5-2019

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* Regulation Fellow, University of Pennsylvania Law School. For extremely helpful feedback at various stages, I thank Margot Pollans, Peter Lehner, Albert Lin, Chris Green, Matthew Hayek, Cary Coglianese, Hari Osofsky, JB Ruhl, Nina Mendelson, Gabe Scheffler, and Mark Nevitt. I also thank Ashley Gregor, Dan Resler, and the rest of the editorial board at the *Columbia Journal of Environmental Law* for very helpful review of the work. Any errors are my own.

*Despite possessing statutory authority to regulate at least some contributing causes of climate change, environmental regulators in the United States have recently found themselves tied up in political gridlock. In response, advocates are turning from the regulatory track to a common law liability track, bringing public nuisance suits against fossil fuel producers and electric utilities. However, most of these public nuisance suits have met a common fate: they have been held to be displaced by the comprehensive regulatory framework for controlling greenhouse gas emissions contained in the Clean Air Act. As long as there is even the possibility of regulatory action from EPA, suits alleging violations of the federal common law of public nuisance will be dismissed. The result is that neither road to serious climate policy is passable in the current environment.*

*This Article points to a gap-filling approach that has yet to be pursued by climate change advocates. Even if EPA will not or cannot regulate and nuisance suits against electric power and transportation sector defendants are barred, one set of contributors to climate change is still susceptible to suit. The animal agricultural industry is responsible for a surprising amount of greenhouse gas emissions—around 18 percent of global emissions and by some estimates even more than all transportation sources combined. Unlike with emissions of greenhouse gases from tailpipes or smokestacks, there is no plausible argument that Congress has ever developed a statutory framework that speaks directly to the problem of animal agriculture's contributions to climate change. While this means regulators lack authority to address the problem, it also means that courts should be able to maneuver around the displacement barriers to hear a properly pled federal common law of nuisance action against offending meat producers. I argue that such a suit would be a worthwhile enterprise not only because it stands a reasonable chance of surmounting the displacement barrier to climatic nuisance suits, but also because it would put pressure on policymakers and industry to curb emissions and would bring public scrutiny to the inefficiencies and externalities of animal agriculture.*

## INTRODUCTION

Climate change is an existential threat to our way of life.[1] Policymakers around the globe have been scrambling for several

1. *See* Coral Davenport, *Major Climate Report Describes a Strong Risk of Crisis as Early as 2040*, N.Y. TIMES (Oct. 7, 2018), https://www.nytimes.com/2018/10/07/climate/ipcc-climate-report-2040.html [https://perma.cc/8BRP-MNBW] (reporting on a report by the Intergovernmental Panel on Climate Change showing that at the current pace of emissions, the "atmosphere will warm up by as much as 2.7 degrees Fahrenheit (1.5 degrees Celsius)

decades now to find ways to respond to the threat.[2] It is clear, however, that these regulatory efforts are not moving fast enough to prevent some of the serious impacts of climate change.[3] In the United States, the situation is particularly dire, as the Trump Administration has reversed most of the significant Obama-era climate initiatives, setting the timetable for action back by years.[4] While the Clean Air Act ("CAA") gives the U.S. Environmental Protection Agency ("EPA") authority to regulate greenhouse gas emissions from certain sources,[5] the agency appears uninterested in using that authority while President Trump holds office.

Compounding the problem is that much climate change litigation—which could potentially serve as a parallel or a substitute track to the regulatory track—has been stymied by the false hope that U.S. regulators would use their authority to develop a comprehensive regulatory solution. For decades before the advent of modern statutory environmental policy, environmental problems were addressed in federal court in private nuisance suits.[6] When disputes crossed state lines, federal courts stood at the ready to impose liability under the federal common law of public nuisance. Even though global climate change presents unique challenges and complexities compared to ordinary environmental problems, it is plausible to think that the federal common law of nuisance might have some role to play, particularly when other forms of regulation are unavailable. Indeed, litigants have been bringing climate

above preindustrial levels by 2040, inundating coastlines and intensifying droughts and poverty").

2. *See generally* Cass R. Sunstein, *Changing Climate Change, 2009–2016*, 42 HARV. ENVTL. L. REV. 231 (2018).

3. *See* DAVID WALLACE-WELLS, THE UNINHABITABLE EARTH: LIFE AFTER WARMING ch. 1 (2019) (engagingly summarizing the likely scenarios for warming over the next decades); Cary Coglianese, *Pledging, Populism, and the Paris Agreement: The Paradox of a Management-Based Approach to Global Governance*, 34 MD. J. INT'L L. (forthcoming 2019) (on file with author) (showing that there are critical gaps in the Paris Climate Accord that fail to ensure sufficient mitigation efforts).

4. *See* Joseph E. Aldy, *Real World Headwinds for Trump Climate Change Policy*, 73 BULL. ATOMIC SCIENTISTS 376 (2017).

5. *See* Massachusetts v. EPA, 549 U.S. 497 (2007) (holding that carbon dioxide is a pollutant under the Clean Air Act).

6. *See* Mark P. Nevitt & Robert V. Percival, *Could Official Climate Denial Revive the Common Law as a Regulatory Backstop?*, 96 WASH. U. L. REV. 441, 447–62 (2018) (chronicling in detail the history of the federal courts' use of the common law of public nuisance to address interstate environmental problems); *see also infra* Part I.B.

nuisance suits in the hopes that they might spur further action, governmental and private.[7]

Yet courts have so far punted in the most important of these cases.[8] In the 2011 case *American Electric Power v. Connecticut*, the Supreme Court seemed to eliminate nuisance liability for climate-changing emissions.[9] According to the Court, the CAA displaced the federal common law of public nuisance when it came to carbon dioxide ("$CO_2$") emissions from electric utilities, leaving the EPA with exclusive authority to regulate in this space.[10] In the years following this holding, EPA appeared to be making the regulatory progress that the Supreme Court expected.[11] However, political changes have halted this progress, leaving a policy vacuum.[12] As long as the Court's decision in *American Electric Power* stands and

7. *See* Albert C. Lin & Michael Burger, *State Public Nuisance Claims and Climate Change Adaptation*, 36 PACE ENVTL. L. REV. 49 (2018) (discussing much of the current nuisance litigation landscape).

8. In saying this, I do not mean do diminish the importance of the often incrementalist litigation strategies being employed around the country. *See* Hari M. Osofky & Jacqueline Peel, *The Role of Litigation in Multilevel Climate Change Governance: Possibilities for a Lower Carbon Future?*, 30 ENVTL. & PLANNING L.J. 303, 307 (2013) ("The rulings issued by courts in climate change cases, across various jurisdictions and at different levels of governance (sub-national, national, and international) can thus be seen to play an important role in articulating forms of 'transnational climate change regulation.'"). My point is only that federal law can be more comprehensive in its impacts, and therefore more likely to be accepted by courts as a useful form of policymaking in the complex, interjurisdictional domain of climate change policy.

9. Am. Elec. Power Co. v. Connecticut, 564 U.S. 410 (2011). Technically, displacement does not apply to *state* public nuisance law, which has led litigants in a recent wave of nuisance actions to predominantly plead state nuisance causes of action. *See* Lin & Burger, *supra* note 7 (arguing that state public nuisance claims may prove influential in ongoing litigation). Importantly, the early signs suggest problems with this route around the displacement barrier. First, even though displacement does not apply, preemption might. *Id.* Second, Judge Alsup's bellwether decision in *City of Oakland* construed the state causes of action as federal causes of action, noting that "a patchwork of fifty different answers to the same fundamental global issue would be unworkable." Order Denying Motions to Remand, People of the State of California v. BP p.l.c., No. C 17-06011 WHA, at *5 (N.D. Cal. Feb. 27, 2018), https://cases.justia.com/federal/district-courts/california/candce/3:2017cv06011/318403/134/0.pdf?ts=1519809712 [https://perma.cc/VBK9-957T]. It remains to be seen whether state public nuisance claims against fossil fuel companies and utilities will fare better on appeal.

10. *Am. Elec. Power Co.*, 564 U.S. at 424 ("We hold that the Clean Air Act and the EPA actions it authorizes displace any federal common law right to seek abatement of carbon-dioxide emissions from fossil-fuel fired power plants.").

11. *See infra* Part I.A.

12. *See infra* Part I.C.

regulators remain unwilling or unable to act, any serious national response to climate change would appear to be a non-starter.[13]

This Article points to a gap-filling approach that, so far, has been overlooked by climate change advocates who have focused on the energy and transportation sectors. Even if EPA currently will not regulate the fossil fuel sources of emissions, and even if federal nuisance suits against electric power and transportation sector defendants are displaced, the CAA leaves one major contributing industry unregulated. The agriculture industry is responsible for a surprising amount of greenhouse gas emissions. At the global level, studies show that the industry is responsible for a third of global emissions.[14] In the United States, the numbers are slightly lower, but still stunning. Accepting even the lowest-end estimate of 9 percent of U.S. emissions would mean that the industry produces enough to match the emissions from 120 million automobiles.[15] Animal agriculture contributes the lion's share of these agricultural emissions—some 18 percent of global greenhouse gas emissions come from livestock production.[16] Beef production in the United States alone accounts for 3.3 percent of domestic greenhouse gas emissions—not just agricultural emissions, but *all* emissions.[17]

13. It bears noting that the federal government's inaction and delay could be limited by the litigation in *Juliana v. United States* over whether the government's failure to mitigate climate change violates the constitutional rights of minors and the duty of the government to protect its sovereign land. *See* David Wallace-Wells, *What if the Courts Could Save the Climate?*, N.Y. MAG.: INTELLIGENCER (Nov. 29, 2018), http://nymag.com/intelligencer/2018/11/julianna-v-united-states-how-courts-could-save-the-climate.html [https://perma.cc/8FJ9-S4FL]. However, the ultimate outcome of that litigation is anything but certain at this point, and the latest orders have further delayed the litigation. *See* Sophie Yeo, *Will the Juliana Climate Case Ever Go to Court?*, PAC. STANDARD (Nov. 27, 2018), https://psmag.com/environment/will-the-juliana-youth-climate-case-ever-go-to-court [https://perma.cc/X7KZ-G7MK].

14. *See, e.g.*, Sonja J. Vermeulen et al., *Climate Change and Food Systems*, 37 ANN. REV. ENV'T & RESOURCES 195, 198 (2012).

15. *See* Peter H. Lehner & Nathan A. Rosenberg, *Agriculture*, *in* LEGAL PATHWAYS TO DEEP DECARBONIZATION IN THE UNITED STATES 772, 774 (Michael Gerrard & John C. Dernbach eds., 2019) (citing *Sources of Greenhouse Gas Emissions*, U.S. ENVTL. PROTECTION AGENCY, https://www.epa.gov/ghgemissions/sources-greenhouse-gas-emissions [https://perma.cc/HHG6-SSG8] (last visited Mar. 2, 2019)).

16. *See, e.g.*, ALEXANDER N. HRISTOV ET AL., U.N. FOOD & AGRIC. ORG., MITIGATION OF GREENHOUSE GAS EMISSIONS IN LIVESTOCK PRODUCTION (Pierre J. Gerber et al. eds., 2013), http://www.fao.org/docrep/018/i3288e/i3288e.pdf [https://perma.cc/3BZV-77D9]; *How Meat Contributes to Global Warming*, SCI. AM., https://www.scientificamerican.com/slideshow/the-greenhouse-hamburger/ [https://perma.cc/BB2K-YTEZ] (last visited Feb. 27, 2019).

17. Jan Suszkiw, *Study Clarifies U.S. Beef's Resource Use and Greenhouse Gas Emissions*, U.S. DEP'T OF AGRIC. (Mar. 11, 2019), https://www.ars.usda.gov/news-events/news/research-news/2019/study-clarifies-us-beefs-resource-use-and-greenhouse-gas-emissions/

Some of the industry's contributions come from direct emissions of greenhouse gases—carbon dioxide, methane, and nitrous oxide—from the animals and their waste.[18] But changes in land use, transportation of materials, and production of feed for animal consumption are also part of the overall footprint of meat.[19] Indeed, when these factors are all considered, it becomes apparent that producing meat is among the least efficient uses of natural resources. For example, it takes 20 calories of grain to produce just one calorie of beef, and when all of the inputs are added up, the carbon footprint of a single kilogram of beef protein is an astonishing 1,000 kilograms of $CO_2$ equivalent.[20] The industry also diminishes the world's resilience in the face of climate change: that same kilogram of beef protein will have used about 15,000 liters of water compared to just 1,250 liters of water for the same amount of corn or wheat.[21] Considering that global meat consumption will double by 2050,[22] agriculture, and in particular animal agriculture, is fertile ground for curbing climate change, and the failure to adequately address it could mute gains made in other areas.

Despite its significant impact, animal agriculture is in effect exempt from the suite of environmental statutes that collectively demarcate the field of environmental law in the United States.[23] This lack of statutory attention would seem to be a major problem, but the Supreme Court's approach to the displacement of the federal common law of nuisance is promising for future climate change litigants. Unlike with emissions of greenhouse gases from

[https://perma.cc/H7KV-6ELG]. *See also* C. Alan Rotz, Senorpe Asem-Hiabele, Sara Place & Greg Thomas, *Environmental Footprints of Beef Cattle Production in the United States*, 169 AGRIC. SYS. 1, 1 (2019).

