ARTICLES

REIGNING IN ANIMAL AGRICULTURE'S EMISSIONS BY SHRINKING THE HERD: EARLY SIGNS OF A NECESSARY GLOBAL POLICY SHIFT

BY
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We will be unable to achieve the temperature goals of the Paris Agreement without radically reforming our food systems. Despite animal agriculture's significant responsibility for climate change—emitting the majority of agricultural greenhouse gases (GHGs), likely 15% or more of all human-caused GHGs, around a third of anthropogenic methane and more than half of nitrous oxide (two climate super-pollutants)—policymakers have so far largely failed to reign in its emissions. In recent years, international bodies including the Intergovernmental Panel on Climate Change, U.N. Environment Programme, World Health Organization, and World Bank have begun to explicitly make the connection between animal agriculture's outsized emissions and the need to reduce consumption of animal products, especially in high-income, high-consuming countries. While national-level policy in the United States has not yet embraced these recommendations, policymakers in other countries—led by Europe—are experimenting with policies that would change diets and ultimately "shrink the herd," i.e., reduce the number of animals raised for food. Recent farmer protests and

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weakening of policy proposals in Europe illustrate the political realities of seeking reform in this area. But sooner government action would enable better outcomes, before the climate crisis forces changes to food systems. Developing effective and lasting policy on climate and animal agriculture will require consensus building, incremental approaches, attention to international equity, and a commitment to a just transition.

I. INTRODUCTION

> Say the order of your time feels unjust and unsustainable and yet massively entrenched, but also falling apart before your eyes.
>
> ~Kim Stanley Robinson,
> *The Ministry for the Future*[1]

> [A]s the world keeps warming, it will become clear that political leaders' climate pledges require that we phase down all sorts of polluting machines: not just the metal ones that burn fossil fuels but also the ones that have brains, and hearts, and use up three-quarters of the world's agricultural land, and overheat the planet.

[1] KIM STANLEY ROBINSON, THE MINISTRY FOR THE FUTURE 124 (2020) (including a cover inscription by writer Jonathan Lethem describing it as "[t]he best science fiction nonfiction novel I've ever read").

~Noah Gordon,
Carnegie Endowment for
International Peace[2]

Despite the immense scale of greenhouse gas (GHG) emissions from the U.S. animal agriculture sector,[3] the federal government remains largely unwilling to espouse reductions to meat and dairy consumption as part of its climate mitigation strategy. Indeed, after a British tabloid article falsely implied that President Biden was planning to limit meat consumption in order to meet emissions targets and Republican politicians began spreading the story (some even calling him "The Hamburglar"), a Biden spokesperson was quick to post a reassuring photo of Biden smiling while grilling steaks.[4]

U.S. Agriculture Secretary Tom Vilsack, a former dairy lobbyist,[5] has downplayed the growing momentum—led by some other national governments and in the international arena[6]—around elevating plant-based foods to help the climate. Despite the unprecedented focus on food systems and dietary change at the Conference of the Parties to the U.N. Framework Convention on Climate Change in Dubai (COP28),[7] when asked about reducing meat consumption as part of climate mitigation, Secretary Vilsack replied: "I don't hear much about that."[8]

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[2] Noah Gordon, *No, the Government Isn't Coming for Your Burger—But Maybe It Should Be*, NEW REPUBLIC (Oct. 3, 2023), https://newrepublic.com/article/175875/no-government-isnt-coming-burgerbut-maybe.

[3] *E.g.*, *Sector at a Glance*, U.S. DEP'T AGRIC., ECON. RSCH. SERV., https://www.ers.usda.gov/topics/animal-products/cattle-beef/sector-at-a-glance (Aug. 30, 2023) (noting that the United States has "the world's largest fed-cattle industry" and "is also the world's largest consumer of beef"); GRAIN & INST. FOR AGRIC. & TRADE POL'Y, EMISSIONS IMPOSSIBLE: HOW BIG MEAT AND DAIRY ARE HEATING UP THE PLANET 6 (2018) [hereinafter EMISSIONS IMPOSSIBLE], https://grain.org/article/entries/5976-emissions-impossible-how-big-meat-and-dairy-are-heating-up-the-planet (identifying the United States as one of the "main culprits" for animal agriculture GHG emissions, which "have surplus production *and* high per capita consumption of meat and dairy").

[4] Katie Shepherd, *Biden's Climate Plan Doesn't Ban Meat. But Baseless Claims Left Republicans Fuming: 'Stay Out of My Kitchen*,' WASH. POST (Apr. 26, 2021, 4:58 AM), https://www.washingtonpost.com/nation/2021/04/26/republicans-meat-biden-climate-plan; David Bauder & Ali Swenson, *The Hamburglar? How a Story About Meat Limits Fell Apart*, ASSOCIATED PRESS (Apr. 28, 2021, 8:55 AM), https://apnews.com/article/joe-biden-new-york-climate-climate-change-media-529b0cb6d7393c225c8b9baf040c1904.

[5] Tom Philpott, *It's Official: A Former Dairy Exec Now Runs Biden's Agriculture Department*, MOTHER JONES (Feb. 23, 2021), https://www.motherjones.com/food/2021/02/its-official-a-former-dairy-exec-now-runs-bidens-agriculture-department.

[6] *See* discussion *infra* Parts III–IV.

[7] *See infra* notes 101–122 and accompanying text.

[8] Marcia Brown & Meredith Lee Hill, *Tom Vilsack at COP28*, POLITICO (Dec. 11, 2023, 10:00 AM), https://www.politico.com/newsletters/weekly-agriculture/2023/12/11/tom-vilsack-at-cop28-00131018. More than 250 advocacy groups and experts sent Secretary Vilsack a letter in response, noting the prominent discussions of meat and dairy reduction at COP28 and arguing that the United States must incorporate meat and dairy reduction into its climate strategies. Letter from Ctr. for Biological Diversity et al. to Thomas J. Vilsack, U.S. Sec'y of Agric. 2 (Jan. 11, 2024), https://www.biologicaldiversity.org/programs/population_and_sustainability/pdfs/usda_sec_vilsack_letter.pdf.

Other U.S. lawmakers did not share his insouciance. Commenting on ongoing food system discussions at COP28, U.S. Senator Chuck Grassley of Iowa asserted that the talks were "targeting farmers" and that "[t]hey're really after the livestock business."[9] Representative Mike Flood of Nebraska went so far as to propose that the U.S. House of Representatives adopt a resolution to express disapproval of the recommendations shared by the U.N. Food & Agriculture Organization (FAO) at COP28[10] and "oppose[] the use of any Federal resources to support attempts to reduce meat consumption."[11]

The reactionary posture of many U.S. lawmakers when it comes to the animal agriculture industry has been a frustration for decades for those who seek to address its numerous and significant externalized harms to people, animals, and the environment.[12] But changemakers may take inspiration from a nascent wave of policies around the world that would have the concomitant impact of reducing both GHG emissions and animal numbers. Such policies may address supply (e.g., by buying out farmers) or demand (e.g., by shifting dietary guidelines and procurement policies), and they may combine various approaches. This Article focuses on policies that would ultimately result in a reduction of the total number of animals (rather than technological approaches[13]) because policies that "shrink the herd" are the only ones that guarantee a reduction in emissions while at the same time reducing the other harmful externalities of industrial animal agriculture.

These are not new ideas.[14] What is new is the acceleration of policy proposals and activity over the last half decade. This Article aims to collect progress and challenges for policymakers and advocates who would look to learn from leading examples—and who may also be inspired by the degree of activity in a policy area that can sometimes seem intractable. Part II provides background on animal agriculture's role in the climate crisis, followed by an overview of global momentum and international signaling in Part III. Part IV describes examples of climate animal agriculture policies around the world. Recent farmer

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9 Marc Heller, *Grassley Laments Climate Talks 'Targeting' Farmers*, E&E DAILY (Dec. 6, 2023, 6:19 AM), https://subscriber.politicopro.com/article/eenews/2023/12/06/grassley-laments-climate-talks-targeting-farmers-00130164.

10 *See* discussion of the FAO Roadmap *infra* notes 111–115 and accompanying text.

11 H.R. Res. 920, 118th Cong. §§ 3–4 (2023); *see also* Press Release, Rep. Mike Flood, Rep. Flood Introduces Resolution Condemning UN's Anti-Beef Food Strategy (Dec. 11, 2023), https://flood.house.gov/media/press-releases/rep-flood-introduces-resolution-condemning-uns-anti-beef-food-strategy ("The resolution I'm introducing today makes it clear that the United States opposes any attempt to reduce or eliminate meat production.").

12 *See infra* notes 244–256 and accompanying text.

13 *See* discussion *infra* Section IV.E.

14 *E.g.*, Herve Guyomard et al., *Review: Why and How to Regulate Animal Production and Consumption: The Case of the European Union*, ANIMAL: INT'L J. ANIMAL BIOSCIS., Dec. 2021, No. 100383, at 9 (citing articles published in 2011 and 2017) ("In order to significantly diminish GHG emissions of food systems, it will be necessary to reduce livestock activity levels.").

protests in the Netherlands are described in Part V as an example of political headwinds, followed by a gathering of lessons in Part VI.

II. BACKGROUND: ANIMAL AGRICULTURE AND CLIMATE

Last year was the hottest year on record,[15] shattering prior temperatures and causing scientists to use words like "mind-boggling," "staggering," and "absolutely gobsmackingly bananas."[16] The summer of 2024 was the warmest on record,[17] and this year is "virtually certain" to be the warmest year on record, exceeding even the unprecedented temperatures of 2023.[18] While some of the recent warming was likely associated with the El Niño weather pattern, many scientists are concerned at what may be the beginning of an accelerating trend.[19]

Higher temperatures not only have major impacts around the world—including extreme heat and drought and associated wildfires, tropical cyclones, and major floods[20]—but are also concerning because of their ability to induce irreversible changes. Tipping points are changes to climatic systems that become self-perpetuating at certain levels of warming.[21] A 2023 report found that at least five major systems were at risk of reaching tipping points, namely: the Greenland and West Antarctic ice sheets, warm-water coral reefs, North Atlantic Subpolar Gyre circulation, and permafrost regions.[22] The report described the risk of triggering tipping points as amongst "the gravest threats faced by humanity," which would "severely damage our planet's life-support systems and threaten the stability of our societies."[23]

To confront this challenge collectively, nearly all countries in the world have signed onto the Paris Agreement, a climate change treaty.[24] The primary goals of the Agreement are to maintain global average

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[15] Press Release No. 24-008, Roxana Bardan, Nat'l Aeronautics & Space Admin., NASA Analysis Confirms 2023 as Warmest Year on Record (Jan. 12, 2024), https://www.nasa.gov/news-release/nasa-analysis-confirms-2023-as-warmest-year-on-record.

[16] Zeke Hausfather, Opinion, *I Study Climate Change. The Data Is Telling Us Something New.*, N.Y. TIMES (Oct. 13, 2023), https://www.nytimes.com/2023/10/13/opinion/climate-change-excessive-heat-2023.html.

