

Climate Homicide: Prosecuting Big Oil for Climate Deaths

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Prosecutors regularly bring homicide charges against individuals and corporations whose reckless or negligent acts or omissions cause unintentional deaths, as well as those whose misdemeanors or felonies cause unintentional deaths. Fossil fuel companies learned decades ago that what they produced, marketed, and sold would generate “globally catastrophic” climate change. Rather than alert the public and curtail their operations, they worked to deceive the public about these harms and to prevent regulation of their lethal conduct. They funded efforts to call sound science into doubt and to confuse their shareholders, consumers, and regulators. And they poured money into political campaigns to elect or install judges, legislators, and executive officials hostile to any litigation, regulation, or competition that might limit their profits. Today, the climate change that they forecast has already killed thousands of people in the United States, and it is expected to become increasingly lethal for the foreseeable future. Given the extreme lethality of the conduct and the awareness of the catastrophic risk on the part of fossil fuel companies, should they be charged with homicide? Could they be convicted? In answering these questions, this Article makes several contributions to our understanding of criminal law and the role it could play in combating crimes committed at a massive scale. It describes the doctrinal and social predicates of homicide prosecutions where corporate conduct endangers much or all of the public. It also identifies important advantages of homicide prosecutions relative to civil and regulatory remedies, and it details how and why prosecution for homicide may be the most effective legal remedy available in cases like this. Finally, it argues that, if our criminal legal system cannot focus more intently on climate crimes—and

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soon—we may leave future generations with significantly less for the law to protect.

INTRODUCTION

Activists and journalists declaim the executives of ExxonMobil, Shell, and other large oil companies as “mass murderers.”⁴ Lamenting that “millions of human beings will die so that they can have private planes and huge mansions,”⁵ they talk of “[d]ragging the corporate titans who profited from driving the world to the brink before a judge.”⁶ But as of this writing, no prosecutor in any jurisdiction is bringing homicide charges of any kind against fossil fuel companies (FFCs) for even a single death related to climate change.⁷ They should.

The case for homicide prosecutions is increasingly compelling. A steady growth in the information about what FFCs knew and what they did with that knowledge is revealing a story of antisocial conduct generating lethal harm so extensive it may soon become unparalleled in human history.⁸

⁴ Kate Aronoff, *It's Time to Try Fossil-Fuel Executives for Crimes Against Humanity*, JACOBIN (Feb. 5, 2019).

⁵ Juan Cole, *Are ExxonMobil Execs the Most Evil People in the 200K-Year History of Humanity?*, COMMON DREAMS (May 19, 2019).

⁶ James Robins, *The Case for Calling Climate Change “Genocide,”* THE NEW REPUBLIC (Sept. 23, 2020).

⁷ Many others have suggested criminal prosecutions more broadly. Notably, Professor Rena Steinzor has suggested several other forms of criminal prosecution for harming the environment. See RENA STEINZOR, WHY NOT JAIL? INDUSTRIAL CATASTROPHES, CORPORATE MALFEASANCE, AND GOVERNMENT INACTION (2015). See also Donna Minha, *The Possibility of Prosecuting Corporations for Climate Crimes Before the International Criminal Court: All Roads Lead to the Rome Statute?*, 41 Mich. J. Int'l L. 491 (2020).

⁸ See, e.g., R. Daniel Bressler et al., *Estimates of Country Level Temperature-Related Mortality Damage Functions*, 11 Sci. Reps. 20282 (2021) (giving a central estimate 4.2% increase in global mortality from climate change by 2100 under RCP 8.5 assumptions). Assuming a total global population of 10.9 billion in 2100, this would amount to approximately 500 million excess climate-related deaths per year. See *Population Facts*, United Nations Dep't of Econ. & Soc. Affs. (Dec. 2019). There are also more conservative estimates for the United States. See Whanhee Lee et al., *Projections of Excess Mortality Related to Diurnal Temperature Range Under Climate Change Scenarios: A Multi-Country Modeling Study*, 4 Lancet Planet Health 512 (2020) (estimating an additional increase of approximately 5.5% in excess mortality caused by carbon-induced climate change by 2100 under RCP 8.5 assumptions, with the effect of increased temperatures on mortality being “most prominent in South Africa, Mexico, Spain, and the USA.”). See also Drew Shindell et al., *The Effects of Heat Exposure on Human Mortality Throughout the United States*, 4 GeoHealth, Mar. 26, 2020, at 1 (estimating 12,000 excess deaths per year in the United

FFCs have long understood the “globally catastrophic” risks that the production, marketing, and sale of their product generates.⁹ But when confronted with extensive internal and external research about the grave dangers posed by their business model, they did not notify the public, regulators, or legislators, much less work to find solutions or change their business model. Instead, they developed extensive disinformation and political influence campaigns to obscure the risks, confuse others, and block legal or regulatory restriction of their increasingly lethal conduct.¹⁰ Moreover, while they put their wealth to work reducing regulatory and legal risks to their profit margins, they privately used the data they disputed and obscured to reduce their own exposure to climate-change-related industrial risks to further maximize their future profits.¹¹

FFCs were technically sophisticated enough to know that they could hide the harms they were generating from lay observers for decades, allowing them to earn trillions of dollars while researchers, activists, and regulators struggled to overcome the sophisticated disinformation and political-influence campaigns these profits supported.¹² In recent years, the harms have become increasingly lethal and will likely continue to worsen for decades to come. These harms, while global, already include thousands of readily foreseeable deaths of residents of the United States, a toll that may escalate into the hundreds of thousands and, over time, potentially millions.¹³

States currently caused by climate change related heat, and up to 36,000 climate-change related deaths every year by 2100 under RCP 8.5 assumptions).

⁹ *Infra* note ___ and accompanying text. *See generally infra* Part II.C.

¹⁰ Sandra Laville, *Top Oil Firms Spending Millions Lobbying to Block Climate Change Policies*, *The Guardian* (March 21, 2019) (“The successful lobbying and direct opposition to policy measures to tackle global warming have hindered governments globally in their efforts to implement policies after the Paris agreement to meet climate targets and keep warming below 1.5C.”); Jillian Ambrose, *US Oil Giants Top List of Lobby Offenders Holding Back Climate Action*, *The Guardian* (Nov. 3, 2021). (“ExxonMobil and Chevron are the world’s most obstructive organisations when it comes to governments setting climate policies”). *See also infra* Part II.

¹¹ *See* Amy Lieberman & Susanne Rust, *Big Oil Braced for Global Warming While It Fought Regulations*, *L.A. Times* (Dec. 31, 2015) (“As many of the world’s major oil companies — including Exxon, Mobil, and Shell — joined a multimillion-dollar industry effort to stave off new regulations to address climate change, they were quietly safeguarding billion-dollar infrastructure projects from rising sea levels, warming temperatures and increasing storm severity.”); *See also infra* Part II.C.

¹² *See, e.g.*, Matthew Taylor & Jillian Ambrose, *Revealed: Big Oil's Profits Since 1990 Total Nearly \$2tn*, *The Guardian* (Feb. 12, 2020).

¹³ *See* Shindell et al, *supra* note 8.

The summary above describes the core elements of an ongoing mass homicide: conduct undertaken with a culpable mental state that substantially contributes to or accelerates death.¹⁴ Much of the conduct—the production, marketing, and sale of their harmful product—is undisputed. Regardless of whether FFCs knew their conduct would contribute to these lethal risks, were aware of the substantial and unjustifiable risks they were running, or merely should have known and should have investigated further—that is, whether they had a knowing, reckless, or negligent attitude towards these risks—they satisfy at least one of the culpable mental states required for some gradation of homicide. Further, under misdemeanor manslaughter or felony murder laws, if prosecutors can prove that FFCs engaged in any related criminal conduct involving fraud, racketeering, anti-competitive practices, or safety violations, homicide liability could obtain independent of any mental state regarding the risk of death.¹⁵ As additional evidence of FFCs’ knowledge of the lethal risks they were generating surfaces through leaks and court-mandated discovery, obstacles to a successful prosecution are falling away.

At the same time, with every new wave of climate-related deaths, the justification for prosecution grows. Although some of the harmful externalities that FFCs generate may be suitable for tort or regulatory suits, the lethality of FFCs’ conduct, their awareness of the risks they are generating, and their efforts to obscure those risks make criminal prosecution for homicide particularly appropriate.¹⁶ Perhaps most importantly, if FFCs continue to fight speedy reductions in the harms they are generating, and if they continue to obstruct or delay state and federal regulation and civil suits designed to reduce the lethal impact of their conduct, then homicide prosecutions may prove necessary to prevent the escalating threat that their lethal conduct poses to hundreds of thousands, if not millions of potential victims in the United States.¹⁷

Prosecutors regularly bring charges against corporations for far less serious crimes. But many are reluctant to prosecute corporations, perhaps because they see no obvious benefit. A corporation, after all, cannot be thrown in jail. These prosecutors may be unaware of modern remedies that

¹⁴ See *infra* Part IV.

¹⁵ This evidence should be convincing enough to overcome the presumption that externalities of valuable economic activity should be managed through civil remedies. See Jules L. Coleman, *Crime, Kickers, and Transaction Structure*, 27 *NOMOS* 313 (1985); see also Alvin K. Klevorick, *Legal Theory and the Economic Analysis of Torts and Crimes*, 85 *COLUM. L. REV.* 905 (1985). See also *infra* Part V.

¹⁶ See *infra* Part I.E.

¹⁷ See *infra* Part V.

can effectively force harmful corporate actors to adopt pro-social practices while preserving the value of the corporation itself. This Article reviews these remedies, highlighting one particularly appropriate sanction: restructuring into public benefit corporations. Rewriting the corporate form of criminal corporations is, this Article argues, particularly attractive when the corporations in question are engaging in what, doctrinally speaking, amounts to mass homicide.

The argument proceeds as follows. Part I of this Article lays out a general justification for prosecution. Part II outlines factual predicates that could form the basis of homicide liability for FFCs. Part III describes five possible homicide charges and how the facts could support each: negligent homicide, manslaughter, misdemeanor manslaughter, depraved and malignant heart murder, and felony murder. Part IV explores possible affirmative defenses. Part V discusses ways that the threat of criminal liability could support remedies, even in the absence of a full criminal prosecution, and how FFCs could alter their conduct to reduce their criminal exposure.

I. FFCs SHOULD FACE PROSECUTION FOR HOMICIDE

Before discussing the facts and doctrine relevant to homicide charges in Parts II–IV, this Article starts with a more general case for prosecuting FFCs for homicide.

A. FFCs Are Committing Homicide

We begin with a basic point about homicide doctrine: it is meant to protect life, to punish those who kill, and to give expression to a core value that the lives of all people are valued by the law and by society. In this case, the material stakes are high: if FFCs continue to produce, market, and sell all available fossil fuels, they will contribute to the deaths of an innumerable large number of people and render large regions of the planet unfit for human life.¹⁸ The stakes are also high for the law: if the law does not call FFCs to account, does not sufficiently value or protect the lives being sacrificed to bolster FFC profits, then it will have failed colossally—a

¹⁸ See generally Elizabeth Kolbert, *The Sixth Extinction: An Unnatural History* [hereinafter Kolbert, *Sixth Extinction*]; David Wallace-Wells, *The Uninhabitable Earth: Life After Warming* (2019) [hereinafter Wallace-Wells, *Uninhabitable Earth*].

broad, systemic failure that may break the increasingly equitable social ordering humanity has slowly, over centuries, worked to foster.¹⁹

In its most abbreviated form, the legal definition of homicide is causing death by an act or omission with a culpable mental state.²⁰ Publicly available information shows that FFCs conducted and relied on research into the consequences of using their product, and they found not some minor risk of harm at the margin, but risks of harm so great that no reasonable person would disregard them. Their own inquiries, combined with other research they consumed, showed among other things that the production and use of fossil fuels would render large swaths of the planet uninhabitable, pushing many cities under water, and generating such extensive drought and flooding in food-producing regions of the globe that mass famine would follow.²¹

FFCs were not naive or uninformed actors. They were sophisticated enough to know that these effects would be delayed such that the public would not perceive them for decades—in fact, delayed until too late to prevent grave harm. While some FFCs considered pivoting to less destructive forms of energy production, most doubled down on their lethal business model, funding disinformation campaigns designed to prevent public or regulatory responses that would diminish their profits. They were extraordinarily successful, reaping trillions of dollars in revenue over decades. No reasonable and informed person doubts that FFCs were aware of the harms they were generating—in other words, that they caused or contributed to deaths, with a culpable mental state. And that, as any prosecutor can attest, is the core of homicide.

B. Homicide Prosecutions Are Justified

Consider now the standard justifications for punishment and how climate-related homicides compare with other unintentional homicides in relation to each. From a utilitarian perspective (and for reasons detailed in Part V below), criminal prosecution may be an effective way for states to prevent further harm and to require remediation.²² If criminal prosecution

¹⁹ See generally Tom Bingham, *The Rule of Law* (2011) (describing the centrality of the principle that “no one is above the law” to human welfare and modern democratic life); see also John Rawls, *The Law of Peoples* (2001) (describing the importance of egalitarian enforcement of the law to a just society).

²⁰ See *infra* Part IV.B.

²¹ *Infra* Part II. See also Kolbert, *Sixth Extinction*, *supra* note 18; Wallace-Wells, *Uninhabitable Earth*, *supra* note 18.

²² See Jeremy Bentham, *An Introduction to the Principles of Morals and Legislation*, in *The Utilitarians* [first page], 170 (Dolphin Books 1961) (describing punishment as

can reduce by even a small fraction the future deaths caused by the prior and ongoing conduct of FFCs, it will have done a significant service. From a utilitarian perspective, the failure to use the power of the criminal law to compel those who threaten humanity's future to desist and repair what damage they can would count as a failure of the highest order.

From the perspective of fairness and just deserts,²³ sophisticated, wealthy actors who are willing to let millions die so they might accumulate more wealth require prosecution as a matter of justice.²⁴ And although Kantian and post-Kantian scholars may disagree about punishment of the ignorant or the uneducated, they have no pity for the learned and powerful actors who use their advantage to harm others for their own benefit. Deception and sophistry are, for nearly all retributivists, the opposite of exculpating; they reveal the mental acuity to understand and manipulate others to achieve some private benefit at another's expense.²⁵

Similarly, the expressive justification of punishment—the view that punishment gives expression to a community's fundamental values—falls squarely in favor of prosecution.²⁶ For if we are willing to prosecute the poor, the hapless, and the abused when their conduct, even unintentional conduct, causes death, what does it say—what message does it send—if we refuse to prosecute those who have the advantages of money, notice, sophistication, and influence?²⁷

detering potential offenders by raising the costs associated with criminal acts); Gary S. Becker, *Crime and Punishment: An Economic Approach*, 76 J. Pol. Econ. 169 (1968) (formalizing the argument for deterrence in the language of neoclassical economics).

²³ See Immanuel Kant, *The Philosophy of Law* 194–98 (W. Hastie trans., The Lawbook Exchange, Ltd. ed. 2002) (1887) (justice requires that punishment be “pronounced over all criminals proportionate to their internal wickedness”); Andrew von Hirsch, *Doing Justice: The Choice of Punishments* 69 (1976) (proportionate punishment is a “requirement of justice”); Herbert Morris, *Persons and Punishment*, 52 *Monist* 475 (1968) (punishment should redress the unfair advantage that lawbreakers gain over those who respect that law).

²⁴ See Matthew Talbert, *Moral Responsibility*, *Stan. Encyclopedia of Phil.* (Oct. 16, 2019), <https://plato.stanford.edu/entries/moral-responsibility/> (describing an actor's moral responsibility for any action as depending on the actors “powers” and “capacities”).

²⁵ That is, they treat others as means rather than ends. See generally Thomas L. Carson, *Lying and Deception: Theory and Practice* (2010); Leo Katz, *Ill-Gotten Gains: Evasion, Blackmail, Fraud, and Kindred Puzzles of the Law* (1996).

²⁶ See Dan M. Kahan, *What Do Alternative Sanctions Mean?*, 63 *U. Chi. L. Rev.* 591, 598 (1996) (“Under the expressive view, the signification of punishment is moral condemnation.”); cf., Richard H. McAdams, *The Expressive Powers of Law: Theories and Limits* (2015) (describing the expressive function of law as helping to explain behavior).

²⁷ The answer that it would say different things to different people is undoubtedly true. A lack of enforcement that tells the powerful they can get away with killing has a broader expressive message that may be equally if not more important than the direct signaling sent to those involved in killings.

These concerns go to the heart of challenges currently confronting the criminal legal system in every jurisdiction today. While the politically powerless spend years in prison for conduct that arguably harms no one,²⁸ powerful corporations engaging in lethal conduct at a massive scale are avoiding even the threat of prosecution for the deaths they cause. Whether FFCs are insulated by their wealth and power or a more subtle confluence of those factors with their ability to portray their conduct as productive, beneficial, or even necessary, the disparity is striking. Justice Black famously said, “There can be no equal justice where the kind of trial a man gets depends on the amount of money he has.”²⁹ The “kind of trial” FFCs desire is no trial at all—and that is exactly what they are getting. Under any major theory of punishment, that is unjust.

C. FFCs’ Culpability Far Exceeds That in Ordinary Homicide Cases

Homicide prosecutions for far less culpable and lethal conduct are regularly undertaken across the country. People are regularly indicted and convicted over momentary negligence that kills a single person.³⁰ Consider a few examples:

- A nurse mistakenly injects a patient with a paralytic instead of a sedative; the nurse is convicted of negligent homicide for the death of the patient.³¹
- A woman swerves around a car that stopped abruptly in front of her, hitting and killing a child running into the road; the woman is convicted of vehicular manslaughter.³²

²⁸ Here, we are thinking of drug possession cases. *See generally* Michelle Alexander, *The New Jim Crow: Mass Incarceration in the Age of Colorblindness* (2015) (describing many harms of the war on drugs). Some have also argued that drug use can be helpful. *See generally* Carl L. Hart, *Drug Use for Grown Ups: Chasing Liberty in the Land of Fear* (2021) (describing benefits of responsible drug use).

²⁹ *Griffin v. Illinois*, 351 U.S. 12, 19 (1956).

³⁰ *See infra* Part IV. Some of the most common unintentional homicides involve traffic accidents and momentary negligent or reckless behavior. *See generally* John Clennan, *How To Deter Pedestrian Deaths: A Utilitarian Perspective on Careless Driving*, 36 *Touro L. Rev.* 435 (2020) (reviewing some recent cases and doctrine).

³¹ Mariah Timms, *Ex-Nurse RaDonna Vaught Found Guilty on Two Charges in Death of Patient*, *Nashville Tennessean* (Mar. 25, 2022).

³² *Actress Gets Probation for Running Down Boy*, *L.A. Times* (Nov. 28, 2001, 12:00 AM), <https://www.latimes.com/archives/la-xpm-2001-nov-28-me-9037-story.html>; *see also* Christopher Hoffman, *Enfield Teacher Accused of Negligent Homicide in Pedestrian's Death in Newington*, *Hartford Courant* (Aug. 4, 2016, 2:24 PM), <https://www.courant.com/breaking-news/hc-newington-enfield-teacher-accident-homicide->

- A man brings his five-year-old son to a park to play, then crosses the street to speak with a friend; his son follows behind him and is hit and killed by a passing car; the father is convicted of involuntary homicide for the death of his son.³³

Far less harmful and culpable behavior than that of FFCs has supported prosecutions for murder as well:

- A man attempts to shoplift razor blades, and one of the guards who apprehends and handcuffs him subsequently dies of a heart attack; the man is convicted of felony murder for the death of the security guard.³⁴
- After being pulled over for following another car too closely, a driver flees the scene in his car. During the ensuing pursuit, the suspect stops his car and walks away. The pursuing officers collide with each other, killing one of the officers. The driver is convicted of felony murder for the death of the officer.³⁵
- A man and his cousin steal some cocaine. The man is present when his cousin consumes too much cocaine and dies. The man is convicted of felony murder for his cousin's death.³⁶

In none of these cases did the defendants' lethality reach the scale of FFCs'. In none did the defendants have a long history of consuming and then disregarding evidence about lethal risks associated with their conduct. And in none of these cases were the defendants engaged in campaigns of fraud or deception designed to hide both the lethality of their conduct and their knowledge of that lethality.

It will require considerable work to successfully prosecute FFCs because they possess real political power, sophistication, and considerable financial resources. Unlike most homicide defendants, FFCs will be represented by some of the most skilled and highly compensated attorneys

0805-20160804-story.html (describing charges against Alyssa Santos for running a red light and hitting a man drunkenly staggering into the road).

³³ Ty Tagami, *Mother: Father's Punishment Too Steep in Boy's Death*, The Atlanta J.-Const. (Oct. 18, 2010).

³⁴ Times Staff Writer, *Shoplifter Gets Five Years in Death Of Target Guard*, Tampa Bay Times (Jan. 14, 2013).

³⁵ Beth Schwartzapfel, *D'Angelo Burgess Fled From Police. Does That Make Him a Killer?*, The Marshall Project (May 30, 2019, 6:00 AM), <https://www.themarshallproject.org/2019/05/30/d-angelo-burgess-fled-from-police-does-th-at-make-him-a-killer>.

³⁶ *Hickman v. Commonwealth*, 398 S.E.2d 698 (Va. Ct. App. 1990).

available, and their counsel will make every argument in their defense.³⁷ They will deploy considerable resources to ensure that the prosecution will fail to indict, face speedy dismissal, or fail to obtain a conviction. If recent history is any guide, they may attack their prosecutors politically and in the courts. But these factors reflect the high status of the defendants, not their culpability, and failure to prosecute them for these reasons would be tantamount to an admission that the powerful are above the law.

This Article does not suggest that FFCs or their officers should be made to suffer in service of some vindictive or punitive purpose. Nor does it suggest there would be any utility in their suffering. Rather, in line with human and traditional principles of justice, it acknowledges that true accountability requires a reckoning of the harm FFCs have inflicted and the acts they must undertake to restore the people and communities they have harmed to a less damaged state.³⁸ As argued at greater length below, there are few tools as powerful as criminal prosecution for bringing parties as powerful as FFCs to the table for a meaningful reckoning.

We turn now to the relevant facts and law.