18. *Global Livestock Environmental Assessment Model (GLEAM)*, U.N. FOOD & AGRIC. ORG., http://www.fao.org/gleam/results/en/ [https://perma.cc/3EZ7-PRL2] (last visited Feb. 27, 2019) (describing emissions from enteric fermentation in the digestion of feed and emissions from manure management practices).

19. *See infra* Part II.A.

20. J.L.P., *Meat and Greens: How Bad for the Planet Is Eating Meat?*, ECONOMIST (Dec. 31, 2013), https://www.economist.com/feast-and-famine/2013/12/31/meat-and-greens [https://perma.cc/63NV-757L].

21. *Id.*

22. *Id.*

23. *See* J.B. Ruhl, *Farms, Their Environmental Harms, and Environmental Law*, 27 ECOLOGY L.Q. 263 (2000). *But see* J. Nicholas Hoover, *Can't You Smell That Smell? Clean Air Act Fixes for Factory Farm Air Pollution*, 6 STAN. J. ANIMAL L. & POL'Y 1 (2013) (arguing that the CAA could apply to a special category of animal farm called a Concentrated Animal Feeding Operation ("CAFO") and support emission-based regulation of the industry).

tailpipes or smokestacks, there is no plausible argument that Congress has ever developed a statutory framework that speaks directly to the problem of animal agriculture's contributions to climate change. Displacement should therefore not be a barrier to courts hearing a properly pled federal common law of public nuisance claim against offending meatpackers who pass the environmental harms that they create on to a future public.

This Article lays out the case for using the federal common law of public nuisance to address animal agriculture's contribution to climate change. Part I explains why this move is necessary, recounting the failures of regulators, the turn to climate change litigation, and the barriers to climate change litigation created by the Supreme Court's endorsement of a preference for regulatory solutions where Congress has directly spoken to a problem. Part II then makes the legal case that animal agriculture's contribution to climate change has not been directly addressed by Congress, and therefore the displacement analysis in *American Electric Power* would not control. In Part III, I explain why overcoming the displacement barrier would likely be sufficient for such a climate nuisance suit to make a substantial impact.

## I. THE REGULATORY GAP

Climate change is an extraordinarily complex market failure—a "super wicked problem," as Richard Lazarus terms it."[24] Many economists, environmental scholars, and even judges tend to prefer a regulatory strategy to a common law strategy.[25] Of course, these categories—purely regulatory and purely common law—tend to blur in the real world of governance.[26] Moreover, action in one category can be part of a positive feedback loop that spurs action in

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

25. *See generally* REGULATION VERSUS LITIGATION: PERSPECTIVES FROM ECONOMICS AND LAW (Daniel P. Kessler ed., 2010); Shi-Ling Hsu, *A Realistic Evaluation of Climate Change Litigation Through the Lens of a Hypothetical Lawsuit*, 79 U. COLO. L. REV. 701 (2008); Elizabeth Fisher, *Climate Change Litigation, Obsession and Expertise: Reflecting on the Scholarly Response to* Massachusetts v. EPA, 35 LAW & POL'Y 236 (2013).

26. Hari M. Osofsky & Jacqueline Peel, *Litigation's Regulatory Pathways and the Administrative State: Lessons from U.S. and Australian Climate Change Governance*, 25 GEO. INT'L ENVTL. L. REV. 207, 213 (2013) (describing a broad "socio-legal tradition that treats a wide range of formal and informal action by diverse actors as regulatory and as part of an overall governance process").

the other category.[27] Nevertheless, we can think of progress on climate change as taking either a regulatory track or a common law track. This Part chronicles the ascendance of the regulatory track over the common law track in the United States and the growing political barriers to regulation that make this imbalance concerning.

### *A. Massachusetts v. EPA* and the Regulatory Track

Initially, climate change litigation focusing on regulatory inaction seemed to hold out the possibility that regulators would ultimately take the reins. In *Massachusetts v. EPA*, a coalition of states, cities, and environmental groups successfully sued EPA after the agency denied a rulemaking petition urging the agency to undertake regulation of carbon dioxide emissions from mobile sources.[28] In denying the petition, EPA had argued that it did not have the regulatory authority to do what the petitioners were asking, and that, even if it did, it would not opt to exercise that regulatory authority in light of other considerations, including the possibility of Congress taking on the task of passing targeted legislation.[29] The Supreme Court, however, rejected the notion that carbon dioxide did not qualify as an air pollutant under the CAA, holding that EPA did in fact have authority to use the CAA to address carbon dioxide emissions from mobile sources.[30] Further, the Court rejected EPA's prudential reasons for inaction as arbitrary and capricious because they were too untethered to the criteria designated as relevant under the statute.[31]

With the Supreme Court's decision, EPA had little choice but to make an endangerment finding—a decision that carbon dioxide and other greenhouse gases were not only potential air pollutants under the CAA, but that they also endanger public health and welfare by contributing to global climate change.[32] EPA made that

27. *See infra* Part III.B.

28. Massachusetts v. EPA, 549 U.S. 497 (2007).

29. Control of Emissions from New Highway Vehicles and Engines, Notice of Denial of Petition for Rulemaking, 68 Fed. Reg. 52,922, 52,928–31 (Sept. 8, 2003).

30. *Massachusetts*, 549 U.S. at 528–32.

31. *Id.* at 532, 535.

32. Jody Freeman & Adrian Vermeule, Massachusetts v. EPA*: From Politics to Expertise*, 2007 SUP. CT. REV. 51, 66 (arguing that the Court's decision made it "virtually unavoidable" for EPA to decline to regulate).

finding with respect to mobile sources in 2009,[33] paving the way for rules regulating emission standards for light-duty vehicles and heavy-duty vehicles.[34] Moreover, after promulgating the light-duty automobile standards, EPA made the finding that regulating those sources "set off a chain reaction" culminating in a duty to regulate emissions from stationary sources under other programs in the CAA.[35] In the so-called "Triggering Rule," EPA stated that the regulation of vehicle greenhouse gas emissions required it to seek pre-construction permits for any major stationary source in an attainment area under the Prevention of Significant Deterioration ("PSD") program,[36] and also required it to seek operating permits for existing sources under the Title V program.[37]

One obstacle remained, however; by statute, the PSD and Title V programs apply when sources emit pollutants in excess of fairly low statutory thresholds. Greenhouse gases are emitted on a scale that is ill-suited to this framework, with the result that millions of sources would have suddenly been required to seek permits.[38] EPA's solution was to promulgate a rule, known as the "Tailoring Rule," that imposed different thresholds that were more appropriate to the scale of industrial greenhouse gas emissions.[39] In effect, the new requirements under the PSD and Title V

33. Endangerment and Cause or Contribute Findings for Greenhouse Gases Under Section 202(a) of the Clean Air Act, 74 Fed. Reg. 66,496 (Dec. 15, 2009). Getting to that point was not easy, however. During the George W. Bush administration, high-level executive officials stunted EPA's early proposals. For a brief recap of these temporary, and ultimately unsuccessful, attempts to stall the response to *Massachusetts v. EPA*, see Lisa Heinzerling, *Climate Change at EPA*, 64 FLA. L. REV. 1, 3–5 (2012).

34. Light-Duty Vehicle Greenhouse Gas Emission Standards and Corporate Average Fuel Economy Standards, 75 Fed. Reg. 25,324 (May 7, 2010); Greenhouse Gas Emissions Standards and Fuel Efficiency Standards for Medium- and Heavy-Duty Engines and Vehicles, 76 Fed. Reg. 57,106 (Sept. 15, 2011).

35. Cecilia Segal et al., *Climate Regulation Under the Clean Air Act in the Wake of* Utility Air Regulatory Group v. EPA, 39 HARV. ENVTL. L. REV. 1, 2–3 (2015). Notably, EPA maintained that it was not required to issue National Ambient Air Quality Standards ("NAAQS") for carbon dioxide, which therefore triggered no duty for states to develop implementation plans to reduce carbon dioxide. As I will discuss later, this gap may be another reason that the CAA does not displace the common law of public nuisance when it comes to greenhouse gases.

36. Reconsideration of Interpretation of Regulations That Determine Pollutants Covered by Clean Air Act Permitting Programs, 75 Fed. Reg. 17,004 (Apr. 2, 2010).

37. *Id.*

38. Prevention of Significant Deterioration and Title V Greenhouse Gas Tailoring Rule, 75 Fed. Reg. 31,514, 31,516 (June 3, 2010) [hereinafter Tailoring Rule].

39. *Id.*

programs would only apply to significant contributors of greenhouse gas emissions.

In *Utility Air Regulatory Group v. EPA*, the Supreme Court nixed this effort to limit the scope of the new requirements.[40] According to the Court, the plain language of the statute—specifically, the numerical thresholds—could not be effectively amended by regulations.[41] EPA would have to regulate all sources, no matter how minute their contributions, or not regulate at all. In light of the purported absurdity of regulating all sources, the Court narrowly construed the triggering language relied on by the Triggering Rule, vacating EPA's conclusion that it had to regulate greenhouse gas emissions from stationary sources in the first place.[42]

Undeterred, EPA found a new path within the CAA to regulate greenhouse gas emissions. Responding in part to President Obama's increasing emphasis on climate action,[43] EPA in 2015 promulgated $CO_2$ emission guidelines for existing electric generating units.[44] Colloquially known as the "Clean Power Plan," these new regulations on existing power plants aimed to fill a long-standing gap in the CAA's coverage by bringing grandfathered existing plants into the regulatory fold.[45] At the same time, EPA imposed new source performance standards ("NSPS") on new and modified power plants.[46] Together, the two rules were predicted to lead to declines of electric power sector emissions to 32 percent of 2005 levels by 2030.[47]

40. Util. Air Reg. Grp. v. EPA, 573 U.S. 302 (2014).

41. *Id.*

42. *Id.* To be clear, the Court did uphold EPA's development of "best available control technology" standards for greenhouse gas emissions for so-called "anyway sources"—i.e., those sources that would have been required to comply with the PSD and Title V permitting programs because of emission of more conventional "air pollutants." *Id.* at 334.

43. *See, e.g.*, EXEC. OFFICE OF THE PRESIDENT, THE PRESIDENT'S CLIMATE ACTION PLAN (2013), https://obamawhitehouse.archives.gov/sites/default/files/image/president27s climateactionplan.pdf [https://perma.cc/QG7Q-FZDC] (reaffirming a commitment to reduce U.S. greenhouse gas emissions by 17 percent below 2005 levels by 2050).

44. Carbon Pollution Emission Guidelines for Existing Stationary Sources: Electric Utility Generating Units, 80 Fed. Reg. 64,661 (Oct. 23, 2015).

45. *See* RICHARD L. REVESZ & JACK LIENKE, STRUGGLING FOR AIR: POWER PLANTS AND THE "WAR ON COAL" (2016).

46. Standards of Performance for Greenhouse Gas Emissions from New, Modified, and Reconstructed Stationary Sources: Electric Utility Generating Units, 80 Fed. Reg. 64,510 (Oct. 23, 2015).

47. *Id.* at 64,665. The NSPS standards for new and modified power plants were not expected to change significantly the net benefits of the two regulations, as modeling "indicate[d] that, even in the absence of [the NSPS] rule, (i) existing and anticipated

Once again, though, the courts stopped EPA. In February of 2016, the Supreme Court issued a surprising stay of enforcement of the Clean Power Plan pending the resolution of litigation in the lower courts.[48] Then, while the litigation proceeded slowly in the D.C. Circuit, the tidal shift in environmental policy that was the election of President Trump occurred. Under Trump, EPA has formally proposed the rescission of the Clean Power Plan with the so-called Affordable Clean Energy Rule and has begun the process of withdrawing the United States from the recently ratified Paris Climate Accord, among other actions.[49]

*Massachusetts v. EPA* committed the United States to a primarily federal regulatory response to the threat of climate change.[50] Even as the substance of the regulatory efforts has seesawed between the Bush, Obama, and Trump administrations, there has never been much doubt since *Massachusetts* that it is EPA's responsibility to take the lead on climate change policy using its authority under the CAA (at least insofar as comprehensive climate change legislation is not forthcoming). As the next section demonstrates, the Supreme Court reinforced this trend when it held that most private litigation alleging climate-related injuries was foreclosed by EPA's efforts.

### B. *American Electric Power v. Connecticut* and the Displacement of the Litigation Track

In the early years after *Massachusetts*, climate advocates began to explore another track to meaningful climate change policies—one based not on regulation but on common law liability for private emissions of greenhouse gases. But this "litigation track" was short lived. When it came to policing climate changing emissions, the

economic conditions are such that few, if any fossil fuel-fired steam-generating EGUs will be built in the foreseeable future, and (ii) utilities and project developers are expected to choose new generation technologies (primarily NGCC) that would meet the final standards and renewable generating sources that are not affected by these final standards." *Id.* at 64,515.

48. Jonathan H. Adler, *Supreme Court Puts the Brakes on the EPA's Clean Power Plan*, WASH. POST: THE VOLOKH CONSPIRACY (Feb. 9, 2016), https://www.washingtonpost.com/news/volokh-conspiracy/wp/2016/02/09/supreme-court-puts-the-brakes-on-the-epas-clean-power-plan/?utm_term=.d962d09864bd [https://perma.cc/6A8T-RVFX] (describing the case and the Court's surprising and unprecedented decision).