[17] Sally Younger, *NASA Finds Summer 2024 the Hottest to Date*, NASA (Sept. 11, 2024), https://www.nasa.gov/earth/nasa-finds-summer-2024-hottest-to-date.

[18] Press Release, Eur. Comm'n et al., Copernicus: 2024 Virtually Certain to Be the Warmest Year and First Year Above 1.5ºC (Nov. 7, 2024), https://climate.copernicus.eu/copernicus-2024-virtually-certain-be-warmest-year-and-first-year-above-15degc.

[19] Hausfather, *supra* note 16.

[20] Press Release, World Meteorological Org., 2023 Shatters Climate Records, with Major Impacts (Nov. 30, 2023), https://wmo.int/news/media-centre/2023-shatters-climate-records-major-impacts.

[21] David I. Armstrong McKay et al., *Exceeding 1.5ºC Global Warming Could Trigger Multiple Climate Tipping Points*, 377 SCIENCE 1171 (2022).

[22] UNIV. OF EXETER GLOB. SYS. INST., GLOBAL TIPPING POINTS: SUMMARY REPORT 2023, at 5 (2023).

[23] *Id.* at 3.

[24] *The Paris Agreement*, U.N. FRAMEWORK CONVENTION ON CLIMATE CHANGE, https://unfccc.int/process-and-meetings/the-paris-agreement (last visited Sept. 16, 2024).

temperatures well below 2ºC above pre-industrial levels, and to use best efforts to limit the increase to 1.5ºC.[25] According to the Intergovernmental Panel on Climate Change (IPCC), the UN body responsible for assessing the science related to climate change,[26] limiting the temperature increase to as close as possible to 1.5ºC is necessary to avoid the worst effects of climate change.[27] But, on our current path, we will reach 3.2ºC by 2100.[28] 2024 is on track to be the first year averaging more than 1.5ºC above preindustrial temperatures.[29] While one year spent above an average of 1.5ºC does not breach the Paris Agreement targets—which require a sustained increase over a longer period[30]—there is a growing understanding amongst scientists that breaching 1.5ºC is, at this point, likely inevitable.[31] To increase the chances of a safer future, time is of the essence. In 2023, the United Nations advised that GHG emissions would need to be halved by the end of this decade, describing a looming "climate cataclysm."[32]

But policy makers the world over have so far largely failed to address a key contributor to climate change: animal agriculture.[33] It will not be possible to adhere to climate targets without addressing food systems.[34] Animal agriculture is the biggest factor,[35] accounting for

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[25] *Id.*

[26] INTERGOV'TAL PANEL ON CLIMATE CHANGE, https://www.ipcc.ch (last visited Sept. 16, 2024).

[27] U.N. INTERGOV'TAL PANEL ON CLIMATE CHANGE [IPCC], GLOBAL WARMING OF 1.5°C, at v–vi (Valérie Masson-Delmotte et al. eds., 2018) [hereinafter 2018 IPCC REPORT], https://www.ipcc.ch/sr15/download.

[28] WILLIAM R. SUTTON ET AL., RECIPE FOR A LIVABLE PLANET: ACHIEVING NET ZERO EMISSIONS IN THE AGRIFOOD SYSTEM (OVERVIEW), WORLD BANK 6 (2024), https://openknowledge.worldbank.org/server/api/core/bitstreams/a0431f46-c65e-441a-9eed-8783d8b00272/content.

[29] Eur. Comm'n et al., *supra* note 18.

[30] Paris Agreement art. 2, ¶ 1, *adopted* Dec. 12, 2015, T.I.A.S. No. 16-1104, 3156 U.N.T.S. 79.

[31] *E.g.*, Jeff Tollefson, *Is It Too Late to Keep Global Warming Below 1.5°C? The Challenge in 7 Charts*, NATURE (Nov. 21, 2023), https://www.nature.com/immersive/d41586-023-03601-6/index.html.

[32] U.N. DEP'T OF ECON. & SOC. AFFAIRS, THE SUSTAINABLE DEVELOPMENT GOALS REPORT 2023, at 38 (Jennifer Ross ed., 2023), https://unstats.un.org/sdgs/report/2023/The-Sustainable-Development-Goals-Report-2023.pdf.

[33] *E.g.*, Simona Vallone & Eric Lambin, *Public Policy and Vested Interests Preserve the Animal Farming Status Quo at the Expense of Animal Product Analogs*, 6 ONE EARTH 1213, 1221 (2023) ("Despite the climate and biodiversity crises and the urgency to implement effective mitigation measures, both the EU and U.S. governments are slow to act decisively to mitigate the environmentally damaging role played by the dominant animal production systems.").

[34] Michael A. Clark et al., *Global Food System Emissions Could Preclude Achieving the 1.5° and 2°C Climate Change Targets*, 370 SCIENCE 705, 705 (2020) ("[E]ven if fossil fuel emissions were immediately halted, current trends in global food systems would prevent the achievement of the 1.5°C target and, by the end of the century, threaten the achievement of the 2°C target. Meeting the 1.5°C target requires rapid and ambitious changes to food systems as well as to all nonfood sectors."); *see also* U.N. ENV'T PROGRAMME, EMISSIONS GAP REPORT 2022: THE CLOSING WINDOW—CLIMATE CRISIS CALLS FOR RAPID

nearly sixty percent of global food system emissions[36] and almost eighty percent of U.S. agricultural emissions.[37] Overall, animal agriculture is likely responsible for somewhere between 14.5% and 20% of global GHG emissions.[38]

Animal agriculture also bears outsized responsibility for emissions of the climate super-pollutants methane and nitrous oxide. Nitrous oxide is an exceptionally powerful GHG, around 280 times more potent than carbon dioxide over its first twenty years in the atmosphere.[39] According to a U.N. estimate, more than half of all nitrous oxide comes from animal agriculture.[40]

Animal agriculture is also responsible for almost one third of all anthropogenic methane emissions globally and 36% in the United States.[41] During its first twenty years after release, methane is about 80

TRANSFORMATION OF SOCIETIES, at xxv (2022), https://www.unep.org/emissions-gap-report-2022 ("To get on an emissions pathway aligned with the Paris Agreement temperature goal, . . . [r]equired transformations include shifting diets, protecting natural ecosystems, improving food production and decarbonizing the food value chain.").

35 2018 IPCC REPORT, *supra* note 27, at 327.

36 U.N. ENV'T PROGRAMME, WHAT'S COOKING? AN ASSESSMENT OF THE POTENTIAL IMPACTS OF SELECTED NOVEL ALTERNATIVES TO CONVENTIONAL ANIMAL PRODUCTS, at viii (2023) [hereinafter UNEP WHAT'S COOKING?], https://wedocs.unep.org/20.500.11822/44236.

37 PETER H. LEHNER & NATHAN A. ROSENBERG, FARMING FOR OUR FUTURE; THE SCIENCE, LAW, AND POLICY OF CLIMATE-NEUTRAL AGRICULTURE 43 (2021).

38 UNEP WHAT'S COOKING?, *supra* note 36, at viii; *see also* Dan Blaustein-Rejto & Chris Gambino, *Livestock Don't Contribute 14.5% of Global Greenhouse Gas Emissions*, BREAKTHROUGH INST. (Mar. 20, 2023), https://thebreakthrough.org/issues/food-agriculture-environment/livestock-dont-contribute-14-5-of-global-greenhouse-gas-emissions (describing prominent estimates of livestock's global emissions responsibility between 11.1% and 19.6%). The U.N. Food & Agriculture Organization's (FAO's) most recent estimate is the low end of that range, and the only one below 14.5%. U.N. FOOD & AGRIC. ORG., PATHWAYS TOWARDS LOWER EMISSIONS: A GLOBAL ASSESSMENT OF THE GREENHOUSE GAS EMISSIONS AND MITIGATION OPTIONS FROM LIVESTOCK AGRIFOOD SYSTEMS 4 (2023), https://www.fao.org/3/cc9029en/cc9029en.pdf. Given that FAO's prior estimates were higher (14.5% and 17.8%) and that a number of commentators have questioned the recent lower estimate, this Article provides the UNEP's recent description above: 14.5%–20%. *E.g.*, Blaustein-Rejto & Gambino, *supra* (noting that "FAO's [recent] analysis has several limitations and uncertainties," and that it may not accurately estimate GHG emissions of grazing and the impacts of deforestation and land-use change); Arthur Neslen, *Ex-Officials at UN Farming Body Say Work on Methane Emissions Was Censored*, GUARDIAN (Oct. 20, 2023).

39 Piers Forster et al., *The Earth's Energy Budget, Climate Feedbacks and Climate Sensitivity*, *in* CLIMATE CHANGE 2021: THE PHYSICAL SCIENCE BASIS 923, 1017 (Valérie Masson-Delmotte et al. eds., 6th ed. 2021).

40 P.J. GERBER ET AL., U.N. FOOD & AGRIC. ORG., TACKLING CLIMATE CHANGE THROUGH LIVESTOCK 15 (2013), https://www.fao.org/3/i3437e/i3437e.pdf (relying on 2004 and 2005 data).

41 U.S. ENV'T PROT. AGENCY, INVENTORY OF U.S. GREENHOUSE GAS EMISSIONS AND SINKS: 1990-2022, at ES-18 (2023), https://www.epa.gov/system/files/documents/2024-04/us-ghg-inventory-2024-main-text_04-18-2024.pdf; PETER H. LEHNER & NATHAN A. ROSENBERG, FARMING FOR OUR FUTURE: THE SCIENCE, LAW, AND POLICY OF CLIMATE-NEUTRAL AGRICULTURE 41 (2021); Jo-Anne McArthur, *Methane Emissions Are Driving Climate Change. Here's How to Reduce Them*, U.N. ENV'T PROGRAMME, (Aug. 20, 2021)

times more powerful than carbon dioxide.[42] But an average methane molecule only lasts in the atmosphere for about a decade, while carbon dioxide can persist for hundreds of years.[43] The potency of methane, combined with its shorter life in the atmosphere, creates a mitigation opportunity. As explained by the U.N. Environment Programme (UNEP): "[R]educing methane emissions now would have an impact in the near term and is critical for helping keep the world on a path to 1.5°C."[44] In light of both its emissions of climate super-pollutants and association with land use change, a "global phaseout" of animal agriculture over the next fifteen years "would have the same effect, through the end of the century, as a 68% reduction of CO_2 emissions."[45]

Nonetheless, animal agriculture has frequently benefitted from light or no environmental regulation around the world.[46] The United States is a particularly cogent example. In the climate realm, the United States has consistently and almost entirely exempted the animal agriculture industry from air pollution GHG regulation regimes.[47] Even in Europe—while ahead of the United States in addressing animal agriculture's climate impacts[48]—significant continent-wide policy has so far failed to address the climate harms of animal agriculture. Efforts to use the EU Industrial Emissions Directive (IED), which regulates pollutants from industrial facilities, to regulate GHG emissions from large-scale animal agriculture floundered in 2023 when industry lobbying resulted in the European Parliament removing all cattle farms and some targeted pig and poultry farms from the reach of the

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[hereinafter *UNEP Methane Emissions*], https://www.unep.org/news-and-stories/story/methane-emissions-are-driving-climate-change-heres-how-reduce-them.