II. FFCs' ACTS, OMISSIONS, AND AWARENESS

Over the past decade, a wealth of evidence has surfaced demonstrating the scope of FFCs' criminal conduct, the lethal harms that their conduct caused, and their awareness of the relationship between their conduct and those harms. We start with what every reasonable person familiar with the science of climate change now knows: FFCs have caused and are continuing to cause death at an increasingly massive scale. We now have sufficient information in the public record to conclude that, but for the FFC's production, marketing, and sale of their lethal product, and but for FFC's disinformation campaigns designed to contradict and distract from climate science, and but for FFC's multi-million dollar political influence campaigns designed to fend off reasonable regulation and alternative forms of energy, thousands of Americans lives would have been spared in past

³⁷ Recent empirical research shows considerable compensation effects on defense attorney performance. See Michael A. Roach, *Indigent Defense Counsel, Attorney Quality, and Defendant Outcomes*, 15 Am. L. & Econ. Rev. 577(2014); Amanda Agan et al., *Is Your Lawyer a Lemon? Incentives and Selection in the Public Provision of Criminal Defense* (Nat'l Bureau of Econ. Rsch., Working Paper No. 24579, 2018), <https://www.nber.org/papers/w24579>; Andrew J. Lee, *Compensation, Incentives, and the Right to Effective Legal Counsel for Poor Criminal Defendants* (Dec. 23, 2021) (unpublished working paper), <https://sites.google.com/view/ajlee/research>.

³⁸ See generally Howard Zehr, *The Little Book of Restorative Justice* (2002).

decades, and hundreds of thousands more would be spared over the next several.

We then turn to FFCs' awareness of the relationship between their conduct and the lethal harms they foresaw flowing from that conduct. Again, facts now in the public record show that FFCs generated internal research and engaged with external research clearly demonstrating the risks of mass mortality associated with their business practices.

And finally, we examine the campaign that FFCs undertook to hide the relationship between their conduct and these increasingly massive lethal harms. FFCs not only refused to alert the public or relevant government actors; they funded campaigns to sow doubt and confusion regarding this research and the extent of scientific consensus about the role of fossil fuels in altering the climate, the catastrophic effects of the carbon-forced climate change, and the ability of regulation, legislation, and alternative energy sources to mitigate these risks.

A. FFCs' Conduct Caused Death

FFCs' business practices caused and continue to cause thousands of deaths every year in the United States. Experts expect this lethality to grow significantly in coming years if their practices continue unabated.³⁹

A significant portion of FFC-driven mortality derives from the well-documented increases in extreme weather events driven by carbon emissions from fossil-fuels. Although FFC-induced climate change is not the sole cause of individual hurricanes, wildfires, extreme heat waves, or other destructive weather events, it makes these events frequent, more damaging, and more deadly.⁴⁰ A spate of record-breaking, climate-fueled

³⁹ This Article primarily discusses U.S. mortality because it addresses the question of criminal prosecution under domestic law. In many other parts of the world, the harms of climate change are far worse and the death toll vastly higher. David Cipler et al., *A Burden to Share? Addressing Unequal Climate Impacts in the Least Developed Countries*, INT'L INST. FOR ENV'T & DEV., Nov. 2013, at 1.

⁴⁰ The science linking climate change with weather disasters, known as "attribution science," is improving rapidly. See National Academy of Sciences, Engineering, and Medicine, *Attribution of Extreme Weather Events in the Context of Climate Change* (2016); Quirin Schiermeier, *Droughts, Heatwaves And Floods: How To Tell When Climate Change Is To Blame*, 560 *Nature* 7717 (2018). We may be the first to link attribution science to the distinctive form of causation doctrine of modern criminal codes modeled on the MPC, but many others have discussed the legal significance of climate attribution more generally. See, e.g., Michael Burger, Jessica Wentz & Radley Horton, *The Law and Science of Climate Change Attribution*, 45 *Colum. J. Envtl. L.* 57 (2020); NAT'L ACADS. OF SCIS., ENG'G, & MED., Sophie Marjanac & Lindene Patton, *Extreme Weather Event Attribution Science And Climate Change Litigation*, 36 *J. Energy & Nat. Res. L.* 3, 265 (2018); Rupert

hurricanes provides a vivid example.⁴¹ experts have drawn direct links between Hurricanes Harvey, Irma, Maria,⁴² Michael,⁴³ Florence,⁴⁴ and Dorian,⁴⁵ and the heat-trapping emissions associated with burning fossil fuels. The deadliest of these hurricanes, Maria, killed roughly 3,000 people, nearly all in Puerto Rico.⁴⁶

As the science of climate attribution becomes more robust and precise, scientists are increasingly certain in their estimates of the proportion of deaths caused by fossil-fuel-driven climate change. For example, a recent study found that 35 percent of heat-related deaths in select U.S. cities from 1991 to 2018 were due to carbon-driven climate change.⁴⁷ Researchers estimate that deaths due to heat exposure related to climate change have risen to 12,000 annually in the contiguous United States over the last decade, and are projected to increase to an average of 96,000 deaths per

F Stuart-Smith, Friederike EL Otto & Thom Wetzer, *Liability for Climate Change Impacts: the Role of Climate Attribution Science*, in Corporate Responsibility and Liability in Relation to Climate Change (Intersentia 2022).

⁴¹ *Stronger Hurricanes*, CLIMATE CENT. (Sept. 23, 2020), <https://medialibrary.climatecentral.org/resources/2020-stronger-hurricanes>.

⁴² Umair Irfan, *One of the Clearest Signs of Climate Change in Hurricanes Maria, Irma, and Harvey Was the Rain*, VOX (Sept. 29, 2017, 9:46 AM), <https://www.vox.com/energy-and-environment/2017/9/28/16362522/hurricane-maria-2017-irma-harvey-rain-flooding-climate-change>.

⁴³ Jeff Berardelli, *Climate Change Provided High Octane Fuel for Hurricane Michael*, CBS NEWS (Oct. 13, 2018, 2:59 PM), <https://www.cbsnews.com/news/climate-change-provided-high-octane-fuel-for-hurricane-michael/>.

⁴⁴ Laura Parker, *Hurricane Florence's Rains May Be 50% Worse Thanks to Climate Change*, NAT'L GEOGRAPHIC (Sept. 13, 2018), <https://www.nationalgeographic.com/environment/2018/09/hurricane-florence-rain-climate-change-science/>.

⁴⁵ John Schwartz, *How Has Climate Change Affected Hurricane Dorian?*, N.Y. TIMES (Sept. 3, 2019), <https://www.nytimes.com/2019/09/03/climate/hurricane-dorian-climate-change.html>.

⁴⁶ Sheri Fink, *Nearly a Year After Hurricane Maria, Puerto Rico Revises Death Toll to 2,975*, N.Y. TIMES (Aug. 28, 2018), <https://www.nytimes.com/2018/08/28/us/puerto-rico-hurricane-maria-deaths.html>. See also *infra* notes __=__ and accompanying text (discussing related legal actions).

⁴⁷ See, e.g., Seth Borenstein, *Study Blames Climate Change for 37% of Global Heat Deaths*, ASSOCIATED PRESS (May 31, 2021), <https://apnews.com/article/climate-climate-change-science-environment-and-nature-f0b4ba4ed0e335035fdb1ba8c8f65e53>.

year before the end of the century.⁴⁸ Most recently, in June 2021, an unprecedented heat wave “left hundreds dead across the Pacific Northwest,” and increasingly frequent fires ravage the West Coast.⁴⁹ Global warming has also “vastly increased” the likelihood of wildfires—and that they will burn more intensely and spread more widely.⁵⁰

Fossil-fuel-driven climate change also exacerbates mortality in other ways. In the United States, air pollution from fossil fuels causes more than 13 percent of deaths of people over age 13 and 6.6 percent of deaths of children aged five and under.⁵¹ Fossil fuel combustion exacerbates air pollution because increased temperatures fuel the chemical reactions that

⁴⁸ See Shindell et al, *supra* note 8; see also G. Brooke Anderson et al., *Projected Trends in High-Mortality Heatwaves Under Different Scenarios of Climate, Population, and Adaptation in 82 US Communities*, 146 *CLIMATE CHANGE* 455 (2018).

⁴⁹ Blacki Migliozi et al., *Record Wildfires on the West Coast Are Capping a Disastrous Decade*, *N.Y. Times* (Sept. 24, 2020), <https://www.nytimes.com/interactive/2020/09/24/climate/fires-worst-year-california-oregon-washington.html> (“In the last 20 years, on average, the number of square miles burned annually across California, Oregon and Washington has increased sixfold compared with the average between 1950 and 2000.”).

⁵⁰ Alejandra Borunda, *The Science Connecting Wildfires to Climate Change*, *NAT’L GEOGRAPHIC* (Sept. 17, 2020), <https://www.nationalgeographic.com/science/article/climate-change-increases-risk-fires-western-us>. Jeff Masters, *Reviewing the Horrid Global 2020 Wildfire Season*, *YALE CLIMATE CONNECTIONS*, (Jan. 4, 2021).

⁵¹ See Karn Vohra et al., *Global Mortality from Outdoor Fine Particle Pollution Generated by Fossil Fuel Combustion: Results from GEOS-Chem*, 195 *ENV’T RSCH.* 110754 (2021) (air pollution is responsible for 8.7 million deaths per year). See also Tatyana Deryugina et al., *The Mortality and Medical Costs of Air Pollution: Evidence from Changes in Wind Direction*, 109 *AM. ECON. REV.*, 4178, 4192 (2019) (describing mortality effects of pollution); Michael L. Anderson, *As the Wind Blows: The Effects of Long-Term Exposure to Air Pollution on Mortality*, 18 *J. Eur. Econ. Assoc.* 1886, 1886 (2019) (finding that doubling “time spent downwind of a highway increases mortality among individuals 75 or older by 3.6%-6.5%.”). More recently, pollution exposure is increasing mortality for those infected with SARS-CoV-2. See Claudia L. Persico & Kathryn R. Johnson, *The Effects of Increased Pollution on COVID-19 Cases and Deaths*, 107 *J. Env’t Econ. & Mgmt.*, at 1 (May 2021) (finding that increases in fossil-fuel pollution are associated with a “10.6 percent increase in deaths from COVID-19”).

create smog, or ground-level-ozone.⁵² More heat means more smog,⁵³ and more smog means more death.⁵⁴

Climate change also contributes to major refugee crises and armed conflicts directly impacting the United States.⁵⁵ It is a major cause of food insecurity and other harms that are driving many Central Americans to migrate to the United States.⁵⁶ Recent research suggests that the tropics—a 3,000-mile-wide band around the Earth’s equator, contains half the earth’s surface, and is home to 3 billion people—may become uninhabitable after warming greater than 1.5°C.⁵⁷ Among those who will be affected are millions of Americans in Hawaii, Puerto Rico, and other U.S. territories. And, according to recent projections Southern Florida and Texas may soon

⁵² See *What is Ozone?*, U.S. Env’t Prot. Agency, [https://www.epa.gov/ozone-pollution-and-your-patients-health/what-ozone#:~:text=Ozone%20\(O3\)%20is%20a%20highly,either%20good%20or%20bad%20ways](https://www.epa.gov/ozone-pollution-and-your-patients-health/what-ozone#:~:text=Ozone%20(O3)%20is%20a%20highly,either%20good%20or%20bad%20ways). (July 25, 2022); *Energy and the Environment Explained: Where Greenhouse Gases Come From*, U.S. ENERGY INFO. ADMIN., <https://www.eia.gov/energyexplained/energy-and-the-environment/where-greenhouse-gases-come-from.php> (June 24, 2022).

⁵³ See, e.g., Bryan Walsh, *Why Bad Heat = Bad Air*, TIME (July 22, 2011), <https://science.time.com/2011/07/22/why-bad-heatbad-air/>.

⁵⁴ Karn Vohra et al., *Global Mortality from Outdoor Fine Particle Pollution Generated by Fossil Fuel Combustion*, 195 Env’t Rsch. 110754 (2021) (estimating that more than 8 million people died in 2018 from fossil fuel pollution, including hundreds of excess in deaths of children under 4 years old in North America).

⁵⁵ Many view the 2006 Syrian drought—the worst in 900 years, creating 1.5 million internal refugees, stoking that nation’s civil war, estimated to be responsible for more than 500,000 deaths and, in substantial part, for the rise of the Islamic State of Iraq and Syria (ISIS)—as among the first major climate-related national security issues impacting the United States. Linda Qiu, *Fact-Checking the Link Between Climate Change and ISIS*, POLITIFACT, (Sept. 23, 2015), <https://www.politifact.com/factchecks/2015/sep/23/martin-omalley/fact-checking-link-between-climate-change-and-isis/> (citing Colin P. Kelley et al., *Climate Change in the Fertile Crescent and Implications of the Recent Syrian Drought*, 112 PROC. NAT’L. ACAD. SCIS. U.S. 3241 (2015)).

⁵⁶ Michael D. McDonald, *Climate Change Has Central Americans Fleeing to the U.S.*, BLOOMBERG GREEN (June 8, 2021, 4:00 AM); Jonathan Blitzer, *How Climate Change is Fuelling the U.S. Border Crisis*, NEW YORKER (Apr. 3, 2019); Kirk Semple, *Central American Farmers Head to the U.S., Fleeing Climate Change*, N.Y. TIMES (Apr. 13, 2019); Nicholas Kristof, *Food Doesn’t Grow Here Anymore. That’s Why I Would Send My Son North.*, N.Y. TIMES: OPINION (June 5, 2019).

⁵⁷ Henry Fountain, *Global Warming’s Deadly Combination: Heat and Humidity*, N.Y. TIMES (Mar. 8, 2021), <https://www.nytimes.com/2021/03/08/climate/climate-change-heat-tropics.html> (discussing Yi Zhang, Isaac Held & Stephan Fueglistaler, *Projections of Tropical Heat Stress Constrained by Atmospheric Dynamics*, 14 NATURE GEOSCI. 133 (2021)).

produce millions of climate refugees seeking higher latitudes and higher ground in other states.⁵⁸

B. FFCs' Are Generating "Globally Catastrophic" Risks

The above captures only a fraction of potential climate-related deaths. A growing number of scientific studies estimate that, within the next fifty years, climate harms could become, in the words of FFC researchers themselves, "globally catastrophic," endangering significant proportions of humanity.⁵⁹ For example, the U.S. could avoid an estimated 4.5 million deaths from air pollution over the next 50 years by cutting emissions to levels consistent with keeping temperatures below 2°C.⁶⁰ Oceans are almost certain to rise by one to four feet by 2100, but could rise by as much as six to eight feet,⁶¹ exposing over 2 million homes to chronic flooding.⁶²

Globally, once temperatures rise by 2°C, researchers estimate that increased temperatures will cause hundreds of millions of additional deaths; air pollution will account for over 100 million additional deaths;⁶³ the death toll from flooding will rise by 50 percent globally;⁶⁴ an additional 400 million people will face water insecurity;⁶⁵ and crop yields could fall by 20 percent, driving up food prices and exposing tens of millions more people to food insecurity and starvation.⁶⁶ Globally, "critical regions of food

⁵⁸ See ORRIN H. PILKEY & KEITH C. PILKEY, *SEA LEVEL RISE: A SLOW TSUNAMI ON AMERICA'S SHORES* 3 (2019) (predicting that millions of people from Florida and Texas will become "a stream of refugees moving to higher ground").

⁵⁹ Letter from Am. Petroleum Inst. to AQ-9 Task Force, CO₂ and Climate Task Force Meeting Minutes 13 (Feb. 29, 1980), <https://www.climatefiles.com/climate-change-evidence/1980-api-climate-task-force-co2-problem/>.

⁶⁰ *The Devastating Impacts of Climate Change on Health: Hearing Before H. Comm. on Oversight & Reform*, 116th Cong. 1 (2020) (testimony of Drew Shindell, Distinguished Professor of Earth Scis., Duke Univ.), <https://docs.house.gov/meetings/GO/GO00/20200805/110965/HHRG-116-GO00-Wstate-ShindellD-20200805.pdf>.

⁶¹ *Id.* at 59 (six feet); NCA, *supra* note __, at 333 (eight feet).

⁶² UNION OF CONCERNED SCIENTISTS, *UNDERWATER: RISING SEAS, CHRONIC FLOODS, AND THE IMPLICATIONS FOR US COASTAL REAL ESTATE* 5 (2018).

⁶³ See Wallace-Wells, *supra* note 18, at 28 (citing Drew Shindell et al., *Quantified, Localized Health Benefits of Accelerated Carbon Dioxide Emissions Reductions*, 8 NATURE CLIMATE CHANGE 291 (2018)).

⁶⁴ From 1995 to 2015, about 157,000 people died from flooding. Wallace-Wells, *supra* note 18, at 62. That is 7,850 per year. Fifty percent of that number is 3,925.

⁶⁵ Wallace-Wells, *supra* note 18, at 13.

⁶⁶ See Wallace-Wells, *supra* note 18, at 49.

production” would be “swamped,”⁶⁷ and hundreds of millions of people would be displaced, including entire Pacific island nations,⁶⁸ though many of these places will already have been rendered uninhabitable by extreme heat and humidity.

Alarming, the median projection for warming by 2100 under current policies is nearly 3°C,⁶⁹ a level of temperature increase that could “unleash suffering beyond anything that humans have ever experienced,”⁷⁰ potentially ending civilization as we know it.⁷¹ Even more alarmingly, one in six models forecasts 4°C or above, a level at which it is uncertain that most humans would survive.⁷² And this is according to IPCC estimates that many experts believe are too conservative,⁷³ because they fail to account for

⁶⁷ Doyle Rice, *Earth's Oceans Could Rise Over 6 Feet by 2100 as Polar Ice Melts, Swamping Coastal Cities Such as NYC*, USA TODAY (May 20, 2019).

⁶⁸ Adam Vaughan, *Sea Level Rise Could Hit 2 Metres by 2100 - Much Worse Than Feared*, NEWSIDENTIST (May 20, 2019). (discussing Jonathan L. Bamber et al., *Ice Sheet Contributions to Future Sea-level Rise from Structured Expert Judgment*, 116 PROC. NAT'L ACAD. SCI. 11195 (2019)).

⁶⁹ *Temperatures, Climate Action Tracker*, <https://climateactiontracker.org/global/temperatures/> (Nov. 11, 2022).

⁷⁰ Wallace-Wells, *supra* note 18, at 31.

⁷¹ See U.S. Glob. Change Rsch. Program, Fourth National Climate Assessment (David Reidmiller et al., eds., 2018), https://nca2018.globalchange.gov/downloads/NCA4_2018_FullReport.pdf; Working Group II, Intergovernmental Panel on Climate Change, *Climate Change 2022: Impacts, Adaptation and Vulnerability* (Hans-Otto Pörtner et al. eds., 2022); Mark Lynas, *Six Degrees: Our Future on a Hotter Planet* 144–93 (2008); Wallace-Wells, *Uninhabitable Earth*, *supra* note 18, at 39–139.

⁷² See, e.g., Hans Joachim Schellnhuber et al., Potsdam Inst. for Climate Impact Rsch. & Climate Analytics, *Turn Down The Heat: Why a 4°C World Must Be Avoided* xiv (The World Bank, Working Paper No. 74455, 2012) (“[T]here is also no certainty that adaptation to a 4°C world is possible.”).

⁷³ For example, the IPCC omits the worst 5 percent of modeled outcomes. When those outcomes are included, the high end of IPCC estimates rises from 4.8°C to 7.8°C. See Rajendra K. Pachauri et al., Intergovernmental Panel on Climate Change, *Climate Change 2014 Synthesis Report: Summary for Policymakers* 12 (2014). See also Yangyang Xu & Veerabhadran Ramanathan, *Well Below 2°C: Mitigation Strategies for Avoiding Dangerous to Catastrophic Climate Changes*, 114 PROC. NAT'L ACAD. SCI. 10315 (2017) (characterizing the effects as “unknown, implying beyond catastrophic, including existential threats”); *id.* at 10317 (temperature ranges and probability); Timony N. Lenton et al., *Climate Tipping Points—Too Risky to Bet Against*, 575 NATURE 592, 592 (2019) (reviewing “the effects of such large-scale changes, how quickly they might unfold and whether we still have any control over them”); Jorgen Randers & Ulrich Goluke, *An Earth System Model Shows Self-Sustained Thawing of Permafrost Even If All Man-Made GHG Emissions Stop in 2020*, 10 SCI. REPS. (2020) (describing models estimating that we are already past a tipping point).

feedback loops that could dramatically increase warming.⁷⁴ One recent study concludes that feedback effects could lead to a runaway global warming trend, termed a “Hothouse Earth,” where global temperatures might inexorably rise and then stabilize at 5°C, with humanity helpless to reverse course.⁷⁵

There is enough uncertainty about potential tipping points that scientists worry they might be triggered at any time.⁷⁶ That is, any additional combustion of fossil fuels could cross the line from the dire and globally catastrophic forecasts of the IPCC to nearly unthinkable feedback loop scenarios they explicitly do not model. Due to the delayed effects of carbon emissions, we cannot say when or how these feedback loops might interact with each other and trigger tipping points. However, we can say that with every additional metric ton of carbon produced and sold, FFCs are playing an extremely lethal and profitable form of Russian Roulette with millions of lives in the United States.⁷⁷

⁷⁴ This is largely because we humans have never lived through such rapid warming. See Paola A. Arias et al., Intergovernmental Panel on Climate Change, Technical Summary, Climate Change 2021: The Physical Science Basis 60 (Valérie Masson-Delmotte et al. eds., 2021) [hereinafter IPCC Technical Summary 2021] (describing the “lack of observations” as hampering understanding of such rapid climate change). However, these feedback loops include well-established shifts in the earth’s major carbon sinks as temperatures increase. See, e.g., William J. Ripple et al., *The Climate Emergency: 2020 in Review*, Sci. Am. (Jan. 6, 2021) (“Scientists now find that catastrophic climate change could render a significant portion of the Earth uninhabitable”); Daniel Steel, et al., *Climate Change and the Threat to Civilization*, 119 Proc. Nat’l Acad. Sci. 42 (2022) (“Both of the high-emission pathways considered in the IPCC’s most recent Working Group I report contain ... a level of heating that many scientists regard as a significant threat to civilization.”).

⁷⁵ Will Steffen et al., *Trajectories of the Earth System in the Anthropocene*, 115 Proc. NAT’L ACAD. SCIS. 8252 (2018) (“[A] cascade of feedbacks could push the Earth System irreversibly onto a ‘Hothouse Earth’ pathway.”).

⁷⁶ See David I. Armstrong McKay et al., *Exceeding 1.5°C Global Warming Could Trigger Multiple Climate Tipping Points*, 377 Science, at 7 (2022) (“We cannot rule out that [key] tipping points have already been passed ... and several other tipping elements have minimum threshold values within the 1.1 to 1.5°C range.... Crossing these CTPs can generate positive feedbacks that increase the likelihood of crossing other CTPs.”).

⁷⁷ There is precedent for runaway effects of this kind. Four of the five major mass extinctions in Earth’s history—all except the one in which an asteroid struck the earth and killed the dinosaurs—were caused by similar greenhouse gas-induced climate change. WALLACE-WELLS, *supra* note __, at 3; PETER BRANNEN, *THE ENDS OF THE WORLD: VOLCANIC APOCALYPSES, LETHAL OCEANS, AND OUR QUEST TO UNDERSTAND EARTH’S PAST MASS EXTINCTIONS* (2017).