49. *See* Editorial Board, *Trump Imperils the Planet*, N.Y. TIMES: OPINION (Dec. 26, 2018), https://www.nytimes.com/2018/12/26/opinion/editorials/climate-change-environment-trump.html [https://perma.cc/H8WJ-L35L].

50. Osofsky & Peel, *supra* note 26, at 224 ("EPA regulation pursuant to [*Massachusetts*] . . . has served as the core of the U.S. federal efforts on climate change.").

Supreme Court's answer was clear: there was "no room for a parallel track" of climate change regulation.[51]

1. The Federal Common Law of Public Nuisance

Operating alongside statutory and regulatory environmental protections, the federal common law of public nuisance "protects the public against unreasonable and substantial interference with a public right."[52] What rights are included is not entirely clear, but the doctrine roughly covers "rights in health, safety, and comfort that are not necessarily tied to land or a particular resource."[53] What differentiates federal public nuisance from ordinary public nuisance, which has a long lineage in state common law, is federal jurisdiction, which is established by Article III, Section 2's grant of original jurisdiction to the Supreme Court to resolve disputes between states or between states and citizens of another state.[54] States have a quasi-sovereign interest in reducing environmental harms that originate out-of-state but affect the state's citizenry.[55]

The Supreme Court has developed the federal common law of public nuisance in a series of environmental cases spanning over a century.[56] Indeed, as Robert Percival has observed, "[p]rior to the enactment of comprehensive federal regulatory statutes, the common law of nuisance was the first line of legal defense for the

51. Am. Elec. Power Co. v. Connecticut, 564 U.S. 410, 425–27 (2011).

52. Albert C. Lin, *Public Trust and Public Nuisance: Common Law Peas in a Pod?*, 45 U.C. DAVIS L. REV. 1075, 1077 (2012) (citing RESTATEMENT (SECOND) OF TORTS § 821B(1) & cmt. a (AM. LAW INST. 1979)). According to the Court, the federal common law of public nuisance exists notwithstanding the familiar adage from *Erie R. Co. v. Tompkins*, 304 U.S. 64, 78 (1938), that there "is no federal general common law" because the it is uniquely concerned with "areas of national concern" that are suited to the development of "federal decisional law." *Am. Elec. Power Co.*, 564 U.S. at 420–21.

53. Lin, *supra* note 52, at 1078.

54. U.S. CONST. art. III, § 2. In a later case, the Supreme Court held that public nuisance suits under federal common law need not be heard originally by the Court, but could in fact be heard as usual in federal district court under general federal question jurisdiction. Illinois v. City of Milwaukee (*Milwaukee I*), 406 U.S. 91, 98–99 (1972).

55. Georgia v. Tenn. Copper Co., 206 U.S. 230, 237 (1907).

56. Other scholars have offered more comprehensive treatments of the federal common law of public nuisance than the one I will offer here, which is simply intended to provide critical background. For an account of the rise of the doctrine, see Paul J. Wahlbeck, *The Development of a Legal Rule: The Federal Common Law of Public Nuisance*, 32 LAW & SOC'Y REV. 613 (1998), and Benjamin P. Harper, *Climate Change Litigation: The Federal Common Law of Interstate Nuisance and Federalism Concerns*, 40 GA. L. REV. 661 (2006). For commentary on much of the current litigation using the common law of nuisance to address climate change—much of which serves as a model for the litigation urged in this Article—see Lin & Burger, *supra* note 7.

environment. In the early decades of the twentieth century, the Supreme Court itself heard many prominent disputes between states over transboundary air and water pollution."[57] For instance, in 1906 the Court recognized the possibility of using public nuisance to remediate the contamination of public water that occurred when the City of Chicago, aiming to protect Lake Michigan, reversed the flow of the Chicago River and directed its sewage down the Illinois River and into the Mississippi River.[58] Just a year later, the Court recognized the possibility of states suing private defendants in a case involving two Tennessee Copper Company smelters that spewed sulfur dioxide across state lines and into Georgia.[59] The Court continued to hear similar cases for decades,[60] sometimes appointing special masters to oversee the technical and scientific questions raised by the litigation.[61] Ordinarily, the relief in these cases took the form of an injunction to abate the nuisance, although in recent decades it has become clear that money damages of some kind are suitable remedies as well.

The scope of the federal common law of public nuisance action is elastic. The essential elements are a public right—usually enjoyment of a common resource, such as water or air—and an unreasonable interference with that right caused by a defendant, either public or private.[62] Beyond this, the Court has described

57. Robert V. Percival, Massachusetts v. EPA: *Escaping the Common Law's Growing Shadow*, 2007 SUP. CT. REV. 111, 113.

58. Missouri v. Illinois, 200 U.S. 496 (1906).

59. *Tennessee Copper Co.*, 206 U.S. 230.

60. *See, e.g.*, New Jersey v. City of New York, 283 U.S. 473 (1931) (issuing an injunction against New York's dumping of sewage into the Atlantic Ocean); Wisconsin v. Illinois, 278 U.S. 367 (1929) (issuing an injunction against Illinois's excessive drawing of Lake Michigan water, which had lowered the lake level for neighboring states). Occasionally, the Court declined to recognize public nuisance actions. *See, e.g.*, Ohio v. Wyandotte Chems. Corp., 401 U.S. 493 (1971) (refusing to hear a case alleging private defendants created a public nuisance by dumping mercury in Lake Erie); *Milwaukee I*, 406 U.S. 91 (1972) (rejecting Illinois's bid for a public nuisance action against Wisconsin cities for dumping sewage that contaminated Lake Michigan, which was Chicago's main source of drinking water); Washington v. Gen. Motors Corp., 406 U.S. 109 (1972); Vermont v. New York, 417 U.S. 270 (1974) (per curiam) (declining to approve a settlement in a dispute involving pollution from a paper mill because the Court saw it as inconsistent with the judicial role to police compliance with the settlement without any law to apply).

61. Nevitt & Percival, *supra* note 6, at 452–53.

62. Native Vill. of Kivalina v. ExxonMobil Corp., 696 F.3d 849, 855 (9th Cir. 2012) ("A successful public nuisance claim generally requires proof that a defendant's activity unreasonably interfered with the use or enjoyment of a public right and thereby caused the public-at-large substantial and widespread harm.").

these suits as requiring a court to "appraise the equities" on either side of an environmental dispute.[63] As a result of this elasticity, climate change litigants began to think about the possibility of using the public nuisance concept to address climate-related harms. The right to a habitable planet might be thought of as the quintessential public right.[64]

The main limit on the scope of the public nuisance doctrine is the concept of "displacement," which holds that the federal common law is no longer available where there is already statutory law that fills the role.[65] The displacement question is somewhat similar to preemption (which applies to state law),[66] although, critically, it is closer to conflict preemption than field preemption in that it does not hinge on evidence of congressional purpose or intent.[67] Instead, the focus is on whether the remedy sought in a public nuisance suit would be duplicated by, and therefore

63. *Milwaukee I*, 406 U.S. at 107. More recently, however, the Court has cautioned that courts "do not have creative power akin to that vested in Congress" and should ordinarily rely on the "readymade body of state law as the federal rule of decision until Congress strikes a different accommodation." Am. Elec. Power Co., Inc. v. Connecticut, 564 U.S. 410, 422 (2011).

64. *See generally* David Hunter & James Salzman, *Negligence in the Air: The Duty of Care in Climate Change Litigation*, 155 U. PA. L. REV. 1741, 1791–94 (2007); David A. Grossman, *Warming Up to a Not-So-Radical Idea: Tort-Based Climate Change Litigation*, 28 COLUM. J. ENVTL. L. 1, 53 (2003) (noting that the "enjoyment of the natural environment" constitutes a public right).

65. *See, e.g.*, Milwaukee v. Illinois (*Milwaukee II*), 451 U.S. 304 (1980) (holding that Illinois's nuisance action against Wisconsin cities was displaced by the passage of the Clean Water Act); Middlesex Cty. Sewarage Auth. v. Nat'l Sea Clammers Ass'n, 453 U.S. 1 (1981) (finding displacement of ocean dumping nuisance claims under the Ocean Dumping Act). Note, however, that the Court expressly declined to hold that comprehensive federal regulatory schemes would displace *state* common law public nuisance actions. *See* Int'l Paper Co. v. Ouellette, 479 U.S. 481, 498–500 (1987).

66. Harper, *supra* note 56, at 680.

67. *See Milwaukee II*, 451 U.S. at 316–17 ("[W]hen the question is whether federal statutory or federal common law governs . . . [,] the same sort of evidence of a clear and manifest purpose is not required."); *see generally* R. Trent Taylor, *The Obsolescence of Environmental Common Law*, 40 ECOLOGY L. CURRENTS 1 (2013) (comparing and contrasting preemption and displacement). The distinctions become critical in understanding why, even if the Clean Air Act's silence as to agriculture, see *infra* Part III, evinces "a clear and manifest purpose" to set essentially no greenhouse gas emission policy for agriculture, it does not mean there is displacement of nuisance liability. Common law liability can still exist so long as there is not direct regulation of the same conduct, and an implied exemption arguably does not rise to that level of specificity. *See also* Zachary Hennessee, Note, *Resurrecting a Doctrine on its Deathbed: Revisiting Federal Common Law Greenhouse Gas Litigation After* Utility Air Regulatory Group v. EPA, 67 DUKE L.J. 1073, 1094 (2018) ("This suggests that the field displacement theory contending that silence in a comprehensive statute may evidence a legislative intent *not* to regulate is incompatible with *AEP*'s reasoning.").

interfere with, applicable federal statutory programs[68]—indeed, the displacement cases expressly acknowledge that federal common law will play a supplemental role to environmental statutory regimes, filling in interstices and gaps left by Congress.[69] For instance, in a 2008 case involving claims arising from the Exxon Valdez oil spill, the Court focused the displacement inquiry on whether the claims "threaten . . . interference with federal regulatory goals," finding that the common law suit in that case did not threaten the implementation of the Clean Water Act and filled a gap left by the statute.[70] In climate change nuisance litigation, the displacement inquiry has become the central issue and the biggest hurdle.

2. The *American Electric Power* Case and Its Aftermath

Climate change was implicated under the federal common law of nuisance for the first time in 2004, when a coalition of states and the City of New York filed suit, alleging that electric utilities were collectively liable for their emission of up to ten percent of U.S. emissions of $CO_2$ and that these contributions to climate change were unreasonably interfering with the public rights of citizens to an unchanged climate.[71] The coalition sought an injunction limiting $CO_2$ emissions, all in the hope of spurring a shift to

68. *See* Molly M. Watters, Note, *Fish and Federalism: How the Asian Carp Litigation Highlights a Deficiency in the Federal Common Law Displacement Analysis*, 2 MICH. J. ENVTL. & ADMIN. L. 535, 557 (2013) (arguing that *AEP* analogized displacement to conflict preemption analysis).

69. *See* Dan Mensher, *Common Law on Ice: Using Federal Judge-Made Nuisance Law to Address the Interstate Effects of Greenhouse Gas Emissions*, 37 ENVTL. L. 463 (2007):

> How much common law a statute displaces is determined through a two-part analysis. First, if legislation precedes common law, 'courts are not free to 'supplement' Congress'[s] [enactment]. In such cases, courts may only add law to areas left unaddressed by the statutory scheme, as courts presume that Congress intended its statute to be the sole rule of law. Second, if Congress legislates against the background of preexisting common law, the opposite presumption prevails. Courts in this situation are to presume that Congress intended its legislation to enhance the common law rules in specific areas, but to leave the rest of the existing common law rules in place to fill the gaps left in the legislative framework. Congress can displace preexisting common law, but absent an explicit desire to do so, courts are to continue applying the common law unless the statute specifically addresses the issue before the court.

*Id.* at 471–72.

70. Exxon Shipping Co. v. Baker, 554 U.S. 471 (2008).

71. Connecticut v. Am. Elec. Power Co., 582 F.3d 309, 380 (2d Cir. 2009). This suit was not the only climate suit filed on the federal common law of nuisance theory. Comer v. Murphy Oil USA, Inc., No. 05-cv-436, 2007 WL 6942285 (S.D. Miss. Aug. 30, 2007); Native Vill. of Kivalina v. ExxonMobil Corp., 663 F. Supp. 2d 863 (N.D. Cal. 2009). *See also* California v. Gen. Motors Corp., No. C06-05755, 2007 WL 2726871 (N.D. Cal. Sept. 17, 2007) (rejecting nuisance suit by California against six car manufacturers for their alleged contributions to climate change impacts as a nonjusticiable political question).

renewable energy sources. Countering the coalition's claims, American Electric Power Company and its co-defendants argued that the case was non-justiciable for a host of reasons, including that the CAA had displaced the federal common law of public nuisance with respect to emissions of air pollutants.