[42] Forster et al., *supra* note 39, at 1017.

[43] *Overview of Greenhouse Gases*, U.S. ENV'T PROT. AGENCY, https://www.epa.gov/ghgemissions/overview-greenhouse-gases (Feb. 16, 2024); *Understanding Global Warming Potentials,* U.S. ENV'T PROT. AGENCY, https://www.epa.gov/ghgemissions/understanding-global-warming-potentials (Apr. 18, 2023); *UNEP Methane Emissions*, *supra* note 41.

[44] *UNEP Methane Emissions*, *supra* note 41; *see also* U.N. INTERGOV'TAL PANEL ON CLIMATE CHANGE, CLIMATE CHANGE 2023: SYNTHESIS REPORT 26 (Hoesung Lee & José Romero eds., 2023) [hereinafter IPCC SIXTH ASSESSMENT REPORT SYNTHESIS] ("Strong, rapid and sustained reductions in methane emissions can limit near-term warming and improve air quality by reducing global surface ozone (*high confidence*).").

[45] Michael B. Eisen & Patrick O. Brown, *Rapid Global Phaseout of Animal Agriculture Has the Potential to Stabilize Greenhouse Gas Levels for 30 Years and Offset 68 Percent of CO_2 Emissions This Century*, PLOS CLIMATE, Feb. 1, 2022, No. e0000010, at 2–3, 7, https://doi.org/10.1371/journal.pclm.0000010 (accounting for both the "emission reduction and biomass recovery" that would result from phaseout of animal agriculture).

[46] *See* Claire Regenstreif, *Animal Agricultural Exceptionalism in the 21st Century*, 37 J. ENV'T L. & LITIG. 249, 250 (2022); Charlotte E. Blattner & Odile Ammann, *Agricultural Exceptionalism and Industrial Animal Food Production: Exploring the Human Rights Nexus*, J. FOOD L. & POL'Y, Spring 2019, at 92, 117–18, 121–22; Alexander Zahar, *Agricultural Exceptionalism in the Climate Change Treaties*, 12 TRANSNAT'L ENV'T L. 42, 55–56 (2023).

[47] Ryan Levandowski, *Polluting 'til the Cows Come Home: How Agricultural Exceptionalism Allows CAFOs Free Range for Climate Harm*, 33 GEO. ENV'T L. REV. 151, 152–53 (2020).

[48] *See* discussion *infra* Part III.

regulation.[49] The decision to postpone the implementation of stronger animal agriculture emissions controls in the IED was recently identified as an "ambition gap" by the European Scientific Advisory Board on Climate Change,[50] an independent body established in 2021 by the European Climate Law to advise the EU on climate change.[51] Moreover, the removal of a reference from the EU 2040 Climate Roadmap to efforts to reduce non-carbon dioxide GHGs (primarily methane and nitrous oxide) in agriculture by at least 30% by 2040 was viewed by many as a capitulation to the industry.[52]

In addition to benefitting from regulatory exclusion and gaps, animal agriculture enjoys high levels of government support.[53] For example, a recent report from the European Scientific Advisory Board on Climate Change described how the EU Common Agricultural Policy's subsidization of "the livestock sector . . . is a direct subsidy for GHG-intensive food products and undermines the goal of having food products reflect their true costs."[54] Across the EU and United States, animal

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[49] *Questions and Answers on Revised EU Rules on Industrial Emissions*, EUR. COMM'N (Apr. 5, 2022), https://ec.europa.eu/commission/presscorner/detail/en/qanda_22_2239; Antonia Zimmerman, *EU Conservatives Score Big Win on Industrial Emissions Rules*, POLITICO (July 11, 2023), https://www.politico.eu/article/eu-conservative-big-win-industrial-emissions-directive.

[50] EUR. SCI. ADVISORY BD. ON CLIMATE CHANGE, TOWARDS EU CLIMATE NEUTRALITY: PROGRESS, POLICY GAPS, AND OPPORTUNITIES (ASSESSMENT REPORT 2024) 155 (2024) [hereinafter EU ASSESSMENT REPORT 2024], https://climate-advisory-board.europa.eu/reports-and-publications/towards-eu-climate-neutrality-progress-policy-gaps-and-opportunities.

[51] *About the Advisory Board*, EUR. SCI. ADVISORY BD. ON CLIMATE CHANGE, https://climate-advisory-board.europa.eu/about (last visited Mar. 8, 2024).

[52] *E.g.*, Maria Simon Arboleas, *EU Commission Backtracks on Agricultural Emissions Cuts*, EURACTIV (Feb. 6, 2024), https://www.euractiv.com/section/agriculture-food/news/eu-commission-backtracks-on-agricultural-emissions-cuts.

[53] Gordon, *supra* note 2 ("About a third of global public agricultural subsidies, which totaled $233 million in 2017, are for the production of meat, milk, or dairy—even though the livestock that feeds us is also responsible for around 15 percent of global greenhouse gas emissions. . . . In other words, governments are decidedly not trying to take away your burgers. . . ."); *see also* U.N. FOOD & AGRIC. ORG. ET AL., A MULTI-BILLION DOLLAR OPPORTUNITY: REPURPOSING AGRICULTURAL SUPPORT TO TRANSFORM FOOD SYSTEMS xvii (2021) ("[E]mission-intensive commodities (e.g. beef, milk, and rice) receive the most support worldwide, despite the potentially negative impacts on health as well as on climate change adaptation and mitigation, and the (relative) disincentives this support creates towards producing healthier and more nutritious foods, such as fruits and vegetables.").

[54] EU ASSESSMENT REPORT 2024, *supra* note 50, at 161–62; *see also id.* at 182 ("[T]he current CAP continues to financially support livestock production (policy inconsistency), which drives demand for land for feed production. . . . EU policies on agriculture should better reflect the need to maintain and expand the area of forests and wetlands for carbon sequestration purposes."); Elena Sánchez Nicolás & Carolin Sprick, *Dismay Over EU Plans to Keep Paying for Meat*, EUOBSERVER (May 29, 2022, 7:07 PM), https://euobserver.com/green-economy/ar0b815ce4 (analyzing EU Commission data and finding that the EU had spent €143 million to promote European meat products in last five years); *see also* Mose Apelblat, *Climate Change: Is the EU Doing Enough to Reduce Methane Emissions in Agriculture?*, BRUSSELS TIMES (May 7, 2023), https://www.brusselstimes.com/493849/climate-change-is-the-eu-doing-enough-to-reduce-

agriculture receives about one thousand times more government funding—including for research and development—than alternative products, even though it is dramatically more established.[55]

Meanwhile, global consumption of animal products continues to increase. Per the FAO, by 2030, global meat consumption will increase fourteen percent as compared to 2018–2020 levels.[56] Increasing consumption of animal products will increase their related GHG emissions (including the potential to undo any efficiency gains in production[57]) and exacerbate the many harms of the industry, including other environmental damage and harms to health, communities, and animals.[58]

III. GLOBAL MOMENTUM AND INTERNATIONAL SIGNALING

This Part describes emergent recognition from international and multinational bodies and in international agreements about the need to reduce GHG emissions from animal agriculture through dietary change. The first section provides a chronology of international and EU developments—with the EU highlighted because it is a leader in this area—and the second describes COP28 as an example both of progress and obstacles to change.

A. International and EU Activity

Widespread awareness of the significant contributions of animal agriculture to climate change goes back at least as far as the publication of the FAO report, *Livestock's Long Shadow*, in 2006.[59] The report did not shy away from animal agriculture's environmental impacts, noting in its opening lines that "[l]ivestock activities have significant impact on virtually all aspects of the environment, including air and climate change, land and soil, water and biodiversity" and that "[l]ivestock's impact on the environment is already huge, and it is growing and rapidly changing."[60] In the report, the FAO determined that animal agriculture "has such deep and wide-ranging environmental impacts that it should rank as one of the leading focuses for environmental policy" and estimated that the sector was responsible for 18% of all

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methane-emissions-in-agriculture (discussing the EU's commitment to the Global Methane Initiative, which does not reach agricultural emissions).

55 Vallone & Lambin, *supra* note 33, at 1213.

56 U.N. FOOD & AGRIC. ORG., OECD-FAO AGRICULTURAL OUTLOOK 2021–2030, at 164 (2021), https://doi.org/10.1787/19428846-en.

57 *See* discussion *infra* Section IV.E. Tech Fixes and Climate Efficiency Approaches

58 *See infra* notes 244–256 and accompanying text.

59 U.N. FOOD & AGRIC. ORG., LIVESTOCK'S LONG SHADOW: ENVIRONMENTAL ISSUES AND OPTIONS (2006) [hereinafter LIVESTOCK'S LONG SHADOW], https://www.fao.org/3/a0701e/a0701e.pdf.

60 *Id.* at 3.

global GHG emissions.[61] This was the first global emissions reckoning for the industry, which had not been evaluated as its own sector in any of the IPCC synthesis reports issued beginning in 1990.[62] These findings reportedly resulted in significant industry pushback on the FAO.[63] Several years later, the UNEP also commented on the environmental and climate profile of animal agriculture in a report aimed at identifying the highest impact goods: "Animal products, both meat and dairy, in general require more resources and cause higher emissions than plant-based alternatives."[64] In their reports, neither the FAO nor the UNEP explicitly called for a reduction in consumption of animal products as a part of the response to climate change.

Recent years have seen international bodies more willing to make that connection. In a 2018 report, the IPCC considered the differing impacts of global warming of 1.5ºC and 2.0ºC above preindustrial levels—concluding that the former was near certain to occur and the latter would be dramatically worse—along with GHG emission pathways to both scenarios.[65] The IPCC explicitly recognized the importance of reducing consumption of animal products—"particularly where consumption is higher than suggested human health guidelines"—as well as the uncertainty of the best policy pathways to achieve that end in the face of increasing consumption.[66] The report highlighted that "plant-based proteins" and "cultured meat" could "radically reduce agricultural and land-use emissions," "less resource-intensive diets" would reduce demand for land, and "[l]ower consumption of livestock products by 2050 could also substantially reduce deforestation and cumulative carbon losses."[67]

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[61] *Id.* at xxiv, 112.

[62] Viveca Morris & Jennifer Jacquet, *The Animal Agriculture Industry, US Universities, and the Obstruction of Climate Understanding and Policy*, CLIMATIC CHANGE, Mar. 2024, No. 41, at 2.