C. FFCs Have Long Been Aware of the Risks They Generated

Although much of the general public is only recently becoming aware of the severity and urgency of climate harms,⁷⁸ FFCs have long known about the cataclysmic effects of fossil fuels on our climate. FFCs understood climate science as far back as the 1950s and had scientists working in the field by the 1970s. FFCs also realized at that time that fossil fuel combustion was likely to cause catastrophic harm in the next 100 years, possibly sooner. Crucially, they were also aware that curtailing fossil fuel combustion would prevent the catastrophic outcomes about which internal and external experts repeatedly warned them. Consider just a handful of highlights from the public record, decade by decade.⁷⁹

A century after the greenhouse gas effect was first described,⁸⁰ the American Petroleum Institute (API) and executives of major oil companies learned of scientific research into fossil-fuel-driven climate change and some of the threats that greenhouse gas pollution posed when, in 1954, California Institute of Technology scientists shared findings estimating that fossil-fuel combustion had caused a 5 percent increase in atmospheric CO₂ from 1854 to 1954.⁸¹ The next year, API began funding additional research,⁸² and in 1957, scientists at Humble Oil (now ExxonMobil) published a paper finding that fossil fuel combustion causes increases in atmospheric

⁷⁸ It was not until 2019 that over 50 percent of the American public was “very” or “extremely” sure that global warming was really happening. Anthony Leiserowitz et al., Yale Univ. & Geo. Mason Univ., *Climate Change in the American Mind*, April 2022 (2022).

⁷⁹ For the sake of convenience, this Article often discusses evidence regarding a particular FFC as relevant to FFCs generally. Much of the discussion involves ExxonMobil because more evidence is publicly available regarding that company than others. In a prosecution, of course, the state would be required to produce evidence sufficient to convict the specific defendant in the case.

⁸⁰ Eunice Foote, *Circumstances Affecting the Heat of Sun's Rays*, 22 Am. J. Art & Sci. 2d Ser. 66, at 382-383 (Nov. 1856).

⁸¹ Benjamin Franta, *Early Oil Industry Knowledge of CO₂ and Global Warming*, 8 NATURE CLIM. CHANGE 1024, 1024 (Dec. 2018). Asked to speak about “energy in the future,” he pointed out that a 10 percent increase in atmospheric CO₂ would be “sufficient to melt the icecap and submerge New York.” *Id.* “All the coastal cities would be covered,” he continued, “and since a considerable percentage of the human race lives in coastal regions, I think that this chemical contamination is more serious than most people tend to believe.” Then he quipped that he was not sure whether the Empire State building would be submerged, but “anyone can calculate it” by observing that the ice over Greenland and Antarctica is “perhaps five thousand feet thick.” *Id.*

⁸² *Id.*

CO₂.⁸³ Closing out the decade in 1959, physicist Edward Teller told fossil fuel industry executives gathered at an API event celebrating the industry's 100th anniversary that, because fossil fuel emissions would “melt the icecap and submerge New York” and “all coastal regions,” in which “considerable percentage of the human race lives,” humanity needed to find new sources of energy.⁸⁴

In the 1960s, FFCs continued to engage with scientific research on carbon-driven climate change, with the President of the API noting in 1965 that one of “the most important predictions” from recent research was that “carbon dioxide is being added to the earth’s atmosphere by the burning of coal, oil, and natural gas,” causing “marked changes in climate.”⁸⁵ API then commissioned additional research by the Stanford Research Institute that showed “rising levels of CO₂ would likely result in rising global temperatures and . . . if temperatures increased significantly, the result could be melting ice caps, rising sea levels, warming oceans, and serious environmental damage on a global scale.”⁸⁶

By the 1970s, Exxon Scientific Advisor James F. Black was warning the company’s Management Committee of broad scientific agreement that temperature increases related to fossil fuel combustion would cause the agricultural output of entire nations to be “reduced or destroyed,”⁸⁷ and that humanity had “a time window of five to ten years before the need for hard

⁸³ H.R. Brannon et al., *Radiocarbon Evidence on the Dilution of Atmospheric and Oceanic Carbon by Carbon from Fossil Fuels*, 38 TRANSACTIONS AM. GEOPHYS. UNION 643 (Oct. 1957). This paper engaged with prior work, including the Caltech research, which had not been published, and with which it agreed, demonstrating that Humble Oil scientists were keeping up with the latest research on fossil fuels and atmospheric CO₂. Franta, *supra* note __, at 1024.

⁸⁴ Benjamin Franta, *On Its 100th Birthday in 1959, Edward Teller Warned the Oil Industry About Global Warming*, GUARDIAN (Jan. 1, 2018, 6:00 AM).

⁸⁵ Frank N. Ikard, President, Am. Petroleum Inst., Presentation at the 45th Annual Meeting of the Am. Petroleum Inst.: Meeting the Challenges of 1966 (Nov. 8, 1965) <http://www.climatefiles.com/trade-group/american-petroleum-institute/1965-api-president-meeting-the-challenges-of-1966/>.

⁸⁶ Carroll Muffett & Steven Feit, CTR. FOR INT’L ENV’T L., SMOKE AND FUMES: THE LEGAL AND EVIDENTIARY BASIS FOR HOLDING BIG OIL ACCOUNTABLE FOR THE CLIMATE CRISIS 13 (Amanda Kistler & Marie Mekosh eds., 2017). The research not only revealed that atmospheric CO₂ was “steadily increasing,” it also estimated that “90 percent of this increase could be attributed to fossil fuel combustion.” *Id.* at 12.

⁸⁷ James Black Presentation 1 (1977) [(hereinafter Black Presentation)]; Neela Banerjee et al., *Exxon’s Own Research Confirmed Fossil Fuels’ Role in Global Warming Decades Ago*, INSIDECLIMATE NEWS (Sept. 16, 2015), <https://insideclimatenews.org/news/15092015/Exxons-own-research-confirmed-fossil-fuels-role-in-global-warming>.

decisions regarding changes in energy strategies might become critical.”⁸⁸ In 1979, in response to a request by an Exxon vice president, Exxon researchers produced a memorandum warning that there would be “dramatic environmental effects before the year 2050” if fossil fuel use continued unabated,⁸⁹ that “ocean levels would rise four feet,” that the melting of polar ice caps would redistribute weight and pressure on the earth’s crust, possibly triggering “major increases in earthquakes and volcanic activity,” and that increased temperatures and related effects would render the entire tropics “less habitable.”⁹⁰

FFCs continued to be deeply engaged with climate science throughout the 1980s.⁹¹ API began the decade with a task force meeting which included members from Exxon, Texaco, and Amoco (now part of BP), the minutes of which summarize the “likely impacts” as “1°C rise (2005): barely noticeable,” “2.5°C rise (2038): major economic consequences, strong

⁸⁸ *Id.* Exxon studied global warming extensively in following years, and the company’s lead climate scientist, Haroon Kheshgi, even corrected researchers who had underestimated global warming related to fossil fuels, reconciling the latter account with the “modeling community consensus.” Exxon also proposed a research program “on the greenhouse effect” to the National Oceanic and Atmospheric Administration. 1979 Exxon Report on Greenhouse Effect for NOAA, ClimateFiles, <https://www.climatefiles.com/exxonmobil/1979-exxon-presentation-greenhouse-gases-noaa> (last visited Nov. 20, 2022)./

⁸⁹ Memorandum from W.L. Ferrall to R.L. Hirsch on Controlling the CO₂ Concentration in the Atmosphere, at 1 (Oct. 16, 1979). The memorandum makes clear that fossil fuel use could be curtailed in response to “adverse environmental effects” from global warming. *Id.* at 1 (noting that global warming could lead to policy limits on fossil fuel usage).

⁹⁰ *Id.* Appendix A.

⁹¹ A 1980 Exxon “Technological Forecast” states that fossil fuel combustion would be the most significant source of increasing atmospheric CO₂, which could double as soon as 2035. The 1980 forecast states that the “most widely accepted calculations” indicate that a doubling of atmospheric CO₂ would lead to a temperature rise of 3°C ±1.5°C and notes that more modest predictions exist but “are not held in high regard by the scientific community.” Memorandum from Henry Shaw, Exxon, to T.K. Kett, Technological Forecast on CO₂ Greenhouse Effect 2 (Dec. 18, 1980). A separate 1980 memo by a senior vice president and member of Exxon’s board was also sufficiently aware of the scientific literature to engage in a scientific argument with a company scientist about the role of oceans in storing or releasing CO₂. Neela Banerjee, *More Exxon Documents Show How Much It Knew About Climate 35 Years Ago*, INSIDE CLIM. NEWS (Dec. 1, 2015). Scientists employed by FFCs also continued to publish scientific papers furthering the scientific understanding of climate change as a response to increased carbon emissions. See, e.g., Hoffert, M. I., Flannery, B. P.,. *Model Projections of the Time-Dependent Response to Increasing Carbon Dioxide*, Projecting the Climatic Effects of Increasing Carbon Dioxide 151-168 (1985).

regional dependence,” and “5°C rise (2067): globally catastrophic effects.”⁹² The minutes also note that although “significant impact[s]” may not be felt for “very roughly 50 yrs,” there is “no leeway” in the time for action.⁹³ Shortly thereafter API produced a summary of existing research reporting that that climate scientists expect fossil fuel use to drive a doubling of atmospheric CO₂ “sometime in the next century”⁹⁴ with “serious consequences” for the survival of humanity.⁹⁵

The release of the first IPCC report in 1990 and the related growth in global awareness of climate change among political elites accelerated FFCs’ engagement with climate science and research.⁹⁶ Exxon’s lead climate scientist contributed to the IPCC report and published over a dozen important scientific articles on climate science throughout the decade.⁹⁷

⁹² Minutes from API CO₂ and Climate Task Force, Feb. 29, 1980, at 13. The minutes also note that “a 3% per annum growth rate of CO₂” would bring “world economic growth to a halt” in mere decades.

⁹³ *Id.* at 15. On the bright side, the 1980 technological forecast and 1982 memorandum state (without explanation) that participants in a recent scientific workshop on global warming felt that the problem was “not as significant to mankind as a nuclear holocaust or world famine.” 1980 Technological Forecast at 4; 1982 memo at 14.

⁹⁴ API, *Climate Models and CO₂ Warming: A Selective Review and Summary* 4 (1982). Also in 1982, the President of Exxon Research and Engineering Company wrote, “[f]ew people doubt that the world has entered an energy transition away from dependence upon fossil fuels and toward some mix of renewable resources that will not pose problems of CO₂ accumulation.” *Inventing the Future: Energy and the CO₂ “Greenhouse” Effect* 1 (1982). He recognized in the same piece that the most important question regarding climate risk concerned not the science itself, but how people would choose to react to it: “It is ironic that the biggest uncertainties about the CO₂ buildup are not in predicting what the climate will do, but in predicting what people will do.” *Id.* at 2.

⁹⁵ *Id.* 4–5. The same year, Exxon Sciences Lab Director Roger Cohen wrote of “unanimous agreement in the scientific community that a temperature increase of [3°C ± 1.5°C] would bring about significant changes in the earth’s climate, including rainfall distribution and alterations in the biosphere.” Cohen noted that, despite unanimity regarding the prediction that global warming would cause major climate changes, not everyone agreed with the “consensus prediction” of how much warming would occur. He then explained that new research by Exxon scientists “reconcile[d]” the objection with the “consensus.” David Hasemyer & John H. Cushman Jr., *Exxon Sowed Doubt About Climate Science for Decades by Stressing Uncertainty*, INSIDECLIMATE NEWS (Oct. 22, 2015), <https://insideclimateneeds.org/news/22102015/Exxon-Sowed-Doubt-about-Climate-Science-for-Decades-by-Stressing-Uncertainty>.

⁹⁶ To gain some sense of the rise in engagement with climate science, consider that the number of scientific publications by Exxon scientists increased from 3 in the 1980s to 18 in the 1990s. See <https://corporate.exxonmobil.com/sustainability/environmental-protection/climate-change/exxonmobil-four-decades-of-climate-science-research#Media-reported-documents>.

⁹⁷ *Id.*

Prominent publications by FFC scientists confirmed the link between carbon emissions and climate change, and many are among the most commonly cited articles describing and refining the science of climate change.⁹⁸ The 1990s also marked the adoption of climate change as part of corporate industrial engineering by FFCs, with platform and refinery planning explicitly incorporating management of rising sea levels and more energetic storms as necessary aspects of physical infrastructure development.⁹⁹

In the first decade of the twentieth century, FFC's engagement with climate science increased even further, with Exxon scientists publishing over two dozen scientific articles related to the topic.¹⁰⁰ Both internal and external scientific studies by FFCs all supported the consensus scientific link between FFC-driven carbon emissions and climate change. With the release of the documentary film "An Inconvenient Truth" in the middle of the decade,¹⁰¹ awareness of these models and their consequences reached new heights. Of course, FFCs were already well aware of all of the science described in the documentary.

In sum, for decades FFCs have understood the fundamentals of how their conduct was driving climate change, and that the consequences would very likely be "globally catastrophic" for humanity.¹⁰² FFCs needed to gain accurate insights into climate change not only because they needed to understand how sea level rise and other aspects of climate change would impact their industrial operations, but also because they needed to understand its potential impact on market share and future profits. They understood the most likely policy response to global warming would be "curtailment of fossil fuel consumption,"¹⁰³ and most of the relevant documents explicitly or implicitly focus on defending the company's

⁹⁸ See, e.g., <https://scholar.google.com/citations?hl=en&user=1CNE2iwAAAAJ>.

⁹⁹ Lieberman & Rust, *supra* note __.

¹⁰⁰ *Id.*

¹⁰¹ "An Inconvenient Truth," dir. Davis Guggenheim, perf. Al Gore (Paramount Classics, 2006).

¹⁰² See 1980 Technological Forecast at 3; 1982 memo at 11. Indeed, some argue there have been no major breakthroughs in climate science since 1979. See Rich, *supra* note __. Strikingly, the latest IPCC report shows that very little has changed with respect to temperature estimates since the first synthesis published by the National Academy of Sciences in 1979 through every IPCC report since the first in 1990, with FFCs keenly aware of every single report. Compare IPCC 2021 Technical Summary 94 (2021) with Nat'l Rsch. Council, Carbon Dioxide and Climate: A Scientific Assessment 14 (1979).

¹⁰³ 1982 Exxon Primer at 29; *id.* at 2 (stating that mitigating global warming "would require major reductions in fossil fuel combustion").

business interests.¹⁰⁴ In discussing the scientific research, communications to senior management often highlight the risk that, for example, “future public decisions aimed at controlling the build-up of atmospheric CO₂ could impose limits on fossil fuel combustion,”¹⁰⁵ and that there might be “limits” on fossil fuels¹⁰⁶ with potentially “irreversible” harms to FFCs profits.¹⁰⁷ It is notable, in this respect, that much of the research not only highlights the effects of fossil-fuel-driven climate change but also describes the decades-long lag between the burning of fossil fuels and the major impacts that might drive profit-reducing regulation.¹⁰⁸ By this time, FFCs had been made well aware that, as one Exxon researcher put it, if “policy actions to control the increased CO₂ loading of the atmosphere are delayed until climate changes resulting from such an increase are discernible, then it is likely that they will occur too late to be effective.”¹⁰⁹

¹⁰⁴ See, e.g., Exxon Modeling (1982) (“Q. Why is Exxon doing this work? A. In order to gain capability for critical evaluation of developments in a field which could impact on future energy policy.”); Memorandum from H. Shaw to H. N. Weinberg on Research in Atmospheric Science 2 (Nov. 19, 1979) (“It behooves us to start a very aggressive defensive program in the indicated areas of atmospheric science and climate because there is a good probability that legislation affecting our business will be passed. Clearly, it is in our interest for such legislation to be based on hard scientific data.”); Credible Scientific Team Letter 2 (1978) (“The rationale for Exxon’s involvement and commitment of funds and personnel is based on our need to assess the possible impact of the greenhouse effect on Exxon business.”). There is at least one instance of an Exxon employee arguing that the company had an “ethical responsibility to permit publication” of study results that might attract unwanted media attention, despite that it accorded with mainstream climate science, merely because of the source. See Consensus on CO₂ Impacts 3 (1982). Letter from Roger W. Cohento A.M. Natkin 3 (Aug. 3, 1984).

¹⁰⁵ Memorandum from N.R. Werthamer to H.N. Weinberg on CO₂ Greenhouse Communications Plan 1 (July 8, 1980), <http://www.climatefiles.com/exxonmobil/1980-internal-exxon-memorandum-co2-greenhouse-communications-plan/>. See also Black Presentation, *supra* note __, at 2 (suggesting in 1977 that it could become “critical” for humanity to make “hard decisions regarding changes in energy strategies” in five to ten years).

¹⁰⁶ *Id.* (“Failure to understand the need for substantial advances in the science to reduce the uncertainty and extreme variability in the projections can lead to premature limitations on fossil fuels”).

¹⁰⁷ *Id.* (“Arguments that we can’t tolerate delay and must act now can lead to irreversible and costly Draconian steps.”).

¹⁰⁸ See, e.g., API Review *supra* note __, at 4. (a 1982 memo from Exxon’s Manager of Environmental Affairs Programs notes that, although unrestrained fossil fuel use would cause “great irreversible harm to our planet,” it would be decades before most ordinary people would start to feel the effects of their product on the planet).

¹⁰⁹ Memorandum from Henry Shaw to D.E. Smiley on National Commission on Air Quality CO₂ Workshop Draft Statement of Findings and Recommendations 4 (Dec. 5, 1980) [hereinafter Input to Congressional Commission].

D. FFCs Worked to Obscure Risks They Were Generating

The same profit motive that moved FFCs to understand the relationship between their business practices and climate change also lead them to produce extensive external communications designed to obscure the climate science that their own researchers and others produced. Particularly when speaking to policymakers and the public, FFCs exaggerated the uncertainties around global warming. The most aggressive phases of denial occurred during major pushes for policymaking.¹¹⁰

One tactic employed by FFCs was to present false and misleading information to investors. For example, in response to a 1990 shareholder petition asking the company to develop a plan to reduce CO₂ emissions, Exxon stated that its “examination of the issue supports the conclusions that the facts today and the projection of future effects are very unclear.”¹¹¹ In 1996, Exxon published “Global warming: who’s right?”: Warning against “precipitous, poorly considered action on climate change,” it claimed that “scientific evidence remains inconclusive as to whether human activities affect global climate” and evidence to the contrary was “bad science.”¹¹² In its 2005 Corporate Citizenship Report, ExxonMobil stated that “gaps in the scientific basis for theoretical climate models and the interplay of significant natural variability make it very difficult to determine objectively the extent to which recent climate changes might be the result of human actions.”¹¹³ The Royal Society wrote a letter expressing “disappointment” over “inaccurate and misleading” statements about climate science¹¹⁴—and noted that the statements contradicted the IPCC and other research to which Exxon scientist Haroon Kheshgi contributed as an author.¹¹⁵

¹¹⁰ Scott Waldman & Benjamin Hulac, *This Is When the GOP Turned Away from Climate Policy*, E&E NEWS (Dec. 5, 2018) (“Those who think we are powerless to do anything about the greenhouse effect forget about the ‘White House effect.’”). See also United Nations Framework Convention on Climate Change, May 9, 1992, 1771 U.N.T.S. 107; and Kyoto Protocol to the United Nations Framework Convention on Climate Change, Nov. 12, 1997, 2303 U.N.T.S. 162.H.R. 2454, 111th CONG. (2009)

¹¹¹ Sara Jerving et al., *supra* note __.

¹¹²

¹¹³ Letter from Bob Ward, Senior Manager, Policy Communication, Royal Society, to Nick Thomas, Director, Corporate Esso UK Limited (Sept. 4, 2006), https://royalsociety.org/~media/royal_society_content/policy/publications/2006/8257.pdf.

¹¹⁴ *Id.* It is not obvious on the face of the letter that it is from the Society rather than just one employee, but the organization represents it as a Royal Society letter.

¹¹⁵ *Id.* Indeed, Exxon scientists published 53 peer-reviewed papers on climate-related topics from 1983 to 2014, and each one agrees with the broad scientific consensus that

Industry executives also made public statements disputing their company's own climate science. Exxon CEO Lee Raymond declared carbon-driven climate change an "unproven theory"¹¹⁶ based on "inconclusive science."¹¹⁷ He claimed that "96 percent of the carbon dioxide entering the atmosphere is produced by nature and is beyond our control,"¹¹⁸ and that "the scientific evidence is inconclusive as to whether human activities are having a significant effect on the global climate."¹¹⁹ Incredibly, he claimed in 1997, then the hottest year on record,¹²⁰ that the earth was "cooler today than it was 20 years ago."¹²¹ Flatly contradicting his own company's research and that of every reputable climate scientist, he asserted that it was "highly unlikely that the temperature in the middle of the next century will be affected whether policies are enacted now or 20 years from now."¹²²

The gap between FFCs' public stance and the research was also starkly demonstrated in a 2012 speech at the Council on Foreign Relations by ExxonMobil CEO Rex Tillerson.¹²³ Fears about climate change were not based on science, Tillerson stated, but rather were the product of an "illiterate" public and a "lazy" press.¹²⁴ Tillerson knew this, he claimed, because ExxonMobil had been "working with a very good team at MIT" for more than 20 years on climate modeling, and their "ability to predict, with any accuracy what the future's going to be is really pretty limited."¹²⁵ Ronald Prinn, Director of the Center for Global Change Science at the MIT (the lead researcher on the "very good team" to which Tillerson referred) responded quickly by contradicting Tillerson, stating that action on climate

humans cause global warming. Dana Nuccitelli, *Two-faced Exxon: The Misinformation Campaign Against Its Own Scientists*, *THE GUARDIAN* (Nov. 25, 2015).

¹¹⁶ Geoffrey Supran & Naomi Oreskes, *Assessing ExxonMobil's Climate Change Communications (1977–2014)*, 12 *ENV'TL RES. LETTERS* 1, 6 (2017).

¹¹⁷ Lee Raymond, Chairman, Exxon Corporation, Speech at the Annual Meeting of the American Petroleum Institute 3 (Nov. 11, 1996), <http://www.climatefiles.com/lee-raymond-collection/1996-exxons-raymond-speech-api-meeting/>.

¹¹⁸ *Id.* at 4.

¹¹⁹ Hasemyer & Cushman, *supra* note __.

¹²⁰ *Id.*

¹²¹ *Id.*

¹²² Lieberman & Rust *supra* note __.