Although the Second Circuit rejected the displacement arguments and held that the suit could proceed,[72] a unanimous Supreme Court reversed, finding that the CAA had in fact displaced the federal common law of public nuisance as it relates to greenhouse gas emissions from power plants.[73] The Court clarified the standard for displacement: "The test for whether congressional legislation excludes the declaration of federal common law is simply whether the statute 'speak[s] directly to [the] question' at issue."[74] That is, the "relevant question . . . is 'whether the field has been occupied, not whether it has been occupied in a particular manner.'"[75] Hence, it is irrelevant whether EPA is in fact regulating $CO_2$ emissions from power plants—the point is that it has been delegated the authority to do so.[76] As the Court noted, after determining that a particular category of stationary sources causes or contributes to air pollution that endangers public health or welfare, EPA "must establish standards of performance for emission of pollutants from new or modified sources within that category" and may also be required to develop regulations of "existing sources within the same category."[77]

In the wake of *American Electric Power*, climate change plaintiff states and municipalities have continued to press public nuisance claims in court, but to no avail. In each instance, displacement under the CAA has proven to be an insurmountable barrier to federal jurisdiction. For example, in *Native Village of Kivalina v.*

72. *Am. Elec. Power Co.*, 582 F.3d at 380.

73. Am. Elec. Power Co. v. Connecticut, 564 U.S. 410, 424 (2011) ("We hold that the Clean Air Act and the EPA actions it authorizes displace any federal common law right to seek abatement of carbon-dioxide emissions from fossil-fuel fired power plants.").

74. *Am. Elec. Power Co.*, 564 U.S. at 424 (quoting Mobil Oil Corp. v. Higginbotham, 436 U.S. 618, 625 (1978)).

75. *Id.* at 426.

76. David R. Brody, Case Comment, American Electric Power Co. v. Connecticut, 36 HARV. ENVTL. L. REV. 297, 300 (2012) ("It is the delegation of authority, not its exercise, which displaces federal common law.") (citing *Am. Elec. Power Co.*, 549 U.S. at 426); *see also* Michigan v. U.S. Army Corps of Eng'rs, 667 F.3d 765, 777 (7th Cir. 2011) ("Congress's decision to assign a particular problem to an executive agency or its description of an agency's role in addressing a problem may be evidence of displacement, but the ebb and flow of agency action neither diminishes nor increases the role of federal common law.").

77. *Am. Elec. Power Co.*, 564 U.S. at 424 (citing 42 U.S.C. § 7411(b)(1)(A)–(B), (d)).

*ExxonMobil Corp.*, an indigenous Alaskan village sued ExxonMobil for climate change-related public nuisance, but the Ninth Circuit held that the CAA displaced public nuisance claims concerning "domestic greenhouse gas emissions from stationary sources."[78] Likewise, in *Michigan v. U.S. Army Corps of Engineers*, a case involving the failure to control the spread of invasive Asian carp through Chicago's waterways, the Seventh Circuit likened the displacement analysis to field preemption, writing that the "important displacement question is whether Congress has provided a sufficient legislative solution to the particular interstate nuisance . . . to warrant a conclusion that this legislation has occupied the field to the exclusion of federal common law."[79] That panel held that the public nuisance action was *not* displaced because, "[f]or better or for worse, congressional efforts to curb the migration of invasive species, and of invasive carp in particular, have yet to reach the level of detail one sees in the air or water pollution schemes,"[80] despite the fact that Congress was clearly "aware of the problem" and had passed numerous acts to appropriate funds to the Army Corps of Engineers to develop underwater electronic barriers to prevent migration of the fish.[81] The Seventh Circuit, though, emphasized that the limited statutory attention to the fish bore "little resemblance to the regulatory power that the EPA wields under the Clean Air Act."[82]

More recently, several cities have filed separate lawsuits raising similar claims that major oil companies' production, marketing, and sale of fossil fuels contributed to climate change, creating a public nuisance.[83] According to many of the complaints, the fossil fuel companies had "early knowledge of climate change risks" but nevertheless "extensively promoted fossil fuels for pervasive use, while denying or downplaying these threats."[84] In one of the first cases to result in a decision, Judge Alsup of the Northern District of California reiterated his earlier order that the federal common law

78. Native Vill. of Kivalina v. ExxonMobil Corp., 696 F.3d 849, 856 (9th Cir. 2012).

79. *U.S. Army Corps of Eng'rs*, 667 F.3d at 777; *see generally* Christopher Grubb, Note, *Worthy of Their Name? Addressing Aquatic Nuisance Species with Common Law Public Nuisance Claims*, 87 CHI.-KENT L. REV. 237 (2012).

80. *U.S. Army Corps of Eng'rs*, 667 F.3d at 778–79.

81. *Id.* at 780.

82. *Id.*

83. *See, e.g.*, City of New York v. BP p.l.c., 325 F. Supp. 3d 466 (S.D.N.Y. 2018); King County v. BP p.l.c., 2018 WL 4385448 (W.D. Wash. Aug. 31, 2018); City of Oakland v. BP p.l.c., 325 F. Supp. 3d 1017 (N.D. Cal. 2018).

84. *City of New York*, 325 F. Supp. 3d at 469.

of public nuisance, not the state-level equivalents, necessarily governed because of the complex inter-jurisdictional issues implicated by global climate change.[85] Then, citing *American Electric Power*, the court dismissed the suit on the ground that the federal common law of public nuisance had been displaced by the CAA's extensive scheme for regulating greenhouse gas emissions from stationary sources.[86] While the case is currently pending appeal, the result seems preordained, given *American Electric Power*'s position on the CAA's displacing effect on any claim related to the direct emission of greenhouse gases by the electric power sector.[87]

## II. FILLING THE GAP: ANIMAL AGRICULTURE AS CLIMATE NUISANCE

If federal climate policy in the United States is to advance over the near future, the courts will have to take the lead. The first two years of the Trump administration have seen the attempted decimation of EPA's regulatory program under the CAA. Any climate legislation can be considered dead on arrival even should it proceed through the Republican held Senate. On the international level, President Trump has made it clear that the United States will not accede to any limitations on its greenhouse gas emissions. In short, for the time being, the regulatory track is leading nowhere.

However, *American Electric Power*'s conclusion that the CAA displaces the federal common law of public nuisance severely restricts courts' ability to fill the gap. The logic behind the Court's displacement analysis in *American Electric Power* centers on the intuitive notion that the CAA is a comprehensive regulatory

85. *Id.* at 471 ("Widespread global dispersal is exactly the type of 'transboundary pollution suit []' to which federal common law should apply.") (citing Native Vill. of Kivalina v. ExxonMobil Corp., 696 F.3d 849, 855–58 (9th Cir. 2012)) (alteration in original).

86. *Id.* at 472–75.

87. It is possible that the Ninth Circuit will hold that the District Court erred in construing the claims as federal public nuisance claims. *See* Lin & Burger, *supra* note 7 (contending that the District Court arguably erred on this point). If this occurs, plaintiffs would have another way around the displacement barrier—i.e., operating entirely under the state common law of public nuisance. The question would then be whether federal law *preempts* the state law causes of action. The Court has not given clear answers about the extent of preemption in this domain. *Id.* In addition, state common law claims would presumably be subject to state-level "Right-to-Farm" laws that often bar nuisance claims against agricultural operations. *See* Alexandra Lizano & Elizabeth Rumley, *States' Right-to-Farm Statutes*, NAT'L AGRIC. L. CTR., https://nationalaglawcenter.org/state-compilations/right-to-farm/ [https://perma.cc/PZM2-ARX9] (last visited Apr. 21, 2019) (noting that all fifty states have enacted statutes that bar nuisance suits).

framework for the regulation of greenhouse gas emissions from the electric power and transportation sectors. As the legislative history of the CAA shows, Congress did indeed aim to "fashion[] effective strategies" for the control of "numerous highly diversified sources," from "millions of automobiles driven on city streets or interstate highways to a relatively limited number of facilities and plants which are large-scale polluters such as powerplants burning coal or fuel oil."[88] The approach the CAA takes is to impose technology-based limitations on this set of sources at the pollutants' points of origin (e.g., a smokestack). This leaves little room for competing emissions limitations imposed by courts, and it is easy to see how such limitations could substantially interfere with Congress's ability to set policy through a delegation of rulemaking authority to EPA.

Nevertheless, the CAA is not all encompassing when it comes to greenhouse gas emissions. As the Supreme Court itself noted in *American Electric Power*, "we each emit carbon dioxide merely by breathing," yet Congress plainly never intended the CAA to reach these activities.[89] There must be limits to the scope of the CAA, and in many cases the displacement analysis will have to grapple with the issue-specific inquiry into whether the CAA really "speak[s] directly to [the] question."[90] As the rest of this section demonstrates, one major industry that the CAA arguably does not speak directly to is the animal agriculture industry. The implication of this is that climate nuisance suits against animal agricultural operations should be able to survive displacement in court.

## A. The Climate Impacts of Animal Agriculture

Worldwide and nationally, agricultural production is a major contributor to climate change, estimated by some to account for

88. *See, e.g.*, House Report on the Clean Air Act Amendments of 1970, H.R. REP. 91-1146, at 15 (1970), *reprinted in* 1970 U.S.C.C.A.N. 5356, 5371.

89. Am. Elec. Power Co. v. Connecticut, 564 U.S. 410, 426 (2011). In fact, the Court has repeatedly emphasized the absurdity of the notion that the CAA reaches beyond conventional industrial sources of air pollution. In *Utility Air Regulatory Group*, for instance, the Court scoffed at the idea that EPA could ever extend its PSD and Title V programs to all sources emitting 100- or 250-tons-per-year level (including churches and schools), opining that a claim of such "extravagant statutory power over the national economy . . . would render the statute 'unrecognizable to the Congress that designed' it." Util. Air Reg. Grp. v. EPA, 573 U.S. 302, 324 (2014).

90. *Am. Elec. Power Co.*, 564 U.S. at 424.

about one-third of greenhouse gas emissions.[91] This is roughly equivalent to, perhaps in excess of, the amount contributed by all transportation-related activities.[92] The majority of these agricultural impacts—up to 18 percent of total global greenhouse gas emissions—are attributable to the livestock production cycle.[93] The contributions can be direct or indirect.

On the direct side, livestock (especially ruminant livestock, such as cattle or sheep[94]) produce and emit vast quantities of methane gas, an extremely potent greenhouse gas.[95] They produce and emit lower but still substantial quantities of nitrous oxide, another greenhouse gas.[96] Together, these direct emissions from livestock account for approximately 9 percent of global greenhouse gas emissions.[97]

Indirect emissions are harder to see but just as consequential. The Food and Agriculture Organization ("FAO") of the United Nations has released several reports assessing greenhouse gas contributions associated with the entire supply chain for livestock.[98] The entire life cycle of the livestock industry includes several different pathways for greenhouse gas emissions, including:

> . . . fossil fuels used to produce mineral fertilizers used in feed production . . . ; methane release from the breakdown of fertilizers and from animal manure; land-use changes for feed production and for grazing; land degradation; fossil fuel use during feed and animal

91. Vermeulen et al., *supra* note 14 at 198; *see generally* Lehner & Rosenberg, *supra* note 15 (reviewing the many sources of emissions in the food system and the known methods of reducing these emissions).

92. HENNING STEINFELD ET AL., U.N. FOOD & AGRIC. ORG., LIVESTOCK'S LONG SHADOW: ENVIRONMENTAL ISSUES AND OPTIONS (2006), http://www.fao.org/3/a0701e/a0701e.pdf [https://perma.cc/8SAY-KPX7].

93. M. Gill, P. Smith & J.M. Wilkinson, *Mitigating Climate Change: The Role of Domestic Livestock*, 4 ANIMAL 323 (2010).

94. William J. Ripple et al., *Ruminants, Climate Change and Climate Policy*, 4 NATURE CLIMATE CHANGE 2 (2014).

95. *See, e.g.*, STEINFELD ET AL., *supra* note 92, at 271 tbl.7.1 (noting that livestock produces 37 percent of methane emissions worldwide); Agence France-Presse, *Methane Emissions from Cattle Are 11% Higher than Estimated*, THE GUARDIAN (Sept. 29, 2017), https://www.theguardian.com/environment/2017/sep/29/methane-emissions-cattle-11-percent-higher-than-estimated [https://perma.cc/TN9R-56VP].

96. STEINFELD ET AL., *supra* note 92, at 271 tbl.7.1 (noting that livestock produces 65 percent of nitrous oxide emissions).

97. *Id.*

98. *Id.* at 272; P.J. GERBER ET AL., U.N. FOOD & AGRIC. ORG., TACKLING CLIMATE CHANGE THROUGH LIVESTOCK: A GLOBAL ASSESSMENT OF EMISSIONS AND MITIGATION OPPORTUNITIES (2013), http://www.fao.org/3/a-i3437e.pdf [https://perma.cc/AP3W-SS9P].

> production; [and] fossil fuel use in production and transport of processed and refrigerated animal products.[99]

This resource-intensive process is more problematic because the resources are almost entirely wasted with the substantial losses of energy value from conversion of feed to muscle. For instance, 97 percent of the caloric value of the feed inputs involved with beef production is lost by the time it reaches our plates.[100] By one estimate, a meat-eating diet doubles the carbon footprint of any given person relative to a vegan diet.[101] Moreover, in severely depleting other natural resources, such as water, animal agriculture renders the world less resilient to the impacts of climate change that is already occurring. With the global production of meat likely to double by 2050,[102] the problem will only become worse as the threat from climate change grows.[103]

It bears mentioning, as well, that there is enormous climate change mitigation potential even with fairly modest shifts in dietary patterns. For instance, several studies have modeled the mitigation potential of a shift in meat consumption to nutritionally recommended levels, finding that between 2.15 and 5.6 gigatons of $CO_2$ equivalent could be eliminated per year.[104] To put that in perspective, the 2017 estimate of the "emissions gap," measuring the difference between the 2.0 degree target global temperature level and the conditional "Nationally Determined Contributions" in the Paris Accord, was 11 to 13.5 gigatons of $CO_2$ equivalent.[105] In

99. Gill, Smith & Wilkinson, *supra* note 93, at 323.

100. Alon Shepon et al., *Energy and Protein Feed-to-Food Conversion Efficiencies in the US and Potential Food Security Gains from Dietary Changes*, 11 ENVTL. RES. LETTERS 1, 1–2 (2016).