[63] Arthur Neslen, *Ex-Officials at UN Farming Body Say Work on Methane Emissions Was Censored*, GUARDIAN (Oct. 20, 2023), https://www.theguardian.com/environment/2023/oct/20/ex-officials-at-un-farming-fao-say-work-on-methane-emissions-was-censored; Arthur Neslen, *'The Anti-Livestock People Are a Pest': How UN Food Body Played Down the Role of Farming in Climate Change*, GUARDIAN (Oct. 20, 2023), https://www.theguardian.com/environment/2023/oct/20/the-anti-livestock-people-are-a-pest-how-un-fao-played-down-role-of-farming-in-climate-change; EMISSIONS IMPOSSIBLE, *supra* note 3, at 15; *see also* Susannah Savage et al., *The Global Power of Big Agriculture's Lobbying*, FIN. TIMES (Aug. 22, 2024), https://www.ft.com/content/5f4e0538-10a4-4c8f-bc3c-28f255f20f0b ("Henning Steinfeld, former head of the [FAO's] livestock analysis unit, says officials within the UN itself 'diminished' and 'defamed' his team for more than a decade after it published [*Livestock's Long Shadow*].").

[64] EDGAR G. HERTWICH ET AL., U.N. ENV'T PROGRAMME, ASSESSING THE ENVIRONMENTAL IMPACTS OF CONSUMPTION AND PRODUCTION: PRIORITY PRODUCTS AND MATERIALS 79 (2010).

[65] 2018 IPCC REPORT, *supra* note 27, at 4, 7–10, 12.

[66] *Id.* at 327 (internal citations omitted); *see also id.* at 382 (noting that the extent and feasibility of dietary shifts will "[d]epend[] on individual behavior, education, cultural factors and institutional support").

[67] *Id.* at 16, 112, 146; *see also id.* at 316 ("Shifts in dietary choices towards foods with lower emissions and requirements for land . . . could reduce emissions and increase adap-

Also in 2018, announcing the awarding of the Champions of the Earth Award in the Science and Innovation Category to the founders of two prominent plant-based meat companies, the UNEP issued a statement strikingly entitled "*Tackling the World's Most Urgent Problem: Meat*," and shared the awardees' views in these terms: "[O]ur use of animals as a food-production technology has brought us to the verge of catastrophe. . . . There is no pathway to achieve the Paris climate objectives without a massive decrease in the scale of animal agriculture . . . ."[68]

In 2019, the "EAT-*Lancet* Commission," a group of experts in human health, agriculture, political sciences, and sustainability, released an influential report.[69] The Commission described the effort as "the first attempt to set universal scientific targets for the food system that apply to all people and the planet."[70] The report concluded:

> Transformation to healthy diets by 2050 will require substantial dietary shifts. Global consumption of fruits, vegetables, nuts and legumes will have to double, and consumption of foods such as red meat and sugar will have to be reduced by more than 50%. A diet rich in plant-based foods and with fewer animal source foods confers both improved health and environmental benefits.[71]

Also in 2019, a joint report from the FAO and the World Health Organization (WHO) described "the combined health and environmental benefits of shifting towards a more plant-based diet."[72]

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tation options . . . ."); *see also* Cheikh Mbow et al., *Food Security*, *in* CLIMATE CHANGE AND LAND: AN IPCC SPECIAL REPORT ON CLIMATE CHANGE, DESERTIFICATION, LAND DEGRADATION, SUSTAINABLE LAND MANAGEMENT, FOOD SECURITY, AND GREENHOUSE GAS FLUXES IN TERRESTRIAL ECOSYSTEMS 437, 481 (Valérie Masson-Delmotte et al. eds., 2022) [hereinafter IPCC, CLIMATE CHANGE AND LAND] ("[A] dietary pattern that is higher in plant-based foods . . . and lower in animal-based foods is more health-promoting and is associated with lesser environmental impact (GHG emissions and energy, land, and water use) than is the current average 'meat-based' diet.").

[68] *Tackling the World's Most Urgent Problem: Meat*, U.N. ENV'T PROGRAMME: CHAMPIONS OF THE EARTH (Sept. 26, 2018), https://www.unep.org/championsofearth/news-and-stories/tackling-worlds-most-urgent-problem-meat (describing awarding of prize to Ethan Brown and Patrick O'Reilly Brown, founders of Beyond Meat and Impossible Foods, respectively).

[69] Walter Willett et al., *Food in the Anthropocene: The EAT*-Lancet *Commission on Healthy Diets from Sustainable Food Systems*, 393 LANCET 447 (2019); *see also* Ayesha I.T. Tulloch et al., *How the EAT*-Lancet *Commission on Food in the Anthropocene Influenced Discourse and Research on Food Systems: A Systematic Review Covering the First 2 Years Post-publication*, 11 LANCET GLOB. HEALTH e1125, e1133 (2023) (discussing popularity and impact of the report).

[70] EAT, SUMMARY REPORT OF THE EAT-*LANCET* COMMISSION 5 (2019), https://eatforum.org/eat-lancet-commission/eat-lancet-commission-summary-report.

[71] *Id.* at 3.

[72] U.N. FOOD & AGRIC. ORG. & WORLD HEALTH ORG., SUSTAINABLE HEALTHY DIETS: GUIDING PRINCIPLES 34 (2019), https://iris.who.int/bitstream/handle/10665/329409/9789241516648-eng.pdf.

In Europe, in September 2020, the European Commission recognized in a communication about its 2030 climate ambition that a "strong decrease of consumption of animal products for nutrition could potentially reduce emissions by more than 30 million tonnes by 2030."[73] The next month, in its strategy to reduce methane emissions, the Commission recognized that, "[g]iven the high share of methane emissions in agriculture that result from livestock, lifestyle and diet changes can also contribute significantly to reducing EU methane emissions."[74]

Then, in 2021, the European Parliament adopted its "Farm to Fork Strategy," which the European Commission described as "at the heart of the European Green Deal."[75] The Strategy aims to make food systems "fair, healthy and environmentally-friendly,"[76] recognizes both the health and environmental benefits of reducing meat consumption,[77] and commits to dedicating EU funds to research alternative proteins.[78] But advocates said that it was "deeply disappointing" that a call to end government spending on promoting meat production and consumption that had appeared in an earlier draft did not make it into the final strategy.[79] Moreover, as one European agriculture expert put it: "Remarkably, the EU Farm-to-Fork Strategy, while emphasizing the need to reduce methane and nutrient emissions from livestock, does not mention a reduction in total livestock numbers as either a goal or a policy option."[80]

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[73] *Stepping Up Europe's 2030 Climate Ambition: Investing in a Climate-Neutral Future for the Benefit of Our People*, at 5 n.2, COM (2020) 562 final (Sept. 17, 2020).

[74] *Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions on an EU Strategy to Reduce Methane Emissions*, at 3–4, COM (2020) 663 final (Oct. 14, 2020) [hereinafter *EU Strategy to Reduce Methane Emissions*]; *see also id.* at 11 (noting that, in addition to efficiency and technological improvements, further reductions in methane emissions could be achieved "by more sustainable diets").

[75] EUR. COMM'N, FARM TO FORK STRATEGY FOR A FAIR, HEALTHY AND ENVIRONMENTALLY-FRIENDLY FOOD SYSTEM 4 (2020) [hereinafter FARM TO FORK STRATEGY]. The European Green Deal is a set of policies that aims to make Europe the first climate-neutral continent by 2050. *The European Green Deal*, EUR. COMM'N, https://commission.europa.eu/strategy-and-policy/priorities-2019-2024/european-green-deal_en (last visited Oct. 12, 2024).

[76] FARM TO FORK STRATEGY, *supra* note 75, at cover.

[77] *Id.* at 14 ("Moving to a more plant-based diet with less red and processed meat and with more fruits and vegetables will reduce not only risks of life threatening diseases, but also the environmental impact of the food system.").

[78] *Id.* at 16.

[79] *European Commission Will Start Supporting Plant-Based Diets in New Farm to Fork Strategy, but 'Chickened Out' of Removing EU Funding for Meat Promotion*, HUMANE SOC'Y INT'L (May 20, 2020), https://www.hsi.org/news-resources/european-commission-supports-plant-based-diets-farm-to-fork-strategy.

[80] Daan Boezeman et al., *Less Livestock in North-Western Europe? Discourses and Drivers Behind Livestock Buyout Policies*, EUROCHOICES, Aug. 2023, at 4, 4 (internal citation omitted). As discussed below, four years on, the promise of the Farm to Form Strategy has largely not been realized. *See infra* note 286.

According to the UNEP's 2021 Global Methane Assessment, "the adoption of healthy diets (vegetarian or with a lower meat and dairy content)" is one of three key measures to reduce emissions from animal agriculture.[81] Also in 2021, at COP26 in Glasgow more than a hundred countries signed the "Global Methane Pledge," undertaking to reduce methane emissions by 30 percent by 2030.[82] But the Pledge took quite different approaches to the other two main sectoral sources of methane than it did to agriculture, calling for "all feasible reductions in the energy and waste sectors" but only "abatement of agricultural emissions through technology innovation as well as incentives and partnerships with farmers."[83] The signatories apparently were not willing to commit to "all feasible reductions" in emissions from agriculture.

A 2022 IPCC report on "Climate Change and Land" identified "a shift toward plant-based diets" as one of the top three options (along with reducing deforestation and food waste) to reduce emissions from agriculture, forestry, and other land use.[84] Less clearly, the IPCC's Sixth Assessment Report released in March 2023 stated that "unbalanced diets" contribute to "agricultural expansion," "increase[] ecosystem and human vulnerability and lead[] to competition for land and/or water resources."[85] The report also recognized that, along with other measures, shifting to "sustainable healthy diets" could "reduce ecosystem conversion, and methane and nitrous oxide emissions, and free up land for reforestation and ecosystem restoration."[86]

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[81] U.N. ENV'T PROGRAMME, GLOBAL METHANE ASSESSMENT 13 (2021) [hereinafter GLOBAL METHANE ASSESSMENT], https://www.ccacoalition.org/sites/default/files/resources//2021_Global-Methane_Assessment_full_0.pdf.

[82] *COP26: Together for Our Planet*, UNITED NATIONS: CLIMATE ACTION, https://www.un.org/en/climatechange/cop26 (last visited Oct. 14, 2024).

[83] GLOBAL METHANE PLEDGE (Nov. 22, 2023), https://www.globalmethanepledge.org/sites/default/files/documents/2023-11/Global%20Methane%20Pledge.pdf; *see also* CHANGING MARKETS FOUND., BLINDSPOT: HOW LACK OF ACTION ON LIVESTOCK METHANE UNDERMINES CLIMATE TARGETS 8 (2021) [hereinafter BLINDSPOT], https://changingmarkets.org/report/blindspot-how-lack-of-action-on-livestock-methane-undermines-climate-targets ("[T]he Global Methane Pledge . . . ignore[s] the potential to reduce methane emissions by addressing people's overconsumption of meat and dairy—where some of the biggest cuts in emissions can be achieved.").

