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CLIMATE CHANGE: A NEW REALM OF TORT LITIGATION, AND HOW TO RECOVER WHEN THE LITIGATION HEATS UP

Lauren Case*

I. INTRODUCTION

Many U.S. citizens are beginning to feel the negative effects of climate change, most notably in the form of property damage resulting from global temperature increases.\(^1\) One major effect of an increased global temperature is a rise in ocean temperatures, amplifying storm intensity and accelerating glacial melting.\(^2\) Scientists now agree that human activity—primarily the burning of fossil fuels—is the most significant cause of global warming.\(^3\) Despite the harms U.S. citizens are facing from greenhouse gas \("\text{GHG}\) emissions, the federal government currently does not regulate

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3. \textit{Id.} at 37–38. The combustion of fossil fuels creates GHGs, which cause a heating effect in the atmosphere. \textit{See id.}
GHGs or provide any recourse for citizens in the form of a statutory cause of action.⁴ Remedy seeking plaintiffs have started to rely on state and federal public nuisance laws as a cause of action against big carbon dioxide emitters, namely oil and energy companies.⁵ The Second Circuit Court of Appeals has recently determined that these public nuisance cases are permissible, holding that the plaintiffs have Article III standing to bring the case, and that the nuisance claim is a justiciable question for the courts.⁶ After they survive the pleading stage, future climate change litigants face a new dilemma. Climate change plaintiffs are unable to prove that a particular defendant caused their injuries because of the impossibility of tracing GHGs back to a specific emitter.⁷

Part II of this comment examines the causes and effects of climate change, and analyzes the public nuisance cause of action, in general and as applied to environmental cases. It also examines recent federal court decisions regarding climate change and collective liability theories.⁸ Part III identifies the problems involving causation and the apportionment of liability.⁹ Part IV analyzes the relevant collective liability theories as applied to climate change defendants.¹⁰ Finally, Part V proposes the “commingled products” theory—a modified market-share liability theory—

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⁴. While there is currently no federal regulation of GHGs, regulations are likely to appear in the near future. On December 7, 2009, the EPA announced “that six greenhouse gases taken in combination endanger both the public health and the public welfare of current and future generations.” Endangerment and Cause or Contribute Findings for Greenhouse Gases Under Section 202(a) of the Clean Air Act, 74 Fed. Reg. 66,496-01 (Dec. 15, 2009) (to be codified at 40 C.F.R. chpt. 1). Because GHGs endanger public welfare, the EPA is obligated to create regulations under the Clean Air Act, 42 U.S.C. §§ 7401—7671q (2006). This endangerment finding is a result of the Supreme Court’s ruling in Massachusetts v. EPA that GHGs are covered by the Clean Air Act, and that the EPA Administrator is therefore obligated to determine if they are likely to endanger public health or welfare. 549 U.S. at 528–29 (2007).

⁵. E.g., Native Vill. of Kivalina, 663 F. Supp. 2d at 869. The plaintiffs in Native Village of Kivalina sued twenty-four separate oil, energy, and utility companies. Id.


⁷. GHGs are molecular compounds, each having a generic makeup, rendering like molecules indistinguishable. Climate Change Report, supra note 2, at 37.

⁸. See discussion infra Part II.A–D.

⁹. See discussion infra Part III.

¹⁰. See discussion infra Part IV.
as the best solution for apportioning liability among climate change defendants.¹¹

II. BACKGROUND: CLIMATE CHANGE AND THE RESULTING LITIGATION

In the United States, climate change is expected to cause increasingly more damage to real property.¹² As a result, litigation has commenced, and an escalation is anticipated as a result of the recent Second Circuit decision in American Electric.¹³ Plaintiffs have employed common-law and statutory torts as an alternative method of getting into court because of the lack of a statutory cause of action to bring suit against major emitters of GHGs.¹⁴ Tort causes of action have been found viable in one federal circuit,¹⁵ but because no case has been litigated at trial thus far, there is no indication of how the courts will approach liability apportionment problems. These problems are very likely to arise given the large number of GHG emitters.

A. The Changing Climate and Its Damaging Effects

The U.S. Environmental Protection Agency (the “EPA”) acknowledges that “the burning of fossil fuels, such as coal and oil . . . have caused the concentrations of heat-trapping ‘greenhouse gases’ to increase significantly in our atmosphere.”¹⁶ GHGs prevent heat from leaving the earth’s atmosphere, causing a greenhouse effect on earth.¹⁷ Scientists agree that human GHG emissions are changing the earth’s atmosphere, and are therefore changing its climate.¹⁸ “Human activities result in emissions of four long-lived GHGs: [carbon dioxide] CO₂, methane (CH₄), nitrous oxide

¹¹. See discussion infra Part V.
¹². See discussion infra Part II.A.2.
¹⁴. See, e.g., Murphy Oil, 585 F.3d 855; Am. Elec., 582 F.3d 309; Native Vill. of Kivalina v. ExxonMobil Corp., 663 F. Supp. 2d 863 (N.D. Cal. 2009).
¹⁵. Murphy Oil, 585 F.3d at 879–80; Am. Elec., 582 F.3d at 392.
¹⁷. Id.
¹⁸. Id.
and halocarbons (a group of gases containing fluorine, chlorine or bromine).” No matter where these gases come from, once released, they “rapidly mix in the atmosphere.” Each of these gases has a different impact “on the global climate system due to their different radiative properties and lifetimes in the atmosphere.” The emissions of different GHGs are compared using “CO₂ equivalent emissions,” a universal standard based on the “warming influence” of CO₂. The observed effects of global warming attributable to GHGs include “sea level rise, shrinking glaciers, changes in the range and distribution of plants and animals, trees blooming earlier, lengthening of growing seasons, ice on rivers and lakes freezing later and breaking up earlier, and thawing of permafrost.”

1. The Energy Supply: The Primary Source of GHGs

Energy-related activities contribute the largest amount of GHGs to the atmosphere. The Intergovernmental Panel on Climate Change (the “IPCC”) found that carbon dioxide is the most significant anthropogenic GHG, globally representing 77% of the total GHG emissions in 2004, with such emissions increasing between 1970 and 2004 by about 80%. The largest and fastest growing carbon dioxide sources in recent years include “energy supply, transport and industry, while residential and commercial buildings, forestry

19. Climate Change Report, supra note 2, at 37.
22. Id. CO₂ equivalent emission is the amount of CO₂ emission that would cause the same radiative forcing (or warming impact) over time as a specific amount of another GHG, or a mixture of GHGs. Id. “The equivalent CO₂ emission is obtained by multiplying the emission of a GHG by its Global Warming Potential (GWP) for the given time horizon. For a mix of GHGs it is obtained by summing the equivalent CO₂ emissions of each gas.” Id.
23. Climate Change: Basic Information, supra note 16.
25. The IPCC is a scientific and intergovernmental body established by the United Nations Environment Programme and the World Meteorological Organization “to provide the world with a clear scientific view of the current state of climate change and its potential environmental and socio-economic consequences.” INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE, http://www.ipcc.ch/organization/organization.htm (last visited Sept. 17, 2010). Scientists from around the world contribute to the IPCC’s reports on climate change. Id.
(including deforestation) and agriculture sectors have been growing at a lower rate." 27 In its 2009 U.S. Greenhouse Gas Inventory Report, the EPA found that energy-related activities are the primary source of GHG emissions, totaling 86.3% of the total carbon dioxide emissions for the United States in 2007. 28 Combustion of fossil fuels is the major source of energy-related emissions, and carbon dioxide is the primary gas emitted in that process. 29 Other energy-related activities, "such as the production, transmission, storage, and distribution of fossil fuels, also emit greenhouse gases," though in less significant quantities. 30