101. Peter Scarborough et al., *Dietary Greenhouse Gas Emissions of Meat-Eaters, Fish-Eaters, Vegetarians and Vegans in the UK*, 125 CLIMATE CHANGE 179, 179 (2014).

102. *Meat & Meat Products*, U.N. FOOD & AGRIC. ORG., http://www.fao.org/ag/againfo/themes/en/meat/home.html [https://perma.cc/Y7G2-MFTE] (last visited on Mar. 2, 2019).

103. M.J. MacLeod et al., *Invited Review: A Position on the Global Livestock Environmental Assessment Model (GLEAM)*, 12 ANIMAL 383, 384 (2018) ("If the GHG emissions intensities (Ei) (i.e. the kg of GHG per kg of animal product) of livestock commodities are not reduced, the forecast increases in production will lead to proportionate increases in GHG emissions, compromising efforts towards climate change mitigation.").

104. *See* ROB BAILEY, ANTONY FROGGATT & LAURA WELLESLEY, LIVESTOCK—CLIMATE CHANGE'S FORGOTTEN SECTOR: GLOBAL PUBLIC OPINION ON MEAT AND DAIRY CONSUMPTION 12 (2014), https://www.chathamhouse.org/sites/default/files/field/field_document/20141203LivestockClimateChangeForgottenSectorBaileyFroggattWellesleyFinal.pdf [https://perma.cc/Y9BY-SNZR].

105. JOHN CHRISTENSEN ET AL., U.N. ENV'T PROGRAMME, THE EMISSIONS GAP REPORT 2017: A UN ENVIRONMENT SYNTHESIS REPORT xvii (2017), https://wedocs.unep.org/bitstream/handle/20.500.11822/22070/EGR_2017.pdf [https://perma.cc/7T4S-Y23Y].

other words, eating the appropriate amount of meat for a healthy diet could get the world halfway where it needs to be to avoid the worst effects of climate change. Likewise, the FAO estimates that a "30 percent reduction of GHG emissions would be possible, for example, if producers in a given [animal agriculture] system, region and climate adopted the technologies and practice currently used by the 10 percent of producers with the lowest emission intensity."[106]

## B. Agricultural Exceptionalism and the CAA

As discussed in Part I.A, the CAA is now widely understood to contain a framework for regulating the climate change impacts of electric generation and transportation, even if the details of that framework have yet to be worked out. The same cannot be said about the CAA when it comes to animal agriculture.[107]

To understand why this is the case, it is necessary to understand how the animal agriculture sector is organized, as well as how it is not organized. As many have noted, there has been a fundamental change in recent decades from an almost pastoral model of animal rearing and slaughter to an industrial model marked by vertical integration by a small set of leading industry players (*e.g.*, Tyson, Cargill, Smithfield, etc.).[108] The concentration of power on the meatpacker, or buyer, side means that small farmers who rear the animals and prepare them for slaughter often feel pressure to establish stable relationships with the dominant meatpackers.[109] Small farmers now often enter into contracts with meatpackers to raise livestock using a highly efficient and arguably cruel system of

106. GERBER ET AL., *supra* note 98, at xiii.

107. *See generally* Ruhl, *supra* note 23; CLAUDIA COPELAND, CONG. RESEARCH SERV., RL32948, AIR QUALITY ISSUES AND ANIMAL AGRICULTURE: A PRIMER 7 (2005) ("[U]nder the Clean Air Act (CAA), most agricultural sources escape that law's regulatory programs because the majority of them do not meet the CAA's minimum emission quantity thresholds."); Sarah C. Wilson, *Hogwash! Why Industrial Animal Agriculture Is Not Beyond the Scope of Clean Air Act Regulation*, 24 PACE ENVTL. L. REV. 439, 450–51 (2007) (noting that "the government has historically graced agriculture with special treatment, expressly exempting the industry or simply not addressing it at all").

108. *See* Susan M. Brehm, *From Red Barn to Facility: Changing Environmental Liability to Fit the Changing Structure of Livestock Production*, 93 CAL. L. REV. 797 (2005); PEW COMM'N ON INDUS. FARM ANIMAL PROD., PUTTING MEAT ON THE TABLE: INDUSTRIAL FARM ANIMAL PRODUCTION IN AMERICA (2008), https://www.pewtrusts.org/~/media/legacy/uploadedfiles/phg/content_level_pages/reports/pcifapfinalpdf.pdf [https://perma.cc/PFH3-5UH3].

109. Brehm, *supra* note 108.

animal feeding operations involving close confinement of the animals.[110] Most notorious among these are so-called concentrated animal feeding operations ("CAFOs"), which can hold hundreds of thousands of animals in confinement.[111] After farmers raise the animals for some time, the animals are shipped to the vertical integrator for slaughter in a processing plant.[112]

As industrial as this model is compared to the bucolic 1950s, it is not industrial enough to fit the mold set out by the CAA. Starting with the CAA's permitting programs, the reality is that animals in the industrial agriculture system spend their short lives going through discrete stages at an incredibly diverse set of sites,[113] almost all of which are guaranteed to be below the thresholds for emissions at which the permits would be required. In order to reach greenhouse gases under the PSD or Title V programs, EPA would have to be able to require permits for the emission of non-greenhouse gas emissions such as ammonia, volatile organic compounds, particulate matter, and hydrogen sulfide.[114] Under

110. *Id.* This contract model is especially typified by the poultry industry, in which packers have made wide use of production contracts to control every aspect of the feeding and rearing of broilers. *See Contracting in the Poultry Industry*, U.S. DEP'T OF AGRIC., https://www.ers.usda.gov/webdocs/publications/42203/13405_aib748c_1_.pdf?v=0 (last visited Apr. 24, 2019); Craig Watts, *Under Contract: Farmers and the Fine Print, A Brutally Honest Look at Contract Poultry*, FARM AID BLOG (Jan. 18, 2017), https://www.farmaid.org/issues/industrial-agriculture/under-contract-farmers-fine-print-honest-look-contract-poultry/ [https://perma.cc/4L7C-C8AT].

111. CAFOs are defined as a point source by the Clean Water Act (a rare exception to the general silence of environmental statutes on agriculture) and, therefore, are required to obtain a permit for discharging pollutants into water. *See* 33 U.S.C. § 1362(14) (2018). EPA has promulgated regulations delineating the distinctions between different tiers of CAFOs. *See Regulatory Definitions of Large CAFOs, Medium CAFO, and Small CAFOs*, ENVTL. PROTECTION AGENCY, https://www.epa.gov/sites/production/files/2015-08/documents/sector_table.pdf [https://perma.cc/XC8V-DB85] (last visited Mar. 2, 2019).

112. James M. MacDonald, *CAFOs: Farm Animals and Industrialized Livestock Production*, *in* OXFORD RESEARCH ENCYCLOPEDIA OF ENVIRONMENTAL SCIENCE 5 (2018), http://oxfordre.com/environmentalscience/view/10.1093/acrefore/9780199389414.001.0001/acrefore-9780199389414-e-240?print=pdf [https://perma.cc/M4LV-8MSD] (reviewing the organization of industrial agriculture).

113. *Id.* (noting that beef production, like pork, "is arranged into separate stages" including cow-calf operations, stocker operations, and industrial feedlot operations, and that "integration across stages" is "still a rare phenomenon").

114. Util. Air Reg. Grp. v. EPA, 573 U.S. 302, 333–34 (2014) ("We hold that EPA exceeded its statutory authority when it interpreted the Clean Air Act to require PSD and Title V permitting for stationary sources based on their greenhouse-gas emissions. Specifically, the Agency may not treat greenhouse gases as a pollutant for purposes of defining a 'major emitting facility' (or a 'modification' thereof) in the PSD context or a 'major source' in the Title V context. To the extent its regulations purport to do so, they are

the operative provisions, these "anyway" sources would have to exceed at least 100 tons per year of a designated pollutant.[115] The modal livestock farm is far too small to meet these thresholds for "anyway" pollutants. The USDA has estimated that in 1997 there were 1.32 million farms holding livestock.[116] Approximately 1.08 million of these farms held less than four animals,[117] even though the animals raised on these farms were likely sold to a major meatpacker on a spot market and transported to a CAFO.[118] For these kinds of sites, and even for medium-sized CAFOs (approximately 500 animal units), there is essentially no chance that sites will meet the 100 tons per year *de minimis* thresholds for the non-greenhouse gas pollutants that must provide the hook for permit requirements.[119] Only about 12,000 farms would be considered large CAFOs under EPA's definitions (i.e., holding at least 1,000 individual animals, and often many more).[120] Even there, most large CAFOs will not meet the thresholds: taking EPA's own estimates at face value, a beef farm would need nearly 5,000 animal units to cross the 100 ton-per-year *de minimis* threshold for

invalid. EPA may, however, continue to treat greenhouse gases as a 'pollutant subject to regulation under this chapter' for purposes of requiring BACT for 'anyway' sources.").

115. *See* Teresa B. Clemmer, *Agriculture and the Clean Air Act, in* FOOD, AGRICULTURE, AND ENVIRONMENTAL LAW 163, 166 (Mary Jane Angelo, Jason J. Czarnezki & William S. Eubanks eds., 2013).

116. ROBERT L. KELLOGG, U.S. DEP'T OF AGRIC., PROFILE OF FARMS WITH LIVESTOCK IN THE UNITED STATES: A STATISTICAL SUMMARY (2002), https://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/home/?cid=nrcs143_014121 [https://perma.cc/55U3-ZXQ3].

117. *Id.* Of note, the USDA defines animal units by each 1,000 pounds of live weight, whereas EPA measures units by head. *Id.*

118. CONG. RESEARCH SERV., RL33325, LIVESTOCK MARKETING AND COMPETITION ISSUES 8 (2009) (noting that "alternative marketing arrangements" to production contracts and marketing contracts, such as spot market sales, accounted for 38 percent of slaughter-ready beef cattle volume and 89 percent of finished hog volume). Vertical integration is much more common and developed in the poultry market. *See* MacDonald, *supra* note 112.

119. A 2001 EPA study found that 500 animal-unit cattle farms emitted 11.2 tons per year of ammonia, 1.4 tons per year of nitrous oxide, and 3.2 tons per year of particulate matter. Swine farms with 500 animal units emitted 15 tons per year of ammonia, 0.021 tons per year of nitrous oxide, 2.6 tons per year of hydrogen sulfide, 0.6 tons per year of volatile organic compounds, and 2.0 tons per year of particulate matter. Poultry farms with 500 animal units emitted 13 tons per year of ammonia, 1.8 tons per year of nitrous oxide and 2.1 tons per year of particulate matter. U.S. ENVTL. PROT. AGENCY, EMISSIONS FROM ANIMAL FEEDING OPERATIONS tbls.8-12, 8-18 & 8-19 (2001), https://www3.epa.gov/ttn/chief/ap42/ch09/draft/draftanimalfeed.pdf [https://perma.cc/XDW6-ZMUP] [hereinafter EMISSIONS FROM ANIMAL FEEDING OPERATIONS]. The study unfortunately did not look into carbon dioxide emissions associated with animal feeding operations.

120. KELLOGG, *supra* note 116.

the PSD and Title V programs.[121] While a handful of sites might exceed thresholds for certain pollutants,[122] feeding operations of this size comprise an exceedingly small slice of the overall pie.

In short, the animal agriculture industry is just disaggregated enough that it flies under the radar of the major permitting programs in the CAA. Were one to aggregate all the emissions at all sites, treating the system as one large bubble, then the thresholds would easily be exceeded and regulators would be able to require greenhouse gas permits at these sites as well. However, the CAA contains no language that would allow EPA's authority to be stretched over the entirety of the animal agriculture system's discrete stages or to aggregate the many different "anyway" emissions that they produce. Moreover, it is not clear under *American Electric Power* whether piecemeal, site-by-site regulatory programs like Title V and PSD would be enough to displace a public nuisance action asking for a comprehensive and uniform solution were it otherwise applicable in individual instances.

It might be argued that the 1.32 million individual sites in the livestock production system are potentially subject to comprehensive regulation under the CAA's NSPS program, since unlike the CAA's permitting programs, it requires no threshold amount of pollution and applies to an entire industry. For NSPS to apply, the only requirement is that the EPA Administrator determine that the category of sources is in fact a category of "stationary sources" as defined by the Act.[123] When this determination is made, new sources in the category must implement the "best system of emission reduction."[124] To date, though, the Administrator has not defined animal feeding operations, or farms more generally, as stationary sources warranting an NSPS. Indeed, the closest category recognized is grain elevators.[125]

121. This assumes a linear relationship between the rate of emission estimated by EPA's 2001 report and the number of animal units (for instance, the report found a rate of 11.2 tons per year of ammonia emissions at 500 animal-unit beef farms, which suggests that getting to 100 tons per year would require the size to rise to nearly 5,000 animal units). *See* EMISSIONS FROM ANIMAL FEEDING OPERATIONS, *supra* note 119.