[84] IPCC, CLIMATE CHANGE AND LAND, *supra* note 67, at 49; *see also* Mustafa Babiker et al., *Cross-sectoral Perspectives, in* CLIMATE CHANGE 2022: MITIGATION OF CLIMATE CHANGE 1279 (Priyadarshi R. Shukla et al. eds., 2022) ("[M]itigation actions need to go beyond food producers and suppliers to incorporate dietary changes and consumers' behavioural patterns . . . .").

[85] IPCC SIXTH ASSESSMENT REPORT SYNTHESIS, *supra* note 44, at 50. A prior 2022 IPCC report had defined "balanced diets" as "featur[ing] plant-based foods, such as those based on coarse grains, legumes, fruits and vegetables, nuts and seeds, and animal-source foods produced in resilient, sustainable, and low-greenhouse gas emissions systems." INTERGOV'TAL PANEL ON CLIMATE CHANGE, CLIMATE CHANGE 2022: IMPACTS, ADAPTATION AND VULNERABILITY 12 n.32 (Hans-Otto Pörtner et al. eds., 2022).

[86] IPCC SIXTH ASSESSMENT REPORT SYNTHESIS, *supra* note 44, at 29; *see also id.* at 106. The IPCC defines "[s]ustainable healthy diets" as "promot[ing] all dimensions of individuals' health and well-being; hav[ing] low environmental pressure and impact; [being] accessible, affordable, safe and equitable; [and] culturally acceptable . . . ." *Id.* at 29 n.53.

According to reporting after the release of the 2023 report, more direct references to the climate impacts of animal agriculture were removed from drafts after pressure from delegates from Brazil and Argentina (both major meat-producing and exporting countries).[87] In particular, a leaked draft had reportedly included much more precise and definitive language:

> A shift to diets with a higher share of plant-based protein in regions with excess consumption of calories and animal-source food can lead to substantial reductions in GHG emissions . . . . Plant-based diets can reduce GHG emissions by up to 50% compared to the average emission intensive Western diet.[88]

The European Commission's Agricultural Outlook for 2022–2032 evaluated the impacts of reducing farm animal density in Europe to comply with nitrogen pollution and habitat protection laws. The Commission concluded that reductions would reduce GHG emissions in the EU, and that such measures should be paired with complementary policies (including dietary changes, improved emissions efficiency, and trade measures) to prevent "leakage," i.e., European consumers importing more animal products to meet demand.[89] Interestingly, the analysis showed that farmer incomes would grow even as production declined, as a result of higher prices for animal products and reduced feed costs.[90]

In late 2023, the European Union announced that, through the European Innovation Council, it would spend €50 million in 2024 to help scale up alternative proteins including precision fermentation.[91] And lest it seem that the United States is lagging entirely behind international bodies and the European Union in acknowledging the role of dietary shifts in climate mitigation, in late 2023, the Fifth National Climate Assessment addressed food systems for the first time, notably

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87 Michael Thomas, *How Meat and Fossil Fuel Producers Watered Down the Latest IPCC Report*, DISTILLED (Mar. 23, 2023), https://www.distilled.earth/p/how-meat-and-fossil-fuel-producers; *see also* Mustafa Zia et al., *Brazil Once Again Becomes the World's Largest Beef Exporter*, U.S. DEP'T OF AGRIC. (July 1, 2019), https://www.ers.usda.gov/amber-waves/2019/july/brazil-once-again-becomes-the-world-s-largest-beef-exporter; Maximilian Heath, *Argentina to Loosen Restrictions on Beef Exports*, REUTERS (Dec. 9, 2021, 3:58 PM), https://www.reuters.com/markets/commodities/argentine-meat-industry-says-fatter-cows-may-help-end-export-impasse-with-2021-12-09 ("Argentina is a key global supplier of beef . . . .").

88 Thomas, *supra* note 87.

89 DIRECTORATE-GEN. FOR AGRIC. & RURAL DEV., EUR. COMM'N, EU AGRICULTURAL OUTLOOK: FOR MARKETS, INCOME AND ENVIRONMENT 2022–2032, at 48, 53 (2022), https://agriculture.ec.europa.eu/system/files/2023-04/agricultural-outlook-2022-report_en_0.pdf.

90 *Id.* at 48, 52.

91 Cate Lawrence, *The EU Invests €50M to Help Startups Scale Up Alternative Proteins*, TECH EU (Dec. 15, 2023), https://tech.eu/2023/12/15/eics-eur50m-challenge-scaling-up-alternative-protein-production-in-europe.

acknowledging that shifts to plant-based and cultivated meats "offer the potential to reduce GHG emissions."[92]

In a January 2024 report on EU progress toward climate neutrality, the European Scientific Advisory Board on Climate Change included the following in its key recommendations:

> The [EU common agricultural policy] CAP should be better aligned with EU climate goals . . . [including by] shifting CAP support away from emission-intensive agricultural practices, including livestock production, and towards lower-emitting products . . . .
>
> [T]he EU should strengthen measures to encourage healthier, more plant-based diets, and develop a strategy for a just transition to a food system consistent with climate neutrality.[93]

The Board also noted that the EU's 2018 Long-Term Strategy was not ambitious enough in the timelines it considered for dietary change, and that "further (and faster) reductions in animal product consumption would be recommended," both for climate and health reasons.[94]

Most recently, a groundbreaking 2024 report from the World Bank on emissions from the agrifood system encouraged high-income countries to "decrease consumer demand for emissions-intensive, animal-source foods by fully pricing environmental and health externalities, repurposing subsidies, and promoting sustainable food options."[95] A lead author of the report commented that the recommendation is decidedly *not* to shift support away from agriculture, but rather to "use it in more effective ways that actually contribute to healthier diets and a healthier planet."[96]

In addition to the climate context, calls for dietary change away from animal products have emerged in relation to other critical and related global issues, most prominently public health and biodiversity. Such guidance is based not only on the specific risks that dietary change could help address (for example, zoonotic disease for public health and

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92 Carl H. Bolster et al., *Chapter 11: Agriculture, Food Systems, and Rural Communities*, *in* FIFTH NATIONAL CLIMATE ASSESSMENT 11-1, 11-12 (Allison Crimmins et al. eds., 2023) (internal citations omitted); Marianne Lavelle et al., *Report Charts Climate Change's Growing Impact in the US, While Stressing Benefits of Action*, INSIDE CLIMATE NEWS (Nov. 14, 2023), https://insideclimatenews.org/news/14112023/biden-national-cliimate-assessment.

93 EU ASSESSMENT REPORT 2024, *supra* note 50, at 11–12; *see also id.* at 153–54, 173, 179.

94 *Id.* at 173.

95 SUTTON ET AL., *supra* note 28, at 12. The World Bank estimated that prices that "reflect the true health, climate, and environmental costs of meat" would be 20%–60% higher than current prices. *Id.* at 13.

96 Agnieszka de Sousa, *Cut Aid for Livestock Farms to Help Climate Fight, World Bank Says*, BLOOMBERG (May 6, 2024), https://www.bloomberg.com/news/articles/2024-05-07/cut-aid-for-livestock-farms-to-help-climate-fight-world-bank-says.

deforestation for biodiversity[97]), but also because climate change will itself exacerbate public health and biodiversity risks.[98] In one prominent example, the Kunming-Montreal Global Biodiversity Framework (GBF), adopted by the parties to the Convention on Biological Diversity in 2022, requires establishment of national targets to encourage sustainable consumption choices and, "by 2030, [to] reduce the global footprint of consumption in an equitable manner."[99] Focusing on the food system in its plan for implementation of the GBF, the International Union for Conservation of Nature, a membership group of government and civil society organizations that advises and works at the intersection of development, economics, and conservation, called for "[m]inimizing impacts of food production on species by reducing consumption of animal protein . . . especially in developed countries [to limit] negative impacts on wild species."[100]

B. COP28

The meeting of the Conference of the Parties to the U.N. Framework Convention on Climate Change in Dubai in November 2023 (COP28), which included a flurry of activity around food systems, is a prominent, recent example of the growing energy around this issue on the global stage.[101] While this new focus was laudable, the fact that food systems had never before received this level of attention—despite their

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97 Matthew N. Hayek, *The Infectious Disease Trap of Animal Agriculture*, SCI. ADVANCES, Nov. 2022, No. eadd6681, at 3–4; Marta Kozicka et al., *Feeding Climate and Biodiversity Goals with Novel Plant-Based Meat and Milk Alternatives*, NATURE COMMC'NS., Sept. 12, 2023, No. 5316, at 6–7.

98 *E.g.*, Howard Frumkin et al., *Climate Change: The Public Health Response*, 98 AM. J. PUB. HEALTH 435, 435 (2008) (discussing potential and already experienced negative impacts of climate change on human health); K.R. Shivanna, *Climate Change and Its Impact on Biodiversity and Human Welfare*, 88 PROC. INDIAN NAT'L SCI. ACAD. 160, 164–66 (discussing climate change's detrimental effects on biodiversity).

99 Conference of the Parties to the Convention on Biological Diversity, *Kunming-Montreal Global Biodiversity Framework*, ¶ 13, U.N. Doc. CBD/COP/DEC/15/4, annex (Dec. 19, 2022).

100 INT'L UNION FOR CONSERVATION OF NATURE, GLOBAL SPECIES ACTION PLAN: SUPPORTING IMPLEMENTATION OF THE KUNMING-MONTREAL GLOBAL BIODIVERSITY FRAMEWORK 37 (2023), https://portals.iucn.org/library/node/51362; *Int'l Union for Conservation of Nature (IUCN)*, U.N. ENV'T PROGRAMME, https://www.unep.org/explore-topics/oceans-seas/what-we-do/working-regional-seas/partners/international-union (last visited Oct. 17, 2024).

101 One might wonder whether the prominence of food at COP28 was driven, at least in part, by the interest of its host country and president, Sultan Al Jaber, who is the CEO of the United Arab Emirates national fuel company, in diverting attention away from fossil fuels. Fiona Harvey, *Cop28 President Denies on Eve of Summit He Abused His Position to Sign Oil Deals*, GUARDIAN (Nov. 29, 2023, 12:17 PM), https://www.theguardian.com/environment/2023/nov/29/cop28-president-denies-on-eve-of-summit-he-abused-his-position-to-sign-oil-deals. Nonetheless, as described herein, COP28 was the most significant COP to date for food.

significant emissions—is illustrative of the lack of attention to the climate impacts of agriculture.[102]

1. COP28: Progress

During the second day of the meeting, the COP president announced the Emirates Declaration on Sustainable Agriculture, Resilient Food Systems and Climate Action, which more than 160 countries have signed.[103] The nonbinding declaration acknowledges that food systems "must urgently adapt and transform" to respond to the climate crisis.[104] Signatory countries committed to "[m]aximize the climate and environmental benefits—while containing and reducing harmful impacts—associated with agriculture and food systems [including] by . . . shifting from higher greenhouse gas-emitting practices to more sustainable production and consumption approaches . . . ."[105] The Declaration tasks governments, for the first time, with including agriculture in their Nationally Determined Contributions[106] by COP30 in 2025,[107] and commits countries to improve their approaches to bolstering animal and ecosystem health within agriculture and food systems.[108]

In a short video message prepared for COP28, WHO Director-General Tedros Adhanom Ghebreyesus recognized that food systems are harming people and the planet, and noted their significant climate

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[102] *See supra* text accompanying notes 34–36; *see also, e.g.*, Jan Dutkiewicz, *The Comforting Lie of Climate-Friendly Meat*, NEW REPUBLIC (Dec. 14, 2023) [hereinafter Dutkiewicz, *The Comforting Lie of Climate-Friendly Meat*], https://newrepublic.com/article/177575/never-trust-green-meat ("Given the urgency of the climate crisis, one would think that tackling the single biggest source of food-sector emissions would have been central to serious climate discussions for the past decade and a half.").