2. Climate Change in the United States

In its 2007 Assessment Report, the IPCC drew from a range of climate models and projected that for the next two decades there will be a 0.2°C increase in global temperatures. 31 This increase will raise both land and ocean temperatures. 32 In a report on climate change impact, the National Assessment Synthesis Team (NAST) broke down the impact of climate change by region. 33 The effects of the increased temperatures include decreased snow cover, reduction or disappearance of sea ice in the Arctic and Antarctic, increase in heat waves and precipitation, rise in sea level, and a likely surge in the intensity of tropical storms, with storm tracks expected to move poleward. 34 A rise in sea levels and storm intensity has already caused damage, encouraging U.S. citizens to seek judicial relief. 35

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27. Id.
29. Id.
30. Id.
31. Climate Change Report, supra note 2, at 45.
32. Id. at 46, 46 fig.3.2.
34. Climate Change Report, supra note 2, at 46–47.
35. See Comer v. Murphy Oil USA, 585 F.3d 855 (5th Cir. 2009); Connecticut v. Am. Elec. Power Co., 582 F.3d 309 (2d Cir. 2009), petition for
The global sea level has risen by four to eight inches over the last one hundred years, adversely impacting U.S. coastal areas.36 "Between 1985 and 1995, southeastern states lost more than 32,000 acres of coastal salt marsh due to a combination of human development activities, sea-level rise, natural subsidence, and erosion."37 Additionally, it is estimated that Louisiana lost about thirty-five square miles of coastal land per year between 1978 and 1990.38 Future projected impacts in coastal regions include "the loss of barrier islands and wetlands, . . . reduced fisheries productivity, . . . and saltwater intrusion into surface and ground water supplies."39

In addition, storm intensities have increased as a result of the warmer Atlantic Ocean temperature,40 and "[o]ne hurricane modeling study suggests that peak wind speed will increase by 5–10% by the end of the 21st century."41 Further, "[e]stimates of the cumulative financial effect of a 0.5-meter rise in sea level on U.S. coastal property by 2100 range from roughly $20 billion to $150 billion."42 In 2005, Hurricane Katrina alone cost insurance companies $41.1 billion.43 GHG induced climate change is affecting property, health, and safety in the United States, and while there are many types of adverse effects of climate change, damages resulting from sea level rise and storm intensity have pushed citizens to pursue tort actions in court.44

36. CLIMATE CHANGE IMPACTS, supra note 33, at 80–81.
37. Id. at 51.
38. Id.
39. Id. Barrier islands and wetlands help to protect coastal areas from storm surges. Id.
41. CLIMATE CHANGE IMPACTS, supra note 33, at 81.
42. David A. Grossman, Warming up to a Not-So-Radical Idea: Tort-Based Climate Change Litigation, 28 COLUM. J. ENVTL. L. 1, 13 (2003).
43. Kraus, supra note 40, at 171.
B. Nuisance Law in an Environmental Context

Plaintiffs alleging damages from GHG emissions face many of the same challenges as plaintiffs in toxic tort cases. In a toxic tort case, plaintiffs must prove “that they were exposed to a hazardous level” of a dangerous chemical.45 Often these cases are characterized by multiple defendants and an inability to identify the responsible party.46 Climate change litigants have a similar problem; identification among multiple defendants is difficult given that the chemical makeup of a specific GHG molecule is indistinguishable from another.47 For example, a methane molecule is identical to all other methane molecules.

Tort causes of action alleged by plaintiffs in toxic tort cases include nuisance, trespass, negligence, strict liability, and strict products liability.48 While a plaintiff suffering injuries from climate change could pursue any of these causes of action, this comment focuses on public nuisance because it has been described as the most promising means of recovery,49 and it is the cause of action most relied on by litigants in climate change cases thus far.50

1. Public Nuisance Generally

A public nuisance is “an unreasonable interference with a right common to the general public.”51 A public nuisance must affect the community, or a large number of plaintiffs, and can include interferences such as “loud noises or

45. Wright v. Willamette Indus., 91 F.3d 1105, 1107 (8th Cir. 1996).
47. See supra note 7 and accompanying text.
48. See Ora Fred Harris, Jr., Toxic Tort Litigation and the Causation Element: Is There Any Hope of Reconciliation?, 40 SW. L.J. 909, 911 (1986).
49. See Grossman, supra note 42, at 52. Public nuisance is distinguished from private nuisance. Private nuisance involves a substantial interference with the use and enjoyment of land and affects the enjoyment of private rights by a single individual, or small group of individuals. Id.
50. See, e.g., Comer v. Murphy Oil USA, 585 F.3d 855 (5th Cir. 2009); Connecticut v. Am. Elec. Power Co., 582 F.3d 309 (2d Cir. 2009), petition for cert. filed, 79 U.S.L.W. 3092 (U.S. Aug. 2, 2010) (No. 10-174); Native Vill. of Kivalina v. ExxonMobil Corp., 663 F. Supp. 2d 863 (N.D. Cal. 2009). Of these cases, Murphy Oil is the only case where plaintiffs were seeking remedies under other tort theories. 585 F.3d at 861.
Plaintiffs in public nuisance cases are generally municipalities or other governmental entities. An interference with a public right can become "unreasonable," and therefore actionable, in three ways: 1) if the conduct involves a significant interference with the public health, safety, peace, comfort, or convenience; 2) if the conduct is unlawful; or 3) if the conduct is "of a continuing nature or has produced a permanent or long-lasting effect [that the] actor knows or has reason to know, has a significant effect upon the public right." Historically, public nuisance law has been upheld as a means to compensate for harms caused by pollution.

2. Public Nuisance in Environmental Cases

Courts have generally recognized a public nuisance action in environmental cases, specifically those dealing with air and water pollution. Two Supreme Court cases have dealt with nuisance in interstate pollution actions.

In an early nuisance case, Georgia v. Tennessee Copper Company, the Supreme Court enjoined the Tennessee Copper Company from discharging sulfur dioxide that was travelling across state lines and damaging forests, orchards, and crops in Georgia. The Court held that the noxious fumes were a common law nuisance and ordered a conditional injunction if the problem persisted after allowing defendants a reasonable time to take steps towards stopping the pollution.

In Illinois v. City of Milwaukee (Milwaukee I), the State of Illinois asked the Court to enjoin the City of Milwaukee from discharging raw or inadequately treated sewage and

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52. Id. § 821A cmt. b(2).
53. Grossman, supra note 42, at 55. Private citizens can also be plaintiffs, however, it is more difficult because the class of private citizens who are allowed recovery is limited to those who have suffered a harm different in kind from the other members of the public. Id. at 55 n.309 (citing RESTATEMENT (SECOND) OF TORTS § 821C(1)(1979)).
54. RESTATEMENT (SECOND) OF TORTS § 821B(2)(a)-(c).
55. RESTATEMENT (SECOND) OF TORTS § 821B(2)(a)-(c).
58. Tennessee Copper Co., 206 U.S. at 236, 238. Sulfur dioxide converts into sulfuric acid, a poisonous gas, after mixing with atmospheric moisture. Id.
59. Id. at 239.
other waste into Lake Michigan. The Court held that actions regarding pollution of interstate or navigable waters are within the jurisdiction of the federal courts, and emphasized that federal common law exists when dealing with air and water in their ambient or interstate aspects. The Federal Water Pollution Control Act was in place at the time, but the Court determined that the Act and the public nuisance action were not inconsistent; therefore, a nuisance cause of action was not preempted. However, Congress subsequently passed the Federal Water Pollution Control Act of 1972 that established a new, more pervasive, system of regulation, and in Milwaukee II the Supreme Court held that common law nuisance was preempted by the new Act. The Court recognized “Congress’s intent in enacting the [1972] amendments was clearly to establish an all-encompassing program of water pollution regulation,” leaving no room for federal common law.

