE: CONCEPTS, METHODS AND POLICY OPTIONS 63, 64 (Reinhard Mechler et al. eds., 2019) (discussing the harms of climate change, caused in part by "hazard driver[s]" such as GHG emissions, and noting that "[l]osses from extreme weather can include both [monetary losses and non-monetary damages]; monetary losses (damages to buildings and other property that can be repaired or replaced), as well [as] non-monetary impacts such as loss of life, health impacts, and irreversible damages such as coastal erosion, ecosystem impacts and societal impacts (for instance retreat after severe flooding)").

292. *See, e.g.*, RESTATEMENT (SECOND) OF TORTS § 902 (AM. L. INST. 1979) ("'Damages' means a sum of money awarded to a person injured by the tort of another."); DAN B. DOBBS, PAUL T. HAYDEN & ELLEN M. BUBLICK, THE LAW OF TORTS § 479 (2d ed. 2011) ("The term damages refers to the monetary award for legally recognized harm.").

293. This observation is a general possibility in relation to abstract types of harms, which are harder to evaluate via objective measures. A typical example of this problem is pain and suffering losses, which require juries to "measure the immeasurable." *See* Ronen Avraham, *Putting a Price on Pain-and-Suffering Damages: A Critique of the Current Approaches and a Preliminary Proposal for Change*, 100 NW. L. REV. 87, 90–91 (2006). For a study dedicated to providing a theoretical explanation for the possible influence of bias in this abstract type of harm, see generally Maytal Gilboa, *The Color of Pain: Racial Bias in Pain and Suffering Damages*, 56 GA. L. REV. 651 (2022). *See also* Yotam Kaplan, *The Other View of* The Cathedral, 82 MD. L. REV. 479, 508–18 (2023) (reviewing judicial bias in the determination of compensation).

values to monetary sums.[294] When gains are monetary, enrichment-based remedies are easier to explain and justify.

2. Future Harms v. Present Gains

Some of the harms of the climate crisis are already occurring now or will occur in the near future. Yet significant climate harms, resulting from current activities, will only become fully known in the mid- to long-term.[295] Future harms are speculative in nature and are therefore difficult to measure accurately. Simply put, it is easier to produce evidence for something that already happened and harder to prove that something will happen. Future harms are also difficult to attribute to specific actors, and any causal link between current emissions and harms occurring in the distant future will be difficult to establish. Climate change is an accumulative harm, since the activities of different polluters join together and become indistinguishable in their contribution to future harms.

These features of the climate crisis make tort law a particularly difficult terrain for climate litigation. Proof of harm is a core doctrinal element of tort law and the starting point for many tort actions (not just for damages).[296] The difficulty in proving future harms is therefore a daunting challenge for plaintiffs to face if climate litigation is solely based on tort principles.

In contrast, immense gains that perpetuate the climate crisis occur already in the present. Firms choose polluting practices and continue the use of environmentally harmful fuels since these are profitable for them in the present. These monetary gains are measurable now, with no need to speculate into future values. And if monetary gains are taken away from polluters, the incentive to pollute dissipates—an outcome that is difficult to achieve using harm-based remedies.[297]

3. Widespread Harms v. Concentrated Gains

The harms of climate change are affecting the population as a whole. Such harms are too widely spread over too many unidentified victims to serve as the basis for a tort claim.[298] To establish a tort claim, some identified victim of harm must prove the magnitude of the harm done to them;[299] even if this would be

294. *See, e.g.*, Gilboa, *supra* note 182, at 367 ("[W]hereas in [tort] cases focusing on the plaintiff's harm, the but-for result must ultimately be translated into monetary terms to determine the recovery amount, in gain-based damages cases, the but-for result reflects both the difference that the defendant's wrongfulness has made and the sum of recovery.").

295. *See* Bryne, *supra* note 52, at 762.

296. Some contemporary tort theorists have introduced interpretations of tort law that emphasize the existence of the element of harm in all tort law doctrines, including trespass and battery. *See, e.g.*, GOLDBERG & ZIPURSKY, *supra* note 154, at 247–48 (suggesting to frame all tort doctrines under a unified umbrella of a duty not to injure by explaining that, in cases such as battery or trespass, the defendant's misconduct toward the plaintiff is also the injury).

297. If further profits are accumulated in the near future, those profits can then be disgorged through similar claims filed after such profits are known.

298. *See, e.g.*, Ewing & Kysar, *supra* note 21, at 369–70; Kysar, *supra* note 23, at 3–4; Burkett, *supra* note 22, at 11145; Zhai, *supra* note 23, at 11.