[103] *Declaration on Sustainable Agriculture, Resilient Food Systems, and Climate Action*, COP28 UAE [hereinafter COP28 UAE DECLARATION], https://www.cop28.com/en/food-and-agriculture (last visited Oct. 20, 2024); Daphne Ewing-Chow, *COP28 Leaders Transforming Food Systems in Face of Climate Change*, FORBES (Dec. 2, 2023, 3:25 AM), https://www.forbes.com/sites/daphneewingchow/2023/12/02/cop28-leaders-transforming-food-systems-in-face-of-climate-change.

[104] COP28 UAE DECLARATION, *supra* note 103.

[105] *Id.*

[106] *All About the NDCs*, U.N.: CLIMATE ACTION, https://www.un.org/en/climatechange/all-about-ndcs (last visited Oct. 11, 2024) (explaining that Nationally Determined Contributions, or NDCs, are a requirement of the Paris Agreement under which each party must create a climate action plan to reduce emissions and adapt to the effects of climate change, and update the plan every five years).

[107] SUTTON ET AL., *supra* note 28, at 18 ("147 of 167 second-round NDCs include [agriculture, food systems and/or land use] in their mitigation commitments."); Kenny Torrella, *There's Less Meat at the UN's COP28 Climate Talks. But There's Plenty of Bull.*, VOX (Nov. 30, 2023, 6:30 AM), https://www.vox.com/future-perfect/2023/11/30/23981529/cop28-meat-livestock-dairy-farming-plant-based-united-nations-dubai-uae (noting that all countries that already have agriculture mitigation NDCs are low- and middle-income countries—with relatively less animal product consumption).

[108] COP28 UAE DECLARATION, *supra* note 103.

impacts. Returning to the message of the WHO's 2019 report,[109] he called for transforming food systems by "shifting toward healthier, diversified, and more plant-based diets."[110]

During Food, Agriculture and Water Day—the first COP day ever dedicated to food systems[111]—the FAO announced its first "Roadmap" to achieve food security[112] without breaching the Paris Agreement goals.[113] The Roadmap addressed the differing climate impacts of food and the need for dietary change as follows: "High consumption of food products with high GHG footprints in some locations contribute unnecessarily to the emissions of agrifood systems. . . . The issue is to know not 'if' diets should change—for they absolutely must for human and planetary health—but how to obtain these results."[114] The Roadmap also recognized the need to consider environmental factors in national dietary guidelines and to utilize public food procurement programs to achieve climate goals.[115]

Also during COP28, references to food systems were included in the first-ever Global Stocktake of progress since the 2015 Paris Agreement,[116] although only after pressure from civil society and only in the adaptation (rather than mitigation[117]) section and in general terms.[118] In addition, UNEP released a report on the potential impacts

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109 FAO & WORLD HEALTH ORG., *supra* note 72.

110 World Health Org., *Our Food Systems Are Harming the Health of People and Planet*, YOUTUBE, at 0:40 (Dec. 21, 2023), https://www.youtube.com/watch?v=kHXJ5O5EDIc.

111 Brown & Hill, *supra* note 8.

112 Sustainable Development Goal 2 (SDG2), "Zero Hunger," aims for an end to hunger by 2030. *Goal 2: Zero Hunger*, U.N. SUSTAINABLE DEVELOPMENT GOALS, https://www.un.org/sustainabledevelopment/hunger (last visited Oct. 14, 2024).

113 U.N. FOOD & AGRIC. ORG., ACHIEVING SDG2 WITHOUT BREACHING THE 1.5C THRESHOLD: A GLOBAL ROADMAP 1–2 (2023) [hereinafter FAO ROADMAP], https://www.fao.org/interactive/sdg2-roadmap/assets/3d-models/inbrief-roadmap.pdf.

114 *Id.* at 19; *see also id.* at 1 ("Providing healthy food for all, today and tomorrow, is crucial; as is aligning agrifood systems transformation with climate actions.").

115 *Id.* at 19–21.

116 *Why the Global Stocktake Is Important for Climate Action This Decade*, UNFCCC, https://unfccc.int/topics/global-stocktake/about-the-global-stocktake/why-the-global-stocktake-is-important-for-climate-action-this-decade (last visited Oct. 13, 2024).

117 *Cf.* SUTTON ET AL., *supra* note 28, at 2 ("[A]ccording to scientists, we cannot adapt our way out of the climate crisis, and now is the time to put agriculture and food at the top of the mitigation agenda. If not, the world will be unable to ensure a livable future for future generations." (internal quotation and citation omitted)).

118 Silvia Mantilla, *Hope amid Challenges: Key Outcomes & Missed Opportunities at COP28*, WORLD FED'N FOR ANIMALS (Dec. 17, 2023), https://wfa.org/hope-amid-challenges-key-outcomes-missed-opportunities-at-cop28; *Good COP, Bad COP: Brighter Green's Take on COP28*, BRIGHTER GREEN (Dec. 20, 2023) [hereinafter *Good COP, Bad COP*], https://mailchi.mp/brightergreen/end-of-year-2023 (both noting that, before advocacy by environmental and animal NGOs, food systems seemed likely to be left out of the Global Stocktake altogether). The Global Stocktake calls for "the implementation of integrated, multisectoral solutions, such as . . . sustainable agriculture [and] resilient food systems," and for "[a]ttaining climate-resilient food and agricultural production and supply and distribution of food, as well as increasing sustainable and regenerative production and equitable access to adequate food and nutrition for all." Conference of the Parties Serving as the Meeting of

of meat and dairy alternatives.[119] A "key finding" of the report was that "[n]ovel plant-based meat, cultivated meat, and fermentation-derived foods show potential for reduced environmental impacts compared to many conventional [animal-sourced foods]. They also show promise for reduced risk of zoonoses and antimicrobial resistance . . . ."[120]

Last but not least in terms of pragmatic impact, following advocacy by youth groups and NGOs, the COP president adopted a "Climate Conscious Catering" plan with the stated goal of having two-thirds of the food served be vegan or vegetarian.[121] COP28 also featured a "Food for Climate Pavilion" and more than 650 food-related events.[122]

2. COP28: Critiques

While all of these COP firsts are undoubtedly steps forward, many are skeptical of their impact and seriousness. Environmental writer and activist George Monbiot pointedly observed that COP28 "was meant to be the first climate summit at which the impacts of the food system were properly considered. But by the time 120 meat and dairy lobbyists had done their worst, nothing meaningful came out of it."[123] Indeed, the meat and dairy industries reportedly had at least 120 delegates present in Dubai, about three times as many as had attended the COP the year before in Egypt.[124]

Another damning assessment of the transformative value of COP28 for animal agriculture emissions was published in the U.S. industry publication *Meatingplace*, which noted the lack of concrete outcomes: "Discussing the transition to plant-based meat and dairy was on the agenda during COP28, but as the annual event wraps up, the

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the Parties to the Paris Agreement, *Decision 1/CMA.5: Outcome of the First Global Stocktake*, ¶¶ 55, 63(b), U.N. Doc. FCCC/PA/CMA/2023/16/Add.1 (Mar. 15, 2024).

119 Press Release, U.N. Env't Programme, Novel Meat and Dairy Alternatives Could Help Curb Climate-Harming Emissions (Dec. 8, 2023), https://www.unep.org/news-and-stories/press-release/novel-meat-and-dairy-alternatives-could-help-curb-climate-harming.

120 UNEP WHAT'S COOKING?, *supra* note 36, at viii.

121 *Good COP, Bad COP, supra* note 118. Compare this to COP24 in 2018, where plant-based options were less common than meat and dairy dishes, which included beef with smoked bacon, gnocchi with ham, and cheeseburgers. FARM FORWARD ET AL., THE CLIMATE COST OF FOOD AT COP24 1 (2018), https://www.biologicaldiversity.org/programs/population_and_sustainability/sustainability/pdfs/COP24-menu-analysis-fact-sheet.pdf; *see also* Torrella, *supra* note 107 (discussing how COP28's catering decision marked a notable change from past, meat-heavy menus).

122 Philip Lymbery, *COP28 Climate Change Summit Saw Landmark Declaration that Should Dramatically Affect What We Eat*, SCOTSMAN (Dec. 15, 2023), https://www.scotsman.com/news/opinion/columnists/cop28-climate-change-summit-saw-landmark-declaration-that-should-dramatically-affect-what-we-eat-philip-lymbery-4445538; *Good COP, Bad COP, supra* note 118.

123 George Monbiot, *Call Me All the Names You Want—I Won't Stop Telling the Truth About Livestock Farming*, GUARDIAN (Dec. 14, 2023, 7:33 AM EST), https://www.theguardian.com/commentisfree/2023/dec/14/livestock-farming-soy-soyboy.

124 Rachel Sherrington et al., *Big Meat and Dairy Delegates Triple at COP28*, DESMOG (Dec. 8, 2023), https://www.desmog.com/2023/12/08/big-meat-dairy-delegates-triple-cop28.

conversation doesn't seem to have inspired any actual change."[125] The publication also observed that the FAO Roadmap "focused more on incremental improvements to the current food system without moves to change the animal agriculture sector or promote a move toward alt-meat and -dairy products."[126] Specifically as to the Declaration issued during the second day of COP28,[127] critics pointed out that its language "sidestepped" the "contentious issue" of meat consumption.[128]

Many observers were particularly critical of the shortcomings of the Roadmap issued by the FAO on Food Day,[129] noting that it did not adequately address the need for meat reduction, focused instead on technological fixes[130] and "intensified productivity,"[131] and "fail[ed] to express the urgency of reducing meat and dairy consumption and production to meet the targets set by the Paris climate agreement."[132] As observed by one expert in response to the Roadmap:

> This current draft puts a huge emphasis on incremental changes to the current industrial food system. But this is a flawed system that is wrecking nature, polluting the environment, and starving millions of

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125 Melissa Sue Sorrells, *Push for Meat Reduction MIA in COP28 Resolutions*, MEATINGPLACE (Dec. 12, 2023), https://www.meatingplace.com/Industry/News/Details/112595?allowguest=true.

126 *Id.*; *see also* Rachel Sherrington, *US Meat Lobby Delighted at 'Positive' Prospects for Industry After Cop28*, GUARDIAN (Apr. 8, 2024), https://www.theguardian.com/environment/2024/apr/08/us-meat-lobby-delighted-at-positive-prospects-for-industry-after-cop28.