¹²³ Interview by Alan S. Murray with Rex W. Tillerson, Chairman and CEO, Exxon Mobil Corporation (Jun. 27, 2012) (transcript available at <https://www.cfr.org/event/ceo-speaker-series-conversation-rex-w-tillerson>).

¹²⁴ *Id.*

¹²⁵ *Id.*

“cannot wait” and that the group’s models “clearly show the benefits of mitigation policies compared to no policy, in lowering risks.”¹²⁶

FFCs also spoke for themselves in advertisements and “advertorials,” or paid content on the editorial pages of newspapers. From 1990 through 2005, Exxon ran ads in *The Washington Post*, the *Wall Street Journal*, and *The New York Times* casting doubt on climate science and saying it was too early to regulate the problem.¹²⁷ These made patently false claims like: “greenhouse-gas emissions, which have a warming effect, are offset by another combustion product—particulates—which leads to cooling;”¹²⁸ and, “Scientists cannot predict with certainty if temperatures will increase, by how much and where changes will occur. We still don’t know what role man-made greenhouse gasses might play in warming the planet.”¹²⁹

These were not disconnected statements; rather they were the result of extensive collaborative efforts among FFCs to develop disinformation strategies. For example, in 1998, API drafted a communications plan, with the principal goal of “defeat[ing]” the Kyoto Protocol, emphasizing that victory could not be declared by FFCs until “no further efforts to thwart the threat of climate change” exist.¹³⁰ Rather than “ced[ing] the science,”¹³¹ and fighting climate regulation with economic arguments, the plan argued that it would be more effective to sow doubt over whether climate change was happening at all and, if so, whether humans “really have any influence on it,”¹³² both of which quickly become major elements of the FFCs’ playbook of doubt and denial.¹³³

Because no reputable researchers would agree with the disinformation campaign, FFCs also funded a network of third-party individuals and

¹²⁶ Jason M. Breslow, *Investigation Finds Exxon Ignored Its Own Early Climate Change Warnings* (Sept. 16, 2015), <https://www.pbs.org/wgbh/frontline/article/investigation-finds-exxon-ignored-its-own-early-climate-change-warnings>.

¹²⁷ Katie Jennings et al., *How Exxon Went from Leader to Skeptic on Climate Change Research*, L.A. TIMES (Oct. 23, 2015), <https://graphics.latimes.com/exxon-research/>. Exxon placed an advertorial every Thursday in *The New York Times* from 1972 to 2001. Supran & Naomi Oreskes, *Rhetoric and Frame Analysis of ExxonMobil's Climate Change Communications*, 4 *One Earth* 5, 696 (2021) at 13.

¹²⁸ *Id.* at 13–14.

¹²⁹ Supran & Oreskes, *supra* note __, at 8.

¹³⁰ Memorandum from Joe Walker to Global Climate Science Team, Am. Petroleum Institute, on Global Climate Science Communications Action Plan 1 (Apr. 3, 1998).

¹³¹ *Id.* at 2 (describing the “action plan” to persuade the public that “science does not support” the mitigations proposed in the Kyoto Accord).

¹³² *Id.* at 3.

¹³³ Chris Mooney, *Some Like It Hot*, MOTHER JONES (May/June 2005), <https://www.motherjones.com/environment/2005/05/some-it-hot/>.

organizations that sowed doubt about climate change.¹³⁴ At least 40 groups, including some of the same people and organizations the tobacco industry funded to sow doubt about the health harms of smoking, were employed to drum up uncertainty and doubt about the catastrophic risks the industry produces.¹³⁵ FFCs invested heavily in advocacy groups,¹³⁶ lawsuits on behalf of other parties,¹³⁷ and even in entire news organizations to promote messages contradicting the sound climate science they both produced and consumed.

Some FFCs now claim to support climate solutions.¹³⁸ But not a single FFC has changed its business in a manner aligned with keeping the planet safe for humans; nor have they agreed to halt new exploration for fossil fuels despite the scientific consensus that known oil reserves, alone, would push the Earth over 1.5°C of warming without the use of new coal or gas.¹³⁹ None has taken meaningful action to help enact solutions, instead touting their minimal efforts aggressively.¹⁴⁰ FCCs have continued to undermine

¹³⁴ Mooney, *supra* note __.

¹³⁵ See *id.*; NAOMI ORESKES & ERIK M. CONWAY, *MERCHANTS OF DOUBT: HOW A HANDFUL OF SCIENTISTS OBSCURED THE TRUTH ON ISSUES FROM TOBACCO SMOKE TO GLOBAL WARMING* (2010). The company also continued funding some of these groups for years after it publicly claimed it had stopped. David Adam, *ExxonMobil Continuing to Fund Climate Sceptic Groups, Records Show*, *THE GUARDIAN* (Jul. 1, 2009).

¹³⁶ See David Gelles, *The Texas Group Waging a National Crusade Against Climate Action*, *N. Y. Times* (Dec. 4 2022) (detailing activities of the Texas Policy Foundation, funded in substantial part by FFCs.”).

¹³⁷ *Id.* (describing the bankrolling of lawsuits designed to support fossil fuels, including one “to block the nation’s first major offshore wind farm off the Massachusetts coast.”).

¹³⁸ The American Petroleum Institute announced its support of carbon pricing in March 2021. Steven Mufson & Joshua Partlow, *Oil, Gas Industry Says It Will Support Carbon Pricing*, *WASH. POST* (Mar. 25, 2021).

¹³⁹ Only one oil major, BP, has announced even a *partial* end to exploration. David Roberts, *On Climate Change, Oil and Gas Companies Have a Long Way to Go*, *VOX* (Sept. 25, 2020, 9:20 AM), <https://www.vox.com/energy-and-environment/2020/9/25/21452055/climate-change-exxon-bp-shell-total-chevron-oil-gas>; David Tong, *Oil Change Int’l, Big Oil Reality Check – Assessing Oil and Gas Company Climate Plans* (Discussion Paper, 2020); Nicholas Kusnetz, *What’s Behind Big Oil’s Promises of Emissions Cuts? Lots of Wiggle Room.*, *INSIDE CLIM. NEWS* (Dec. 30, 2020); Emily Pontecorvo, *Exxon’s ‘Emission Reduction Plan’ Doesn’t Call for Reducing Exxon’s Emissions*, *GRIST* (Dec. 15, 2020); Justine Calma, *The Most Ambitious Climate Pledges from Big Oil Are Still Weak*, *THE VERGE* (Feb. 28, 2020).

¹⁴⁰ See, e.g., Complaint at ¶ 48, *District of Columbia v. Exxon Mobil Corp.*, No. CV 20-1932 (TJK), 2022 WL 16901988 (D.D.C. Nov. 12, 2022) (“Exxon’s advertisements promoting its investments in ‘sustainable and environmentally friendly’ energy sources further fail to mention that the company’s investment in alternative energy is miniscule compared to its ongoing ‘business as usual’ ramp up in global fossil fuel exploration, development, and production activities. From 2010 to 2018, Exxon spent only 0.2% of its

efforts to implement solutions,¹⁴¹ including those they claim to endorse and support in the abstract, by overwhelmingly supporting politicians who oppose all climate solutions and opposing nearly if not all efforts to enact climate policies.¹⁴² And, according to a former lobbyist caught on video discussing FFC policy tactics, FFCs continued to aggressively fight climate science through “shadow groups.”¹⁴³ FFCs continue engaging in greenwashing campaigns so aggressive that they are now being sued in multiple states for fraud and racketeering related to the campaign of false statements they have undertaken.¹⁴⁴

E. Factual Summary

Scientists believe we are perilously close to—or perhaps beyond—triggering tipping points that would inexorably drive cataclysmic warming, resulting in Earth systems that could kill millions or even billions of humans.¹⁴⁵ If the feedback loops behave in ways scientists describe as plausible, any additional unit of carbon dioxide or methane emitted could be the one that triggers these feedback effects. Yet FFCs, some of the world’s most sophisticated, expert parties regarding the science of climate change and other health harms from fossil fuel combustion, continue producing,

capital expenditures on low-carbon energy systems, with nearly the totality of its spending (99.8%) focused on maintaining and expanding fossil fuel production. The company has simultaneously invested billions of dollars into development of Canadian tar sands projects, some of the most carbon intensive oil extraction projects in the world.”); *Municipalities of Puerto Rico v. Exxon Mobil Corp. et al*, 3:22-cv-01550 (D.P.R. 2022) (suing for damages related to FFCs’ fraud, racketeering, and anti-competitive practices).

¹⁴¹ FFCs, like big tobacco, have attempted to lay climate change at the feet of individual consumer choice while at the same time challenging climate science. See Geoffrey Supran & Naomi Oreskes, *Rhetoric and Frame Analysis of ExxonMobil's Climate Change Communications*, 4 ONE EARTH 5, 696 (2021) (finding that ExxonMobil “used rhetoric of climate ‘risk’ and consumer energy ‘demand’ to construct a ‘Fossil Fuel Savior’ (FFS) frame that downplays the reality and seriousness of climate change, normalizes fossil fuel lock-in, and individualizes responsibility”); Amy Westervelt, *Big Oil Is Trying to Make Climate Change Your Problem to Solve. Don’t Let Them*, Rolling Stone, May 14, 2021.

¹⁴² Nichola Groom, *Big Oil Outspends Billionaires in Washington State Carbon Tax Fight*, REUTERS (Oct. 31, 2018, 6:05 AM).

¹⁴³ Hiroko Tabuchi, *In Video, Exxon Lobbyist Describes Efforts to Undercut Climate Action*, N.Y. TIMES (June 30, 2021).

¹⁴⁴ See Aaron Katersky, *Exxon Mobil Must Face Environmental Allegations, Court Rules*, ABC News, May 24, 2022, <https://abcnews.go.com/US/exxon-mobil-face-environmental-allegations-court-rules/story?id=84946565>.

¹⁴⁵ Luke Kemp et al., *Climate Endgame: Exploring Catastrophic Climate Change Scenarios*, 119 Procs. Nat’l Acad. Scis. 131 (2022).

marketing, and selling fossil fuels with abandon.¹⁴⁶ They also continue to mislead and deceive the public about the relationship between their conduct and the escalating harms through major public “greenwashing” campaigns.¹⁴⁷ We will not know for decades precisely how lethal the effects of FFCs’ conduct will end up being. However, there is now overwhelming evidence that the catastrophic risks FFCs foresaw their conduct generating have materialized, killing scores of Americans every year. We also now have extensive evidence that FFCs were not only aware of the catastrophic risks associated with their conduct, but that they also sought to confuse and mislead rather than inform the public of these risks, thereby compounding the lethal harms they generated. In sum, the following facts support a prosecution of FFCs for homicide:

1. FFCs’ extraction, processing, marketing, and use of fossil fuels significantly contributed to climate change in ways that have significantly accelerated or contributed to many deaths.
2. FFCs were aware of research, including their own, accurately projecting that their practices would lead to “globally catastrophic” changes in the Earth’s climate, and that these changes included lethal risks related to flooding, drought, heat exposure, smog, and other harms.
3. When confronted with evidence that their practices would cause catastrophic harms, including reasonably foreseeable deaths, FFCs neither curtailed their practices nor took other remedial action such as informing the public or policymakers of the danger, or even privately initiating serious efforts to transition slowly to a less lethal business model.
4. After learning that their practices would produce catastrophic harms, including reasonably foreseeable deaths, FFCs worked to mislead shareholders, the public, and policymakers in order to prevent the curtailing of their dangerous but profitable practices.

¹⁴⁶ At present, FFCs are arguably engaged in the equivalent of a massively profitable game of global Russian Poker—a game in which one places a bullet in the cylinder of a revolver, spins it once, then pulls the trigger repeatedly without spinning the chamber again—with their business model aimed at humanity. See *infra* note __ and accompanying text, discussing *Commonwealth v. Malone* and the mental state necessary to support a murder charge. 47 A.2d 445 (1946).

¹⁴⁷ See Geoffrey Supran & Cameron Hickey, Algorithmic Transparency Inst., *Three Shades of Green(washing): Content Analysis of Social Media Discourse by European Oil, Car, and Airline Companies* (Algorithmic Transparency Institute & Harvard Univ., Working Paper, 2022), <https://ati.io/three-shades-of-greenwashing/>.

Evidence exists in the public record to support each of these facts. Fully understanding their relevance, however, requires a discussion of the legal doctrine, to which we now turn.

III. FFCs CONDUCT MEETS DOCTRINAL REQUIREMENTS FOR SEVERAL FORMS OF HOMICIDE

The core of homicide doctrine is straightforward: if a person or corporation contributes to or accelerates any number of deaths, by one or more acts undertaken with one of the necessary culpable mental states, they may be held liable for some grade of criminal homicide. Because death is such an extreme harm, many states are willing to punish actors who are merely negligent in generating lethal risks. Several variations or elaborations on the doctrine discussed below exist, but the key features are similar. When considering the doctrine, it is helpful to keep in mind fundamental life-protecting motivation that animates it and the moral impermissibility of a killing even through omissions or negligence. Below, this section outlines a case for finding major FFCs culpable of negligent homicide at the least, and possibly the more serious crimes of manslaughter or murder.

A. Criminal Act Requirements

The core requirement of any crime is an act by the defendant. For many so-called “conduct” crimes like perjury or rape, the specified act itself is sufficiently wrongful or dangerous that a prosecution need not show that any harm resulted from the action; it is enough merely to prove that the defendant committed the act. Conversely, for so-called “result” crimes like murder or manslaughter, the result is sufficiently undesirable and the possible causes so diverse that any conduct can satisfy the act element, so long as it was undertaken with a sufficiently culpable mental state and was a cause of the forbidden result. Homicide, in all its forms, follows this latter pattern. The core act is some variant on *causing the death of a person*.¹⁴⁸

FFCs’ conduct includes not only the extraction, marketing, and selling of products that would so alter the climate that death would result, but also the development and purveying of disinformation designed to prevent both regulation and informed consumer choices that could mitigate climate harms and reduce the number of resulting deaths. The various marketing

¹⁴⁸ Felony murder and misdemeanor manslaughter do require additional acts, but they are used to infer culpable mental state.

and disinformation campaigns pursued by FFCs may also violate less serious civil and criminal laws, and a growing number of cases related to the FFCs' failure to report risk and their campaigns to mislead others are either pending or in development. As we will describe below, some of these cases could have important implications for some forms of homicide liability.

B. Causation

Perhaps the most significant burden for a prosecution related to the act element of homicide will be proving that the specific conduct of the FFCs was a legal cause of any particular death that followed. The law regarding causation varies across jurisdictions, with some employing older common law formulations and others more modern formulations based on the Model Penal Code.¹⁴⁹ But in every jurisdiction, the doctrine is meant to reflect common sense reasoning by ordinary people.¹⁵⁰ All of the doctrine and all of its exceptions, wrinkles, and nuances are meant to capture an ordinary sense of when we may justly hold defendants accountable for harms they cause.¹⁵¹ Therefore, the doctrinal rules of thumb that courts employ should be interpreted in light of how ordinary people think about causation and culpability and—regarding climate homicide—whether FFCs have engaged in actions that hastened or contributed to death through some chain of events that they contemplated or should have contemplated.

1. Causation in Common Law Jurisdictions

Under the common law formulation, causation doctrine requires the prosecution to prove both (1) that the result would not have occurred but for the defendant's conduct; and (2) that the result was a reasonably foreseeable consequence of the defendant's conduct.

¹⁴⁹ Compare, e.g., California Jury Instructions - Criminal, "CALJIC No. 3.40 - Natural and Probable Consequences Doctrine" (5th ed. 2021) with Ala. Code § 13a-2-5 (1975); Del. Code Ann. tit. 11, § 263 (1995); Haw. Rev. Stat. § 702-216 (1984); Mont. Code Ann. § 45-2-201 (1973); N.J. Rev. Stat. § 2C:2-3 (2013); 18 Pa. Cons. Stat. § 303 (2003).

¹⁵⁰ For a recent overview of the literature on causation, see Mark D. Alicke et al., *Causal Conceptions in Social Explanation and Moral Evaluation: A Historical Tour*, 10 *Persps. on Psych. Sci.* 790 (2015).

¹⁵¹ See generally H.L.A. Hart & Tony Honroe, *Causation in the Law* (2d ed. 1985); Michael S. Moore, *Causation and Responsibility: An Essay in Law, Morals, and Metaphysics* (2010).

a. FFC actions were a “but-for” or “in-fact” cause of death

But for FFCs’ extraction, production, marketing, and sale of fossil fuels, the use of which would emit over half a trillion tons of heat-trapping compounds into the atmosphere, climate change and the deaths linked to it would be less catastrophic in scope.

The argument here describes a chain of causation, several links of which the FFCs had control over. First, FFCs largely control the production, marketing, and sales of fossil fuels, the product generating the catastrophic lethal risks in question.¹⁵² Second, when FFCs marketed and sold the fuels they extracted, they failed to convey important information they had about the catastrophic dangers associated with the use of fossil fuels to consumers, shareholders, competitors, regulators, and legislators. An omission, such as a failure to disclose a known risk where one has a legal duty to do so, can count as a causal act. And there is a case to be made that FFCs have gone well beyond omission by engaging in an active campaign of disinformation and lobbying to prevent other parties—including consumers, shareholders, competitors, regulators, and legislators—from understanding or acting to reduce the risks associated with fossil fuel consumption, and that this deception has had lethal consequences.

Any one of these links could be argued as necessary to generate the risks associated with the current climate crisis, but in combination they have a cumulatively greater likelihood of satisfying the “but for” prong of causation doctrine employed by most courts of common law.¹⁵³

Any individual FFC might argue that no single FFC’s actions are “but for” cause of any particular death because many FFCs produced and sold fossil fuels. An FFC might argue that, even without its own production, sale, and marketing of fossil fuels, and without its contributions to the campaign of disinformation designed to convince consumers, shareholders regulators, and legislators, climate change still would have occurred because other companies would have engaged in the same behavior. Another related argument might be that, had FFCs alerted the public and curbed their lethal conduct, economic activity would have shifted to other greenhouse-gas-emitting fuels such as wood.

¹⁵² *Supra* notes __ and accompanying text.

¹⁵³ See generally *Causation in the Law: 2.2 The Dominant Definition of Cause-in-Fact*, Stan. Encyclopedia of Phil. (Oct. 3, 2019), <https://plato.stanford.edu/entries/causation-law/> (describing this requirement as posing the counterfactual question: “but for the defendant’s action, would the victim have been harmed as she was?”). There has been some confusion about causation doctrine in federal courts. See Eric A. Johnson, *Cause-in-Fact after Burrage v. United States*, 68 Fla. L. Rev. 1727 (2016).

These arguments misapprehend how the “but for” cause requirement functions in most jurisdictions. Most courts of common law hold, just as most people believe in ordinary life, that where a defendant’s conduct has either *accelerated* or *contributed to* a death, the conduct satisfies this prong and is an “in-fact” cause of death.¹⁵⁴ Thus, it is no defense to say that many other people also contributed to the forbidden harm.¹⁵⁵ There are many criminal cases in which multiple actors, sometimes even the victims themselves, are substantial contributors to the death in question, but where the defendant who also contributed to the harm is not excused.¹⁵⁶ Similarly, it is no defense to argue that someone else might have engaged in similarly lethal conduct had the defendant not done so. Finally, there is no doctrinal bar to prosecution where there is uncertainty about which particular death a defendant caused, so long as the defendant engaged in related conduct that a reasonable person would understand to be generating lethal risk.¹⁵⁷

b. Death was a reasonably foreseeable consequence of FFCs’ actions

The second causation prong in common law jurisdictions requires that the result be within the scope of some risk of which the defendant was aware or should have been aware. Although this prong is typically thought to be the more difficult of the two, in this instance it may not be. The

¹⁵⁴ *People v. Phillips*, 414 P.2d 353, 358 (Cal. 1966), *overruled on other grounds in* *People v. Flood*, 957 P.2d 869 (Cal. 1998) (“Murder is never more than the shortening of life; if a defendant’s culpable act has . . . decreased the span of a human life, the law will not hear him say that his victim would thereafter have died in any event.”); Dressler, *supra* note __, at _ (“It must be remembered that this test asks whether, but for the voluntary act of the defendant, the harm would have occurred *when it did*.”).

¹⁵⁵ See Note, *Causation in Environmental Law: Lessons from Toxic Torts*, 128 Harv. L. Rev. 2256, 2260 (noting the iniquity of any standard that held “the injured party cannot obtain a remedy from any of the actors simply because each of them could point at the others to prevent any showing of causation”).

¹⁵⁶ See, e.g., *Ward v. State*, 233 S.E.2d 175 (Ga. 1977) (holding that, even if the defendant’s act of throwing the drunken victim off a bridge into a river “did not directly cause” the victim’s death, “the jury was authorized to find that this act either materially contributed to the death . . . or materially accelerated it”); *Durden v. State*, 297 S.E.2d 237 (Ga. 1982) (holding that a defendant’s conduct may be found to be the cause of a death where it either “materially contributed to the happening of a subsequent accruing immediate cause of the death” or “materially accelerated the death, although proximately occasioned by a pre-existing cause.”).

¹⁵⁷ See, e.g., *People v. Sanchez*, 111 Cal.Rptr.2d 129 (2002) (holding that, in a shooting during which multiple persons fired weapons and it was not determined who fired the shot that killed a bystander, there was no bar to finding that the defendant contributed to the death by contributing to the shooting). *People v. Kemp* 150 Cal. App. 2d 654 (1957) (multiple potential causes of death during a drag race does not bar finding that the defendant contributed to the death by participating in the race.)

research and internal reports of the FFCs laying out the risk of “globally catastrophic” climate change related to the use of their products shows that they were aware of the scope of risk. On its face, FFC awareness of fossil fuels generating climate change that would submerge the “considerable percentage of the human race [that] lives in coastal regions,”¹⁵⁸ satisfies this prong. As would projections that “agricultural output” would be “destroyed,” or that heavily populated areas of the Earth would become “less habitable.”¹⁵⁹

It is worth noting that the prosecution does not need to prove that the defendants were actually aware of the risk of death to satisfy this prong. They need only show that the defendant *should have been* aware of that risk. Even if, despite all the notice given by their own researchers and by experts in the field, a factfinder believed FFCs were somehow unaware of the lethal risks associated with their conduct, the legal question is whether, given the internal research they conducted and external research they reviewed, a reasonable actor in their position would have been aware of the risks. This standard has likely been met.

c. Responses to Potential Counterarguments

Consistent with the common-sense basis of causation doctrine, common law courts sometimes hold that an “intervening act” breaks the “chain of causation” if the end result is sufficiently removed from the defendant’s original act and the subsequent acts of third parties are sufficiently unforeseeable.¹⁶⁰ Similarly, where many parties are involved in causing harm, and where the harm is less foreseeable as a result of another party’s act, courts have in some cases held that only those whose acts were more foreseeably linked to the harm are responsible. FFCs might thus argue that, although they have contributed to climate change deaths, it is the actual emitters—those driving cars, heating homes, and flying airplanes—whose actions are more closely linked to climate change.