299. *See* Maytal Gilboa & Yotam Kaplan, *Loser Takes All: Multiple Claimants & Probabilistic Restitution*, 10 U.C. IRVINE L. REV. 907, 911 (2020).

possible in some cases, difficulties in proving harms, their magnitudes, the identity of victims, and the requirements of but-for causation all make tort law a hostile environment for climate litigation claims.[300]

The same cannot be said for the gains associated with the climate crisis. To be sure, *some* level of gain associated with the crisis might be considered near universal, as all people living today benefit from the crisis in the form of low energy prices or cheap products. Yet for a handful of energy sector firms, the crisis generates unimaginable profits, far beyond this general level. Since gains are concentrated in this way, and since gain is the motivating force behind an unjust enrichment claim, this doctrinal foundation offers a more natural setting for climate litigation.

For all these reasons, basing climate litigation on gains seems to be an easier and more natural solution. Note that this does not mean that proving gains is always costless or would never present any difficulty. Any legal course of action has its hurdles. But, on average, it seems reasonable to expect that in the context of climate litigation, showing concrete and concentrated gains is easier than showing concrete and concentrated harms.

B. THE IDENTITY OF PLAINTIFFS

This Section discusses the various types of plaintiffs that might be able to advance climate litigation claims based on unjust enrichment, as described in Part III. We suggest that such claims can be brought, under different circumstances, by private plaintiffs (individuals and organizations) through aggregate litigation, and also by public plaintiffs. This possible diversity in the identity of plaintiffs can bolster the effectiveness of climate enrichment claims, mitigate the problems of regulatory capture,[301] and take advantage of the comparative informational and institutional strengths of different potential claimants.[302]

1. Private Plaintiffs: Aggregated Litigation & Imputed Plaintiffs

Since a claim based on unjust enrichment can offer hefty monetary awards, it provides strong incentives for private individuals to seek out environmental violators and bring them to court. Such plaintiffs might be individuals or groups at whose expense the defendants were enriched. As explained above, climate litigation defendants are enriched at the expense of future generations. Young people can therefore bring claims against defendants that exploited the limited resource of climate stability at the expense of future stakeholders. Similar environmental claims brought to court by young people have recently experienced some success,

300. *See supra* Section II.B.

301. *See* Glover, *supra* note 6, at 1154–55 (describing the issue of regulatory capture as justification for private enforcement mechanisms).

302. *Id.* at 1154 ("[P]ublic civil enforcers in some regulatory areas suffer informational disadvantages. Those disadvantages arise for a simple reason: the best sources of information about private wrongs are often the parties themselves, because they tend to have superior knowledge regarding the costs and benefits of given activities, the costs of reducing risks of harm, and the probability or severity of risk." (footnote omitted)).

albeit in a different doctrinal context.[303] A similar approach might prove useful in the context of unjust enrichment claims. Note that each such individual plaintiff can only sue for a relatively small sum, representing the enrichment made *at their expense*. Yet the fact that the defendant was enriched at the expense of the plaintiff can suffice to get the plaintiff's claim off the ground, and then multiple such claims can be aggregated through mechanisms akin to a class action.[304] Under such a scheme, the young plaintiffs will represent a larger number of similarly situated people at whose expense the defendant was enriched. To provide incentive to sue, such representative plaintiffs can be entitled to a share of any monetary award granted by the court at the end of the proceedings.[305] This award, as in a typical class action scenario, is meant to encourage the group representative to bring the claim to the court, acting as a "private attorney general" and promoting the overall social interest.[306] This incentive is beneficial in recruiting individual plaintiffs to act for the greater good and is advantageous in the common instances in which such individuals enjoy informational advantages over central regulators.[307]

Under this mechanism, whichever share of the monetary award that is not going to the representative plaintiff will be granted to other group members. When providing incentives to sue is of great importance, courts can allow private suits and encourage them by granting higher monetary awards to representative plaintiffs. When there is no special need to encourage suit, the share of representative plaintiffs can remain relatively small. When it is not feasible or suitable to distribute class action awards to each individual group member, for instance, because the group includes future stakeholders, courts may resort to *cy pres* relief instead of the conventional remedies in class action lawsuits.[308] Under the *cy pres* doctrine, courts have the option of directing the defendant in a class action lawsuit to donate a portion of the award to a charitable organization that is related to

303. *See* Held v. State, No. CDV-2020-307, slip op. at 92, 101–03 (Mont. Dist. Ct. Aug. 14, 2023) (entering judgment for youth plaintiffs alleging violations of Montana state constitution's guarantee of a clean and healthful environment through statutory provisions supporting fossil fuel-based energy systems).