122. *See* Clemmer, *supra* note 115, at 171–72 (recounting EPA's efforts in the early 2000s to enforce the PSD and Title V programs against select CAFOs before the EPA entered into a consent decree staying enforcement against the industry altogether).

123. 42 U.S.C. § 7411(b)(1)(A) (2018).

124. *Id.* § 7411(a)(1).

125. *See Clean Air Act Standards and Guidelines for Agriculture, Food and Forestry*, U.S. ENVTL. PROTECTION AGENCY (Mar. 22, 2017), https://www.epa.gov/stationary-sources-air-

There are good reasons for the exclusion. By statute, a stationary source is "any building, structure, facility, or installation which emits or may emit any air pollutant."[126] The direct source of the emissions—the livestock—are not buildings, structures, facilities, or installations, at least not in ordinary English. Moreover, categorizing herds of cattle and pigs as sources of air pollution would make little functional sense, given the nature of the performance standards that EPA would be obliged to develop. It is easy to develop "best system[s] of emission reduction" for "stationary" structures like smokestacks; less so for belching livestock who might be roaming about a property.[127] The feeding operations and other sites through which the animals pass could perhaps be considered facilities, but in practice they are not uniform enough to be a cognizable category. EPA said almost exactly this in denying a petition from the Humane Society and other groups that asked EPA to promulgate NSPS for CAFOs. According to EPA, even within the special category of CAFOs, which has a rather precise, facility-like definition in EPA's regulations,[128] there is simply too much diversity of design, operation, and environment to permit the development of uniform control technologies.[129] That diversity increases exponentially when all animal feeding operations are considered, where the number of discrete operations grows from more than 18,000 to 450,000.[130] As a result, the chances are vanishingly small that EPA

pollution/clean-air-act-standards-and-guidelines-agriculture-food-and [https://perma.cc/H9K2-WT8Q].

126. 42 U.S.C. § 7411(a)(3) (2018).

127. *Id.* § 7411(a)(1). Some might argue that these factors irrelevant and that EPA could design an NSPS to handle the complexities involved with animals by analogizing to the Clean Water Act's regulation of water pollution from CAFOs using a "nonpoint source" framework. *See* Am. Farm Bureau Fed'n v. EPA, 792 F.3d 281, 289–90 (3d Cir. 2015) (discussing the Clean Water Act's authority for requiring states to submit and earn approval for plans for regulating nonpoint sources of water pollution); *see also* Mary Jane Angelo & James F. Choate, *Agriculture and the Clean Water Act*, *in* FOOD, AGRICULTURE, AND ENVIRONMENTAL LAW 147, 156 (Mary Jane Angelo, Jason J. Czarnezki & William S. Eubanks eds., 2013). This overlooks the fact that the CAA has no parallel statutory authority for imposing nonpoint source regulation of air emissions. Any attempt by EPA to implement nonpoint source NSPS of animal feeding operations would be highly vulnerable to judicial review.

128. *See* 40 C.F.R. § 122.23 (2018).

129. Letter from E. Scott Pruitt, Adm'r, U.S. Envtl. Prot. Agency, to Tom Frantz, President, Association of Irritated Residents (Dec. 15, 2017), https://www.regulations.gov/document?D=EPA-HQ-OAR-2017-0638-0003 [https://perma.cc/3S4K-42G6] (follow link titled "View document").

130. OFFICE OF INSPECTOR GEN., U.S. ENVTL. PROT. AGENCY, 17-P-0396, ELEVEN YEARS AFTER AGREEMENT, EPA HAS NOT DEVELOPED RELIABLE EMISSION ESTIMATION METHODS TO

will ever develop NSPS for most animal agricultural operations, and any effort to do so would necessarily be incomplete and legally vulnerable.

Another potential avenue to applying the CAA to animal agriculture, that in reality is a mirage, is the National Ambient Air Quality Standards ("NAAQS") Program. Under the NAAQS Program, EPA first sets permissible concentration levels for certain criteria pollutants and then allows states to craft state implementation plans ("SIPs") to achieve compliance with the standards.[131] Setting aside the fact that carbon dioxide is not currently designated as a criteria pollutant and that EPA has simply ignored a 2009 citizen petition to designate it as such,[132] it is in theory possible that greenhouse gas emissions from farms could be captured in SIPs. States have a great deal of flexibility in these plans, so states could decide to use that authority to regulate animal agricultural sources of emissions.[133] It is not clear, however, that an isolated SIP or two that address greenhouse gas emissions from animal farms would count for displacement in a federal public nuisance suit seeking an industry-wide and nation-wide remedy.

There is even less of a potential role for the CAA when it comes to addressing the roughly half of animal agriculture emissions of greenhouse gases that come indirectly from the entire production cycle rather from the livestock themselves. For instance, one reason animal agriculture affects climate change is because of the loss of forest as farmers clear the land for grazing, yet the CAA contains no provisions that plausibly delegate authority to EPA to regulate decisions to clear forest for grazing. Similarly, feed for livestock not only has its own emissions from the production process, but also can make livestock produce and emit more greenhouse gas. Again, though, the CAA would seem inapposite to these impacts. The CAA might well cover some of these individual

DETERMINE WHETHER ANIMAL FEEDING OPERATIONS COMPLY WITH CLEAN AIR ACT AND OTHER STATUTES 1 (2017), https://www.epa.gov/sites/production/files/2017-09/documents/_epaoig_20170919-17-p-0396.pdf [https://perma.cc/D26F-4XE6].

131. *See Summary of the Clean Air Act*, U.S. ENVTL. PROTECTION AGENCY (Aug. 24, 2017), https://www.epa.gov/laws-regulations/summary-clean-air-act [https://perma.cc/WL22-XHR9].

132. CHRIS WOLD, DAVID HUNTER & MELISSA POWERS, CLIMATE CHANGE AND THE LAW (2013).

133. Ruhl, *supra* note 23, at 306. Note that one good reason to bring a nuisance suit would be to force the Court to urge EPA to respond to this petition.

components of the production cycle, but it would not provide any remedy as to the animal agriculture firms that use these inputs to create a product with major independent impacts on the climate.[134]

### C. The Non-Displacement of Animal Agricultural Climate Nuisance Suits

Of course, the reason for examining whether the CAA reaches the animal agriculture sector is to determine whether a potential federal common law of public nuisance suit against animal agriculture firms would be displaced, as other climate nuisance suits have been. As discussed above, the *American Electric Power* Court explained that displacement occurs when there is a federal regulatory statute that "speaks directly" to the question at issue.[135]

By itself, the standard is somewhat cryptic—the Court simply held that it was "plain that [the CAA] speaks directly to emissions of carbon dioxide from the defendants' plants."[136] If the foregoing discussion in Part II.B does nothing else, it makes it plain that the application of the CAA to animal agricultural operations is anything but "plain." There are countless questions that would have to be answered before EPA could think about regulating the direct and indirect greenhouse gas emissions associated with the production of meat. Moreover, while a creative (or cavalier) EPA might be able to find indirect ways to package the reduction of greenhouse gases from animal feeding operations as a "co-benefit" of some other regulatory program with clearer authorization[137]—i.e., to apply permitting programs to some small set of sites,[138] or to push the envelope of the NSPS program[139]—it is clear that there is no real analogue to EPA's authority to directly regulate greenhouse gas emissions from fossil fuel sources, an authority that was central

134. It is for this reason that I do not see the Farm Bill as a source of displacement of the federal common law of nuisance. Of course, the Farm Bill is a source of some sort of agricultural policy, and its subsidy programs can be deployed as incentive-based tools for regulation. But the Farm Bill is not a regulatory statute, and there is no opportunity, as there was in *American Electric Power*, for plaintiffs to sue the USDA to dispute the allocation of funding and subsidies that it establishes.

135. Am. Elec. Power Co. v. Connecticut, 564 U.S. 410, 424 (2011).

136. *Id.* (internal quotation marks omitted).

137. For instance, ammonia is likely toxic enough to be designated as a hazardous air pollutant, Clemmer, *supra* note 115, at 168–69, and using the CAA's hazardous air pollutant provisions to control emissions of ammonia would have the co-benefit of reducing methane emissions.

138. *See supra* notes 113–22.

139. *See supra* notes 126–30.

to the *American Electric Power* Court's reasoning.[140] In this respect, the animal agriculture case seems closer to the Asian carp case in the Seventh Circuit (where there were some oblique references to the fish in federal statutes but less "detail" than is necessary for displacement) than to the electric utilities in *American Electric Power* (which going back decades have been the target of EPA regulation).[141]

Although some have interpreted the Court's cryptic formulation in *American Electric Power* as setting up a default that all environmental nuisances and environmental torts are displaced,[142] it remains an open question whether the Court would be able to maintain such a position in good faith where there is no realistic possibility that the agency will ever act and the conduct in question falls far outside the ordinary focus on the energy and transportation sectors. In *American Electric Power*, it was not only likely that EPA under the Obama Administration would soon act to address the climate change contributions of the electric generation sector, but it was possibly mandatory as well—at least that was the thinking at the time after the Court in *Massachusetts v. EPA* effectively ordered the agency to begin such action.[143] Thus, even if an argument could be made that the CAA has delegated authority over the entire field of greenhouse gas emissions, including from the animal agricultural operations, the Court could well be persuaded to narrow the displacement test where plaintiffs establish that EPA has no plans to attempt to regulate animal agriculture emissions. If the Court did the opposite and broadened the displacement of the federal common law of nuisance, it would put more pressure on EPA to use whatever powers the Court might think the agency has, and would certainly open the agency to suit for failure to exercise those powers.

In short, there are good reasons to believe that a federal common law of nuisance suit against animal agriculture firms could survive the displacement hurdle. As the next Part demonstrates, this would be an important development in climate law. Moreover,

140. *Am. Elec. Power Co.*, 564 U.S. at 425.

141. Michigan v. U.S. Army Corps of Eng'rs, 667 F.3d 765, 778–79 (7th Cir. 2011).

142. Brody, *supra* note 76, at 302.

143. *Am. Elec. Power Co.*, 564 U.S. at 425 (noting that if EPA failed to set emissions limits, states and private parties could petition the agency and sue if the response was inadequate, and further noting that the "agency agreed to complete that rulemaking by May 2012"). This passage would suggest that EPA's pending action was critically important to the Court's displacement holding.

even if plaintiffs were to lose, the litigation itself would advance the ball by clarifying policymakers' responsibility for regulating greenhouse gas emissions from the industry and catalyzing public demand for regulation.

## III. THE PROMISE OF THE APPROACH

Leading climate change scholars Jacqueline Peel and Hari Osofsky have noted, "common law climate change cases to date have not exerted a direct influence on the regulatory landscape."[144] Overcoming the displacement barrier through a federal nuisance suit against animal agriculture firms would go a long way toward changing that fact.[145] In this Part, I first argue that displacement is the biggest hurdle facing climate nuisance litigation, and that other potential hurdles to a merits judgment are surmountable. I then explain why such a suit would produce many desirable indirect effects no matter the ultimate disposition. In short, I argue that a federal public nuisance suit against the animal agriculture industry would be a worthwhile endeavor.

### A. The Path to Climatic Nuisance Liability for Animal Agriculture

Climate nuisance litigants have consistently stumbled on the displacement question. Because courts have generally not had occasion to reach the merits in any of the climate nuisance cases brought against fossil fuel producers, there are open questions about how courts would decide important questions about liability and causation in a climate change tort action. There are also open questions about other jurisdictional defenses, like the political question doctrine and standing, that have been less tested by the courts. While there is always uncertainty in impact litigation, there are ready answers to many of the most important potential objections.

144. JACQUELINE PEEL & HARI M. OSOFSKY, CLIMATE CHANGE LITIGATION: REGULATORY PATHWAYS TO CLEANER ENERGY 46 (2015).

145. It bears mentioning that public nuisance actions against animal agriculture under state law are probably not as available as they might be against fossil fuel companies and other industries. That is because most states have right-to-farm laws that bar public nuisance actions against animal feeding operations except when specific criteria are met. *See, e.g.*, Honomichl v. Valley View Swine, 914 N.W.2d 223 (Iowa 2018) (rejecting constitutional challenges to a right-to-farm law that barred a state law action alleging a public nuisance from a hog CAFO).