¹⁵⁸ Franta, *supra* note 1.

¹⁵⁹Memorandum from W.L. Ferrall to R.L. Hirsch on Controlling the CO2 Concentration in the Atmosphere, Appendix A (Oct. 16, 1979).

¹⁶⁰ One reform commission recently reviewing the doctrine wrote of the many ways judges have described the term, “these statements all revolve around a basic and intuitive moral question (which is reflected in the case law): can the defendant, given all of the “intervening occurrences [that] may have contributed to” producing the result for which he or she is being prosecuted, “in all fairness[] be held criminally responsible” for that result? D.C. Crim. Code Reform Comm’n, Recommendations for the Council and Mayor (Voting Draft) 27 (Mar. 10, 2021), <https://ccrc.dc.gov/sites/default/files/dc/sites/ccrc/publication/attachments/Report-70%E2%80%93CCRC-Recommendations-for-Council-and-Mayor-Voting-Draft.pdf>.

This argument is implausible. To break the chain of causation, a third-party act must be unforeseeable and sufficiently removed from the defendant's act to absolve them of responsibility. It is unlikely that FFCs will persuade juries or judges that they were unaware their products would be used precisely as intended.

This objection fails for another reason as well. Where a party misleads or deceives another into taking some further harmful action, the deceived party is not viewed as breaking the chain of causation.¹⁶¹ As applied to climate homicide, it is doubtful the FFCs can convincingly argue that the mortal peril they generated was absolved by the public's failure to pierce FFCs' obfuscatory efforts. FFCs did not simply fail to alert the public about the risks they had uncovered; they engaged in a campaign to keep the public not only uninformed but misinformed about those risks. On this account, the law would view the subsequent actors contributing to the harm as "instrumentalities" of the FFCs.¹⁶²

Further, even if the public was negligent in some respect, juries and judges alike regularly hold defendants guilty for deaths that followed the negligent acts of others, so long as the defendant's action initiated the series of events that led to a death. Causation doctrine thus does not absolve the initial actor where the subsequent acts are "responsive to" or "dependent on" the defendant's act.¹⁶³ For example, a defendant who injures someone non-fatally can be liable for homicide even if the victim dies due to negligence of a doctor treating the injury.¹⁶⁴ In the case of a prosecution of FFCs for homicide, far from being "disconnected" from the defendant's conduct, the subsequent acts by others are precisely what the FFCs not only foresaw, but actively encouraged.¹⁶⁵

Finally, it is worth emphasizing once again that terms like "intervening acts" and "innocent instrumentalities" are phrases that judges sometimes

¹⁶¹ Hart & Honore, *supra* note __, at 326.

¹⁶² To this end, prosecutors need only show that FFCs intended for others to burn fossil fuels in a way they knew or should have known would emit sufficient greenhouse gasses to produce the catastrophic conditions likely to produce death of which our broader society is increasingly aware.

¹⁶³ Wayne R. LaFare, *Criminal Law* 354-65 (5th ed. 2010); Rollin M. Perkins & Ronald N. Boyce, *Criminal Law* 791, 809 (3rd ed. 1982); Dressler *supra* note __, at __.

¹⁶⁴ Consider, for example, a rape case where subsequent negligence by hospital staff treating the victim asphyxiated her with an incorrectly placed feeding tube. As judge Posner reasoned in that case, "every event has multiple causes;" for an act to break the chain of causation, it must be "a supervening act disconnected from any act of the defendant." *Brckett v. Peters*, 11 F. 3d 78 (7th Cir. 1993) (quoting *People v. Meyers*, 64 N.E.2d 531, 533 (1945); *People v. Dordies*, 377 N.E.2d 245, 249-50 (1978)).

¹⁶⁵ Larry Alexander, *Culpability*, in *Oxford Handbook of the Philosophy of the Criminal Mind* 128 (John Deigh and Stuart Green, eds., 2008).

employ to explain common-sense moral reasoning. Even in common law jurisdictions that have complex verbiage in their causation doctrine, the core purpose is always the same: to fit the law to common moral intuitions of blameworthiness.¹⁶⁶

2. Causation in Jurisdictions with Modern Criminal Codes

Although jurisdictions with modern codes use an “in fact” test that is nearly identical to that of common law jurisdictions, their test for the “proximate” prong is distinct in important ways. The modern approach to causation, drawn from the Model Penal Code,¹⁶⁷ codifies the role of moral intuitions, simplifies the doctrine, and further empowers the jury, encouraging judicial deference to jurors’ common-sense moral reasoning.¹⁶⁸ Modeled on the MPC, the modern standard for proximate causation requires that the actual result of the defendant’s conduct was not “too remote or accidental” in its occurrence to have a “just bearing” on the actor’s liability or on the gravity of their offense.¹⁶⁹

This modern formulation dispenses with many of the doctrinal wrinkles that have perplexed both judges and commentators in common law jurisdictions, while explicitly shifting decision-making from doctrinal interpretation by the judge to the moral judgment of the factfinder.¹⁷⁰ Accordingly, the MPC encourages deference to the jury’s common-sense determination on any question of causation.¹⁷¹

¹⁶⁶ See Moore, *supra* note __, at 187 (“[C]ausation may be known better by common intuition in particular instances than by the abstract tests legal theorists have devised to ‘guide’ such intuitions.”).

¹⁶⁷ Model Penal Code § 2.03.

¹⁶⁸ See Dressler, *supra* note __, § 14.04 (“proximate causation factors developed by the common law are replaced with a single standard, which expressly invites the jury to reach a commonsense, or just, result.”). Courts in jurisdictions with modern codes regularly employ this approach. *Johnson v. State*, 224 P.3d 105, 110 (Alaska 2010) (“The Model Penal Code couches the relationship between liability and unforeseen consequences in terms of culpability, not causation.”). *Id.* at 111 (“As the drafters [of the MPC] rightly concluded, the need for flexibility is great. We cannot fashion a rule detailing precisely which consequences are too remote to preclude criminal liability — that will be left to the fact finder.”).

¹⁶⁹ MPC 2.03(3)(b).

¹⁷⁰ The MPC does not dispense with foreseeability altogether:

[T]he Code’s flexible standard does not render the traditional causation factors irrelevant. It merely transforms them from dispositive rules into guidelines for the application of a less artificial standard that exposes the underlying issue of imputation for all the world to see....

Marcus D. Druber, *An Introduction to the Model Penal Code* 109 (2d ed. 2014).

¹⁷¹ See, e.g., Hart & Honore, *supra* note __, at 479 (“This must be a matter for the jury to determine and the problem of ‘proximate cause’ on this view of the matter is essentially

These aspects of the modern approach to legal causation in criminal cases—empowering and deferring to juries and distilling the proximate cause question to their notions of justice—work in favor of FFC prosecutions. In common law jurisdictions, judges in criminal trials often rely on complex causation doctrine from tort law, which is notoriously unfavorable to claims against corporate defendants.¹⁷² By contrast, in jurisdictions with modern criminal codes, judges in criminal trials think of causation as a common-sense matter to be decided by the jury.¹⁷³ Along with increased deference to the jury, the modern approach to causation asks jurors for a more straightforward normative, even moral judgment: in light of the defendant’s knowledge and actions, is it *just* to find them culpable?

3. Conceptual Satisfaction of the Criminal Act Element

The review above suggests there is no major doctrinal obstacle to a finding that FFCs satisfy the criminal act element of any form of involuntary homicide, namely that their actions cause and continue to cause death. Because so much of causation doctrine rests on the moral judgment of the finder of fact, as climate change accelerates and climate deaths multiply, and as more facts emerge regarding what FFCs knew and did, the

that of devising a clear formulation to which the jury should attend.”). See also Alaska Criminal Pattern Jury Instructions, 1.25.2 Causation (2014).

¹⁷² The problems associated with establishing the causal link between corporate conduct and diffuse industrial harms in tort law are well known. See Danielle Conway-Jones, *Factual Causation in Toxic Tort Litigation: A Philosophical View of Proof and Certainty in Uncertain Disciplines*, 35 U. Rich. L. Rev. 875, 878 (2002) (“[T]he only clear observation in toxic tort litigation is the unparalleled dilemma of establishing a cause and effect relationship between a toxin and a plaintiff’s injury.”); Jeff Todd, *A Fighting Stance in Environmental Justice Litigation*, 50 ENV’T L. 557 (2020) (“[E]nvironmental torts do not fit the optimal tort situation of a single plaintiff showing a clear harm caused by a single, identifiable defendant.”). This can have a perverse effect on standing. See *Causation in Environmental Law, Lessons from Toxic Torts*, supra note __, at 2256. Moreover, even when juries in common law jurisdictions find causation with respect to environmental torts, judges often rule as a matter of law that the standard for causation has not been met. See, e.g., *Norris v. Baxter Healthcare Corp.*, 397 F.3d 878, 885–88 (10th Cir. 2005). See also Jean Macchiaroli Eggen, *Being Small in a Supersized World: Tackling the Problem of Low-Level Exposures in Toxic Tort Actions*, 44 Env’t L. Rep. 10630, 10632 (2014).

¹⁷³ In modern code jurisdictions, judges often leave even complex causation questions to juries. Thus, in a drunk driving homicide involving the decision to drink before getting behind the wheel, followed by a collision, a victim’s extensive hospitalization, partial recuperation, medical negligence, and a determination to refuse food or remove life support, the jury is the ultimate arbiter of whether the original decision to drink was a criminal cause of death. See, e.g., *State v. Pelham*, 824 A.2d 1082 (N.J. 2003).

turning of the moral tide against FFCs is, with every passing season, making causation less of an obstacle than it may once have been.

We turn now to the various gradations of homicide that a prosecutor might reasonably charge, either singly or in the alternative, and affirmative defenses FFCs might raise.

C. Culpable Mental States and Homicide Gradations

In assessing the grade of homicide the facts might support, we make no claim that FFCs had the purpose or intent of causing the catastrophic conditions and deaths that they foresaw resulting from the production, sale, and distribution of their products; nor do we claim they have intended any harm with their misrepresentations.¹⁷⁴ Rather, we restrict our review of homicide to unintentional forms: negligent homicide, involuntary manslaughter, misdemeanor manslaughter, so-called “depraved and malignant heart” murder, and felony murder.

1. Negligent Homicide and Involuntary Manslaughter

The categories of negligent homicide, manslaughter, and murder are, in nearly every jurisdiction, gradations based primarily on the defendant’s mental state. The underlying conduct—causing the death of another human—could be the same in every case. For unintentional killings, the key distinction is the degree of culpability demonstrated by the defendant’s mental state. At the lower end of the liability spectrum is *negligent homicide*, which requires negligence, often distinguished from *manslaughter*, which requires gross negligence. The distinction between negligent homicide and involuntary manslaughter typically turns, respectively, on whether the defendant was unaware of a risk of death but should have been aware or the defendant was aware of the risk and consciously disregarded it. In both cases, the ignorance or disregard of the risk typically must constitute a “gross deviation from the standard of conduct that a reasonable person would observe in the situation.”¹⁷⁵

Let us assume for the sake of argument that a prosecutor can prove that FFCs were aware, or should have been aware, of the research they produced

¹⁷⁴ Both harms can be thought of as side-effects of the pursuit of profits. There is an old debate over the ability of a corporate entity to commit a crime that requires criminal purpose or intent. As we are not proposing any form of intentional homicide charge here, we do not enter into this debate.

¹⁷⁵ See, e.g., Model Penal Code § 2.02(2)(c); N.Y. Penal Law § 15.05(3) (McKinney 2014); Mass. Gen. Laws ch. 265. Other states employ a similar definition but describe the conduct in terms of “wantonness.” See, e.g., Mass. Gen. Laws ch. 265, § 13L; Ken. Rev. Stat. § 501.020(3) (1975).

indicating that their actions posed a “globally catastrophic”¹⁷⁶ risk to human well-being, could “destroy” the agriculture of entire nations, and could render the tropics “less habitable.”¹⁷⁷ In that case, the question for a jury is whether FFCs should have continued to produce, market, and sell their product—or whether they should have stopped, tapered their conduct or, at the very least, warned the public and policymakers loudly and clearly and sought solutions. If presented with the relevant facts, most if not all people would, we think, say that FFCs’ mental posture amounted to more than the “should have known” standard of ordinary negligence, treading well into the territory of the “conscious disregard” of “substantial and unjustifiable risks” required for recklessness. And the proportion of people who hold those views seems very likely to be greater in five years, and still greater in ten.

2. Misdemeanor Manslaughter

In many jurisdictions, another way to satisfy the culpable mental state requirement for manslaughter is with a predicate misdemeanor.¹⁷⁸ So-called “misdemeanor manslaughter,” in its broadest form, it is simply committing an unlawful act that causes a death. In some states, any misdemeanor can serve as a predicate to a manslaughter conviction, so long as death resulted from the act that constituted a misdemeanor.¹⁷⁹ Others restrict the predicate misdemeanors to those which are *mala in se*, or inherently wrong. Still other states restrict the predicate felonies to those that are “inherently dangerous.”¹⁸⁰ Finally, most jurisdictions require the predicate misdemeanor to be within any relevant statute of limitations for that misdemeanor.

As described above, several states are suing FFCs for some form of fraud, racketeering, or anti-competitive practices.¹⁸¹ Any of these cases might serve as a predicate for homicide charges, and many believe that more evidence of fraud is forthcoming. As the National Whistleblower

¹⁷⁶ Letter from Am. Petroleum Inst., *supra* note __ at __.

¹⁷⁷ Memorandum from W.L. Ferrall, *supra* note __ at __.

¹⁷⁸ In some jurisdictions, a felony can also be a predicate for manslaughter. *See, e.g., Pfister v. State*, 425 P.3d 183 (Alaska Ct. App. 2018) (describing Alaska’s abolition of negligent homicide and the requirement of recklessness “regarding the possibility that their conduct would cause ... death” to support manslaughter predicated on an unlisted felony).

¹⁷⁹ *See* Judith J. Johnson, *Why Mississippi Should Reform Its Penal Code*, 37 Miss. C.L. Rev. 107 (2019) (“Mississippi’s misdemeanor manslaughter rule, which is also unconstrained and could theoretically be imposed for any misdemeanor.”)

¹⁸⁰ *See* Matthew Lippman, *Contemporary Criminal Law: Concepts, Cases, and Controversies* 414 (2d ed. 2006); *see also* Model Penal Code § 210.3 commentary at 77 (1980).

¹⁸¹ *See supra* notes __-__ and accompanying text.

Center recently wrote, the Center anticipates that “the number of cases and defendants will increase dramatically in the near future once potential whistleblowers learn about the benefits of modern whistleblower laws and begin providing information to regulators and prosecutors about the variety of climate risk deceptions” undertaken by FFCs.¹⁸²

A state might thus charge an FFC with fraud, seeking to prove that the FFC “knew forty years ago that climate change was happening, and that humans were contributing to it by burning fossil fuels,”¹⁸³ and that the FFCs “misleading omissions and misrepresentations about the systemic risks of climate change.”¹⁸⁴ In states that require the predicate misdemeanor be *mala in se*, the ability to use the misdemeanor as a predicate for a manslaughter charge depends on the form of fraud. This is because some offenses, like tax fraud, are not considered to be *mala in se*, while other forms of fraud, like the general common law crime of fraud are *mala in se*.

Where a state does not require a finding that the misdemeanor be *mala in se*, the path to both a charge and conviction is easier than it would be where the misdemeanor must be *mala in se*. But even in the latter case, a fraud misleading multiple parties about risking millions of lives seems like the kind of wrongful conduct that *mala in se* describes.

After determining whether the misdemeanor can support a charge, the state needs to determine whether the unlawful act was a legal cause of—that is, whether it contributed to or accelerated—the death of one or more human beings, consistent with the standards we described above. Given the concerted campaign to mislead regulators, shareholders and the public about the risks associated with their product and its intended use, combined with the purpose of preventing mitigation of the catastrophic risks they are generating, it is not hard to see a causal link between the fraud and the resulting harm of death.

3. “Depraved Heart” Murder

Although the best-known formulation of murder involves a perpetrator who intends to kill the victim, another commonly charged form of murder involves killings that are unintentional. Where a defendant acted “recklessly” under circumstances manifesting extreme indifference to the value of human life, even where the killing was unintentional, most states

¹⁸² John Kostyack et al., National Whistleblower Center, Exposing a Ticking Time Bomb: How Fossil Fuel Industry Fraud is Setting Us Up for a Financial Implosion—and What Whistleblowers Can Do About It (2020).

¹⁸³ *Id.*

¹⁸⁴ *Id.*

allow for a murder conviction.¹⁸⁵ In common law jurisdictions, this category of murder¹⁸⁶ goes by various names, including “second-degree,” “third-degree,” “depraved heart” or “abandoned and malignant heart” murder.

The general requirement for a prosecution of unintentional form of second degree murder is that the actions of the defendant demonstrate an indifference to human life; and indifference that is meant “to embrace those cases where a person has no deliberate intent to kill or injure any particular individual.”¹⁸⁷ “The element of ‘extreme indifference to human life,’ by definition, does not address itself to the life of the victim, but to human life generally.”¹⁸⁸ This form of gross recklessness with respect to human life is deemed to satisfy the common-law requirement of malice.¹⁸⁹ As the drafters of the Model Penal Code put it, engaging in an action with awareness that it presents a substantial and unjustifiable threat to human life is classed as murder because conscious disregard of such a risk “cannot be fairly distinguished from homicides committed purposely or knowingly.”¹⁹⁰

At trial, then, a core question would be whether the FFCs were aware of a substantial and unjustifiable risk that their actions would contribute to or accelerate the death of any human.

a. Awareness of the Risk

As discussed above, there appears to be substantial evidence that FFCs have been aware for decades that their actions pose a risk to an extraordinary number of human lives. The question that would raise the potential crime from negligent homicide or involuntary manslaughter to murder is whether that risk to human life was so substantial and

¹⁸⁵ Model Penal Code § 210.2.(1)(b).

¹⁸⁶ 18 Pa. Cons. Stat. § 2502 (1978).

¹⁸⁷ King v. State, 505 So. 2d 403, 405 (Ala. Crim. App. 1987) (citing Napier v. State, 357 So. 2d 1001, 1007 (Ala. Cr. App. 1977), *rev'd on other grounds*, 357 So. 2d 1011 (Ala. 1978)).

¹⁸⁸ *Id.* (quoting *People by & Through Russel v. Dist. Ct. For Fourth Jud. Dist.*, 521 P.2d 1254, 1256 (Colo. 1974)).

¹⁸⁹ See, e.g., Com. v. Pigg, 571 A.2d 438, 441 (Pa. Super. Ct. 1990) (quoting Com. v. Drum, 58 Pa. 9, 15 (1868)). Pigg also cites Com. v. Young, 431 A.2d 230 (Pa. 1981) for the proposition that “malice is one of the essential elements of third-degree murder and is the distinguishing factor between murder and manslaughter,” 571 A.2d at 441, and Com. v. Wanamaker, 444 A.2d 1176 (Pa. Super. Ct. 1982), for the proposition that “malice may be found where the defendant consciously disregards an unjustified and extremely high risk that his actions might cause serious bodily injury.” *Id.*

¹⁹⁰ Model Penal Code and Commentaries § 210.02, comment 4.

unjustifiable that acting in disregard of the risk warrants a murder conviction.

b. Nature and Degree of Risk Required for Murder

We cannot predict a factfinder's answer, but we can consider how the case might be argued. Gradations relating to homicide based on a defendant's mental state are often glossed as a single question about where on a scale of culpability the defendant's mental state falls: unreasonable ignorance of the risk, conscious disregard of the risk, or actual knowledge of the risk. But there is also a question whether the risk is substantial and unjustifiable in the particular context the defendant inhabited.

The Model Penal Code, which most states now reference or employ when assessing mental states, succinctly describes the second prong of the mental state question for recklessness as follows:

The risk must be of such a nature and degree that, considering the nature and purpose of the actor's conduct and the circumstances known to him, its disregard involves a gross deviation from the standard of conduct that a law-abiding person would observe in the actor's situation.

The harm must be significant enough that a normal law-abiding person would not, respectively, fail to perceive it or, if aware of it, disregard it.

Some jurisdictions that recognize depraved heart murder require consideration of more detailed factors, typically the probability that the conduct in question will cause death, the subjective appreciation of the risk, or some base anti-social purpose or motive.

For example, the Utah Supreme Court defines "abandoned and malignant heart" as "an utter callousness toward the value of human life and a complete and total indifference as to whether one's conduct will create the requisite risk of death of another."¹⁹¹ In Alabama, courts have found that a person is guilty of depraved indifference when they "act[] with a 'don't give a damn attitude,' in total disregard of the public safety."¹⁹²

But even people who arguably were fundamentally mistaken about the risks involved have been found to have met the standard of culpable disregard of something they mistakenly thought impossible. Consider the case of James Malone, a young man who wanted to impress his friend by playing "Russian Poker": He placed a bullet in what he believed to be the very last chamber that might be fired and did not spin the cylinder. When

¹⁹¹ State v. Standiford, 769 P.2d 254 (Utah 1988).

¹⁹² King v. State, 505 So. 2d 403 (Ala. Crim. App. 1987).

the gun, to his evident horror, discharged and killed his friend, he was convicted of second degree murder.¹⁹³ No one sat down with the young man to explain, in detailed scientific reports, that people, especially young people, often make dangerous mistakes, or that accidental deaths are a predictable outcome of gunplay. He was not a sophisticated actor consulting and then rejecting the scientific literature beforehand; he simply made a mistake.

To say that the nature and degree of the “globally catastrophic” risk involved in transforming the Earth’s climate satisfies these requirements is a gross understatement. It is difficult to imagine jurors concluding that an ordinary, law-abiding citizen would risk submerging the coastal cities of the world, turning a significant proportion of the Earth’s fertile farmland into deserts, exposing large swaths of humanity to heat waves so intense that a human body at rest cannot survive, or countless other climate-related horrors that have already killed many people and will likely kill millions, possibly *billions* more.

It is rare to have a case in which there is such a wealth of scientific research alerting sophisticated parties to the risk to human life, and even rarer for there to be so extensive a disinformation campaign designed to confuse regulators, legislators, shareholders, and members of the public. While it is impossible to predict whether jurors would reach the conclusion that FFCs acted with extreme indifference to human life, nothing bars them from doing so. In sum, assuming there is convincing evidence that FFCs not only ignored the world-historic risks they were generating in pursuit of profit, but also covertly sought to discredit the people and data accurately describing those risks to the public, a jury might well conclude that FFCs’ conduct exhibits a depraved indifference to human life.