127 *See supra* notes 103–108 and accompanying text.

128 Carissa Wong & Nature Magazine, *World Leaders Agree to a Climate Deal on Food for the First Time*, SCI. AM. (Dec. 11, 2023), https://www.scientificamerican.com/article/world-leaders-agree-to-a-climate-deal-on-food-for-the-first-time.

129 *See supra* notes 113–115 and accompanying text.

130 Dutkiewicz, *The Comforting Lie of Climate-Friendly Meat*, *supra* note 102; Statement, Animal Prot. Denmark et al., *A Collective Call for a Holistic Food Systems Approach in FAO's Roadmap*, WORLD FED'N FOR ANIMALS (Dec. 11, 2023), https://wfa.org/a-collective-call-for-a-holistic-food-systems-approach-in-faos-roadmap; Monbiot, *supra* note 123.

131 FAO ROADMAP, *supra* note 113, at 6.

132 Brown & Hill, *supra* note 8 (quoting Stephanie Feldstein, Center for Biological Diversity); *see also* Cleo Verkuijl et al., *FAO's 1.5°C Roadmap for Food Systems Falls Short*, 5 NATURE FOOD 264, 264–65 (2024). Comments by the FAO's Chief Economist Maximo Torero also garnered critical responses. Referring to the recommendation in the Roadmap that animal production be intensified "in relevant locations," Torero "said the way forward was for countries that are 'very efficient in producing livestock,' such as the Netherlands and New Zealand, to produce more meat and dairy and then ship those products across the world." Susannah Savage, *Ramp Up Meat Production to Address Health Challenge in Poorer Countries*, FIN. TIMES (Dec. 10, 2023), https://www.ft.com/content/2eb93884-0aa3-4590-98ec-5b15cc1d9f44. George Monbiot queried in response:

> Could he really be unaware that both these countries have been thrown into severe ecological and political crisis by the scale of their livestock industries? Yet now he wants them to produce even more—and for poorer nations to become dependent on these imports? Greetings to our visitor from Planet Meat.

Monbiot, *supra* note 123.

> people. . . . The next rounds of this process will need to go much further in proposing a real transformation of the status quo . . . .[133]

Immediately following the COP, the FAO released *Pathways Towards Lower Emissions*, a report analyzing options to mitigate the GHG impact of animal agriculture.[134] Experts and advocates criticized the report on a number of bases, including its focus on productivity and efficiency improvements, as well as for minimizing and questioning the positive climate impacts of dietary changes.[135] Two scientists whose studies were referenced in the report sent a letter to the FAO, requesting a retraction and stating that the report "seriously distort[ed]" their findings and underestimated the climate mitigation potential of dietary change.[136]

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While progress has thus been limited and imperfect, after a long lag following the FAO's first analysis of the climate harms of animal agriculture in 2006, since 2018 a picture begins to emerge of growing calls on the international stage and in the EU for reduced consumption of animal products in response to the climate crisis.

IV. POLICY OPTIONS AND EXAMPLES

What options are available to leaders who would follow this international guidance and signaling? In fact, there are many policies that could reduce the climate harms of animal agriculture. Not only are these policies known and quite well understood,[137] as discussed in this Part, they are each currently being tried or considered somewhere in the world.

Notably, this Part does not include examples of mandatory limitations on animal agriculture's emissions via regulation. At present,

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133 Fiona Harvey, *UN Sets Out Roadmap to Combat Global Hunger amid Climate Crisis*, GUARDIAN (Dec. 10, 2023), https://www.theguardian.com/environment/2023/dec/10/un-sets-out-roadmap-to-combat-global-hunger-amid-climate-crisis (quoting Emile Frison, member of the thinktank International Panel of Experts on Sustainable Food Systems). Despite the Roadmap's limitations, the same expert also acknowledged: "The FAO should be applauded for this first step in laying out a plan" to eliminate hunger and address the GHG emissions from the food system. *Id.*

134 FOOD & AGRIC. ORG. OF THE U.N., PATHWAYS TOWARDS LOWER EMISSIONS: A GLOBAL ASSESSMENT OF THE GREENHOUSE GAS EMISSIONS AND MITIGATION OPTIONS FROM LIVESTOCK AGRIFOOD SYSTEMS (2023), https://www.fao.org/3/cc9029en/cc9029en.pdf.

135 *E.g.*, Jessica Bridgers, *New FAO Report Provides Entry Points for Animal Advocates but also Poses Risks*, WORLD FED'N FOR ANIMALS (Dec. 20, 2023), https://wfa.org/new-fao-report-provides-entry-points-for-animal-advocates-but-also-poses-risks.

136 Letter from Paul Behrens, Leiden Univ. & Matthew Hayek, New York Univ., to Thanawat Tiensin, Dir. of Animal Prod. & Health Div., FAO (Apr. 9, 2024), https://www.universiteitleiden.nl/binaries/content/assets/science/cml/essays/retraction-request-pathways-to-lower-emissions.pdf.

137 *E.g.*, Gordon, *supra* note 2 ("One day, if governments really do come for your burgers, they will do it by expanding the policies for phasing out polluting [animals] that we are already familiar with today.").

no country is limiting GHG emissions from animal agriculture through caps or other such mechanisms.[138] This is not surprising, as it is only relatively recently that such limits are being imposed by some countries on emissions from the largest source of GHG emissions: fossil fuels.[139] While there is an increasing focus around the world on limiting methane emissions—exemplified by the contrasting approaches in the Global Methane Pledge discussed above[140]—the early mandatory methane regulations apply to the energy sector and not to animal agriculture.[141] This is despite the fact that, as discussed above, animal agriculture is one of the most significant sources of anthropogenic methane.[142] Even *disclosure* of supply chain GHG emissions from animal agriculture is, for the most part, not required or provided at present.[143]

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138 *See supra* notes 46–52 and accompanying text.

139 *E.g.*, Rosie Frost, *The End of Fossil Fuels: Which Countries Have Banned Exploration and Extraction?*, EURONEWS (Aug. 12, 2021), https://www.euronews.com/green/2021/08/12/the-end-of-fossil-fuels-which-countries-have-banned-exploration-and-extraction; Editorial, *The EPA Sends a Powerful Signal on Ending Fossil Fuels*, 618 NATURE 433 (2023), https://www.nature.com/articles/d41586-023-01825-0 (discussing proposed U.S. Environmental Protection Agency rule that would force fossil-fuel power plants to reduce their emissions).

140 *See supra* notes 82–83 and accompanying text.

141 Regulation 2024/1787 of the European Parliament and of the Council of 13 June 2024 on the Reduction of Methane Emissions in the Energy Sector and Amending Regulation 2019/942, 2024 O.J. (L) at 13–14; Press Release, U.S. Env't Prot. Agency, Biden-Harris Administration Finalizes Standards to Slash Methane Pollution, Combat Climate Change, Protect Health, and Bolster American Innovation (Dec. 2, 2023), https://www.epa.gov/newsreleases/biden-harris-administration-finalizes-standards-slash-methane-pollution-combat-climate (announcing new rule that will limit methane emissions from oil and gas).

142 *See supra* notes 41–45 and accompanying text.

143 Georgina Gustin & Phil McKenna, *Reducing Methane from Livestock Is Critical for Stabilizing the Climate, but Congress Continues to Block Farms from Reporting Emissions Anyway*, INSIDE CLIMATE NEWS (Dec. 22, 2023) ("We do have emissions estimating methodologies, which you can use if you know the number of animals and which manure management strategy is being used. But we don't even know how many animals are on these farms." (quoting a senior manager at environmental group Friends of the Earth)). At COP28, promises by six major dairy multinationals to disclose their methane emissions and develop methane action plans by 2024 were notable as far ahead of the industry norm. Leah Douglas, *COP28 Summit: Global Dairy Companies Join Alliance to Cut Methane*, REUTERS (Dec. 5, 2023), https://www.reuters.com/sustainability/climate-energy/global-dairy-companies-announce-alliance-cut-methane-cop28-2023-12-05. This will change, however, as new reporting requirements passed in the EU, California, and elsewhere begin to take effect and impose disclosure requirements (including Scope 3 supply chain emissions) on large animal agriculture companies and their business partners. Amanda Carter, *Corporate Climate Disclosure Has Passed a Tipping Point. Companies Need to Catch Up*, WORLD RES. INST. (May 6, 2024), https://www.wri.org/insights/tipping-point-for-corporate-climate-disclosure.

A. Public Relations and Information: Advertising Bans, Climate Labeling, and Confronting Industry Deception

One province and three cities in the Netherlands—first Haarlem in 2022, followed by the cities of Bloemendaal and Utrect and the province of Noord-Holland in 2023—are the first jurisdictions in the world to have banned meat and dairy advertising for climate reasons. The bans will apply to advertising spaces owned by the municiplaties, such as bus stops and billboards, and will take time to come into force (either because they have phase-in dates or will honor current contracts).[144] None of the bans are limited to meat and dairy; they also include other damaging industries and products such as fossil fuels, combustion engines, airline travel, alcohol, and gambling.[145]

A statement from the city of Bloemendaal explained that meat and dairy are included in the ban as part of necessary actions to reduce GHG emissions and deforestation.[146] When asked for the reasoning behind the ban, the leader of the Party for the Animals who had proposed it explained: "The main reason is that meat production leads to climate change. . . . Another reason is animal welfare."[147] A professor of sustainability from the University of Amsterdam observed that, while the bans may not be expected to directly change behavior, they have norm-setting power and can "stimulate the social debate."[148] As a case in point, he noted that the bans have been discussed well outside of the municipalities, indeed all over the world.[149]

In addition to such advertising limits, governments can set affirmative requirements for climate labeling on foods and also help police misleading claims. For example, in its Farm to Fork Strategy, the European Commission called for review of voluntary green claims and to creating a sustainability labelling framework to include climate impacts.[150] Similarly, in its Roadmap, the FAO recommends

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144 *Dutch Municipalities to Ban Meat and Dairy Ads in Public Spaces*, VEGCONOMIST (Nov. 6, 2023) [hereinafter *Dutch Municipalities to Ban Meat Ads*], https://vegconomist.com/politics-law/dutch-municipalities-ban-meat-dairy-ads-public-spaces; *Noord-Holland to Ban Ads for Meat and Fossil Fuels from Bus Shelters*, DUTCH NEWS (Jan. 5, 2023), https://www.dutchnews.nl/2023/01/noord-holland-to-ban-ads-for-meat-and-fossil-fuels-from-bus-shelters; *More Municipalities Banning Meat, Air Travel Ads in Bus Shelters*, NL TIMES (Nov. 16, 2023) [hereinafter *More Municipalities Banning Meat*], https://nltimes.nl/2023/11/16/municipalities-banning-meat-air-travel-ads-bus-shelters (explaining that most municipalities' bans will "take effect when existing contracts expire").