Plaintiffs seeking damages for climate change actions have relied on the principles in these environmental nuisance cases in their attempts to recover damages from alleged public nuisances caused by GHG emitters.

C. Recent Federal Court Decisions Regarding Climate Change as a Public Nuisance

In response to the federal government’s lack of leadership in regulating air pollutants affecting climate change, states and private citizens have started to utilize the courts by bringing tort actions. Article III of the U.S. Constitution

60. Milwaukee I, 406 U.S. at 92, 93.
61. Id. at 99, 103.
63. Milwaukee I, 406 U.S. at 104.
65. Id. at 317.
66. Id. at 318.
67. See discussion infra Part II.C. If Congress passes a comprehensive law regulating air pollutants, these types of common law nuisance actions may no longer be available to plaintiffs after the Court’s holding in Milwaukee II. See supra text accompanying notes 64–66.
limits federal court jurisdiction to "cases" and "controversies," and requires plaintiffs to meet three requirements to establish standing: 1) they must have suffered an injury-in-fact; 2) there must be a causal connection between the injury and the conduct of the defendant; and 3) it must be likely that the injury will be redressed by a favorable decision. Whether these constitutional requirements are met in climate change cases is creating a split among the federal courts. The Second Circuit Court of Appeals recently held that plaintiffs have standing in climate change actions. The Fifth Circuit briefly held the same, until the court reinstated the district court's ruling—that the plaintiff's lacked standing—for procedural reasons. Finally, the District Court for the Northern District of California held that a nuisance cause of action pertaining to climate change was a nonjusticiable political question. Therefore, it is unsettled whether a public nuisance action with respect to climate change satisfies Article III's cases and controversies requirement, or is a nonjusticiable political question.

Notwithstanding the Fifth Circuit's reversal of the panel decision and the Northern District of California's ruling, the Second Circuit has recognized public nuisance as a legitimate

71. Am. Elec., 582 F.3d at 392.  
72. On February 26, 2010 the Fifth Circuit vacated its panel opinion by granting a petition to rehear Comer v. Murphy Oil USA en banc. Comer v. Murphy Oil USA, 598 F.3d 208 (5th Cir. 2010). Then, on May 28, 2010 the Fifth Circuit issued an order stating that the en banc court had lost its quorum and the district court's ruling was reinstated as the court could not "conduct judicial business" without a quorum. Comer v. Murphy Oil USA, 607 F.3d 1049, 1055 (5th Cir. 2010).  
73. Native Vill. of Kivalina, 663 F. Supp. 2d at 882.  
74. The Supreme Court has not yet dealt with whether a public nuisance action regarding the effects of climate change is a justiciable controversy. However, in Massachusetts v. EPA the Court held that under the Clean Air Act, 42 U.S.C. §§ 7401–7671q (2006), Massachusetts and eleven other states have standing to petition the EPA for a review of its refusal to regulate greenhouse gas emissions. Massachusetts v. EPA, 549 U.S. 497, 516–21 (2007). The Court found that the states had demonstrated each standing requirement noting that the "EPA does not dispute the existence of a causal connection" between GHG emissions and climate change. Id. at 523. While this decision does not deal specifically with nuisance, it has helped litigants bringing nuisance causes of action meet the threshold standing requirement of causation. See Comer v. Murphy Oil USA, 585 F.3d 855, 865 (5th Cir. 2009); Am. Elec., 582 F.3d at 333.
cause of action pertaining to injuries suffered as a result of climate change. The Second Circuit's decision in American Electric makes it likely that the Second Circuit will begin to see an increase in climate change litigation. However, the defendant power companies have filed a petition for writ of certiorari. At the time this comment went to print, the petition had not been granted or denied by the Court. If certiorari is granted, the circuit split may be resolved to either permit these causes of action, or not. If certerari is not granted, the circuit split will remain. For the time being, the Second Circuit's reversal of the lower court's holding on the constitutional issues of standing and the political question doctrine has paved the way for future litigation. Nonetheless, it should be noted that the dilemmas district courts faced when deciding these preliminary Article III and political question issues are at the root of the causation problem that future litigants and courts will face.

I. The American Electric Decision

In July 2004, eight states and three land trusts filed complaints against six power companies seeking abatement of the defendants' contributions to global warming, and alleging that the companies' actions constituted a public nuisance. The states asserted that the defendants were "substantial contributors to elevated levels of carbon dioxide and global warming," whose annual emissions equaled "approximately one quarter of the U.S. electric power sector's carbon dioxide emissions and approximately ten percent of all carbon dioxide emissions from human activities in the United States." The states further alleged that the defendants' contribution to global warming unreasonably interfered with public rights, "including, inter alia, the right to public comfort and safety, the right to protection of vital natural resources and public property, and the right to use, enjoy, and preserve the aesthetic and ecological values of the natural world." The

75. Am. Elec., 582 F.3d at 392.
77. See discussion supra Parts II.C.
78. Am. Elec., 582 F.3d at 316–18.
79. Id. at 316 (quoting Compl. ¶ 2).
80. Id. at 352.
district court granted the defendants' motion to dismiss, determining that the case raised a nonjusticiable political question under the Baker factors. The court further held that under the third Baker factor, the cause of action was impossible for a court to decide without making an initial policy determination of a kind clearly not suited for the courts. This is because global warming is global in nature and therefore any policy determination should be made by the legislature.

On appeal, the Second Circuit reversed the lower court after analyzing the Baker factors regarding the political question, the plaintiffs' standing, the federal common law nuisance claim, and the displacement of the common law claim. Contemplating the district court's reliance on the third Baker factor—the necessity of an initial policy determination—and the notion that future judicial decisions relating to climate change may counter the legislature's refusal to regulate GHGs, the Second Circuit noted that "Congress's mere refusal to legislate . . . falls far short of an expression of legislative intent to supplant the existing common law in that area." Additionally, the court found the plaintiffs had standing and had stated a public nuisance claim upon which relief could be granted. The court closed its opinion by quoting Milwaukee's conclusion regarding the preemption of common law nuisance: "[I]t may happen that new federal laws and new federal regulations may in time pre-empt the field of federal common law of nuisance. But until that comes to pass, federal courts will be empowered to

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81. Id. at 320. In Baker v. Carr, 369 U.S. 186 (1962), the Court "enumerated six factors that may indicate the existence of a non-justiciable political question." Am. Elec., 582 F.3d at 319. The six factors include: 1) a textually demonstrable constitutional commitment of the issue to a coordinate political department; 2) a lack of judicially discoverable and manageable standards for resolving it; 3) the impossibility of deciding without an initial policy determination of a kind clearly for nonjudicial discretion; 4) the impossibility of a court's undertaking independent resolution without expressing lack of the respect due coordinate branches of government; 5) an unusual need for unquestioning adherence to a political decision already made; or 6) the potential embarrassment from multifarious pronouncements by various departments on one question. Id. at 321 (citing Baker, 369 U.S. at 217).


83. Am. Elec., 582 F.3d 309.

84. Id. at 330 (quoting United States v. Texas, 507 U.S. 529, 535 (1993)).

85. Id. at 333-34.
appraise the equities of the suits alleging creation of a public
nuisance." On September 21, 2009, the Second Circuit
Court of Appeals vacated and remanded the district court's
judgment. Then on August 2, 2010, the defendant power
companies filed a petition for a writ of certiorari with the
Supreme Court, but the Court has yet to decide whether or
not to hear the case.