304. For an explanation of such mechanisms, see Alon Harel & Alex Stein, *Auctioning for Loyalty: Selection and Monitoring of Class Counsel*, 22 YALE L. & POL'Y REV. 69, 81 (2004).

305. *Id. See also, e.g.*, Rodriguez v. W. Publ'g Corp., 563 F.3d 948, 958–59 (9th Cir. 2009) ("Incentive awards are fairly typical in class action cases. Such awards are discretionary and are intended to compensate class representatives for work done on behalf of the class, to make up for financial or reputational risk undertaken in bringing the action, and, sometimes, to recognize their willingness to act as a private attorney general." (emphasis omitted) (citations omitted)); BRIAN ANDERSON & ANDREW TRASK, THE CLASS ACTION PLAYBOOK 254–55 (2010) ("Settlement agreements often include some form of additional payment to the named plaintiffs, to compensate them for their time complying with discovery, testifying at depositions, and generally acting as private attorneys general.")

306. *See id.*

307. *See* Glover, *supra* note 6, at 1154.

308. *See* Martin H. Redish, Peter Julian & Samantha Zyontz, *Cy Pres Relief and the Pathologies of the Modern Class Action: A Normative and Empirical Analysis*, 62 FLA. L. REV. 617, 634 (2010).

the subject matter of the lawsuit.[309] A similar alternative form of remedy is fluid class recovery.[310] Under this alternative doctrine, courts have the authority to require the defendant to provide goods, services, future price reductions, or other comparable compensation to the plaintiff or other parties in place of a monetary award.[311]

The institution of aggregate litigation can also easily mitigate concerns regarding court congestion or a race to sue between plaintiffs. Supposedly, if claims in unjust enrichment prove lucrative, and if many different potential plaintiffs have the power to initiate legal action, this can lead to coordination problems between multiple plaintiffs, a multiplicity of concurrent and overlapping procedures, wasteful legal expenditure, and opportunistic litigation.[312] But this is not a significant concern, as existing practices of aggregate litigation offer ready answers to these challenges.[313] Thus, if multiple claims are filed in the same matter, these will simply be grouped by the court to save administrative costs and will be adjudicated jointly. Monetary awards will similarly be divided between different plaintiffs to avoid double payments and the problem of overdeterrence.[314]

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309. *Id.* ("In its current form as used in the federal courts, cy pres relief in class actions has involved the donation of a portion of the settlement or award fund to charitable uses which are in some loose manner connected to the substance of the case."). The use of *cy pres* as a class action remedy was first pioneered in a 1972 student note. *Id.* at 631; Stewart R. Shepherd, Comment, *Damage Distribution in Class Actions: The Cy Pres Remedy*, 39 U. CHI. L. REV. 448, 452–53 (1972).

310. *See* Redish et al., *supra* note 308, at 661–62 (explaining the difference between *cy pres* relief and fluid class recovery); Gregory A. Hartman, Comment, *Due Process and Fluid Class Recovery*, 53 OR. L. REV. 225, 227 (1974).

311. Redish et al., *supra* note 308, at 662–64.

312. *See, e.g.*, Michael D. Sant'Ambrogio & Adam S. Zimmerman, *The Agency Class Action*, 112 COLUM. L. REV. 1992, 2010–11 (2012) ("The absence of aggregation procedures also aggravates inefficiencies in adjudication—wasting resources in duplicative litigation, requiring frequent remands to address common factual errors, and hampering the efficient development and enforcement of law. . . . The absence of aggregation techniques also creates inefficient factfinding, as appeals courts frequently remand cases to cure common errors or weaknesses in the record. . . . Finally, without tools to handle the sheer volume of claims, agencies fail to efficiently develop settled expectations about the law or their own regulations."); Sergio J. Campos, *Mass Torts and Due Process*, 65 VAND. L. REV. 1059, 1080 (2012) ("[I]nformal aggregation entails transaction costs. Recruiting clients entails significant costs, and plaintiffs also incur costs in communicating with other attorneys and reproducing information. . . . [M]ost importantly, informal aggregation involves strategic behavior that frustrates aggregation. A plaintiff may defect from informal aggregation to recover more separately, to avoid mixing her claim with other dubious claims, or to avoid any other costs of aggregating. A plaintiff may also defect to free ride on investments in common issues made by others, such as through nonmutual offensive issue preclusion or through reliance on the precedent or findings established in other cases." (footnotes omitted)).