1. Merits Issues

To prove a public nuisance claim, plaintiffs would need to show an unreasonable interference with a public right that was caused by defendants' activity.[146] Assuming that litigants would model a complaint on the many climate nuisance cases against fossil fuel companies currently wending their way through the court system,[147] the causal theory would be that private defendants' production, promotion, and sale of a product that defendants know contributes to climate change causes an unreasonable interference with the public right of plaintiffs to live in a world that is habitable.[148] The court would have to determine whether defendants' conduct was unreasonable by deciding whether "the gravity of the interference with the public right outweighs the utility of the actor's conduct"—an inquiry which in turn involves assessments of the "value that the law attaches to" the conduct and the "burden of avoiding the harm placed upon members of the public."[149]

This may be an uncomfortable analysis,[150] but it is not impossible or uncommon for courts to weigh the costs and benefits of alternative behaviors and identify when costs are not being internalized.[151] To some extent, producing meat has undeniable benefits, as it is a source of calories and nutrition for consumers. But from an economic standpoint, there comes a point at which the harm—the significant contribution to climate change that will wreak havoc on the planet—becomes so large and the cost of switching to alternative, less-carbon-intensive sources of food becomes so low that the production of meat can only be seen as an inefficient choice and a cause of climate change. At that point, it would be an unreasonable diminishment in social utility to allow the producer to continue to produce the harmful product (at least without paying for it), as the continued production creates a

146. RESTATEMENT (SECOND) OF TORTS, § 821B(1) (AM. LAW INST., 2018).

147. *See supra* notes 83–87 and accompanying text.

148. Lin & Burger, *supra* note 7, at 85 ("If the climate change cases are litigated on the merits, defendants likely will content they cease to exert control over their products once the products are sold and thus should not be liable for abatement. Any interference with a public right, they may argue, arises from the burning of fossil fuels after control has already passed to the consumer.").

149. RESTATEMENT (SECOND) OF TORTS, § 821B cmts. a–e (AM. LAW INST., 1979).

150. *See, e.g.*, City of Oakland v. BP p.l.c., 325 F. Supp. 3d 1017, 1024 (N.D. Cal. 2018) (raising, but not answering, a list of purportedly intractable questions associated with the case).

151. *See* Grossman, *supra* note 64.

negative externality. The economic theory behind using liability to force firms to internalize the environmental cost that they have externalized is "nothing extraordinary."[152] Courts may need to rely on experts to determine the optimal production of meat and the degree of the negative externality that the industry has created, but once they do, the damages in a climate nuisance suit should reflect the excess production of meat beyond what is economically efficient. While the scale of the remedy necessary to correct the market failure would be significant,[153] it would not be any more significant than it would be for courts to hold the electric utilities liable for contributions to climate change—a prospect that many find plausible but for the displacement barrier.

One likely response from the industry would be that consumers are responsible for the defendants' production because their aggregate choices create the market for the product.[154] This is another way of saying that the industry lacks control over the instrumentality of the public nuisance, and hence that there is no tortious conduct on the part of the defendants causing climatic injury.[155] The argument would perhaps have more force were it not for the fact that there are significant market distortions in this field that arguably have been created by concerted industry strategy. Like the fossil fuel industry, the animal agriculture industry has been able to promote and sell its product well below true cost because it does not incorporate the environmental costs of the product and survives on significant public subsidies that the consumer can only faintly see.[156] This underpricing leads

152. Brief for Catherine Sharkey as Amicus Curiae Supporting Plaintiff-Appellant at 3, City of New York v. Chevron Corp., No. 18-2188-cv (2d Cir. Nov. 15, 2018).

153. For an argument that common law principles are flexible tools that can be easily adapted to deal with the challenges of climate change, see *id.* at 13 (arguing that the view that the common law "cannot be applied to climate change harms" rests on a "stultified conception of the common law, one that is blind to modern developments fashioning creative remedies and addressing tort liability under causal uncertainty").

154. Lin & Burger, *supra* note 7 (noting that this argument has been raised in the fossil fuel nuisance cases).

155. *Id.*

156. *See, e.g.*, Mark Bittman, *The True Cost of a Burger*, N.Y. TIMES: OPINION (July 15, 2014), https://www.nytimes.com/2014/07/16/opinion/the-true-cost-of-a-burger.html [https://perma.cc/5QE3-HJX4] ("What you pay for a cheeseburger is the price, but price isn't cost. It isn't the cost to the producers or the marketers and it certainly isn't the sum of the costs to the world; those *true* costs are much greater than the price.") (emphasis in original); Susan Subak, *Global Environmental Costs of Beef Production*, 30 ECOLOGICAL ECON. 79, 80 (1999) ("Efforts are under way to seek to limit some of the distortions that have led to the underpricing of an environmentally costly form of protein."); Gowri Koneswaran & Danielle Nierenberg, *Global Farm Animal Production and Global Warming: Impacting and Mitigating*

consumers to overconsume meat because they do not bear the cost of future environmental damages. Were the courts to impose damages on the animal agriculture firms, the price of meat would surely rise, and it is unlikely that consumers would continue to choose to eat meat at the rate they currently do.[157]

While determining liability should be possible, and while it appears that meat producers are in fact liable under the straightforward elements of a public nuisance claim, more difficult questions arise when it comes to apportioning liability across the firms in the industry and determining a workable remedy. However, these too are manageable challenges, provided courts are willing to be somewhat creative. As Daniel Grimm has argued, market-share liability provides a useful mechanism for justly determining each defendant's causal contribution to, and liability for, a climate-change harm.[158] This is because diverse products and activities "combine to form a fungible cause of global warming."[159] Under market-share liability, an individual defendant's liability is indexed to the percentage of the market the firm controls—i.e., if Tyson Foods has around 33.14 percent of the market share for chicken,[160] it will pay for 33.14 percent of the damages associated with the excess production of chicken, whatever level that is determined to be. This kind of calculation is increasingly possible with climate change, where virtually any product can be given a

*Climate Change*, 116 ENVTL. HEALTH PERSP. 578, 580 (2008) ("One critical step [in mitigating the effect of animal agriculture] is accurately pricing environmental services—natural resources that are typically free or underpriced—leading to 'overexploitation and pollution.'") (quoting STEINFELD ET AL., *supra* note 92, at xxiii).

157. In fact, in function if not in form, damages in a public nuisance case against animal agricultural firms would be like a carbon tax, which is many economists' preferred method for regulating climate change, since it allows consumers to make choices about whether the true cost is worth the benefits on an individual basis. *See* Jonathan Zasloff, *The Judicial Carbon Tax: Reconstructing Public Nuisance and Climate Change*, 55 UCLA L. REV. 1827 (2008).

158. Daniel J. Grimm, Note, *Global Warming and Market Share Liability: A Proposed Model for Allocating Tort Damages Among $CO_2$ Producers*, 32 COLUM. J. ENVTL. L. 209, 211 (2007) ("[M]arket share liability, while typically inefficient given the rarity of uniform risk markets, provides an ideal platform for developing a liability regime capable of managing climate change-based torts."); *see also* Samantha Lawson, Note, *The Conundrum of Climate Change Causation: Using Market Share Liability to Satisfy the Identification Requirement in* Native Village of Kivalina v. ExxonMobil Co., 22 FORDHAM ENVTL. L. REV. 433 (2011).

159. Grimm, *supra* note 158, at 219.

160. *TSN's Competition by Segment and its Market Share*, CSIMARKET.COM, https://csimarket.com/stocks/competitionSEG2.php?code=TSN [https://perma.cc/V5NR-CPWP] (last visited Mar. 3, 2019).

carbon footprint.[161] Specific to meat, the Global Livestock Environmental Assessment Model ("GLEAM") produced by the United Nations Food and Agriculture Organization has already done the necessary calculations to standardize the carbon footprints of various meat products.[162] All that a court would need to do is determine the product category's contribution to climate-change harms and then apportion the liability to defendant firms based on their contributions to the market.

As to remedy, courts should have ample authority to craft relief that avoids shuttering small businesses. To start, the meat industry today is highly concentrated—for instance, four companies control 84 percent of the slaughter of beef[163]—and this concentration means that only a handful of firms individually contribute enough to climate change to amount to a significant public nuisance. One good reason to use market-share liability as a basis for apportioning liability is to limit the exposure of smaller firms in the production chain. Moreover, courts retain flexibility in shaping the exact form of the remedy. While public nuisance has traditionally led to injunctions to abate the nuisance, courts now also assess damages in appropriate cases.[164] A court could also enjoin defendants to satisfy the damages by purchasing emissions offsets.[165] Or it could draw on any number of other climate change mitigation strategies detailed in the economic and policy literature to construct a remedial framework that gives firms flexibility to comply while minimizing costs.[166] No matter the approach, if the court determines that a particular firm is responsible for a certain

161. *See* Jason J. Czarnezki, *The Future of Food Eco-Labeling: Organic, Carbon Footprint, and Environmental Life-Cycle Analysis*, 30 STAN. ENVTL. L.J. 3 (2011).

162. *See* GERBER ET AL., *supra* note 98.

163. *Industrial Meat*, FRONTLINE, https://www.pbs.org/wgbh/pages/frontline/shows/meat/industrial/consolidation.html [https://perma.cc/CUD3-NCXZ] (last visited Mar. 3, 2019).

164. Grossman, *supra* note 64, at 58.

165. *See* Kirsten H. Engel, *Harmonizing Regulatory and Litigation Approaches to Climate Change Mitigation: Incorporating Tradable Emissions Offsets into Common Law Remedies*, 155 U. PA. L. REV. 1563 (2007). There are, of course, many practical issues surrounding emission offset programs. *See* James B. Bushnell, *The Economics of Carbon Offsets*, *in* THE DESIGN AND IMPLEMENTATION OF U.S. CLIMATE POLICY 197 (Don Fullerton & Catherine Wolfram eds., 2012); Jimena González-Ramírez, Catherine L. Kling & Adriana Valcu, *An Overview of Carbon Offsets from Agriculture*, 4 ANN. REV. RESOURCE ECON. 145 (2012). However, Kirsten Engel has argued that these difficulties are manageable for courts hearing public nuisance claims. *See* Engel, *supra* note 165.

166. *See generally* JOSEPH E. ALDY ET AL., NAT'L BUREAU OF ECON. RESEARCH, DESIGNING CLIMATE MITIGATION POLICY: WORKING PAPER 15022 (2009), https://www.nber.org/papers/w15022.pdf [https://perma.cc/ZY86-X2K6].

percentage of the industry's contribution to the nuisance and requires the firm to abate the nuisance or pay for someone else to do it, costs would still be internalized and the price of meat would rise to reflect the environmental damage it causes. Consumers would be free to decide whether meat for every meal is still worth it.

2. Jurisdictional Issues

Perhaps a more probable course is that courts would pivot from displacement to another jurisdictional limitation to justify an early-stage dismissal before even reaching the merits. There are two major jurisdictional limitations that have been raised by defendants in existing suits: standing and the political question doctrine.[167] Neither should prove as problematic for plaintiffs as the displacement analysis has been so far.

First, in order to establish subject-matter jurisdiction in federal court, the plaintiff must have standing to sue. The test for standing involves three prongs: (1) the plaintiff must have an injury-in-fact; (2) that injury must be caused by, or "fairly traceable to," the defendants' conduct; and (3) the injury must be "likely to be redressed by a favorable judicial decision."[168] What is important to recognize is that states and other sub-national government units are not "normal litigants for the purposes of invoking federal jurisdiction."[169] Because they have a "quasi-sovereign" right to sue on behalf of their citizens' health and well-being, they are entitled

167. The *Noerr-Pennington* doctrine, which limits liability for certain political activity, has played some role in the current climate nuisance litigation. In a nutshell, the "Noerr-Pennington doctrine immunizes parties from [] liability if their 'activities comprised mere solicitation of governmental action with respect to the passage and enforcement of laws.'" Daniel J. Davis, Comment, *The Fraud Exception to the* Noerr-Pennington *Doctrine in Judicial and Administrative Proceedings*, 69 U. CHI. L. REV. 325, 326 (2002) (quoting E. R.R. Presidents Conference v. Noerr Motor Freight, Inc., 365 U.S. 127, 138 (1961)). The only reason this doctrine played any role in the *City of Oakland* litigation is because the plaintiffs alleged that BP and other oil companies had failed to adequately disclose in public communications—advertising, congressional testimony, and other lobbying activities—what the companies' own internal data were saying about the climate impacts of fossil fuel use, presumably to make the conduct appear more tortious and less ordinary business. The plaintiffs disclaimed reliance on that allegation when pressed by Judge Alsup. *See* City of Oakland v. BP p.l.c., 325 F. Supp. 3d 1017 (N.D. Cal. 2018). There is no reason, however, for plaintiffs to rely on allegations of improper meddling with public policy. As I have argued in Part III.A, liability stems from the knowing excess production of meat alone.

168. Spokeo, Inc. v. Robins, 136 S. Ct. 1540, 1547 (2016), *as revised* (May 24, 2016) (quoting Lujan v. Defs. of Wildlife, 504 U.S. 555, 560–61 (1992)).

169. Massachusetts v. EPA, 549 U.S. 497, 518 (2007).

to "special solicitude"—essentially, a light touch—in the standing inquiry.[170] Thus, although there are perhaps some questions on each prong of the standing inquiry, courts so far have mostly held that standing is satisfied, at least at the motion to dismiss stage. Indeed, in *American Electric Power*, there were four votes for finding that standing had been met for at least some state plaintiffs because of their quasi-sovereign interests, and since Justice Sotomayor did not participate, there likely would have been five votes for standing. Justice Kennedy's retirement and replacement by Justice Kavanaugh makes it somewhat unclear whether the special treatment of states in standing analysis will survive in the future. Even if it does not, states will be able to advance plausible arguments on each prong of the standing analysis, which should be enough to avoid dismissal in at least some courts.[171]

Much of the same can be said about the political question doctrine. The political question doctrine requires courts to dismiss suits insofar as they raise certain questions that would require judges to go beyond the proper judicial role of deciding discrete cases and controversies and to instead assume powers assigned to the coordinate branches of the government.[172] It can be difficult to read the signals from the courts that have opined on the political question issues. In *American Electric Power*, the Second Circuit panel held that the political question doctrine did not apply. Four Supreme Court Justices on review of that decision agreed,

170. *See* Amy J. Wildermuth, *Why State Standing in* Massachusetts v. EPA *Matters*, 27 J. LAND RES. & ENVTL. L. 273, 284 (2007) (quoting *Massachusetts*, 549 U.S. at 520) (discussing the quasi-sovereign interests and how they alter the traditional standing inquiry).