2. The Murphy Oil Decision

Shortly after the Second Circuit's decision in American
Electric, the Fifth Circuit Court of Appeals decided a similar
case. In Comer v. Murphy Oil, land owners along
Mississippi's Gulf Coast brought a class action against oil and
energy companies operating within the United States for the
destruction of their property by Hurricane Katrina. The
plaintiffs alleged that the intensified effects of Hurricane
Katrina stemmed from the increase in global water and air
temperatures that caused a rise in sea levels. The plaintiffs
based their claims on Mississippi common-law causes of
action—including public nuisance—and sought compensatory
and punitive damages, though notably not an injunction. At
the pleading stage, the district court judge, in a ruling from
the bench, granted the defendants' motion to dismiss on the
grounds that the plaintiffs lacked standing, and that the
action presented political questions.

Because the case invoked diversity jurisdiction as well as
state common-law causes of action, the “plaintiffs [needed to] satisfy both state and federal standing requirements.” The
defendants challenged the plaintiffs' ability to meet the
causation prong of Article III standing, contending that the
plaintiffs' theory of their injuries was too attenuated and not

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86. Id. at 392–93 (quoting Illinois v. City of Milwaukee (Milwaukee I), 406
U.S. 91, 107 (1972)).
87. Am. Elec., 582 F.3d 309.
89. See Comer v. Murphy Oil USA, 585 F.3d 855 (5th Cir. 2009).
90. Id. at 859
91. Id.
92. Id. at 859–860.
93. Id. at 860 n.2.
94. Id. at 861.
“fairly traceable” to the oil and power companies actions. The Fifth Circuit indicated this argument was misplaced and improperly asked the court to evaluate the merits of the cause of action prematurely in the litigation. Further, the court noted that “an indirect causal relationship will suffice,” and that plaintiffs’ reliance on scientific reports showing that “a chain of causation between defendants’ substantial emissions and plaintiffs’ injuries” existed, must be accepted as true at the pleading stage.

The Fifth Circuit relied on the Supreme Court’s decision in Massachusetts v. EPA that “accepted as plausible the link between man-made greenhouse gas emissions and global warming.” Citing a climate scientist’s report, the Supreme Court noted “[t]he harms associated with climate change are serious and well recognized . . . . [R]ising ocean temperatures may contribute to the ferocity of hurricanes . . . .” Inferring that the Supreme Court had accepted a virtually identical causal connection, the court of appeals dismissed the defendants’ argument with respect to the causation prong.

In the district court, the defendants also moved to dismiss the action on the grounds that the plaintiffs raised a nonjusticiable political question. The district court judge noted that:

[Plaintiffs' complaint asks] this court to do what Baker v. Carr told me not to do, and that is to balance economic, environmental, foreign policy, and national security interests and make an initial policy determination of a kind which is simply nonjudicial. Adjudication of Plaintiffs’ claims in this case would necessitate the formulation of standards dictating, for example, the amount of greenhouse gas emissions that would be excessive and the scientific and policy reasons behind those standards. These policy decisions are best left to the executive and legislative branches of the government, who are not only in the best position to make those decisions

95. Comer v. Murphy Oil USA, 585 F.3d 855, 864 (5th Cir. 2009).
96. Id.
97. Id.
98. Id. at 865 (citing Massachusetts v. EPA, 549 U.S. 497, 523 (2007)).
99. Id. (citing Massachusetts v. EPA, 549 U.S. at 521-23).
100. Id.
but are constitutionally empowered to do so.\textsuperscript{102}

The Fifth Circuit strongly disagreed with the district court, holding that the claims were justiciable because they "[did] not present any specific question that [was] exclusively committed by law to the discretion of the legislative or executive branch."\textsuperscript{103} The court explained that whether or not an issue can be "decided by a federal court depends ultimately on separation of powers, other applicable constitutional provisions, and federal laws or regulations, not upon federal judges' capability, intellect, knowledge, expertise or training, nor upon the inherent difficulty, complexity, novelty or esoter of the matter to be resolved."\textsuperscript{104} Moreover, common-law tort claims like public nuisance are not generally thought to present nonjusticiable political questions, especially when the relief sought is limited to damages rather than injunctive relief.\textsuperscript{105}

The Fifth Circuit reversed the district court's holding with respect to the standing and political question issues, and remanded the case.\textsuperscript{106} However, the lower court's holding was overruled only briefly, because on February 2, 2010—less than four months later—the Fifth Circuit voted to rehear the case en banc.\textsuperscript{107} On May 26, 2010, the Fifth Circuit announced it had lost its quorum, or majority, and thus could not decide the case.\textsuperscript{108} The appellate decision had been vacated; therefore, the district court's opinion was reinstated by the Fifth Circuit.\textsuperscript{109}

3. The Native Village of Kivalina Decision

On September 30, 2009, the United States District Court for the Northern District of California granted the defendants' (twenty-four oil, energy, and utility companies) motion to dismiss for lack of subject matter jurisdiction in an action alleging contribution to global warming and the resulting sea level rise.\textsuperscript{110} The plaintiffs were the governing

\textsuperscript{102} Murphy Oil, 585 F.3d at 860 n.2.
\textsuperscript{103} Id. at 869.
\textsuperscript{104} Id.
\textsuperscript{105} Id. at 873–74.
\textsuperscript{106} Id. at 889–80.
\textsuperscript{107} Comer v. Murphy Oil USA, 598 F.3d 208 (5th Cir. 2010).
\textsuperscript{108} Comer v. Murphy Oil USA, 607 F.3d 1049 (5th Cir. 2010).
\textsuperscript{109} See id. at 1054.
\textsuperscript{110} Native Vill. of Kivalina v. ExxonMobil Corp., 663 F. Supp. 2d 863, 882
body of the City of Kivalina—an Eskimo village with approximately four hundred inhabitants—as well as the Village of Kivalina itself. The plaintiffs alleged that the defendant companies’ “excessive emission of carbon dioxide and other greenhouse gases” contributed to global warming and the melting of the Arctic sea ice around the Kivalina coast. The sea ice served as protection from storms and as a result of its erosion and destruction, the villagers would be forced to relocate. In their complaint, the plaintiffs sought relocation damages at an estimated cost of $95 to $400 million. The plaintiffs brought four claims: 1) federal common-law of public nuisance, 2) public and private nuisance under state law, 3) civil conspiracy, and 4) concert of action.

In ruling on the motion to dismiss for lack of subject matter jurisdiction and failure to state a claim upon which relief can be granted, the district court analyzed the plaintiffs’ standing and the political question doctrine. The court followed the same reasoning as the district court in Murphy Oil with regards to standing—that the plaintiffs’ injuries were too attenuated and the court would be making policy determinations. With regards to the political question issue, the district court determined that the second and third Baker factors—a lack of judicially discoverable and manageable standards, and the need for an initial policy determination—favored dismissal of the action. The court reasoned that the focus of the second Baker factor is not whether the case is complicated or difficult, but whether a court has “the legal tools to reach a ruling that is ‘principled, rational, and based upon reasoned distinctions.’” The court did not agree with

(N.D. Cal. 2009).