313. *See* Resnik, *supra* note 100, at 2144–55 (enumerating the costs and benefits of aggregate litigation).

314. Such procedural mechanisms exist, for example, in the international administration of compensation for holocaust victims through the International Commission on Holocaust Era Insurance Claims (ICHEIC). *See generally* Steven Less, *International Administration of Holocaust Compensation: The International Commission on Holocaust Era Insurance Claims (ICHEIC)*, *in* THE EXERCISE OF PUBLIC AUTHORITY BY INTERNATIONAL INSTITUTIONS: ADVANCING INTERNATIONAL INSTITUTIONAL LAW 607 (Armin von Bogdandy et al. eds., 2010). The ICHEIC was established in response to the problem of victims having to resort to their own government for compensation for harms incurred in war, often falling between the cracks and failing to attain well-deserved compensation. *See id.* at 617. Thus, a global organization—the ICHEIC—was founded as "a way of providing expedited redress to deserving individuals who had lacked a remedy under national and international law for many decades." *Id.* Similar institutional solutions can be adopted in the context of climate litigation.

Alternatively, climate enrichment claims can be brought by "imputed" plaintiffs who are entrusted with the right to pursue wrongdoers.[315] When defendants are wrongdoers, enrichment can be considered to be "at the expense" of the plaintiff if the wrong violates the plaintiff's right, and not only if it correlates to the plaintiff's loss. Thus, young plaintiffs whose rights in the public good of climate stability have been violated can bring a suit for wrongful enrichment, even if some of it came at the expense of those absent at the time of litigation. This is possible through the same legal mechanisms that allow plaintiffs such as those in *Riggs* to bring a lawsuit for benefits obtained through a wrong.[316] The goal of these mechanisms is to assure wrongful conduct does not pay by allowing a private actor closely associated with the wrong to bring suit.

The notion of imputed plaintiffs might also allow NGOs to sue if they are considered appropriate claimants. This legal construction might prove useful when the defendant's benefit is not distinctly correlated with a loss to an identifiable plaintiff. This might be the case, for instance, with harms like species extinction. Allowing claims for such harms would require a more expansive interpretation of the notion of the imputed plaintiff but is at least conceptually possible. Courts' willingness to adopt such an interpretation should depend on their evaluation of the severity of the crisis, its outcomes, and the wrongfulness of the defendant's conduct.

2. Public Plaintiffs

State actors operating as public plaintiffs might also be able to initiate climate enrichment claims. State attorneys general (AGs) have a history of using unjust enrichment claims for the public good in other contexts, such as in tobacco litigation.[317] Climate litigation is comparable to tobacco litigation, with tort suits having limited success, high profits going to heavily lobbied commercial defendants, and harms spread over large populations (including the harms of increased public expenditure on healthcare).[318]

The use of public plaintiffs could be beneficial in cases where private plaintiffs are unable or unwilling to file claims,[319] when public actors have better access to

315. *See* Cohen, *supra* note 206, at 806 ("In the past the issue was dealt with by public law, and the state was the beneficiary. The current rule located in private law searches for a close enough substitute, an imputed beneficiary, in the private sphere." (footnote omitted)).

316. Riggs v. Palmer, 22 N.E. 188 (N.Y. 1889); *see supra* notes 194–209; *see also* Cohen, *supra* note 206, at 796.

317. *See* Doug Rendleman, *Common Law Restitution in the Mississippi Tobacco Settlement: Did the Smoke Get in Their Eyes?*, 33 GA. L. REV. 847, 848–49 (1999) (describing such involvement of forty state attorneys general in the context of unjust enrichment tobacco litigation).

318. *See id.* at 851–52.

319. *See* Keith N. Hylton, *Litigation Costs and the Economic Theory of Tort Law*, 46 U. MIA. L. REV. 111, 112–13 (1991) (explaining how the costliness of litigation can bar plaintiffs from suing). *See generally* Yotam Kaplan & Ittai Paldor, *Social Justice and the Structure of the Litigation System*, 101 N. C. L. REV. 469 (2023) (highlighting the challenges private plaintiffs face in litigating against corporate litigants).

information,[320] or when the nature of the claim makes a public plaintiff seem more suitable to the court.