171. *See, e.g.*, Comer v. Murphy Oil USA, 585 F.3d 855, 862–64 (5th Cir. 2009) (stating that review of standing at the motion to dismiss stage cannot become so stringent that it becomes a merits determination).

172. United States v. Munoz-Flores, 495 U.S. 385, 394 (1990) (noting the purpose of the political question doctrine as "restrain[ing] the Judiciary from inappropriate interference in the business of the other branches of Government"). Courts apply a six-factor standard to determine whether a political question is presented:

> Prominent on the surface of any case held to involve a political question is found [(1)] a textually demonstrable constitutional commitment of the issue to a coordinate political department; or [(2)] a lack of judicially discoverable and manageable standards for resolving it; or [(3)] the impossibility of deciding without an initial policy determination of a kind clearly for nonjudicial discretion; or [(4)] the impossibility of a court's undertaking independent resolution without expressing lack of the respect due coordinate branches of government; or [(5)] an unusual need for unquestioning adherence to a political decision already made; or [(6)] the potentiality of embarrassment from multifarious pronouncements by various departments on one question.

Baker v. Carr, 369 U.S. 186, 217 (1962).

cryptically stating that neither the political question doctrine nor any "other threshold obstacle" bars review, although again the departure of Justice Kennedy raises questions about whether views have changed. The doctrine would indeed seem to have little applicability to a non-constitutional cause of action, such as public nuisance. For many of the reasons highlighted above, courts have traditionally been recognized as appropriately in charge of determining liability in tort, to the extent that it applies.[173]

### B. The Indirect Effects of the Litigation

Suppose for the sake of argument that there is some insuperable barrier to a merits judgment that I have not envisioned here. Even without a judgment directly imposing liability, climate change litigation can have wide-ranging indirect effects that justify the effort.[174] That is especially likely to be the case with suits targeting animal agriculture's impact on the environment, where there is a policy vacuum and a lack of public appreciation for the linkages that cause so much harm.

#### 1. "Prodding" the Federal Government to Fill the Policy Vacuum

As Benjamin Ewing and Douglas Kysar have written, government actors should "perform[] their official roles with a self-conscious appreciation for the ways in which they can signal to other institutional actors that a given problem demands attention and action."[175] They can use "prods and pleas" to combat "government *under*reach," much as they can use checks and balances to regulate

173. The political question doctrine might, however, be a proxy for a larger constellation of concerns about interference with the policymaking prerogatives of the coordinate branches. *See* Lin & Burger, *supra* note 7, at 67–68. For instance, lower courts hearing the latest round of climate litigation have raised concerns about courts' interference with the complexities of international climate policymaking. In *City of Oakland v. BP*, one of the recent climatic nuisance suits against oil producers, Judge Alsup dismissed the suit after he determined that federal courts should voluntarily avoid recognizing new twists on the federal common law of nuisance that would effectively set foreign policy. To find liability for international conduct the court would potentially "interfere with reaching a worldwide consensus" over climate change policy. City of Oakland v. BP p.l.c., 325 F. Supp. 3d 1017, 1026 (N.D. Cal. 2018).

174. *See* PEEL & OSOFSKY, *supra* note 144 (providing a model of the indirect effects of climate change litigation).

175. Benjamin Ewing & Douglas A. Kysar, *Prods and Pleas: Limited Government in an Era of Unlimited Harm*, 121 YALE L.J. 350, 354 (2011).

government *over*reach.[176] This dynamic can become even more powerful when multiple levels of government act simultaneously.[177]

The "exceptional" status of agriculture under federal environmental law is, as J.B. Ruhl has argued, highly questionable. Farming operations contribute significantly to the environmental harms that other industries alone are tasked with remediating. If public nuisance suits open the doors to liability for environmental harms flowing from agricultural activities, history may repeat itself and the agricultural industry may seek out preemptive federal regulatory legislation that both protects the industry and ensures a baseline level of control over the environmental harms that farms create.[178] Courts' ability to find and remedy liability can amount to an intolerable change to the policy status quo (from the perspective of producers of meat) which may induce coordinate branches to take up the problem, and when they do, national regulatory policy will be up for debate.[179]

2. Encouraging and Accelerating Change in the Industry

Another major indirect effect of even the possibility of exposure to liability is that it can spur innovation and self-regulation, whether in an attempt to appeal to niche markets or to limit risk.[180] Indeed, the deterrence theory of torts is premised on the hope that exposure to liability will encourage potential defendants to avoid harms *ex ante* by taking adequate precautions.[181]

In many ways, the potential for liability for public nuisance for contributing to climate change through meat production would only reinforce larger market trends that are promising to fundamentally change the animal agriculture industry. Cell-cultured meat—i.e., meat grown from stem cells in a lab—appears

176. *Id.* (emphasis added).

177. *See* Kirsten H. Engel, *Harnessing the Benefits of Dynamic Federalism in Environmental Law*, 56 EMORY L.J. 159, 161 (2006).

178. *See, e.g.*, GABRIEL KOLKO, THE TRIUMPH OF CONSERVATISM: A REINTERPRETATION OF AMERICAN HISTORY, 1900–1916 (1977) (arguing that much Progressive Era regulation was requested by industry, as it was feeling pressure from litigation imposing liability, among other things).

179. *See* PEEL & OSOFSKY, *supra* note 144.

180. *Id.* at 48 (noting that "climate change litigation can tie into the broader corporate social responsibility movement").

181. *See* Thomas C. Galligan, Jr., *Deterrence: The Legitimate Function of the Public Tort*, 58 WASH. & LEE L. REV. 1019 (2001).

to be on the verge of marketability.[182] Such meat would have an estimated 7 to 45 percent reduction in energy use, a 78 to 96 percent reduction in greenhouse gas emissions, a 99 percent reduction in land use, and an 82 to 96 percent reduction in water use.[183] In fact, incumbent meat industry leaders have recently begun investing in the technology.[184] Short of a shift to cellular agriculture, there are ample opportunities for cutting emissions from the supply chain of meat production. The United Nations' Food and Agriculture Organization has outlined a suite of technologies and practices that increase the efficiency of animal agriculture.[185] Implementing them across the industry could reduce emissions by 30 percent.[186]

All these adaptations would tend to limit firms' exposure to liability. Consequently, one way to speed the transition would be to heighten the incentives to avoid liability, thereby increasing the incentives to find inefficiencies and remedy them.

### 3. Changing Public Perceptions and Consumer Behavior

Even a marginally successful public nuisance action against animal agriculture—getting to the discovery stage would qualify—might foster public awareness of and deliberation over the significant role of animal agriculture in climate change.[187] Much

182. *See* Barb Stuckey, *What's Next After Plant-Based? Clean Meat Grown from Animal Cells*, FORBES (Sept. 10, 2018), https://www.forbes.com/sites/barbstuckey/2018/09/10/conference-tackles-whats-next-after-plant-based-clean-meat-grown-from-animal-cells/#29cbecae534c [https://perma.cc/UV5C-3MDH] (reviewing estimates that cell-cultured meat could appear on the market in as little as a year, although perhaps more realistically in 3 to 5 years). For a helpful review of the technology and its growth potential, see Neil Stephens et al., *Bringing Cultured Meat to Market: Technical, Socio-Political, and Regulatory Challenges in Cellular Agriculture*, 78 TRENDS IN FOOD SCI. & TECH. 155 (2018). For an advocate's view of the promise of the industry, see PAUL SHAPIRO, CLEAN MEAT: HOW GROWING MEAT WITHOUT ANIMALS WILL REVOLUTIONIZE DINNER AND THE WORLD (2018).

183. Hanna L. Tuomisto & M. Joost Teixeria de Mattos, *Environmental Impacts of Cultured Meat Production*, 45 ENVTL. SCI. & TECH. 6117 (2011).

184. *See, e.g.*, Alisa Odenheimer, *Tyson Foods Makes Another Investment in Lab-Grown Meat*, BLOOMBERG (May 2, 2018), https://www.bloomberg.com/news/articles/2018-05-02/u-s-food-giant-tyson-makes-first-investment-in-israel [https://perma.cc/W6GN-NVL3] (describing investments by Tyson and Cargill in cellular agriculture startups); Matt Ball, *Mosa Meat, Creator of First Clean Meat Burger, Raises $8.8 Million, Featured in Wall Street Journal*, GOOD FOOD INST. (July 16, 2018), https://www.gfi.org/mosa-meat-creator-of-first-clean-meat-burger-2 [https://perma.cc/G5JA-NTMS] (describing an investment by Bell Food Group, one of Europe's leading meat producers).

185. *See* GERBER ET AL., *supra* note 98.

186. *Id.* at 45–46.

187. PEEL & OSOFSKY, *supra* note 144, at 49–50.

climate litigation around the world has been undertaken primarily for its potential to ignite ground-up changes by raising public awareness. For instance, the 2005 Inuit petition to the Inter-American Commission on Human Rights had a major impact on changing the public dialogue on human rights and climate change.[188]

As it is, awareness of meat's significant contribution to climate change is dismally low. A 2014 survey by Chatham House and Glasgow University Media Group found that only 29 percent of respondents believed that meat and dairy production were a major contributor to climate change compared to 64 percent for energy production.[189] The "awareness gap" that this survey uncovered matters for consumer demand,[190] as the same survey found that "[c]onsumers with low awareness" were "less likely to indicate willingness to change their behavio[]r" by reducing meat and dairy consumption.[191] In other words, consumers who believe climate change is a problem may be willing to adapt their eating habits to contribute to mitigation, but many simply do not know that this is a way they can help. Many non-governmental organizations do not even try to influence the amount of meat people eat as a tactic for mitigating climate change, limiting the pathways through which consumers might learn about the linkages.[192] Simply by crystallizing the case for curtailing meat consumption and revealing information about the climate change impacts of agriculture through discovery, litigation could significantly raise awareness and change demand-side habits among consumers.

## CONCLUSION

This Article has argued that government litigants would do well to explore a new frontier in climate change litigation: federal public nuisance suits against the animal agriculture industry. Not only would exploring this frontier circumnavigate the displacement barriers that have resulted in dismissal of most public nuisance suits

188. Jacqueline Peel & Hari M. Osofsky, *A Rights Turn in Climate Change Litigation?*, 7 TRANSNAT'L ENVTL. L. 37, 41 (2018).

189. BAILEY, FROGGATT & WELLESLEY, *supra* note 104, at 18–19.

190. *Id.*

191. *Id.* at 19.

192. Linnea I. Laestadius et al., *"We Don't Tell People What to Do": An Examination of the Factors Influencing NGO Decisions to Campaign for Reduced Meat Consumption in Light of Climate Change*, 29 GLOBAL ENVTL. CHANGE 32 (2014).

against fossil fuel producers and electric utilities, quite possibly resulting in a merits judgment of some kind, but it would also have the laudable indirect effect of catalyzing government, corporate, and consumer efforts to deal with the sizeable climate change impact of meat production. While any meaningful response to climate change must deal with excessive and unsustainable levels of fossil fuel energy consumption, advocates have often overlooked the low-hanging fruit that is the highly inefficient and harmful reliance on meat.[193] Not only are consumers in an arguably better position to curb their own carbon footprint through changed dietary patterns than they are to instigate structural changes in electricity generation, but there are also gaping holes in the regulatory approach to agriculture that have allowed the industry to avoid simple mitigating technologies and processes. Litigation could go a long way toward closing that gap and inspiring a wave of change in consumer behavior with real climate impacts.

To be sure, there are many outstanding questions about how public nuisance litigation against animal agriculture firms would play out in a real courtroom.[194] Some environmental scholars have expressed concern that there are too many complexities, and that courts will always have an institutional aversion to climate litigation.[195] In truth, though, it is the only option available for now, and the analysis in this Article shows that, with a properly targeted lawsuit, advocates could force the courts into the breach.

193. *See* Jonathan Lovvorn, *Climate Change Beyond Environmentalism Part I: Forging New Alliances in the Fight Against Climate Change*, 29 GEO. ENVTL. L. REV. 1 (2016) (arguing that advocates often overlook the climate impacts of meat production).

194. Zasloff, *supra* note 157, at 1829 (recounting such arguments).

195. *See* Michael B. Gerrard, *What Litigation of a Climate Nuisance Suit Might Look Like*, 121 YALE L.J. ONLINE 135 (2011); Hsu, *supra* note 25. *But see* Sabrina McCormick et al., *Science in Litigation, the Third Branch of U.S. Climate Policy*, 357 SCI. 979 (2017) (offering a somewhat sanguine account of the advances in climate science that will make many difficulties with litigation less pressing).