111. Id. at 868.
112. Id.
113. Id.
114. Id. (citing Compl. ¶ 1, Native Vill. of Kivalina, 663 F. Supp. 2d 863 (No. C 08-1138 SBA)).
115. Id. (citing Compl. ¶¶ 249–282, Native Vill. of Kivalina, 663 F. Supp. 2d 863 (No. C 08-1138 SBA)).
116. See FED. R. CIV. P. 12(b)(1), 12(b)(6).
118. See discussion supra Part II.C.2.
120. Id. at 874 (citing Alperin v. Vatican Bank, 410 F.3d 532, 552 (9th Cir. 2005)).
the plaintiffs’ contention that the standards in a global warming action are the same as those in any other nuisance action—an unreasonable interference with public rights—and emphasized the requirement of balancing “the utility and benefit of the alleged nuisance against the harm caused.”121 The court determined that this required balancing the benefits of reliable energy resources against the risk that increasing GHGs would increase the erosion surrounding the village.122 Furthermore, the court contended that there were no standards to guide a factfinder in rendering a principled, rational, and reasonable decision in this balancing and in the resolution of a case such as this.123

The third Baker factor, the requirement of an initial policy determination, proved equally troubling for the court.124 The plaintiffs conceded that “virtually everyone on Earth” contributes to global warming in some minimal way, but argued that the “[d]efendants [were] responsible for a ‘substantial portion.’”125 The court determined that “a policy decision about who should bear the cost of global warming” [was] not appropriate for the courts.126

Based on these three cases, it is clear that climate change litigation can proceed in the Second Circuit, while in the Fifth and Ninth Circuits there is still no clear answer for injured plaintiffs. Notably, all three district courts struggled with the plaintiffs’ ability to prove causation, and the determination of an appropriate method for apportioning liability when a defendant cannot be identified.127 The standing problem addressed by each court pertained only to causation.128 In contrast, the political question concerns of each court were rooted in the difficulty of apportioning liability and the perceived policy determination that accompanies the task of apportionment.129

2005)).
121. Id.
122. Id. at 874–75.
123. Id.
124. Id. at 876.
126. Id. at 876–77.
127. See discussion supra Parts II.C.
128. See discussion supra Parts II.C.
129. See discussion supra Parts II.C.
D. Collective Liability and Apportionment of Damages in Toxic Tort Cases

When multiple actors contribute to an injury—as is the case with climate change injuries—\textsuperscript{130} the question becomes what is “the amount of damages for which the defendants collectively and individually should be held liable.”\textsuperscript{131} Assigning liability where it is difficult or impossible to trace the harm back to a particular defendant has been encountered in tort and environmental litigation before, most notably in toxic tort litigation.\textsuperscript{132}

Toxic tort cases present the difficult problem of identifying the party who caused the plaintiff's injury because the injuries are commonly dormant for a long period of time before they manifest themselves.\textsuperscript{133} Thus, there is uncertainty regarding the effects of exposure to toxins upon humans, and it is often difficult to trace pollutants back to a specific polluter.\textsuperscript{134} It is contrary to public policy, however, to prohibit a plaintiff from recovery only because the nearly impossible burden of proving the cause of injury rests entirely on his shoulders.\textsuperscript{135} Consequently, the collective liability theories traditionally used in products liability cases,\textsuperscript{136} can be implemented to shift some of the burden onto the defendants to prove they have not caused the injury.\textsuperscript{137} The most relevant collective liability theories for climate change cases are discussed below and include: enterprise liability theory, concert of action theory, and market share theory.\textsuperscript{138}

\begin{itemize}
  \item \textsuperscript{130} See Climate Change Report, supra note 2, at 36. Energy, transportation, and industrial companies are the leading GHG emitters. \textit{Id.} These sectors combined comprise an astounding number of companies.
  \item \textsuperscript{131} Grossman, supra note 42, at 31.
  \item \textsuperscript{132} Harris, supra note 48, at 909.
  \item \textsuperscript{133} Id. at 928.
  \item \textsuperscript{134} Id.
  \item \textsuperscript{135} Id. at 930.
  \item \textsuperscript{137} Harris, supra note 48, at 930.
  \item \textsuperscript{138} Another collective liability theory, “alternative liability,” is potentially available, but is less suited to climate change cases because it applies to situations where only one defendant has actually caused harm. Poole v. Alpha Therapeutic Corp., 696 F. Supp. 351, 354–55 (N.D. Ill. 1988).
\end{itemize}
1. Enterprise Liability Theory

One collective liability theory available to plaintiffs who struggle with causation as a result of their inability to identify the defendant is enterprise liability. This theory is used to hold all manufacturers in a given industry liable when they jointly control the risk of harm, but when the plaintiffs cannot identify whose product caused the specific harm. In Hall v. E.I. Du Pont de Nemours & Co., the court established enterprise liability theory to allow recovery for plaintiffs injured by exploding blasting caps, but who could not identify the manufacturer of the injury-causing caps. The manufacturers of the caps were implementing an industry-imposed safety standard that was in fact leading to the injuries rather than promoting safety and therefore each defendant had contributed to the plaintiffs' injuries.

The basis for enterprise liability theory, as established in Hall, is industry-wide control over the risk. Therefore, the theory is limited to "those situations not involving a large number of companies in the particular industry," otherwise, the necessary inference that the companies controlled the risk is less likely. Thus far, courts have not specifically used enterprise liability theory in environmental tort cases, and have expressly rejected it as incompatible with DES cases, because of the large number of companies in that industry.

2. Concert of Action Theory

An alternative collective liability theory—the concert of action theory—stems from the common law rule that "if two or more defendants act pursuant to a common design, each [defendant] is entirely liable for the tort actually committed by another." The theory requires an agreement, express or

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139. Harris, supra note 48, at 936.
140. E.g., Hall, 345 F. Supp. 353.
141. Id.
142. Harris, supra note 48, at 937.
143. Id. (citing Collins v. Eli Lilly Co., 342 N.W.2d 37, 47 (Wis. 1984)).
144. Id. at 937 & 937 n.207 (citing Hall, 345 F. Supp. at 378).
145. DES was a drug given to women to help prevent miscarriages. Its negative effects manifested years later, causing cancer in the offspring of the women who took the drug. Bichler v. Eli Lilly & Co., 436 N.E.2d 182, 184 (N.Y. 1982).
146. Harris, supra note 48, at 937 & 937 n.209.
147. Id. at 932 & 932 n.172 (citing W. PROSSER & W. KEETON, HANDBOOK OF
implied, between the defendants.\textsuperscript{148}

An example of the concert of action theory is illustrated in \textit{Bichler v. Eli Lilly & Co.}\textsuperscript{149} The causation problem presented in \textit{Bichler} was the inability to identify the responsible defendant, where the plaintiff's cervical and vaginal cancer allegedly developed as a result of her mother's ingestion of DES while pregnant with the plaintiff.\textsuperscript{150} The primary issue in the case was whether Eli Lilly could be held liable when numerous other companies developed and distributed DES, and it was virtually impossible for Ms. Bichler to prove Eli Lilly had manufactured the particular DES that her mother had consumed.\textsuperscript{151} To ease the causation burden, the court used the concert of action theory, characterizing the drug manufacturers' conduct as "conscious parallelism," which supported a finding that the companies impliedly agreed to manufacture the drug without first testing it,\textsuperscript{152} "making any of the manufacturers liable for the plaintiff's entire damages despite the plaintiff's inability to identify the manufacturer of the drug."\textsuperscript{153} Therefore, Ms. Bichler could select any manufacturer found to be in concert of action and recover solely from that manufacturer.\textsuperscript{154}

The concert of action theory was also successfully applied to lead-based paint manufacturers. Plaintiffs were injured after the paint manufacturers and their trade organization fraudulently misrepresented the safety of the paint in their marketing, and concealed any knowledge of the paint's hazardous qualities.\textsuperscript{155}

Courts have declined to apply the concert of action theory in certain circumstances. Most notably where a state has not adopted it for policy reasons,\textsuperscript{156} and where, based on the facts

\begin{thebibliography}{99}
\bibitem{Hymowitz} Hymowitz v. Eli Lilly & Co., 539 N.E.2d 1069, 1074 (N.Y. 1989).
\bibitem{Bichler} \textit{Bichler}, 436 N.E.2d 182. Concert of action theory is no longer used in DES cases in New York because the New York Court of Appeals held that market share theory is the appropriate theory for DES cases. \textit{Hymowitz}, 539 N.E.2d at 1072.
\bibitem{Bichler1} \textit{Bichler}, 436 N.E.2d at 184.
\bibitem{Harris} Harris, \textit{supra} note 48, at 932.
\bibitem{Bichler2} \textit{See Bichler}, 436 N.E.2d at 188.
\bibitem{Harris1} Harris, \textit{supra} note 48, at 933.
\bibitem{Id} \textit{Id.}
\bibitem{In re} \textit{See In re School Asbestos Litigation}, No. 83-0268, 1991 WL 249789, at
\end{thebibliography}
of the case, when there is no evidence of an express or tacit agreement, or a common plan to commit a tort.\textsuperscript{157}