The use of public actors as plaintiffs can allow them to represent the public interest or the interests of future generations in court. Such legal procedural mechanisms fit with recent scholarly calls to recognize the "rights of nature" and grant natural resources as a separate legal entity.[321] Under such proposals, mostly theoretical at this point, representative plaintiffs will be able to bring forward a suit on behalf of the environment itself. Policies granting standing to natural resources as legal entities have emerged in countries such as New Zealand, India, and Ecuador.[322] The application of the unjust enrichment doctrine can enhance these legal innovations. Currently, claims brought on behalf of environmental or natural resources suffer the same limitations as regular suits owing to their basis in tort law. Thus, these claims can run into difficulties in attempting to prove wrongs, harms, and the causal link between them, especially when harms are highly uncertain and occur in the distant future. These difficulties can be mitigated through the use of the law of unjust enrichment, as explained above.[323]

In some instances, private plaintiffs may have an informational advantage or greater motivation to file a lawsuit, while in other cases, financial constraints may favor public plaintiffs. Some state AGs may not be politically inclined to initiate litigation against polluters, while some private plaintiffs may be too poor to bear the costs of litigation. The potential diversity of plaintiffs and the decentralized flexibility of the litigation system can mitigate these problems. Thus, it is not required that all state AGs file lawsuits; it is enough that some do, and that some private individuals find it worthwhile to become plaintiffs.

C. INCENTIVES

This Section completes our analysis by studying the effect of liability in unjust enrichment on the incentives of the relevant parties in relation to different remedy measures. We show that enrichment-based liability improves the incentives of defendants without unduly burdening them and with minimal distortion to the incentives of others.

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320. Access to environmental information is a key pillar for the establishment of the Convention on Access to Information, Public Participation in Decision Making and Access to Justice in Environmental Matters (the "Aarhus Convention"). *See generally Access to Information, Public Participation and Access to Justice in Environmental Matters (Aarhus Convention)*, EUR-LEX (Mar. 5, 2018), https://eur-lex.europa.eu/EN/legal-content/summary/access-to-information-public-participation-and-acc ess-to-justice-in-environmental-matters-aarhus-convention.html [https://perma.cc/YSS4-AQWV]. Such access is a necessary condition for "participat[ing] in decisions made about environmental matters." *Id.*

321. *E.g.*, Kaitlin Sheber, *Legal Rights for Nature: How the Idea of Recognizing Nature as a Legal Entity Can Spread and Make a Difference Globally*, 26 HASTINGS ENV'T L.J. 147, 147 (2020).

322. *Id.*

323. *See* Weinbaum, *supra* note 26, at 447–52 (explaining the unique benefits that unjust enrichment litigation poses against climate change).

1. Measuring Disgorgement

This Section briefly illustrates the operation of the disgorgement remedy, which is designed to remove the incentive to operate in an environmentally destructive manner.[324] In some situations, enrichment-based remedies offer better outcomes in this context compared to harm-based tort liability.

To illustrate this issue, consider the following stylized example. Suppose that a firm must choose between high and low levels of GHG emissions and that high emissions are extremely profitable for the firm, but also harmful to everyone else. For simplicity, assume that if the firm chooses high emissions, it invests 1 in production costs (this could be one billion dollars), enjoys an income of 4 from selling its products (so a profit of 3), and causes an overall environmental harm of 10 (in the long term). Conversely, if the firm chooses low emissions, it must make additional investments in more expensive equipment and materials, so production costs equal 2 and income from sales is only 3 (for a profit of 1), but no environmental harm is caused.

Under these simplified assumptions, the socially efficient solution, and the environmentally responsible one, would be to choose low emissions. This is because the overall outcome of choosing high emissions is a social loss of 7, while the outcome of choosing low emissions is an overall social benefit of 1. Yet, absent legal intervention, the firm's private incentive is to choose high emissions for a profit of 3, instead of low emissions for a profit of 1.

Let us now compare two possible legal regimes: a tort-based lawsuit and disgorgement of profits based on an unjust enrichment claim. First, under a tort claim, if the firm is facing a sanction of damages that is equal to the harm, it should theoretically choose low emissions, as is socially desirable. The firm will prefer the lower profit of 1 under low emissions, rather than the profit of 3 under high emissions, which will entail paying damages of 10. This result reflects the general efficiency of tort liability as a deterrent mechanism.[325] Yet in practice, as explained above, this efficient outcome is unlikely to be obtained here. The reason for this is that the full harm of 10 is difficult to observe and prove. Tort doctrine, as it now exists, is therefore unlikely to be able to reflect the harm in an appropriate damages award. Even if we know the harm is extremely high, this is insufficient to establish a monetary tort award; rather, compensation will require proof of a specific, measurable harm.[326] This means that damages will likely be measured only according to a small fraction of the full harm, or not granted at all.