4. Felony Murder

In its broadest conception, felony murder is simply the commission of any felony that causes death.¹⁹⁴ In most jurisdictions,¹⁹⁵ however, the predicate felony must also be in some sense “dangerous.” The

¹⁹³ Commonwealth v. Malone, 47 A.2d 445 (Pa. 1946). Critiques of the reasoning in *Malone* are extensive, but it remains a staple in case law and classrooms as a demonstration of how juries and courts think about mental states, malice, and attention to risk.

¹⁹⁴ State v. Chambers, 524 S.W.2d 826 (Mo. 1975) (holding that, in Missouri, the predicate felony need not be “inherently or foreseeably dangerous to human life” to support a second degree murder conviction).

¹⁹⁵ For a survey of felony murder doctrine and its justifications, see Guyora Binder, FELONY MURDER (2012); Guyora Binder, *Making the Best of Felony Murder*, 91 B.U.L. REV. 403 (2011).

determination that a felony is “dangerous” varies across jurisdictions. Some jurisdictions enumerate specific felonies that may serve as predicates to murder; others leave it to courts to determine which felonies qualify as “dangerous” and thus may serve as predicates to murder; still others look to the particular circumstances involved in each case to determine whether the defendant’s commission of the felony, in the circumstances it was committed, posed sufficient danger to qualify as a predicate to murder (for example, stealing a car may not be inherently dangerous, but stealing it from someone who is driving to a hospital for emergency treatment might qualify).

Where not cabined by legislative language or court-made doctrine, the felony murder rule has supported murder convictions that demonstrate the exceptional breadth of the law.¹⁹⁶ For argument’s sake, let us say, that prosecutors prove that FFCs have committed the felony of fraud by misleading consumers, shareholders, regulators, or legislators regarding information they had about the harms their product would produce, including the transformation of the global climate and the potential for mass mortality resulting from it.

No jurisdiction statutorily enumerates fraud as a predicate to murder, and no jurisdiction has found fraud to be dangerous “on the elements” of the offense. But several states look to the circumstances of the case to determine dangerousness.¹⁹⁷ In doing so, the jury determines if the specific context supports a finding that the predicate felony was sufficiently dangerous, supporting a felony murder conviction.¹⁹⁸ For reasons similar to those discussed above regarding jury determinations, it is not difficult to imagine jurors concluding that the requirement of danger is met in the case of a felonious fraud carried out to assist in selling products that pose global risks to humanity.

Finally, there are still jurisdictions that do not require the predicate felony to be inherently or foreseeably dangerous. As courts in Missouri have noted, neither the statute setting out the definition of murder¹⁹⁹ nor the

¹⁹⁶ See Part I.C *supra*.

¹⁹⁷ Alabama, Delaware, Georgia, Maryland, Montana, North Carolina, Oklahoma, Rhode Island, South Carolina, Texas, and Virginia. Several states have adopted this approach, and in doing so they leave it to a jury to determine whether the specific context in which the defendant committed the felony supports a finding that the predicate felony was sufficiently dangerous to support a felony murder conviction. *See, e.g.*, *Hulme v. State*, 544 S.E.2d 138 (Ga. 2001) (woman proding friend with methadone guilty of murder when friend overdosed)..

¹⁹⁸ *See, e.g.*, *Malaske v. State*, 89 P.3d 1116 (Okla. Crim. App. 2004) (man who purchased vodka for sister guilty of murder when sister’s friend dies of alcohol poisoning)..

¹⁹⁹ Mo. Rev. Stat. § 565.021 (2005).

case law under which murder convictions have been upheld in that state require the underlying felony to be “inherently or foreseeably” dangerous.²⁰⁰ Under this standard, *any* felony that causes death can serve as the basis of a felony murder conviction.

IV. POTENTIAL AFFIRMATIVE DEFENSES

FFCs already raise many objections to civil and regulatory suits, and those objections could be reframed in terms of affirmative defenses to a criminal prosecution. It is useful to explore potential defenses both as a practical matter and as a more thorough exploration of how the criminal law considers the kind of conduct that FFCs are undertaking.

A. Necessity Is Not a Defense

FFCs have argued that, although they were aware of the risks associated with their product, they believed that greater harms associated with poverty would flow from further regulating fossil fuels.²⁰¹ Although this argument has not yet been raised in the context of homicide prosecution, this kind of claim amounts to a form of “necessity” defense to a criminal charge. Although commentators have found it “exceedingly difficult to determine the standing and scope of the defense in any particular jurisdiction,”²⁰² the basic contours are well established. The doctrine of necessity is essentially an escape valve for criminal statutes that may be overinclusive, allowing a person who, through no fault of their own, is faced with a choice between two evils and chooses the lesser. The affirmative defense of necessity would thus be something like: fossil fuels may contribute to catastrophic risks including death, but fossil fuel production and consumption are necessary to avoid the greater risks associated with poverty that would result from reduced production and sales of fossil fuels.

In most states that allow the defense, the law typically requires that (1) the choice of evils the defendant faced was “clear” and “imminent”; (2) the defendant reasonably believed that their actions were necessary to avoid the harm they chose to avoid; (3) there was no effective legal remedy for the harm they avoided; (4) the harm chosen was less serious than that avoided;

²⁰⁰ See, e.g., *State v. Duffy*, 967 P.2d 807 (N.M. 1998); *State v. Goodseal*, 553 P.2d 279 (Kan. 1976)

²⁰¹ This argument has arisen most commonly in claims by FFCs that their statements to the public about climate change were free speech, protected by the First Amendment, and that attempts to sue or prosecute on the basis that speech would unconstitutionally chill their right to enter into the policy debate over the merits of regulation of their industry.

²⁰² Dressler, *supra* note ___, at ___.

(5) it is not anticipated by the law or regulation; and (6) the defendant may not have substantially contributed to the evil they seek to avoid; and (7) the charged crime is not some form of homicide.²⁰³ Under this framework, the defense fails for multiple reasons, including that it is barred outright in homicide cases. Even if it were allowed, the FFCs' choice was not "imminent" in the sense contemplated by the criminal law; legal remedies were available; and the choice was of their own making, as FFCs contributed to at least one of the catastrophic evils they say they must choose between.

Those familiar with the Model Penal Code might wonder whether the more flexible version of the defense it employs might be available to FFCs. Under the Model Penal Code Formulation, there is no restriction barring the use of the defense in homicide cases, there is an exception to the bar on self-created harms, and there is no requirement that legal remedies be unavailable to avoid the harm. Further, in jurisdictions with these provisions, the code's clear intent is to be deferential to jurors, "who give voice to the moral standards of the community, [because it is they who] should make the normative decision about whether the evils the defendant sought to avoid were worse than those the criminal law sought to prevent."²⁰⁴ Perhaps, on this account, FFCs might hope that at least some jurors would agree with the choice FFCs claim they faced and made, viewing catastrophic climate risks as the lesser of the two evils.

This argument won't serve FFCs well. Although many states have adopted the Model Penal Code's conception of causation as a flexible standard for juries to consider, the same cannot be said about the Code's conception of the necessity defense. As Michael Hoffheimer wrote in a review of state doctrine, "a half-century after it was first proposed, the federal government and a majority of states have flatly refused to codify any form of the necessity defense."²⁰⁵ Of nineteen states that have codified the defense, "[s]eventeen ... reject the unrestricted balancing of harms proposed by the Model Penal Code." This leaves only two states, Nebraska and Pennsylvania, that have codified the Model Penal Code's version of necessity, and in those states, courts require that the threat of greater harm be imminent or immediate.²⁰⁶ Given that informing the public of the risks their product generates or gradually transitioning to less lethal alternatives

²⁰³ *Id.* at 22.02.

²⁰⁴ Michael H. Hoffheimer, *Codifying Necessity: Legislative Resistance to Enacting Choice-of-Evils Defenses to Criminal Liability*, 82 Tul. L. Rev. 191, 228 (2007).

²⁰⁵ *Id.* at 242.

²⁰⁶ *Id.* at 243.

would not have generated imminent or immediate harm, the defense would be unavailable to FFCs in any state.

B. Entrapment Is Not a Defense

FFCs may also raise objections or defenses centering on government actions related to fossil fuels, including regulation, subsidization, and related policies at the federal and state levels, arguing that these government actions should shield FFCs' lethal conduct from prosecution. FFCs might, for example, claim that government actions induced them to produce, market, and sell fossil fuels, such that subsequent prosecution would amount to *entrapment*. The defense of entrapment builds on the intuition that law enforcement should not encourage the commission of a crime that would not otherwise have occurred in order to then prosecute that crime. In most states, entrapment requires a defendant to prove that law enforcement agents, for the purposes of future prosecution, induced them to commit a crime that they would not otherwise have committed.

A claim of entrapment by FFCs fails on several fronts. First, it is implausible that law enforcement agents encouraged FFCs to engage in any form of homicide, let alone provided encouragement for the purpose of subsequent prosecution. It is also implausible that, in the absence of government action, FFCs would have given up the core of their business: the production, marketing, and sale of fossil fuels. Law enforcement did not encourage the extensive disinformation campaign that accompanied government regulation and support; rather, FFCs engaged in their disinformation campaign to undercut growing pressure for government regulation in response to climate science. For all these reasons, the defense of entrapment is unavailable to FFCs.

C. Reliance Is Not a Defense

FFCs might also argue that it is unfair to prosecute their lethal conduct because FFCs *relied* on government regulation, grants, and rulings authorizing the criminal conduct in question. A non-trivial amount of fossil fuel production has occurred on land or in waters owned by the U.S. government leased for fossil fuel development.²⁰⁷ Reasonable reliance on apparent or actual government authority is one form of a broader set of mistake-of-law defenses.²⁰⁸ To succeed, defendants must show the specific

²⁰⁷ See, e.g., *About the BLM Oil and Gas Program*, Bureau of Land Mgmt., U.S. Dep't of the Interior, <https://www.blm.gov/programs/energy-and-minerals/oil-and-gas/about> (last visited Nov. 22, 2022).

²⁰⁸ See Dressler *supra* note __, at §13.02

statement of law on which they relied. Further, the reasonable reliance defense requires “(1) that [a defendant's] reliance on the government official's statement supposedly authorizing [the defendant's] actions was reasonable; and (2) that the statement misled [the defendant] into believing [the defendant's] conduct was legal.”²⁰⁹

The conduct in homicide doctrine is, generally speaking, causing death. Thus, to successfully raise a mistake-of-law via reliance defense to homicide, FFCs would have to show (1) that a government agent of apparent authority assured FFCs that it was not a crime to cause death in any of the various ways detailed above, and (2) that FFCs were genuinely misled into believing that it was not a crime to cause death in any of those ways.

If the defense were not constructed in this way—if all a defendant needed to prevail was to demonstrate that they caused death by engaging in conduct that they believed would not be a crime had they not had a culpable mental state and death had not resulted from it—the result would be that any person or corporation engaging in a licensed or regulated activity that negligently, recklessly, or illegally caused death would be able to claim the defense. For example, driving is authorized, subsidized, and regulated by federal and state governments, but driving in a manner that negligently or recklessly causes death is still a crime. As the PG&E conviction on multiple manslaughter charges shows, businesses that are subject to extensive state and federal regulation can be put on notice that their operations are dangerous or lethal and prosecuted for negligent or reckless conduct that proves lethal. In combination with their failure to take sufficient precautions, notice has served as the basis of homicide prosecutions in numerous cases.²¹⁰

Reliance is thus unavailable to FFCs as a defense.

D. Preemption Is Not a Defense

FFCs might also claim that federal regulations *preempt* enforcement of state criminal laws against them for acts committed while engaging in federally regulated behavior.²¹¹ Preemption occurs when enforcement of a state law either directly conflicts with federal law or impinges on a field that Congress intended to exclusively occupy with federal regulation. A preemption defense fails on several fronts. Most directly relevant to

²⁰⁹ United States v. Xiong, No. 16-CR-167 (SRN/HB), 2017 WL 123428, at *3 (D. Minn. Jan. 12, 2017).

²¹⁰ See, e.g., discussion of PG&E case, *supra* notes ___ - ___ and accompanying text.

²¹¹ See *Hillsborough Cty. v. Automated Med. Labs., Inc.*, 471 U.S. 707, 713 (1985).

preemption doctrine, preemption of general criminal laws is an implausible interpretation of congressional intent. States' ability to prosecute homicides within their borders is a core state police power around which federal courts correctly tread very lightly. Congress may, of course, preempt a state's criminalization of the killing of a *federal* agent or *federal* official where Congress intends the federal government to manage all such prosecutions itself. But it has never attempted to preempt general homicide doctrine by passing a more general federal homicide statute, let alone a more modest—and civil rather than even criminal—regulatory statute.

No authority suggests that Congress intended to exert exclusive jurisdiction over general crimes committed by actors engaged in the regulated conduct. It is also difficult to see why Congress would try to bar states from prosecuting all homicides in a regulated field, particularly when state prosecutions of the non-federal crimes do not interfere with federal regulation.²¹² To understand why, consider that preemption would presumably apply to all cases in the regulated industries, which would be the equivalent of granting immunity from prosecution to a broad class of actors who have previously been prosecuted for crimes committed in the course of heavily regulated conduct.²¹³

Although preemption doctrine is complex and its contours can be difficult to predict, there is no precedent for preemption of any generally applicable criminal law, let alone a homicide statute. Perhaps because it is so implausible, we have been unable to find any consideration of such a broad defense in criminal case law. There is no indication that it has even been raised. It is exceedingly unlikely that a preemption defense would be available in a prosecution under generally applicable homicide law.

E. Extensive Government Regulation Is Not a Defense

There is one final related argument that, while not a legal defense *per se*, may serve as an extra-legal objection: if FFCs are guilty of homicide, then they might suggest that the federal and state governments that failed to sufficiently regulate their lethal conduct—or even assisted it by leasing

²¹² A full review of preemption doctrine is a complex inquiry that lies beyond the scope of this Article and, in the civil context, is the subject of considerable debate. *See* George Horvath, *Avoiding the Preemption Muddle: Reading Professor Bickel and Judge Garland* (Sept. 15, 2016) (“Justices have disagreed over just about every important task that courts must perform in analyzing preemption questions.”).

²¹³ *See City of New York v. Chevron Corp.*, 993 F.3d 81 (2d Cir. 2021) (finding that “federal common law actions concerning such emissions are displaced”).

them land on which to develop fossil fuels—are guilty as well,²¹⁴ and, if federal and state governments are not being prosecuted for homicide, it would be *unfair* to prosecute FFCs for homicide. This line of reasoning suggests that it would be unjust for a government that is in any way involved in the commission of an offense to prosecute another party for that offense.

This view is mistaken on several grounds. First, as discussed above, another person’s partial culpability for homicide does not remove one’s own. Second, government officials can be prosecuted for homicide if their conduct, undertaken with a culpable mental state, causes death.²¹⁵ Third, federal or state governments did not, via extensive disinformation campaigns, attempt to persuade the FFCs that the extensive climate science they and others were producing was mistaken; rather, FFCs obscured and argued against the findings of their own research and the research of other reputable scientists showing that catastrophic harms would likely result from their conduct, and FFCs did that in order to garner the benefits of insufficient regulation and government subsidies.

FFCs may believe that they befuddled and bankrolled enough public officials to insulate themselves from the consequences of their conduct, and they may complain of genuine surprise when they are held accountable.²¹⁶ But as a moral or legal argument, the belief that money, influence, or deception would allow them to cause world-historic harm to human life without consequence is evidence of culpability rather than innocence. Engaging in the production of disinformation designed to sway government actors does not give FFCs the ability to rely on the credulous response of those government actors, even if those government actors should have known better. This non-legal objection is inculpatory, not exonerating.

²¹⁴ This objection is most closely associated with *Juliana v. United States*, 947 F.3d 1159 (9th Cir. 2020). Juliana was brought by 21 young plaintiffs against the United States and several federal officials for inter-generational harms under an “atmospheric trust” theory of federal public trust law. Michael C. Blumm & Mary C. Wood, ‘No Ordinary Lawsuit’: *Climate Change, Due Process, and the Public Trust Doctrine*, 67 Am. U.L. Rev. 1 (2017).

²¹⁵ See, e.g., Grand Jury Felony Indictment, *People v. Lyons*, https://www.michigan.gov/documents/ag/GJ_Indictment_-_Lyon_N_712952_7.pdf.

²¹⁶ In the terms of classical economics, one could say FFCs and prosecutors hold “divergent expectations” about the possible range of outcomes at trial. Divergent expectations are a staple in modern legal theories of litigation. See, e.g., George Priest & Benjamin Klein, *The Selection of Disputes for Litigation*, 13 J. Legal Stud. 1 (1984); William M. Landes, *An Economic Analysis of the Courts*, 14 J. Law & Econ. 61 (1971); and John P. Gould, *The Economics of Legal Conflicts*, 2 J. Legal Stud. 279 (1973).

(Similar arguments may be made regarding the general public for its use of fossil fuels. Those arguments fare similarly.)

V. CLIMATE HOMICIDE PROSECUTIONS WOULD BENEFIT THE PUBLIC

States are looking for ways to reduce the lethal harms FFCs are generating. Below, this Article argues that homicide prosecutions may be an effective tool states have for doing so. In the United States, corporations have been held criminally liable—including for homicide—for over a century.²¹⁷ The extension of homicide doctrine to corporations is linked to the advent of modern industrial harms that corporations began generating at increasing scale at the end of the nineteenth century.²¹⁸ Witnessing and abhorring a growing number of deaths made possible in the modern industrial era, lawmakers looked to criminal law as a means to hold corporations accountable.²¹⁹

A. Precedents for Homicide Charges

There are several notorious early examples. For example, prosecutors sought homicide convictions for the deaths of passengers aboard the General Slocum steamship,²²⁰ for workers killed in or attempting to escape

²¹⁷ See *United States v. Van Schaick*, 134 F. 592 (1904) (affirming the conviction of a corporation for manslaughter under a statute providing that “[e]very owner ... through whose fraud, connivance, misconduct or violation of the law, the life of any person is destroyed shall be deemed guilty of manslaughter,” even though the prescribed penalty of “confinement at hard labor” could not be enforced.); *N.Y. Cent. & Hudson River R.R. v. United States*, 212 U.S. 481 (1909) (allowing for a federal prosecution); *State v. Lehigh Valley R.R.* (permitting a negligence-based prosecution of a railroad for involuntary manslaughter in New Jersey); *People v. Ebasco Servs., Inc.*, 354 N.Y.S.2d 807, 811 (Sup. Ct. 1974) (holding that, under the state’s newly revised Penal Code, “a corporation may commit [homicide] and be held to answer therefor”); *Commonwealth v. Penn Valley Resorts, Inc.*, 494 A.2d 1139, 1142–43 (Pa. Super. Ct. 1985) (holding that a corporation is a person within the statutory definition of involuntary manslaughter); *Vaughan & Sons, Inc. v. State*, 737 S.W.2d 805, 810 (Tex. Crim. App. 1987) (en banc) (extending liability to Texas corporations after statutory reform). See also, generally, Michael B. Bixby, *Workplace Homicide: Trends, Issues, and Policy*, 70 Or. L. Rev. 333, 335–56 (1991).

²¹⁸ For discussion of contemporaneous changes in tort law, see Donald G. Gifford, *Technological Triggers to Tort Revolutions*, 11 J. Tort L. 1, 71-143 (2018).

²¹⁹ In this sense, corporate homicide is appropriately viewed as complementing the simultaneous rise of the public welfare offense. See Francis B. Sayre, *Public Welfare Offenses*, 33 Colum. L. Rev. 55 (1933).

²²⁰ See *Van Schaick supra*, note __, consolidating the Slocum cases.

the Triangle Shirtwaist Factory Fire,²²¹ and for the deaths of patrons in the Cocoanut Grove Nightclub fire.²²² More recently, federal prosecutors brought manslaughter and other charges against BP Exploration and Production Inc. for its conduct leading to and after the 2010 Deepwater Horizon disaster. BP pleaded guilty and was sentenced to pay \$4 billion in criminal fines and penalties, still the largest criminal monetary resolution in U.S. history.²²³ And, in 2019, California prosecutors charged Pacific Gas and Electric with homicide for deaths related to a 2018 wildfire that killed over eighty people and destroyed over 18,000 structures.²²⁴

Each of these precedents pales in comparison to a potential climate homicide prosecution along multiple dimensions: the scope of the harm FFCs have generated, the scope of the evidence about which they were aware, and the extent of disinformation promoted regarding the lethal risks generated by their business. Most of the precedents involve scores of deaths, or at most roughly 1,000—not thousands, tens or hundreds of thousands, or millions. In no case (barring BP) were the defendants as technically sophisticated as fossil fuel companies, nor were they aware of and helping to create the research detailing the extent of the lethal risks they were running. And in no case did the defendants engage in extensive, multi-decade disinformation campaigns about their lethal activity to forestall policymakers from intervening and less lethal competition from emerging.

²²¹ See, generally, David von Drehle, *Triangle: The Fire That Changed America* (2004).

²²² *Commonwealth v. Welansky*, 55 N.E.2d 902 (1944). See also Daniel J. Fleming, *The Cocoanut Grove Revisited: U.S. Navy Records Document How 492 Died in a Deadly Nightclub Fire 75 Years Ago*, 49 *Prologue Magazine* (2017) (detailing the timeline of the fire).

²²³ BP Exploration and Production, Plea Agreement, *United States v. BP Exploration and Production Inc.*, No. 2:12-cr-00292 (E.D. La. 2012).

²²⁴ The fire, known as the Camp Fire, began when power lines came into contact with dry brush. PG&E plead guilty to 84 counts of involuntary manslaughter and, in addition to the \$13.5 billion it paid people who lost homes and businesses as part of its bankruptcy settlement, agreed to pay a \$3.5 million fine and an additional \$500,000 to cover the costs of the investigation. See Ivan Penn & Peter Eavis, *PG&E Pleads Guilty to 84 Counts of Manslaughter in Camp Fire Case*, *N.Y. Times* (June 16, 2020). PG&E has also pledged to spend an estimated \$15 to \$20 billion to bury over 10,000 miles of powerlines. Ivan Penn, *PG&E Aims to Curb Wildfire Risk by Burying Many Power Lines*, *N.Y. Times* (July 21, 2021).