3. Market Share Liability Theory

Market Share liability theory, first recognized in Sindell\textit{ v. Abbot Laboratories}, is another collective liability theory that courts may apply when an innocent plaintiff cannot prove the identity of the negligent defendant whose product caused the injury.\textsuperscript{158} In the situation where the plaintiff can prove every element of her claim except the identification of the defendant and has "joined potential tortfeasors representing a 'substantial share' of the product market," the burden of identification shifts to the defendants to prove that they are not the responsible parties, and the court will hold each defendant severally liable for a percentage of the judgment equal to the percentage that represents the defendant's share of the market at the time of the injury.\textsuperscript{159}

In Sindell, the court "based its decision on two policy considerations: (1) 'as between an innocent plaintiff and negligent defendants, the latter should bear the cost of the injury'; and (2) holding manufacturers liable would create an incentive to produce safer products."\textsuperscript{160} In determining whether market share liability should be adopted in a particular case, the Restatement (Third) of Torts advises courts to consider the following factors:

(1) the generic [or fungible] nature of the product; (2) the long latency period of the harm; (3) the inability of plaintiffs to discover which defendant's product caused plaintiff's harm, even after exhaustive discovery; (4) the clarity of the causal connection between the defective product and the harm suffered by plaintiffs; (5) the absence of other medical or environmental factors that could have caused or materially contributed to the harm; and (6) the availability of sufficient "market share" data to support a reasonable apportionment of liability.\textsuperscript{161}

\begin{itemize}
\item 158. See Sindell v. Abbott Labs., 607 P.2d 924 (Cal. 1980).
\item 159. Damron, supra note 46, at 511 (citing Sindell, 607 P.2d at 936-37).
\end{itemize}
None of these factors are dispositive in determining liability.\textsuperscript{162}

In \textit{Sindell}, eleven pharmaceutical companies were sued for injuries resulting from their manufacturing of DES, and the cancer it caused to women exposed to the drug in utero.\textsuperscript{163} The California Supreme Court found existing liability theories inadequate to properly apportion liability amongst the defendants, and thus adopted the market share theory.\textsuperscript{164} Other states have since adopted the market share theory for DES cases as well.\textsuperscript{165}

In contrast to DES cases, most courts decline to use market share liability for application in asbestos cases because of the nonfungibility of asbestos fibers.\textsuperscript{166} Unlike DES, "asbestos fibers are of several varieties, used in varying quantities in the various products that contain asbestos, and each is different in its harmful effect."\textsuperscript{167} One district court has noted that while none of the factors listed in the Restatement (Third) of Torts is dispositive, "great weight should be given to factor [one] because . . . the fungible nature of goods creates the necessity for using the market share theory and ensures fairness in apportioning liability."\textsuperscript{168}

\textbf{4. The Commingled Product Theory as a Modification of the Market Share Liability}

The commingled product theory, a slight modification of market share liability theory, emerged in 2005.\textsuperscript{169} In \textit{MTBE Products Liability Litigation}, the plaintiff municipalities and water providers alleged that the defendants, multiple gasoline producers, manufactured and distributed the gasoline additive MTBE, and that the additive had contaminated their ground water.\textsuperscript{170} "MTBE is [a] chemical

\textsuperscript{162} MTBE Prods. Liab. Litig., 379 F. Supp. 2d at 377.
\textsuperscript{163} Sindell, 607 P.2d at 925.
\textsuperscript{164} Id. at 936–37.
\textsuperscript{166} White v. Celotex Corp., 907 F.2d 104, 106 (9th Cir. 1990).
\textsuperscript{167} Id. (quoting In re Related Asbestos Cases, 543 F. Supp. 1152, 1158 (N.D. Cal. 1982)).
\textsuperscript{170} Id. at 361.
compound produced from methanol and isobutylene, a byproduct of the gasoline refining process," and it has no "chemical signature" that would allow it to be traced back to a particular gasoline manufacturer. Under the commingled product theory,

[when a plaintiff can prove that certain gaseous or liquid products . . . of many suppliers were present in a completely commingled or blended state at the time and place that the risk of harm occurred, and the commingled product caused a single indivisible injury, then each of the products should be deemed to have caused the harm.]

In constructing the theory, the court determined that courts may make a policy decision to implement new liability theories when "it would be inappropriate to foreclose plaintiffs entirely from seeking relief merely because their actions did not fit the parameters of existing liability theories." The court noted that the "MTBE cases suggest the need for one more theory, which can be viewed as a modification of market share liability, incorporating elements of concurrent wrongdoing." In MTBE Products Liability Litigation, the district court illustrated a commingled product situation by giving an example pertaining to petroleum:

the petroleum products of ten refiners are commingled in an underground storage tank. These ten products are completely fungible and blended, combined or commingled into a single batch. Each refiner supplied ten percent of the total volume of product in the tank. If twenty percent of the petroleum in the tank leaks into the ground, it is not reasonable to assume that the harm resulting from this leak was caused by the products of only two refiners (each supplying ten percent), and to require plaintiffs to prove which two proximately caused the harm. Because the petroleum products were commingled to form a new mixture, each of the ten refiners contributed to the injury in proportion to the amount of product that each supplied.

171. Id. at 364–65.
172. Id. at 377–78.
173. Id. at 377.
174. Id.
The commingled product theory allows plaintiffs to recover when there is both concurrent wrongdoing by multiple defendants, and an inability to identify a particular defendant as the specific wrongdoer.176

The effects of climate change have led to an interesting new type of litigation, and the recent decisions regarding the justiciability of these cases will create novel liability issues for courts to navigate. The remainder of this comment will discuss these issues.

III. THE PROBLEM OF APPORTIONING LIABILITY AMONG CLIMATE CHANGE DEFENDANTS

It is generally accepted that the burning of fossil fuels has increased concentrations of GHGs in the earth’s atmosphere, causing global temperatures to increase.177 The resulting effects—such as increased storm intensities—have allegedly begun to cause injuries in the United States.178 As there is currently no statutory cause of action to pursue,179 plaintiffs are beginning to seek relief under public nuisance theories.180 The viability of such a cause of action has been tested and upheld in the Second Circuit,181 and because federal common-law nuisance is a generally accepted theory in toxic tort cases,182 more litigation is likely to follow.

Because climate change litigation is in its infancy, the discussion of apportioning liability has not yet been thoroughly explored. Yet the problems associated with proving causation and apportioning liability seem to be the primary cause for concern in the district courts,183 and as a result of the impossibility of tracing carbon dioxide from a defendant source, courts hearing future climate change cases will struggle to determine which defendant has caused the

176. See id.
177. Climate Change: Basic Information, supra note 16.
178. See, e.g., Comer v. Murphy Oil USA, 585 F.3d 855 (5th Cir. 2009).
179. See supra note 4 and accompanying text.
181. Murphy Oil, 585 F.3d at 879–80; Am. Elec., 582 F.3d at 392.
183. See supra text accompanying note 125.
harm.\textsuperscript{184} The Second Circuit Court of Appeals has determined that the cause of action is justiciable.\textsuperscript{185} Therefore, assuming the Supreme Court does not grant certiorari and overturn this decision, district courts, in at least the Second Circuit, will be faced with the apportionment of liability problem in the near future.