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324. *See* Robert Cooter & Ariel Porat, *Disgorgement Damages for Accidents*, 44 J. LEGAL STUD. 249, 249 (2015).

325. *See* WILLIAM M. LANDES & RICHARD A. POSNER, THE ECONOMIC STRUCTURE OF TORT LAW 4–5 (1987); Richard A. Posner, *A Theory of Negligence*, 1 J. LEGAL STUD. 29, 32 (1972) (discussing the efficiency of tort liability with reference to the famous Hand formula); William M. Landes & Richard A. Posner, *The Positive Economic Theory of Tort Law*, 15 GA. L. REV. 851, 884–85 (1981) (same).

326. *See, e.g.*, STEPHEN A. SMITH, RIGHTS, WRONGS, AND INJUSTICES: THE STRUCTURE OF REMEDIAL LAW 249 (2019) ("[C]ompensatory damages are awarded on proof of, and set at the value of, pecuniary losses that the claimant suffered as a consequence of the defendant's actions.").

Therefore, a tort claim is highly unlikely to achieve the efficient outcome, and the firm will choose high emissions: the socially harmful yet privately profitable option.

Conversely, under a claim of unjust enrichment, the harm of 10 need not be measured. If the firm chooses high emissions, a claim for disgorgement of profits can be established without measuring this precise harm and linking it to the firm in terms of the but-for test of causation. Rather, it is sufficient to show that the choice of high emissions is generally inefficient and generally harmful, yet profitable for the firm. Under this remedy, the firm will be stripped of any ill-gotten gains, meaning it will not be able the retain the higher profit of 3 it was able to obtain by choosing the high emissions. Instead, it will be allowed only the lower profit of 1 it would have obtained under low emissions. This means the disgorgement payment in this case will equal 2, the sum stripping the defendant of ill-gotten gains in the sense that it brings the defendant to the position they would be in had they acted appropriately and not wrongfully. This mechanism will nullify the firm's incentive to choose the harmful option of high emissions.[327] This illustration highlights a simple point: taking away present gains is sufficient to induce optimal deterrence,[328] even if the precise magnitude of future harms is presently unknown or difficult to determine.

The effect on the incentive to pollute can be further fine-tuned using different measures of disgorgement. Thus, measuring disgorgement as described above, when the remedy equals the extra profits obtained through the violation compared to the legitimate level of profit, is just one option to operationalize the remedy. A second option would be to take away *all* profits obtained while the firm is conducting its operation in a manner that constitutes a wrong, and not just the "extra" profits. In the example above, this will mean that if the firm chose high emissions, it will be stripped of all its profits of 3 and will not be allowed to retain even the legitimate level of profit of 1 that it would have secured had it chosen low emissions. This more radical form of disgorgement might be justified for extremely abhorrent acts or when lower levels of recovery are considered insufficient to

327. If the firm chooses high emissions, it is also likely to bear the costs of litigation and may also be subject to a reputational sanction. This may break the tie and further deter the firm from choosing high emissions. On their own, as has been demonstrated, these effects are probably insufficient to dissuade the firm from choosing high emissions if this option is highly profitable.

328. Note that our simple example abstracts away from the real-world complexity of multiple firms who jointly cause the harm. There is a general debate in the literature surrounding efficient deterrence in the case of multiple tortfeasors and uncertainty as to who caused the accident. *See* Robert Young, Michael Faure, Paul Fenn & Jonathan Willis, *Multiple Tortfeasors: An Economic Analysis*, 3 REV. L. & ECON. 111, 115 (2007) ("The economic literature is . . . somewhat divided on the efficiency of joint and several liability as a way to deal with accidents caused by multiple tortfeasors."). For instance, Steven Shavell argues that when tortfeasors act sequentially and independently under a strict liability regime, then no division of liability is efficient, but under a negligence rule, efficiency can be achieved. *See* STEVEN SHAVELL, ECONOMIC ANALYSIS OF ACCIDENT LAW 164–65 (1st Harv. Univ. Press paperback ed., 2007). This intuition is confirmed by Lewis Kornhauser and Richard Revesz, but they show that efficient apportionment rules can be used to overcome the inefficiency of strict liability. *See generally* Lewis A. Kornhauser & Richard L. Revesz, *Sharing Damages Among Multiple Tortfeasors*, 98 YALE L. J. 831 (1989).