B. Negative and Positive Lessons Recommend Prosecution

The closest historical analog to FFCs in terms of lethality,²²⁵ awareness, and disinformation campaigns may be the tobacco industry's production and sale of carcinogenic products despite the well-documented risks to the public. Tobacco companies themselves were keenly aware of—and anxious about—the potential for criminal liability for tobacco-related deaths. As Ernest Pebbles, an attorney and future Vice President for Brown and Williamson wrote in a memo fretting over how much knowledge the company should admit to:

If we admit that smoking is harmful to heavy smokers, do we not admit that BAT [British American Tobacco, Brown & Williamson's parent company] has killed a lot of people each year for a very long time? Moreover, if the evidence we have today is not significantly different from the evidence we had five years ago, might it not be argued that we have been “wilfully” killing our customers for this long period? Aside from the catastrophic civil damage and governmental regulation which would flow from such an admission, I foresee serious criminal liability problems.²²⁶

Although public demand for criminal prosecution was reduced both by the master settlement agreement and by industry campaigns to blame smokers for their smoking-related harms,²²⁷ tobacco companies were unable to gain immunity from criminal prosecution as one of the terms of the settlement.²²⁸ As such, legal analysts who have considered the issue believe that homicide prosecutions against big tobacco under state law are still available.²²⁹

²²⁵ U.S. Dep't of Health & Human Servs., *The Health Consequences of Smoking—50 Years of Progress: A Report of the Surgeon General* (2014), <https://pubmed.ncbi.nlm.nih.gov/24455788> (estimating that tobacco is responsible for over 480,000 deaths each year in the United States.).

²²⁶ Draft memorandum from Ernest Pepples, In-House Counsel, Brown & Williamson Tobacco on a New Strategy on Smoking and Health 1011 (undated, attributed to 1980), Bates No. 680051009/1014, <https://www.industrydocuments.ucsf.edu/docs/kjhd0024>.

²²⁷ See Naomi Oreskes & Erik M. Conway, *Merchants of Doubt: How a Handful of Scientists Obscured the Truth on Issues from Tobacco Smoke to Global Warming* (2010).

²²⁸ Kelsey Romeo-Stuppy et al., *Criminal Liability for Tobacco Corporations and Executives*, 31 *Tobacco Control* 355–357 (2022).

²²⁹ See, e.g., *Williams v. Philip Morris Inc.*, 127 P.3d 1165 (2006) (“... Philip Morris's actions, under the criminal statutes in place at the beginning of its scheme in 1954, would have constituted manslaughter.... Today, its actions would constitute at least second-degree manslaughter, a Class B felony.”)

In the case of tobacco, the choice of a settlement in which states benefited from tobacco sales is generally seen as a negative example of how to manage large-scale corporate lethality. It allowed the industry to continue producing, marketing, and distributing a product proven to be both addictive and lethal, and it tied public coffers to the industry's bottom line.²³⁰ The bargain big tobacco struck, nearly all public health observers have since concluded, was not just toothless, allowing the industry to expand its reach, globally at first, and then domestically with vaping products; it was the worst kind of moral hazard: if they wanted to fight tobacco addiction, disease, and morbidity, states would have to give up substantial revenue every year. Had prosecutors rejected a profit-sharing scheme and instead brought criminal cases against big tobacco, millions of lives might have been saved.²³¹ Michael Moore, the Attorney General of Mississippi from 1988 to 2004, described the result a "moral treason" with "the losers being the people."²³²

There are, however, positive lessons to be learned from other industries facing possible homicide prosecutions. Although the full extent of the Sackler Family's and Purdue Pharma's responsibility for deaths related to Oxycontin addiction and overdoses is not fully resolved, the Sacklers and Purdue have already pleaded guilty to multiple criminal charges and agreed to pay \$8 billion for related federal crimes, including a \$2 billion criminal forfeiture not eligible for elimination in bankruptcy, and a lifetime ban from the opioid industry for the Sacklers. Under the terms of their respective proposed settlements, Purdue and the Sacklers must also make public over 30 million documents, including some previously withheld as privileged legal advice.

Perhaps most significantly, under the terms of Purdue Pharma's September 2021 proposed settlement, the company would enter into a plan that legally dissolves the pharmaceutical manufacturer and restructures it into a public benefit corporation that has a core focus of addressing the opioid crisis and repaying individuals and families who were damaged by

²³⁰ See, e.g., Walter J. Jones & Gerard A. Silvestri, *The Master Settlement Agreement and Its Impact on Tobacco Use 10 Years Later: Lessons for Physicians About Health Policy Making*, 137 *Chest* 692, 697 (2010) ("Once the MSA agreement established that MSA monies would not be 'dedicated' (that they could be used in any way a state saw fit), the die was cast."). See also generally, Michael Pertschuk, *Smoke In Their Eyes: Lessons In Movement Leadership From The Tobacco Wars* (2001).

²³¹ Steven A. Schroeder, *Tobacco Control in the Wake of the 1998 Master Settlement Agreement*, 350 *N. Eng. J. Med.* 295 (2004) ("[T]he consensus that has emerged is that the public lost a golden opportunity to improve its health.").

²³² *Id.*

its products.²³³ That sweeping proposal, a radical shift by a corporation valued in the billions, is now seen as too sweet by many, and has been rejected by a federal judge because it would have protected members of the Sackler family from additional litigation.²³⁴

Homicide charges against the Sacklers and Purdue Pharma remain an option, and the current proposals on the table from the defendants can be seen as reflecting a constructive response to the credible threat of criminal prosecution.²³⁵ In particular, Purdue Pharma's proposed restructuring as a public benefit corporation, precisely because it would align the corporation's incentives with redressing the harm it has caused, alters the costs and benefits of pursuing homicide charges. States would have to ask themselves: what would prosecution of a company devoted to fighting opioid addiction accomplish that the threat of prosecution has not already accomplished?²³⁶

Public benefit corporations are for-profit corporations that are typically required to consider the impact of their decisions on the environment, shareholders, employees, customers, specific communities, and the public.²³⁷ This corporate structure is designed to balance the goal of maximizing profit with a commitment to pursue the public good.²³⁸ Public benefit corporations are also required to report transparently on their social and

²³³ Jonathan Randles, *Purdue Pharma Bankruptcy Plan Approved, Freeing Sacklers From Lawsuits*, Wall St. J. (Sept. 1, 2021, 6:55 PM), <https://www.wsj.com/articles/purdue-pharma-bankruptcy-plan-approved-freeing-owners-from-lawsuits-11630528636>.

²³⁴ Geoff Mulvihill, *Judge Rejects Purdue Pharma's Sweeping Opioid Settlement*, AP News, (December 16, 2021).

²³⁵ See John Seewer & David Collins, *For Families, \$6B Deal with OxyContin Maker is Just a Start*, AP News (Mar. 4, 2022).

²³⁶ The question of the Sacklers' criminal prosecution for their involvement in opioid-related homicides is another matter, as they have not yet aligned their interests with the public good.

²³⁷ Other companies, including Danone, King Arthur Flour, and Method, have restructured as public benefit corporations. Henderson, *World on Fire 153* (detailing the impact of restructuring on practices in these companies); Lara Aryani & Jess Gorski, *PBCs and the Pursuit of Corporate Good*, PBCs and the Pursuit of Corporate Good, Friday, (December 9, 2022), <https://corpgov.law.harvard.edu/2022/12/09/pbcs-and-the-pursuit-of-corporate-good> (describing the emergence and success of these large public benefit corporations); Patagonia Works. (2013).

²³⁸ Briana Cummings, *Benefit Corporations: How to Enforce a Mandate to Promote the Public Interest*, 112 Colum. L. Rev. 578 (2012); Michael B. Dorff, *Why Public Benefit Corporations*, 42 Del. J. Corp. L. 77 (2017).

environmental performance and may be held legally accountable for their actions by stakeholders.²³⁹

It is impossible to say how many lives would be saved if FFCs, in response to threats of homicide prosecution, entered into similar agreements. But compared with the status quo, and depending whether and when climate tipping points are reached, reduced mortality could range from hundreds of thousands to millions of lives in the United States alone, with significantly larger numbers globally.

C. Homicide Prosecution Would Support Uniquely Effective Remedies

Existing attempts at civil and regulatory remedies are failing to deter FFCs' ongoing lethal conduct sufficiently. Federal courts, at the FFCs' request, have blocked serious regulatory measures, and thus far have prevented private civil suits from proceeding.²⁴⁰ This is, in no small part, by FFCs' design. Judicial appointments to federal courts supported by FFC-funded research, appointments-related lobbying, and political campaigning have all helped generate a pipeline of judges supportive of holdings favoring FFCs.²⁴¹ With an anti-regulatory majority on the Supreme Court, with regulatory bodies like the EPA facing new restrictions on their power over private actors,²⁴² and with little prospect of private redress, the criminal law may offer an effective tool for states to shift FFC's conduct from lethal to beneficial.

A significant advantage of state criminal prosecution lies in the greater federal deference given to state criminal law enforcement relative to civil

²³⁹ Rebecca Henderson, *Reimagining Capitalism in a World on Fire* (2020) (henceforth Henderson, *World on Fire*).

²⁴⁰ Ian Millhiser, *Republicans Have an Agenda All Right, and They Don't Need Congress for It*, N.Y. TIMES: OPINION (Mar. 30, 2021) ("One of the most important legal developments in the last few years . . . is that a majority of the [Supreme Court] called for strict new limits on federal agencies' power to regulate the workplace, shield consumers and protect the environment. . . . The result is that . . . business conservatives . . . walk away with big wins, while voters have less access to health care and breathe dirtier air."); Ian Millhiser, *THE AGENDA: HOW A REPUBLICAN SUPREME COURT IS RESHAPING AMERICA* (2021).

²⁴¹ Millhiser, *supra* note 345.

²⁴² See *West Virginia v. Env't Protection Agency*, 142 S. Ct. 2587 (2022) (holding that the EPA lacks authority to regulate emissions from existing plants through generation shifting to cleaner methods of generating power). See also William W. Buzbee, *Anti-Regulatory Skewing & Political Choice In UARG*, 39 Harv. Env't L. Rev. 63 (2019); Jacob M. Schlesinger, *Biden's Hurdle: Courts Dubious of Rule by Regulation*, Wall St. J. (Mar. 2, 2021, 11:13 AM), <https://www.wsj.com/articles/bidens-hurdle-courts-dubious-of-rule-by-regulation-11614701629>.

lawsuits.²⁴³ Although federal courts have increasingly held that regulatory and tort remedies against FFCs for climate-related harms under state law are “preempted” by federal regulatory schemes, federal courts have accepted only narrow federal preemption of criminal statutes.²⁴⁴ While powerful actors may use their money and influence to capture federal agencies or federal courts in ways that effectively block state-level civil remedies, relatively robust federal deference to state criminal prosecutions would require FFCs to capture the legislatures and courts of every jurisdiction where they caused a death, something they are far less likely to accomplish.²⁴⁵

To give just one example, sixteen municipalities in Puerto Rico recently filed suit against the top fossil fuel producers for “losses, deaths, and destruction of property” caused by the “production, promotion, refining, marketing, and sale of fossil fuel-based consumer products” through various climate-related harms including hurricane Maria.²⁴⁶ Although there is little question that the defendants engaged in coordinated acts to deceive the public about the harms that would arise from the use of fossil fuels, in every similar case defendants have argued that these types of civil suits for monetary damages should be removed to federal court and are preempted by federal law.²⁴⁷ But criminal prosecutions for crimes committed in a local jurisdiction are, as we have described above, not preempted by federal law. As such, there is a much more direct, dependable, and timely path to negotiated or court-imposed remedies through a homicide prosecution than through a tort claim.

There are other reasons why the criminal law is well suited to addressing FFCs’ conduct. Where tort law merely prices harmful conduct, criminal law addresses both harms and moral transgressions.²⁴⁸ Under tort

²⁴³ New York lost its action alleging securities fraud after a 12-day bench trial, and the Second Circuit recently held that New York City’s state common law claims against five oil companies were preempted by federal common law and that the relevant federal common law was displaced by the Clean Air Act. *See, respectively*, *City of New York v. Chevron Corp.*, 993 F.3d 81 (2d Cir. 2021), *and* *People ex rel. James v. Exxon Mobil Corp.*, 119 N.Y.S.3d 829 (N.Y. Sup. Ct. 2019). *See, e.g.*, *West Virginia v. Env’t Prot. Agency*, 142 S. Ct. 2587 (2022) (barring the EPA from regulating power plant carbon dioxide emissions to reduce risks related to climate change).

²⁴⁴ *See supra* Part II.E.

²⁴⁵ We discuss the reasons for this federal deference above. *See supra* Part IV.D.

²⁴⁶ *Puerto Rico v. Exxon Mobil Corp.*, 3:22-cv-01550 (D.P.R. 2022), compl. at 4.

²⁴⁷ *See, e.g.*, *City of New York v. Chevron Corp.*, 987 F.3d 663 (2d Cir. 2020).

²⁴⁸ Robert Cooter, *Prices and Sanctions*, 84 COLUM. L. REV. 1523, 1523 (1984) (arguing that criminal law sanctions an activity, while tort law prices it); *see also* Kenneth W. Simons, *The Crime/Tort Distinction: Legal Doctrine and Normative Perspectives*, 17 WIDENER L.J. 719 (2008) (cataloging other differences).

law, corporations may find it acceptable to impose harms where their ledger sees a sufficient profit; under criminal law, the breadth of responses available to the state is appropriately broader, including not only fines, but property seizure, injunctive relief, compulsory program participation, mandated apologies, public shaming and, for humans, incarceration and even death. Where harms are criminal rather than merely economic, and public rather than private, states have a much deeper interest in regulating conduct, and their ability to intervene is far more extensive. The current state of affairs demonstrates that wrongful conduct that is extremely profitable requires more than the threat of fines to remedy. Prosecutors can bring several effective modes of action, influence, and relief to bear.

Increasingly, FFCs are facing climate-related legal claims that have criminal analogues. The cases fall into a few general types: common law actions for injunctive relief,²⁴⁹ common law actions seeking damages for harms of climate change or the costs of adapting to it,²⁵⁰ actions alleging securities fraud for misleading investors or failing to disclose material information regarding harms,²⁵¹ and actions alleging consumer fraud.²⁵²

FFCs have fought these actions aggressively.²⁵³ While the Massachusetts and New York Attorneys General were merely investigating Exxon, the company sued them in Texas court, claiming that their investigations into whether it misled or lied to the public and investors about the most serious threat to humanity in recorded history are legally frivolous and motivated by a political agenda rather than by legitimate concerns.²⁵⁴ Among the company's claims was that a statement by a group of 17 attorneys general saying they share a common interest in "ensuring the dissemination of accurate information about climate change" was evidence that the officials were "willing[] to violate First Amendment rights to carry out [their]

²⁴⁹ See, e.g., *Am. Elec. Power Co. v. Connecticut*, 564 U.S. 410 (2011).

²⁵⁰ See, e.g., *Cnty. of San Mateo v. Chevron Corp.*, 960 F.3d 586 (9th Cir. 2020).

²⁵¹ See, e.g., *People by James v. Exxon Mobil Corp.*, 119 N.Y.S.3d 829 (N.Y. Sup. Ct. 2019); *Complaint, Massachusetts v. Exxon Mobil Corp.*, No. 1984-CV-03333-BLS1 (Mass. Super. Ct. filed Oct. 24, 2019).

²⁵² See, e.g., *Complaint, Massachusetts v. Exxon Mobil Corp.*, No. 1984-CV-03333-BLS1 (Mass. Super. Ct., filed Oct. 24, 2019); *District of Columbia v. Exxon Mobil Corp.*, No. 1:20-CV-01932 (D.D.C. filed June 25, 2020); *State v. Am. Petroleum Inst.*, No. 0:20-CV-01636 (D. Minn. filed June 24, 2020); *Connecticut v. Exxon Mobil Corporation*, No. 3:20-CV-01555 (D. Conn., filed Nov. 13, 2020).

²⁵³ As one district judge put it, Exxon "r[an] roughshod over the adage that the best defense is a good offense." *Exxon Mobil Corp. v. Schneiderman*, 316 F. Supp. 3d 679, 686 (S.D.N.Y. 2018).

²⁵⁴ *Id.* at 705–712.

agenda.”²⁵⁵ The District Court for the Southern District of New York rejected Exxon’s complaint, noting among other things that, assuming the truth of Exxon’s allegations, “they appear to support the AGs’ legal theory that Exxon’s internal research was consistent with the scientific consensus but that Exxon made statements to the market and the public that suggested otherwise.”²⁵⁶ Exxon’s suit against the Attorney General of the U.S. Virgin Islands had greater success. Outmatched, the AG withdrew his subpoena, and Exxon dismissed its complaint.²⁵⁷

To date, most of the litigation has not moved beyond the early stages of procedural wrangling, but the scale is escalating. With over 200 new cases filed against fossil fuel companies for their role in producing climate-related harms and deceptions related to climate harms last year alone,²⁵⁸ it is likely that additional evidence will come to light regarding Exxon or other FFCs in coming years. Unfortunately, while fully justified, these lawsuits may fall well short of the impact that a homicide prosecution would have. They may bring only modest penalties—or even colossal penalties, but ones on a scale that FFCs will view as tolerable costs of doing business. Homicide not only more accurately describes what FFCs have done, it brings the scale of the harm and culpability into focus in ways that even a criminal fraud conviction cannot. FFCs have not simply been lying to the public, they have been killing members of the public at an accelerating rate, and prosecutors should bring that crime to the public’s attention.

In advocating for criminal homicide prosecutions, this Article is not suggesting that imprisonment or the abrupt cessation of fuel production should be a core objective. Rather, prosecution is uniquely suited to holding FFCs accountable in ways that are both meaningful and practically beneficial to everyone involved. The forms of accountability proposed here are not, as punitive versions of deterrence or desert might suggest, the infliction of private or public suffering commensurate with or exceeding the

²⁵⁵ *Id.* at 712.

²⁵⁶ *Id.* at 709–10 (emphasis added).

²⁵⁷ Phil McKenna, *Virgin Islands and Exxon Agree to Uneasy Truce Over Climate Probe*, *INSIDE CLIMATE NEWS* (July 7, 2016), <https://insideclimatenews.org/news/07072016/virgin-islands-exxon-agree-climate-probe-subpoena-claude-walker-schneiderman-healey/>.

²⁵⁸ Joana Setzer & Catherine Higham, *Global Trends in Climate Change Litigation: 2022 Snapshot 9* (Georgina Kyriacou & Natalie Pearson eds., 2022), <https://www.lse.ac.uk/granthaminstitute/publication/global-trends-in-climate-change-litigation-2022/> (“Just over 800 cases were filed between 1986 and 2014, while over 1,000 cases have been brought in the last six years.”). With only a handful of lawsuits filed prior to 2005, the number has been growing steadily since.

harm the defendant has imposed on others.²⁵⁹ Rather, consistent with more traditional and humane theories of justice,²⁶⁰ state power should be used to demand accountability from criminal actors, deploying the most effective tools to shift their conduct from dissembling, exploitation, and harm to truthfulness, engagement, and repair.²⁶¹

Prosecutors have broad powers to negotiate agreements with defendants to serve the public good, and they can use their power to impose imprisonment, asset forfeiture, injunctions, and information-forcing discovery to incentivize broad accountability in their negotiated agreements. The options available to prosecutors are powerful, and below this Article describes how each might be deployed to serve the people whom prosecutors are sworn to represent.

1. Settlements Predicated on Criminal Liability

The most direct method for shaping FFCs' behavior would be through negotiated settlements tied to the criminal conduct charged. Examples of settlement terms drawn from other cases and defendants include: restructuring the defendant corporation into a public benefit corporation; reforming the board of the defendant corporation to include agents that will align future conduct with the public good; requiring legally binding commitments by the defendant corporation to forego certain practices; requiring payments by the corporation to establish ongoing practical remedies to the harm it has generated; publicly disclosing all records relating to the defendant corporation's misconduct; and requiring apologies and cash payments to those harmed.

²⁵⁹ Even devoted deontologists agree with us in this respect. *See, e.g.*, Arthur Ripstein, *Force and Freedom* (2010) (criticizing theories of justice that reduce to "matching of suffering to wickedness").

²⁶⁰ *See* John Braithwaite, *Restorative Justice*, in *The Handbook of Crime and Punishment* (Michael H. Tonry, ed. 2000) (noting that restorative approaches to justice have "been the dominant model of criminal justice throughout most of human history for all the world's peoples.").

²⁶¹ *See generally*, Donald Braman, *Punishment and Accountability: Understanding and Reforming Criminal Sanctions in America*, 53 *UCLA L. Rev.* 1143 (2006) (laying out both theoretical and practical justifications for accountability-enhancing sentencing); Amy Westervelt, *Accountability Is The Most Important Climate Solution*, *Drilled News*, Jan 2, 2023, <https://www.drilledpodcast.com/accountability-is-a-climate-solution> (describing the importance of accountability in developing coherent climate policy).

a. Restructuring FFCs as Public Benefit Corporations

The benefits of restructuring FFCs into public benefit corporations are, as touched on above, among the most attractive options that a prosecution might seek as part of a settlement.²⁶² Unlike homicide cases involving individuals, where the state can at most detain and attempt rehabilitation, homicide cases involving corporations invite a more rigorous adjustment of the culture and incentives of the guilty party. Historically, corporate criminal offenders have avoided harsh penalties because penalties that destroy the value of a business and its assets could also harm the public.²⁶³ But with the emergence of public benefit corporations—organizations that generate profits but do so in pursuit of the public good—states can now pursue a productive restructuring as part of a settlement.

The settlement terms proposed by Purdue Pharma and the Sacklers provide edifying examples of what can and cannot be done under the threat of criminal prosecution. No state can force the Sacklers to care about the public good; but Purdue Pharma the corporation can be restructured as a public benefit corporation that, as part of its charter, would be required by law to care about harms associated with its opioid production and pursue remedies. Similarly, although it would be legally impossible to sentence all members of the Sackler family—including future generations—to devote future earnings to remedying the harms related to opioid addiction to which the family contributed, the same is not true for corporations like Purdue Pharma. Corporations that commit crimes, unlike humans, can be rewritten into different forms with different commitments, and this fundamental rewriting is both ethical and morally appropriate where the harm and culpability are serious. Thus what would normally be conceived of as impossibly harsh and controlling for human defendants is practical and appropriate for corporation defendants.²⁶⁴

²⁶² In broad strokes this would resemble the proposed restructuring of Purdue Pharma to help redress the harm it caused in feeding the opioid addiction crisis. See Taleed El-Sabawi Leo Beletsky, *Purdue's Demise Could Be A New Beginning For The Pharmaceutical Industry*, Health Affairs Blog (Dec. 18, 2020), <https://www.healthaffairs.org/doi/10.1377/forefront.20201211.617504/full/>

²⁶³ Guidance for federal prosecutors explicitly includes consideration of collateral harms to shareholders and employees. See U.S. Dep't of Justice, United States Attorneys' Manual § 9-28.1100 (2015). See also Andrea Amulic, *Humanizing the Corporation While Dehumanizing the Individual: The Misuse of Deferred-Prosecution Agreements in the United States*, 116 Mich. L. Rev. 123 (2017) (arguing that this concern has led to underenforcement against corporations).