IV. PROVIDING A REMEDY FOR INNOCENT PLAINTIFFS WHEN THE DEFENDANT IS UNIDENTIFIABLE

As the preliminary issues—standing and a nonjusticiable political question—have been settled, a district court in the Second Circuit will now have to decide the remanded American Electric case,\textsuperscript{186} and the circuit's district courts will likely be faced with a plethora of similar cases in the near future—assuming the Supreme Court will not overrule American Electric. Plaintiffs in the remanded case will have to prove that the nuisance was caused by the defendants and that it is unreasonable,\textsuperscript{187} and if they can, the trial court will have to apportion liability. First, this section will analyze the inability to prove who caused the harm, with respect to GHG emissions, and second, it will analyze the most reasonable and just way to apportion liability in a climate change case when multiple, unidentifiable defendants are at fault.

A. The Inability to Prove Who Caused Harm

The global scientific community and the EPA recognize that the significant amounts of GHGs in the atmosphere are the result of anthropogenic activity, namely, the burning of fossil fuels.\textsuperscript{188} Even the Supreme Court has recognized the causal connection between man-made GHG emissions and global warming.\textsuperscript{189}

Nevertheless, it is impossible for courts to trace carbon dioxide, or any other GHG, back to a specific polluter for a number of reasons.\textsuperscript{190} First, GHGs, once released, "rapidly

\begin{footnotesize}
\textsuperscript{184} See supra note 7 and accompanying text.
\textsuperscript{185} Am. Elec., 582 F.3d 309.
\textsuperscript{186} Id.
\textsuperscript{187} An unreasonable interference is an element of the public nuisance action. \textit{RESTATEMENT (SECOND) OF TORTS} § 821B(2)(a)-(c).
\textsuperscript{188} Climate Change: Basic Information, supra note 16.
\textsuperscript{189} See Massachusetts v. EPA, 549 U.S. 497, 523 (2007).
\textsuperscript{190} See supra note 7 and accompanying text.
\end{footnotesize}
mix in the atmosphere" and increase worldwide concentrations, as opposed to pollutants released into a river for example, where the potential sources are likely limited to sources near the river. Second, a carbon dioxide molecule’s composition is identical to every other carbon dioxide molecule, as are the other GHG molecules, and there is no way to differentiate individual molecules and track them back to their source. Lastly, identifying a specific defendant as the cause of harm will be difficult because the effects of climate change involve fluctuations in an extant climate system that is very complex, as opposed to the creation of a new harm, like the specific cancer DES causes. Because there are so many factors other than GHGs that cause the climate to fluctuate, it is difficult to show that any particular defendant caused or intensified a particular climate event.

However, it is relatively easy to determine the total amount in tons of carbon dioxide and other GHGs a corporation emits and the percentage of total GHG emissions they contribute to the atmosphere. Therefore, it is not surprising that plaintiffs in climate change actions thus far have elected to join the contributing corporations who emit the largest quantities of GHGs as defendants.

B. Collective Liability Theories Applied to Climate Change Cases

Climate change plaintiffs in recent cases have alleged that they have suffered property damages and that they will suffer similar damages in the future as a result of increased air and water temperatures. Future plaintiffs will likely do the same. In the event that plaintiffs would win their cases but for the inability to identify a particular defendant, courts

192. See supra note 7 and accompanying text.
194. Id.
196. See, e.g., id.
197. Comer v. Murphy Oil USA, 585 F.3d 855, 867 (5th Cir. 2009); Am. Elec., 582 F.3d at 317.
can, and should, make policy determinations allowing alternate forms of liability when "it would be inappropriate to foreclose plaintiffs entirely from seeking relief," simply because no liability theory exists.\(^{198}\) While GHGs are not a traditional "product," like DES, they are a byproduct of fossil fuels, and the policies that support collective liability theories in toxic tort cases apply equally to climate change cases. In this section, the recognized collective liability theories discussed in Part III.D will be examined in relation to their compatibility with climate change litigation.

1. Enterprise Liability Theory in the Climate Change Context

Enterprise liability theory is not well suited for climate change litigation. The basis of enterprise liability theory is industry-wide control over the risk of injury.\(^{199}\) The largest emitters of GHGs do not have industry-wide control over the total level of emission, since many different industries emit substantial amounts of GHGs.\(^{200}\) Furthermore, the Hall decision limits the applicability of enterprise liability to situations where there are only a few companies in a particular industry.\(^{201}\) Emitters of carbon dioxide and other GHGs span multiple industries, with the most significant emitters in the energy, transportation and industry sectors.\(^{202}\) Because there are multiple industries involved and the number of companies within those industries is large, the necessary inference—industry-wide control over the risk of releasing GHGs—cannot be made. Therefore, enterprise liability is incompatible with climate change litigation. Moreover, courts have not yet recognized this theory as applicable to environmental cases,\(^{203}\) and are likely disinclined to do so for the reasons mentioned.


\(^{199}\) Harris, supra note 48, at 937 & 937 n.207.

\(^{200}\) Climate Change Report, supra note 2, at 36.


\(^{202}\) Climate Change Report, supra note 2, at 36.

\(^{203}\) Harris, supra note 48, at 937.
2. Concert of Action Theory in the Climate Change Context

The concert of action theory may be applicable to climate change cases. One advantage of being able to apply the concert of action theory in a climate change case is that a plaintiff who is unable to identify a particular defendant can recover from a single named defendant. Even so, plaintiffs will face problems if they cannot prove some express agreement amongst the defendants.

Climate change litigants share commonalities with the plaintiff in *Bichler v. Eli Lilly & Co.*, the model concert of action case. In *Bichler*, Eli Lilly was held liable under the concert of action theory because the companies that manufactured the DES that was considered to be a defective uniform product were found to have impliedly agreed to manufacture the drug without testing it. The court found that any DES manufacturer could be held liable in this situation, despite the plaintiff's inability to prove specific causation. Similarly, in a climate change scenario, plaintiffs may be able to argue that the principal emitters have impliedly agreed to be unreasonable in continuing to emit such large quantities of GHGs without any precautions. Therefore, any GHG emitter could be held liable for the entire amount of damages in a given lawsuit.

If plaintiffs rely on this theory, they must come to court prepared with solid evidence tending to show an agreement, express or implied, amongst GHG emitters. The New York Court of Appeals, in a DES case after *Bichler*, abandoned the concert of action doctrine for DES cases, because there was nothing in the record to show any agreement, and “[p]arallel activity, without more, is insufficient to establish the agreement element necessary to maintain a concerted action claim.” If plaintiffs can prove GHG emitters are making fraudulent misrepresentations or concealing knowledge of harm, it may be enough for a court to apply the theory to

204. See discussion supra Part IV.A.
206. Harris, supra note 48, at 932.
208. Id.
209. Hymowitz, 539 N.E.2d 1069, 1074–75.
climate change defendants.\textsuperscript{210}

Because of the requirement that defendants expressly or tacitly agree to participate in a plan to commit a tortious act, this theory will prove difficult for plaintiffs to advocate without substantial proof of some such agreement. Therefore, while the concert of action theory can be presented by plaintiffs as an alternative to traditional causation, it should not be the only alternative theory relied upon because a court may decline to apply it.

3. Market Share Liability Theory in the Climate Change Context

Market share liability theory is perhaps the best collective liability theory for plaintiffs in climate change cases. In cases filed thus far, plaintiffs have “joined potential tortfeasors representing a ‘substantial share’ of the market.”\textsuperscript{211} In accordance with public policy, once this occurs, the burden of identification will shift to the defendants to prove that they are not the responsible party.\textsuperscript{212}

Furthermore, of the six factors suggested for consideration in deciding whether market share theory should be adopted in a particular case, factors one, two, three, and six all apply directly to climate change cases.\textsuperscript{213} Factor one applies because carbon dioxide and other GHGs are fungible, or generic in nature.\textsuperscript{214} Factor two applies because there is a latency period in the harm as GHGs buildup over time.\textsuperscript{215} Factor three applies because plaintiffs cannot discover which defendant’s emissions caused their harm.\textsuperscript{216} Finally, factor six applies because there is data available to apportion liability based on a defendant’s share of the market.\textsuperscript{217} Factors four and five— the “clarity of the causal


\textsuperscript{212} Harris, supra note 48, at 930.