generate the necessary levels of deterrence. This operation of the disgorgement remedy still fits with the general rationale of the remedy, as the court orders the forfeiture of all profits made through the wrongful conduct.[329]

Another alternative measure for the disgorgement remedy is to consider the enrichment of the firm as the cost of untaken precautions.[330] Thus, it is possible to say that the measure of the firm's enrichment through its wrongful conduct is only the saved costs of the precautions it did not take when it chose high rather than low emissions. Under this alternative interpretation of the disgorgement remedy, the firm will only pay 1 in its disgorgement payment, for the difference between production costs of 2 under low emissions and 1 under high emissions. This measure of recovery can be used if the other measures are considered too high and lead to overdeterrence or chilling effects.[331]

This rich menu of remedy options can allow courts to tailor deterrence to appropriate levels. Thus, if courts fear that deterrence is too low and that some companies manage to avoid detection and sanction, higher measures of recovery can be used to account for this. This fits with a key goal of the law of unjust enrichment of stripping wrongdoers of ill-gotten gains,[332] thereby ensuring that the wrongful activity does not remain profitable.[333]

2. The Risk of Chilling Effects

A main challenge for our proposal is the possibility of a chilling effect or over-deterrence. Thus, liability in unjust enrichment could theoretically place a heavy burden on the activity of certain defendants, particularly producers and firms in the energy sector. Such burdens can cause these defendants to lower their activity levels, refrain from some commercial activities, or choose activities that are not optimal. Yet under current conditions, this does not appear to be a major concern, for several reasons.

First, the issue of underdeterrence in climate law is currently so prevalent that the possibility of overdeterrence seems almost unrealistic. Even if our proposal leads to a significant increase in deterrence, it seems unlikely that the change

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329. Imposing a large "fine," here through the loss of the entire profit, is consistent with Gary Becker's seminal work on the economics of crime. *See generally* Gary S. Becker, *Crime and Punishment: An Economic Approach*, 76 J. POL. ECON. 169 (1968). Becker famously showed that if wrongdoers can escape liability, it might be desirable to increase the magnitude of sanctions to achieve optimal deterrence. *See id.* However, note that there is also some criticism of Becker's proposition to impose high fines. *See, e.g.*, Roee Sarel, *Crime and Punishment in Times of Pandemics*, 54 EUR. J.L. & ECON. 155, 175–76 (2022).

330. *See generally* Cooter & Porat, *supra* note 324 (offering different interpretations for the measurement of the disgorgement remedies).

331. Among other things, restricting the disgorgement to the specific profit from reducing the cost of production (by using environmentally harmful inputs) ensures that it is not necessarily those firms that are generally the most profitable who will be sued. Instead, the profit is then directly tied to the magnitude of pollution rather than, say, effective marketing.

332. *See* RESTATEMENT (THIRD) OF RESTITUTION AND UNJUST ENRICHMENT § 51(4) (AM. L. INST. 2011).

333. *See* Ofer Grosskopf, *Protection of Competition Rules via the Law of Restitution*, 79 TEX. L. REV. 1981, 2007–08 (2001) (explaining that stripping wrongdoers of their gains is necessary to remove incentives for wrongdoing).

would be so drastic that it would result in overdeterrence. Efforts to address the climate crisis through legal means often face opposition from powerful commercial interests.[334] Although our proposal has advantages in overcoming regulatory capture, it is unrealistic to expect it to eliminate regulatory capture entirely. As a result, even if our proposal is adopted, we still expect that liability will not overwhelm commercial actors.

Second, to the degree that liability in unjust enrichment will increase deterrence, there is no reason to assume this will distort incentives. If some polluters limit their activities or reduce their operations, this would likely be a positive development. Of course, private consumers might bear some additional costs in paying for the consumption of goods, but this seems a fair price to pay for avoiding millions of deaths in the foreseeable future. Currently, consumption and production levels are excessive and do not adequately consider the interests of future generations.[335] If defendants limit their activity, it means that the interests of future generations are being better accounted for. To avoid liability, potential defendants do not necessarily have to reduce their activities but can simply improve their compliance with environmental norms and regulations. This is surely a desirable outcome.

Third, the details of our proposal offer some significant limitations on the use of unjust enrichment claims in climate litigation. Thus, we argue that these claims should be available only when the defendant can prove an actual wrong, or in the absence of a wrong when the set of conditions outlined in Section III.B.2 are met. These limitations are designed to create a legal framework that enables a measured use of unjust enrichment law in climate litigation and is unlikely to lead to overdeterrence.