²⁶⁴ See Donald Braman et al, *Public Benefit Restructuring for Corporate Criminal Offenders* (draft, on file with author).

Conversely, while states may have little concern about the lost industry of any individual Sackler family member convicted of a serious crime and sentenced to prison, many would have serious reservations about stopping the work of a multi-billion dollar corporation on which the healthcare sector relies for many medications.²⁶⁵ Because the public would arguably be significantly harmed were Purdue Pharma effectively put out of business, Purdue and the Department of Justice have instead proposed that the restructured Purdue, in addition to ceasing anti-social practices like aggressive marketing of opioids, and in addition to devoting its profits towards the treatment of opioid addiction, will also continue to manufacture important medications.²⁶⁶ FFCs, on this account, could be restructured in much the same way, reducing the production and distribution of fossil fuels at the fastest pace feasible, but not so fast as to cause harm, while protecting displaced workers and local economies and investing in the development and deployment of clean energy.

By working to defeat alternative energy competition, as well as defeat policies that would diminish or disincentivize fossil fuels or promote alternatives, FFCs have kept the United States dependent on their product, and they bear significant responsibility for our inability to shift to alternative energy more quickly. In large part due to FFCs' success, states cannot end fossil fuel usage in their borders overnight, and they would be foolish to try. Public-benefit restructuring solves this problem and overcomes the most important barrier to prosecuting FFCs: developing a plan for harm reduction and remediation that doesn't needlessly destroy corporate value or harm the public.

b. Other Possible Terms

In addition to a corporate restructuring, prosecutors could require FFCs to reconstitute their boards with a broader set of stakeholders;²⁶⁷ appoint an

²⁶⁵ This is part of a broader concern about the collateral consequences of punishing corporations, and debates over whether criminal prosecution of corporations is ever useful. Compare, e.g., Stephen A. Yoder, *Criminal Sanctions for Corporate Illegality*, 69 J. Crim. L. & Criminology 40 (1978); Brent Fisse, *Reconstructing Corporate Criminal Law: Deterrence, Retribution, Fault, and Sanctions*, 56 S. CAL. L. REV. 1141 (1983); V. S. Khanna, *Corporate Criminal Liability: What Purpose Does it Serve*, 109 Harv. L. Rev. 1477 (1996).

²⁶⁶ See Beletsky supra note ____.

²⁶⁷ This is fairly common in bankruptcy cases following criminal conduct. E.g., in 2004, Enron was ordered to make changes to its board of directors as part of a settlement with the DOJ and the SEC following its bankruptcy and the discovery of accounting fraud at the company. *In re Enron Corp.*, Case No. 01-16034 (AJG) (Jointly Administered)

independent monitor;²⁶⁸ implement new policies and procedures to prevent similar incidents from occurring in the future; and create corporate compliance programs.²⁶⁹ These are fairly standard terms of a settlement. Additional remedies could include requiring FFCs to display prominent warning signs alerting the public to the lethal consequences associated with the production, distribution, and use of fossil fuels;²⁷⁰ refrain from further exploration of fossil fuels sources;²⁷¹ make public apologies in prominent fora;²⁷² and disclose all related internal documents and decision-making to a publicly accessible archive.²⁷³

c. Fines and Cash Payments to Those Harmed

Fines and cash payments to harmed parties are other potential sanctions, though historically such awards have been notoriously ineffective at shaping future conduct.²⁷⁴ In light of the tobacco industry's ability to

(Bankr. S.D.N.Y. Jul. 15, 2004) (ordering the removal of the existing board of directors and installing a new board). See also <https://www.sec.gov/rules/other/35-27810.pdf>

²⁶⁸ See Lana N. Pettus, Court-Appointed Corporate Monitors in Environmental Crimes, 69 DOJ J Fed L & Pr. 6 (2021).

²⁶⁹ See Veronica Root Martinez, *Third Party and Appointed Monitorships*, in Cambridge Handbook of Compliance 605-615 (Benjamin van Rooij & D. Daniel Sokol eds., 2021).

²⁷⁰ These types of warnings are fairly common. Tobacco companies, e.g., are required to post warning labels on cigarette packages. *Tobacco Products; Required Warnings for Cigarette Packages and Advertisements*, 85 Fed. Reg. 15638 (Jun. 18, 2021). Similar warnings have been required of companies producing alcohol, *Alcoholic Beverage Labeling Act (ABLA)*, 27 U.S.C. § 215 (2018), children's toys, *Consumer Product Safety Act (CPSA)*, 15 U.S.C. § 2051 (2018), and airbags, *Federal Motor Vehicle Safety Standard No. 208*, 49 CFR § 571.208 (2018), for example.

²⁷¹ Restraint of harmful conduct via injunction is common in criminal cases. See Mary M. Cheh, *Civil Remedies To Control Crime*, 9 Crime Prevention Studies 45-66 (1998).

²⁷² Richard Phillips, *Shame as a Deterrent*, Chi Trib Section 1 at 20 (July 27, 1988) (company ordered to publish apologies for dumping carcinogenic chemicals).

²⁷³ This would be similar to the proposed settlement requiring Purdue Pharma and the Sacklers to disclose over 30 million documents related to their misconduct. See Jan Hoffman, *Purdue Pharma Is Dissolved and Sacklers Pay \$4.5 Billion to Settle Opioid Claims*, N. Y. Times Sept. 1, 2021.

²⁷⁴ One recent and prominent example can be found in the Consumer Financial Protection Bureau's "ordering Wells Fargo Bank to pay more than \$2 billion in redress to consumers and a \$1.7 billion civil penalty for legal violations across several of its largest product lines." *CFPB Orders Wells Fargo to Pay \$3.7 Billion for Widespread Mismanagement of Auto Loans, Mortgages, and Deposit Accounts* (Dec. 20, 2022), <https://www.consumerfinance.gov/about-us/newsroom/cfpb-orders-wells-fargo-to-pay-37-billion-for-widespread-mismanagement-of-auto-loans-mortgages-and-deposit-accounts>. CFPB Director Rohit Chopra acknowledged in his remarks announcing the order that even fines and payments this large "will not fix Wells Fargo's fundamental problems," and

continue inflicting lethal harm after its Master Settlement Agreement, it would appear that allowing FFCs to pay cash for their lethal conduct is profoundly unwise.²⁷⁵ However, if such payments were accompanied by a corporate restructuring and other terms described above, cash transfers could be an acceptable part of broader accountability measures.

2. Alternatives to a Negotiated Settlement

FFCs should agree to terms as sweeping as these because prosecutors have many other powerful tools, the use of which would be far less desirable to them. The first and most direct method for shaping FFCs' behavior outside of a settlement would be through civil injunctions tied to the criminal conduct charged.²⁷⁶ If states can show that FFCs are killing their residents through criminal conduct, prosecutors could ask courts to enjoin FFCs from the relatively unrestrained and increasingly lethal activity from which they currently profit.²⁷⁷ If any FFC were unwilling to settle to the terms described above, prosecutors could attempt to enjoin the holdout from doing business in the state altogether, providing greater market share to more compliant, pro-social competitors.

encouraged other enforcement agencies to take action. *Prepared Remarks of CFPB Director Rohit Chopra on the Wells Fargo Law Enforcement Action* (Dec. 20, 2022), <https://www.consumerfinance.gov/about-us/newsroom/prepared-remarks-of-cfpb-director-rohit-chopra-on-the-wells-fargo-law-enforcement-action/>

²⁷⁵ See discussion *supra* Part V.A.1. (discussing moral hazards related to cash payments in the context of tobacco liability).

²⁷⁶ Injunctions are routinely used at the federal and state level to combat crime. See Off. of the Deputy Att'y Gen., U.S. Dep't of Just., Report of the Attorney General's Cyber Digital Task Force (2018), <https://www.justice.gov/archives/ag/page/file/1076696/download> (noting that the Department of Justice "often uses civil injunctions, as well as seizure and forfeiture authorities" to disrupt criminal conduct); Shauni Tyler Lynch, *New Function for an Injunction: Department of Justice Utilizes Temporary Restraining Order to Stop Excessive Prescribing and Selling of Opioids - Will Massachusetts Follow Suit?*, 25 Suffolk J. Trial & App. Advoc. 275 (2019) (describing the use of civil injunctions to stop excessive prescribing of narcotics); Press Release, Dep't of Just., Justice Department Files Action to Enjoin Texas Doctors From Illegally Prescribing Highly Addictive Opioids and Other Controlled Substances (May 10, 2019), <https://www.justice.gov/opa/pr/justice-department-files-action-enjoin-texas-doctors-illegally-prescribing-highly-addictive>; Matthew D. O'Deane, *GANG INJUNCTIONS AND ABATEMENTS: USING CIVIL REMEDIES TO CURB GANG-RELATED CRIMES* (2012) (reviewing the many cases where civil injunctions were used to disrupt criminal gang activity).

²⁷⁷ Under federal law and in many states "title to property used to commit a crime (or otherwise 'traceable' to a crime) passes to the Government at the instant the crime is planned or committed." *Luis v. United States*, 136 S. Ct. 1083, 1085 (2016) (citing 21 U.S.C. § 853(c)).

A second, complementary action states could take would be to seize FFCs' property with probable cause to believe that it was involved in criminal conduct.²⁷⁸ Derived from common law doctrine holding that any property causing death or bodily injury was "forfeit" and could be seized by the sovereign for the common good,²⁷⁹ in many states, as well as federally, law enforcement may seize property where there is probable cause that the property is involved in a crime.²⁸⁰ The action is one against the property itself, not the suspect or defendant, and thus in many states can be seized absent a criminal indictment. The particulars of forfeiture statutes vary considerably across jurisdictions, but the general theory behind asset seizures is relatively straightforward. They "help to ensure that crime does not pay: They at once punish wrongdoing, deter future illegality, and 'lessen the economic power' of criminal enterprises."²⁸¹ If state and local prosecutors have no other timely means of slowing fatalities driven by FFCs' conduct, they could employ the broad seizure powers that a criminal prosecution enables. They could then auction the property to competitor FFCs that agreed to terms more beneficial to the public the prosecutors are sworn to protect.

Third, and finally, prosecutors could seek prison time for the executives of FFCs. Incarceration typically provides few if any direct benefits to anyone.²⁸² However, it can have several indirect benefits. Foremost, incarceration can encourage other FFCs to cooperate and enter into

²⁷⁸ In civil forfeitures, the action is against the property rather than the owner, and the owner has the burden of proof once the state has shown probable cause to believe that the property is connected to criminal conduct. The standard of proof is typically a preponderance of the evidence. *United States v. \$250,000 in U. S. Currency*, 808 F.2d 895, 900 (1st Cir. 1987); *United States v. Brock*, 747 F.2d 761, 762 (D.C. Cir. 1984). Seizing property related to criminal conduct is routinely employed by state actors. Alice W. Dery, *Overview of Asset Forfeiture*, Am. Bar Ass'n: BUS. L. TODAY (2012), https://www.americanbar.org/groups/business_law/publications/blt/2012/06/02_dery/ ("[F]orfeiture is available for over 200 different federal, state, and local crimes.").

²⁷⁹ Paul Schiff Berman, *An Anthropological Approach to Modern Forfeiture Law: The Symbolic Function of Legal Actions Against Objects*, 11 YALE J.L. & HUMANS 1, 5, 42, 45 (1999); Jacob J. Finkelstein, *The Goring Ox: Some Historical Perspective on Deodands, Forfeitures, Wrongful Death and the Western Notion of Sovereignty*, 46 TEMP. L.Q. 169, 181 (1973); Marc B. Stahl, *Asset Forfeiture, Burdens of Proof and the War on Drugs*, 83 J. CRIM. L. & CRIMINOLOGY 2, 295 (1992).

²⁸⁰ David J. Fried, *Rationalizing Criminal Forfeiture*, 79 J. CRIM. L. & CRIMINOLOGY 328, 329 (1988) ("In civil forfeitures, the owner of the property has the burden of proof once the government has shown probable cause to believe that the property is "guilty," in other words, connected with the prohibited activity.").

²⁸¹ *Kaley v. United States*, 134 S. Ct. 1090, 1094 (2014) (quoting *Caplin & Drysdale, Chartered v. United States*, 491 U.S. 617, 630 (1989)).

²⁸² See, generally, Donald Braman, *Doing Time on the Outside* (2006).

beneficial settlements. To be effective as an incentive to cease criminal conduct, however, the threat of incarceration needs to be credible; as such, prosecutors may need to bring criminal charges with penalties including detention, at least in early cases involving recalcitrant FFCs.

Incarceration would also bring some satisfaction to those harmed. Beyond personal satisfaction, however, incarceration could also increase trust in the fairness of the criminal justice system more broadly.

D. Beneficial Effects Outside of Settlement or Conviction

Counterintuitively, even a homicide investigation or prosecution that does not produce a settlement or conviction could help save lives. Simply opening an investigation or bringing charges could have beneficial effects related to discovery, shareholder reporting, and norm-shifting.

1. Prosecution Would Generate Valuable Information

First, there are benefits related to the broad discovery powers associated with criminal investigations and cases. Prosecutors can require defendants to disclose all documents and records relevant to the case. Just as importantly, they may depose defendants (including executives and those who supplied them with research and reports) under oath. FFCs are notoriously secretive, and jealously guard as much information about their actions and state of knowledge as legally permitted.²⁸³ Although regulations have some information-forcing ability, as courts have increasingly deprecated regulations seeking to curb climate change, trials themselves have become increasingly important sources of information about FFC conduct and mental states.²⁸⁴ To this end, discovery in criminal cases—even cases that fall short of a homicide conviction—could prove useful in educating the public and laying the groundwork for future criminal or civil cases.²⁸⁵

²⁸³ They operate, in other words, with a significant asymmetric information advantage. Lucian A. Bebchuk, *Litigation and Settlement Under Imperfect Information*, 15 *Rand J. Econ.* 404 (1984).

²⁸⁴ Bradley C. Karkkainen, *Information-Forcing Environmental Regulation*, 33 *Fla. St. U.L. Rev.* 861 (2006).

²⁸⁵ This is one of the important benefits that many states and cities seek in bringing cases where a successful verdict is uncertain. Robert D. Cooter & Daniel L. Rubinfeld, *An Economic Model of Legal Discovery*, 23 *J. Legal Stud.* 435 (1994). *See also* Sushma Subramanian, *US Cities Are Suffocating In The Heat. Now They Want Retribution*, *The Guardian* (Jul. 1, 2021) (noting that even if a lawsuit against FFCs fails to remedy the harm, “the legal process is expected to reveal new information on what the industry knew of the environmental destruction brought by climate change.”).

2. Prosecution Can Influence Reporting and Shareholder Actions

Second, criminal prosecution would trigger important reporting requirements by FFCs to shareholders and regulators. These reporting requirements include both the potential criminal convictions that could result and the risks that the corporation and its shareholders face as a result. Multiple lawsuits have already been brought against FFCs for failing to alert shareholders, the public, regulators, and legislators about the serious risks their products posed to the public.²⁸⁶ Although FFCs have reported some climate-related risks, they apparently have yet to report on the risks related to exposure to homicide prosecutions and the broader set of potential remedies described above.

Shareholders, in addition to wanting to avoid supporting an industry that generates and then conceals foreseeable and avoidable catastrophic risks to the public, may be sensitive to the potential loss of value in the market following an indictment or conviction for any form of homicide.²⁸⁷ Shareholders have already begun to pressure Exxon to take some climate-mitigation action through board elections, driven by a small activist investment firm, and supported by much larger investors. In response to a “rapid shift in public sentiment on climate change,” hundreds of fund managers have joined the United Nations Race To Zero campaign, signing on to the Net Zero Asset Managers Initiative.²⁸⁸ But while these initiatives

²⁸⁶ Connecticut, Delaware, the city of Charleston, South Carolina, and the city of Hoboken, New Jersey. Stephen Singer, *Connecticut Sues ExxonMobil Over Climate Change, Accusing Energy Giant of Misrepresenting Threats to the Environment*, HARTFORD COURANT (Sept. 14, 2020, 4:02 PM), <https://www.courant.com/business/hc-biz-exxonmobil-connecticut-lawsuit-20200914-b46c-karie5b7nlbpqun274l6xm-story.html>; Rachel Frazin, *Delaware Sues Major Oil Companies Over Climate Change*, THE HILL (Sept. 10, 2020, 2:41 PM), <https://thehill.com/policy/energy-environment/515892-delaware-sues-major-oil-companies-over-climate-change>; Emily Bohatch, *Charleston Sues 24 Fossil Fuel Companies, Seeks Money for Climate Change Damages*, THE STATE (Sept. 10, 2020), <https://www.thestate.com/news/local/crime/article245598585.html>; Sebastien Malo, *Hoboken N.J. Joins Other Cities Suing Over Climate Change*, REUTERS (Sept. 2, 2020, 1:25 PM), <https://www.reuters.com/article/usa-environment-lawsuit-idUSL1N2FZ1L2>.

²⁸⁷ See, e.g., Matt Phillips, *Exxon's Board Defeat Signals the Rise of Social-Good Activists*, N.Y. Times (June 9, 2021).

²⁸⁸ “Race To Zero is a global campaign to rally leadership and support from businesses, cities, regions, investors for a healthy, resilient, zero carbon recovery that prevents future threats, creates decent jobs, and unlocks inclusive, sustainable growth.” *Race to Zero Campaign*, United Nations Climate Change, <https://unfccc.int/climate-action/race-to-zero-campaign> (last visited Nov. 22, 2022);

have promise, they have been criticized as effectively toothless and potentially “greenwashing.”²⁸⁹ The prospect of prosecution for homicide related to climate-related deaths would give activist investors significant leverage to bring real change to FFCs boardrooms and the funds that support them.

3. Prosecutions Can Encourage Prosocial Public Norms

Third and finally, even a failed or extended prosecution could have several salutary effects on public opinion and behavior. Prosecution that informs the public of to the true extent of FFCs culpability could help the members of the public exercise their preference for ethical products, shifting their consumption away from fossil fuels. Legislators, similarly, may be less inclined to shield an industry that generates and then conceals catastrophic risks when that behavior is recognized as mass-homicide.

Finally, a variety of trends are shifting the public toward receptivity to climate science and against the disinformation campaigns of FFCs. These trends also support a successful prosecution. But the converse is also true: a high-quality prosecution would help inform the public and help inoculate them against FFCs’ disinformation. A prosecution would help focus public attention in ways that are distinct from typical public education campaigns and debates in important ways. First, while FFCs can make false statements to the public with little risk, doing the same in court carries significant risks. Second, the factual claims in a criminal trial focus attention on particular issues and events and open those who testify to cross-examination, and FFC executives have been more truthful in their in-court statements in response to cross examination or judicial inquiry than they have been out-of-court.²⁹⁰ Admissions in court could help dispel inaccurate beliefs held by members

Commitment, The Net Zero Asset Managers Initiative, <https://www.netzeroassetmanagers.org/commitment/> (last visited Nov. 22, 2022).

²⁸⁹ Fiona Harvey, *Bank Group Accused of Exploiting Loopholes and ‘Greenwashing’ in Climate Pledge*, *The Guardian* (June 15, 2022, 2:16 PM) (quoting Beau O’Sullivan of Bank on Our Future: “The only real action we’ve seen from banks is to up their greenwashing budget. [The Glasgow Financial Alliance for Net Zero] has huge potential, but sadly it’s providing financial institutions with cover to continue, with a few exceptions, business as usual. They need to make a plan to get out of all fossil fuels, including oil and gas, and stop their funding of the [fossil fuel] sector’s growth right now.”).

²⁹⁰ See, e.g., Warren Cornwall, *In a San Francisco Courtroom, Climate Science Gets Its Day on the Docket*, *Sci. Insider* (Mar. 22, 2018), <https://www.science.org/content/article/san-francisco-court-room-climate-science-gets-its-day-docket> (describing a hearing in which Chevron’s lead attorney “quickly declared the company is convinced humans are playing a major role in climate change”).

of the public that FFCs have spread through extensive disinformation and political influence campaigns.

* * *

FFCs benefit from disinformation campaigns designed to confuse the public about the catastrophic lethality of their core business, which they have predicted for decades. If they do not face at least the possibility of being held accountable for their conduct, they will not only escape justice and have little reason to alter course; they will have made lethal profitability an example for every powerful corporation to study. Prosecutors can, and should, set a different example and teach a different lesson: that no one is above the law, and the law can help restore the public to safety when harm has been done.

Prosecutors wield enormous power, from injunctions to seizures to information-forcing. They are also well-situated to shift the conduct of FFCs from lethal to publicly beneficial. Beyond the traditional tools of prosecution lie a host of powers that criminal prosecutors alone can wield. As evidenced by cases like Purdue Pharma, the threat of a criminal conviction can move corporations to shift their business models from public exploitation to the pursuit of public benefit.

CONCLUSION

The acts committed by FFCs are like those supporting many other successful homicide convictions: the corporations disregarded serious risks that were brought to their attention and engaged in conduct that accelerated or contributed to one or more deaths. In another sense, however, the scope of the lethality is so vast that, in the annals of crime, it may eventually dwarf all prior homicide cases, combined. The scale of the crime may invite some readers to think it too vast to admit to anything but a political remedy.

We disagree.

Acts this culpable and harmful should not be beyond the law's reach, even for the most powerful actors in our society. Where the conduct is immoral enough and the harm is great enough, criminal prosecution must be considered as a tool to protect the public. Just as the research conducted by FFCs and others put FFCs on notice that they are generating catastrophic risks, the threat of a homicide prosecution would put them on notice that they can be called to answer for their conduct.

Importantly, homicide prosecutions could make available remedies that states have been unable to access other means. And because FFCs must consider legal risks in their business planning, simply making FFCs aware of the realistic potential for homicide liability may achieve many of the

benefits of a successful prosecution. It is both the moral and practical power of homicide prosecution that make it compelling.

Few would view homicide convictions as goods themselves, independent of benefits to the public. In this respect, the credible threat of a homicide prosecution would have a strong chance of aligning FFCs' incentives with the public good. Indeed, if in response FFCs were to restructure into enterprises that reduced mortality and benefited the public, prosecution might not be necessary to protect the public.

Today, however, FFCs remain exceptionally powerful, profitable, and lethal, and they are acting as though they are above the law. As a result, they are far from pursuing remedies to the harms they are causing, from which prosecutors are sworn to protect the public. If we want FFCs to take the climate-related harms they cause seriously, they must face at least the prospect of incurring legal consequences commensurate with the gravity of those harms. Under a plain reading of the law in hundreds if not thousands of jurisdictions in the United States, they are committing mass homicide. Prosecutors should act accordingly.