\textsuperscript{213} See supra text accompanying note 161 (listing the six factors provided by the Restatement).

\textsuperscript{214} See supra note 7 and accompanying text.

\textsuperscript{215} See discussion supra Part II.A.

\textsuperscript{216} See discussion supra Part IV.A.

\textsuperscript{217} See, e.g., Am. Elec., 582 F.3d at 316 (alleging defendants emit one quarter of the U.S. electrical sector's total carbon dioxide emissions).
connection" and the "absence of other medical or environmental factors"—may be more difficult to evaluate. In *MTBE Products Liability Litigation*, the district court noted that the most weight should be given to factor one because "the fungible nature of goods creates the necessity for using the market share theory and ensures fairness in apportioning liability." Because the majority of these factors apply to carbon dioxide and other GHG emissions, the theory is applicable in climate change cases.

Moreover, the policy behind market share theory is important in the climate change context because there are innocent plaintiffs and guilty defendants who require incentives to change. In *Sindell*, the court reasoned that innocent plaintiffs should prevail over negligent defendants, and that liability will provide an incentive to produce safer products. The same policy argument applies here. In a climate change nuisance case, if the defendants are found to be unreasonably interfering with a public right by increasing air and water temperatures, the innocent plaintiff, whose property has been destroyed can prevail. In addition to allowing the plaintiff to recover, incentives are created for oil and energy producers to take more precautions with their emissions. The theory is fair because defendants will be held severally liable for only the percentage of the judgment that represents each defendant's share of the market at the time of the injury. With the large number of significant emitters, all contributing to the warming effect, it is reasonable to divide liability amongst defendants in proportion to market share.

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219. See discussion supra Part IV.A.
222. See discussion supra Part II.B.1. A public nuisance is an unreasonable interference with a right held common to the public. Restatement (Second) of Torts § 821B(1) (1979).
223. Damron, supra note 46, at 511.
224. Defining the "market" in a climate change case may prove challenging as there are countless GHG emitters, including individuals. One proposal is to define the "market" as encompassing all the industries to which the defendant companies belong.
4. Climate Change Litigation Compared to MTBE Litigation, and the Applicability of the Commingled Product Theory

GHGs are comparable to MTBE and therefore the justifications for applying the commingled products theory to MTBE cases translates directly to climate change cases. GHGs are the byproduct of burning fossil fuels, and similarly, MTBE is the byproduct of the gasoline refining process.225

Carbon dioxide and other GHGs can be applied to this liability model as “commingled products.” Once emitted as a result of fossil fuel combustion, the GHG molecules enter the atmosphere, becoming comingled, and their increasing concentrations cause the heat-trapping greenhouse effect that leads to global warming.226 Since each large GHG emitter's byproducts are in the atmosphere, each has effectively contributed to a plaintiff’s injuries caused by global warming. The theory is like market share liability in that it holds defendants severally liable. However, it differs from traditional market share liability because the “defendants' products were actually present and contributed to the injury,”227 exactly like GHGs' presence in the atmosphere and contribution to global warming and its associated harms.

Market share liability and the modified market share liability theory of “commingled products” are well suited for use in apportioning liability in climate change cases. Concert of action theory may be applicable with proof of an express agreement to act unreasonably, while enterprise liability theory should not be applied based on the lack of industry-wide control over GHGs.

V. MARKET SHARE LIABILITY SHOULD BE APPLIED IN CLIMATE CHANGE CASES

Public nuisance and other common law tort actions pertaining to climate change are likely to escalate in the near future as a result of the recent decision in the Second Circuit,228 so long as it is not overruled by the Supreme Court. Because of the impossibility of identifying which defendant

226. Climate Change: Basic Information, supra note 16.
228. See discussion supra Part II.C.1.
caused climate related harms, a collective liability theory should be used in support of the policy that innocent plaintiffs should be able to recover for their injuries. Given this policy and the characteristics of the injurious gases, the modified market share theory of “commingled products” is best suited for application in climate change cases.

A. GHGs Cannot be Traced to Their Producer

Because carbon dioxide and other GHGs are the byproducts of burning fossil fuels—each with its own generic chemical structure—it is impossible to trace those molecules back to any particular fuel or energy producer. Yet, climate scientists agree that burning fossil fuels has caused global warming, the effects of which have caused substantial property damage. Since multiple actors have contributed to the harms associated with global warming, like the melting of sea ice and intensification of storms, a cumulative liability theory should be adopted by the courts in support of the policy that proven wrongdoers should not be able to “escape liability merely because the nature of their conduct and the resulting harm has made it difficult or impossible to prove which of them caused the harm.”

B. The Commingled Products Theory is the Best Apportionment Option for Climate Change Cases

Holding major polluters severally liable is the fairest way to apportion liability in the climate change context, and the “commingled product” theory of market share liability is the best suited of the collective liability theories for dealing with the unique characteristics of GHGs. GHGs, like the gasoline additive MTBE, are commingled and combined when the injury is committed, meaning “defendants’ products were actually present and contributed to the injury.”

230. See discussion supra Part IV.A.
231. See discussion supra Part II.A.
232. See discussion supra Part II.
233. MTBE Prods. Liab. Litig., 379 F. Supp. 2d at 373 (citing RESTATEMENT (SECOND) OF TORTS § 433(b)3 cmt. f (1979)). The court is specifically discussing the policy attributed to alternative liability. Id.
234. See discussion supra Part IV.B.4.
235. Id.
GHGs are blended into a “single batch,” exactly like the petroleum products in the example given by the district court in MTBE Products Liability Litigation. While GHGs are not all uniform, CO₂ equivalent emissions allow GHGs to be compared to reflect each type of GHG’s warming potential.

Furthermore, the policy considerations discussed in MTBE Products Liability Litigation and Sindell support an application of the market share theory. These policy considerations focus toward two distinct goals: first “as between an innocent plaintiff and negligent defendants, the latter should bear the cost of the injury,” and second “holding manufacturers liable would create an incentive to produce safer products.” These goals are both important to climate change plaintiffs and to society as a whole. The plaintiffs are innocent and deserve to recover, while the defendants will be incentivized to reduce emissions and the risk of future injuries to society.

VI. CONCLUSION

Global warming is being caused by the increasing amount of GHGs humans emit into the atmosphere, and the damage to real property is expected to increase as global temperatures continue to rise. The Second Circuit Court of Appeals has ruled that public nuisance is a viable cause of action for plaintiffs seeking relief from major emitters of GHGs, and an escalation in litigation on the subject is likely if the Supreme Court upholds this ruling. However, the fungible nature of GHGs makes it impossible to prove any specific actor caused the global warming that led to plaintiffs’ harm. Assuming innocent plaintiffs can prove each element of their claims, courts must find a way to apportion liability amongst defendants. The commingled product theory of market share liability is best suited for this task, given the nature of GHGs, the products causing harm, and

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237. Id.
238. Climate Change Report, supra note 2, at 36.
240. See discussion supra Part II.A.
241. See discussion supra Part II.A.2.
242. See discussion supra Part II.C.
243. See supra note 7 and accompanying text; see also discussion supra Part IV.A.
the associated public policy interests. Because of the difficulty courts will have in determining who is at fault in climate change cases, dividing the defendant’s share of the market at the time of injury is the most reasonable and fair way to provide recovery for innocent plaintiffs.

244. See discussion *supra* Part IV.B.3.