3. Mitigation of Harms

A familiar drawback of compensation for harm is the fact that it distorts the incentives of victims to invest in precautions.[336] Thus, if victims or injured parties

334. *See, e.g.*, Juho Vesa, Antti Gronow & Tuomas Ylä-Anttila, *The Quiet Opposition: How the Pro-Economy Lobby Influences Climate Policy*, GLOB. ENV'T CHANGE, July 2020, at 1, 1 (suggesting that "influential organizations may block ambitious climate change policies in corporatist countries without an extensive media strategy or a strong denialist message"); Joshua A. Basseches, Rebecca Bromley-Trujillo, Maxwell T. Boykoff, Trevor Culhane, Galen Hall, Noel Healy, David J. Hess, David Hsu, Rachel M. Krause, Harland Prechel, J. Timmons Roberts & Jennie C. Stephens, *Climate Policy Conflict in the U.S. States: A Critical Review and Way Forward*, CLIMATIC CHANGE, Feb. 2022, at 32, 32 (reviewing "the political structures and interest groups that slow [climate] action," examining "emerging tensions between climate justice and the technocratic and/or market-oriented approaches traditionally taken by many mainstream environmental groups," and discussing potential solutions to overcome these obstacles).

335. *See, e.g.*, James E. Hansen, Is There Still Time to Avoid 'Dangerous Anthropogenic Interference' with Global Climate? A Tribute to Charles David Keeling, Presentation at the American Geophysical Union 14 (Dec. 6, 2005) (available at http://www.columbia.edu/~jeh1/2005/Keeling_20051206.pdf [https://perma.cc/X45E-3VTA]) ("The special interests seek to maintain short-term profits with little regard to either the long-term impact on the planet that will be inherited by our children and grandchildren or the long-term economic well-being of our country.").

336. *See* COOTER & ULEN, *supra* note 93, at 331–33 (offering the paradox of compensation, whereby the prospect of compensation distorts the incentives of injured parties to invest in precautions).

are fully compensated for harms, they have insufficient incentives to invest in reducing the harm. Any such investment is costly and unprofitable for the victim because it lowers the amount of compensation.[337] In the context of climate change, this seems like a real concern. For instance, if members of a seaside community anticipate being compensated for their harms in large sums, this may hinder their incentives to invest in mitigation.

We suggest that this concern becomes largely irrelevant with unjust enrichment; for instance, if seaside communities know that the recovery they receive equals the gains to polluters, they still retain a full incentive to minimize harms, if they can. Unjust enrichment doctrine disconnects the remedy from the harm, thereby eliminating the insurance function of damages.[338] This is another advantage of our proposal from the perspective of achieving better incentives for plaintiffs.

CONCLUSION

The law of unjust enrichment provides promising, diverse, and hitherto underdeveloped legal mechanisms for successful climate litigation. The doctrine has two key benefits. First, when defendants engage in clear environmental violations, but the harms are difficult to quantify, the legal concepts of wrongful enrichment and disgorgement of profit can offer effective remedies. Second, when defendants are not technically wrongdoers in the sense required to establish tort liability, concepts of unjust enrichment without a wrong can provide relevant legal responses when appropriate.

The doctrine of unjust enrichment, focusing on gains rather than harms and relaxing the requirements of wrongdoing, is a more natural fit for climate litigation than tort law.[339] The climate crisis involves abstract and dispersed harms continuing far into the future, which are difficult to identify, quantify, and attribute to particular actors.[340] Additionally, the climate crisis is also driven by activities that are not currently defined as wrongs or violations of specific legal standards.[341] This makes tort law uniquely unfit for climate litigation.

By contrast, the challenges of climate litigation are far less daunting from the perspective of the law of unjust enrichment. Processes contributing to climate change are unjust (even if only generally harmful) and highly profitable only for some. From a policy standpoint, the application of unjust enrichment concepts to address the climate crisis is a necessary step. An effective legal response to this crisis must ensure that causing environmental harm carries no financial gain.

337. *See id.*

338. *See* Yehonatan Givati & Yotam Kaplan, *Over-Reliance Under Contractual Disgorgement*, 20 AM. L. & ECON. REV. 82, 93–95 (2018) (studying the ability of disgorgement remedies to overcome the problem of underinvestment by the injured party).

339. Farber, *supra* note 26, at 388–94.

340. *See supra* notes 20–22, 291 and accompanying text.

341. *See* Burkett, *supra* note 22, at 11144.