145 *Dutch Municipalities to Ban Meat Ads*, *supra* note 144; *More Municipalities Banning Meat, supra* note 144.

146 *Dutch Municipalities to Ban Meat Ads*, *supra* note 144.

147 *More Municipalities Banning Meat, supra* note 144 (quoting Maarten van Heuven).

148 *Id.*

149 *Id.*; *see also* Samantha Dixon, *No More Burger Ads: These Dutch Cities Are Going Vegetarian*, DUTCHREVIEW (Nov. 17, 2023), (explaining that whether or not the bans will reduce meat consumption is beside the point: "This is a way to convey a message. As a municipality, you make a statement with this." (quoting Sjoukje Goldman, a researcher in sustainable marketing at the Amsterdam University of Applied Sciences)).

150 FARM TO FORK STRATEGY, *supra* note 75, at 14.

improvements to food labeling to inform consumers of the environmental and social impacts of products.[151]

Governments are also starting to bring litigation to enforce consumer protection laws against animal agriculture companies that mislead the public about their climate impacts. In Sweden, the consumer protection agency successfully sued Arla Foods, a major dairy producer, obtaining an injunction preventing the company from continuing to pronounce that its dairy products have a "net-zero climate footprint."[152] Similarly, in a landmark U.S. lawsuit against the meat giant JBS, the New York State Attorney General alleges that JBS's "net zero by 2040" commitment is not only misleading to the public, but perhaps even impossible at JBS's current levels of production.[153]

B. Positive Supports: Shifting Subsidies, Food System Transition Plans, Dietary Guidelines, and Procurement

Most fundamentally, governments can shift subsidies and supports from animal agriculture to non-animal foods.[154] The industry is heavily subsidized around the world, with nearly a third of global agricultural support measures going to meat, milk, and other dairy production.[155] As discussed above, the World Bank has recently called for a shift of subsidies from high-emitting animal foods to alternatives,[156] and reformers decried the failure of the EU's Farm to Fork Strategy to end government subsidization of meat production and consumption.[157] At an EU meeting in late 2023, the Netherlands Minister of Agriculture, Nature, and Food Quality argued that, in line with its sustainability commitments, the European Union should stop providing subsidies for meat production.[158]

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151 FAO ROADMAP, *supra* note 113, at 20.

152 Andy Coyne, *Swedish Court Bans Arla's Net-Zero Advertising Claim*, JUST FOOD (Feb. 6, 2023), https://www.just-food.com/news/swedish-court-bans-arlas-net-zero-advertising.

153 Press Release, Letitia James, N.Y. State Att'y Gen., Attorney General James Sues World's Largest Beef Producer for Misrepresenting Environmental Impacts of Their Products (Feb. 28, 2024), https://ag.ny.gov/press-release/2024/attorney-general-james-sues-worlds-largest-beef-producer-misrepresenting.

154 *E.g.*, Vallone & Lambin, *supra* note 33, at 1221 ("[T]he lack of support to alternative technologies at a level sufficient to allow them to compete on the food market against a well-supported incumbent system [is] symptomatic of a sociotechnical system still resisting fundamental systemic changes.").

155 *See* Marco Springmann & Fabian Freund, *Options for Reforming Agricultural Subsidies from Health, Climate, and Economic Perspectives*, NATURE COMMC'NS, Jan. 10, 2022, No. 82, at 2 (2022) (analyzed by final use, 22% of agricultural support measures in 2017 were used for meat products and 10% for milk and dairy products).

156 SUTTON ET AL., *supra* note 28, at 13.

157 *See supra* notes 79–80 and accompanying text.

158 Jan Braakman, *Adema: Geen EU-Geld Naar Promotie Vlees*, BOERDIREJ (Nov. 2, 2023), https://www.boerderij.nl/adema-geen-eu-geld-naar-promotie-vlees; Hugo Struna, *Eleven EU Countries Call for More 'Flexibility' on CAP's Fallow Land Rules*, EURACTIV (Nov. 21, 2023), https://www.euractiv.com/section/agriculture-food/news/eleven-eu-

Breaking new ground, several countries have announced food system transition plans of varying ambition levels that seek to promote plant-based eating through a collection of policy approaches. For example, Taiwan has taken important steps in a 2023 climate law calling for government promotion of low-carbon diets, including plant-based and local foods and reduction of food waste.[159] Subsequent legislative resolutions in Taiwan also recognized the climate impact of dietary choices and that environmental impacts should be considered when developing dietary guidelines.[160] A private-public partnership in the Netherlands is developing a policy aimed at doubling consumption of legumes by 2030.[161] In late 2023, South Korea announced a national plant-based food promotion plan, describing development in this area as a "new growth engine," including for export.[162]

For the first time, Germany has budgeted significant funds (€38 million in 2024) for the promotion of alternative protein sources.[163] A Green Party elected representative described this investment as a "paradigm shift" and "a clear commitment to the protein transition."[164] Activities to be funded include: amendment of the national food and agriculture agency's protein crop strategy to focus primarily on proteins for human nutrition rather than for animal feed; a new center and stakeholder forum around the protein transition; €20 million for an

countries-call-for-more-flexibility-on-caps-fallow-land-rules (providing more information on the agriculture ministers' meeting). A U.S. industry publication referred to the Minister's comment as "an opening shot in a potential war on meat." Joanne Cleaver, *Netherlands Ag Minister Suggests No Subsidies for Meat Production*, MEATINGPLACE (Nov. 10, 2023), http://www.meatingplace.com/Industry/News/Details/112257?allowguest=true.

159 Climate Change Response Act art. 8, FAWUBU FAGUI ZILIAOKU, *translated in Climate Change Response Act*, L. & REGULS. DATABASE OF THE REPUBLIC OF CHINA (TAIWAN) (Feb. 15, 2023), https://law.moj.gov.tw/ENG/LawClass/LawAll.aspx?pcode=O0020098; *see also* Marissa Sheldon, *Taiwan's Climate Bill Requires Promotion of Low-Carbon Diets*, HUNTER COLL. N.Y.C. FOOD POL'Y CTR. (Jan. 31, 2023), https://www.nycfoodpolicy.org/food-policy-snapshot-taiwan-climate-bill-promotes-low-carbon-diets.

160 *Taiwan Nutrition Law Gives Nod to Animals and Climate, Though Falls Short of Full Embrace*, ENV'T & ANIMAL SOC'Y OF TAIWAN (Dec. 20, 2023), https://www.east.org.tw/en/8704.

161 Flora Southey, *The 'Master Plan' to Double Legume Consumption in the Netherlands by 2030*, FOOD NAVIGATOR EUR. (Feb. 20, 2023), https://www.foodnavigator.com/Article/2023/02/20/The-master-plan-to-double-legume-consumption-in-the-Netherlands-by-2030; *Five Major Players Launch Masterplan for Protein Transition as Economic Engine in The Netherlands*, WAGENINGEN UNIV. & RSCH. (Feb. 20, 2023), https://www.wur.nl/en/newsarticle/five-major-players-launch-masterplan-for-protein-transition-as-economic-engine-in-the-netherlands.htm.

162 India Bourke, *Denmark: The Major Pork Producer Trying to Wean Itself Off Eating Meat*, BBC (Dec. 1, 2023) https://www.bbc.com/future/article/20231201-denmark-the-major-meat-producer-switching-to-a-plant-based-diet; Torrella, *supra* note 107; *Korea Introduces More Rules to Enhance Oversight of Alternative Protein Foods,* KELLER & HECKMAN (Dec. 12, 2023), https://www.khlaw.com/insights/korea-introduces-more-rules-enhance-oversight-alternative-protein-foods.

163 *Paradigm Shift in German Federal Budget 2024: €38M for 'Conversion of Animal Husbandry' and Protein Transition*, VEGCONOMIST (Nov. 17, 2023), https://vegconomist.com/politics-law/german-federal-budget-38m-protein-transition.

164 *Id.*

"opportunity program" to encourage exits from animal husbandry and into alternatives; and €10 million for projects to support promotion and production of alternatives.[165]

The most groundbreaking plan to date was enacted by Denmark in October 2023.[166] This is especially notable because Denmark has a powerful animal agriculture industry: it is the only European country with more pigs than people.[167] Denmark's Action Plan for Plant-Based Foods includes nearly $10 million for promotion of plant-based foods and $195 million to support the plant-based food transition,[168] and the Danish government investments will be supplemented by additional EU funding.[169] The Plan calls for significant reductions in consumption and production of meat and dairy. The Danish approach includes a broad variety of complimentary measures, including grants to support innovation and research, behavior change efforts, voluntary state-reviewed climate labels, training for chefs, changes to public procurement, promotion of export markets for alternatives, efforts to attract expertise and learn from other countries, improvement of the regulatory approval process for new products, and more.[170] In developing the Plan, advocacy groups like the Vegetarian Society worked with farmers' unions and the food lobby, focusing on consensus building and positive opportunities around new products and job creation.[171] A Danish MP and former environment minister described the collaboration this way: "Get the farmers on board, get the unions on board, but also be clear in your vision: say this is where we're going and do it incrementally."[172] Notably, an explicit goal of the Plan is to "serve as an example for the rest of the world."[173]

Early in 2023 in a separate effort, the Danish Parliament created a "Fund for Plant-Based Foods" with an investment of more than €90 million to support the production of more plant-based foods.[174] A

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165 *Id.*

166 *See generally* MINISTRY OF FOOD, AGRICULTURE AND FISHERIES OF DENMARK, DANISH ACTION PLAN FOR PLANT-BASED FOODS (2023) [hereinafter DANISH PLANT-BASED ACTION PLAN], https://en.fvm.dk/Media/638484294982868221/Danish-Action-Plan-for-Plant-based-Foods.pdf; Daniela De Lorenzo, *How Denmark Made the Plant-Based Action Plan Possible*, FORBES (Nov. 23, 2023, 8:26 AM), https://www.forbes.com/sites/danieladelorenzo/2023/11/23/how-denmark-made-the-plant-based-action-plan-possible.

167 Bourke, *supra* note 162.

168 De Lorenzo, *supra* note 166; Henry Mance, *Denmark Leads the Way in Incentivising Low-Meat Diets*, FIN. TIMES (Jan. 24, 2024), https://www.ft.com/content/3f4d58f4-2a3b-4aef-88a8-83784b36c835.

169 De Lorenzo, *supra* note 166.

170 DANISH PLANT-BASED ACTION PLAN, *supra* note 166, *passim*.

171 Mance, *supra* note 168; De Lorenzo, *supra* note 166; Bourke, *supra* note 162.

172 Bourke, *supra* note 162.

173 DANISH PLANT-BASED ACTION PLAN, *supra* note 166, at 5.

174 *Denmark Invests Over €90 Million in Fund for Development of Plant-Based Foods*, FOOD NATION, https://foodnationdenmark.com/news/denmark-invests-over-eur-90-million-in-fund-for-development-of-plant-based-foods (last visited Oct. 13, 2024).

number of other countries have also announced funding for alternative proteins, including China, India, Japan, and the United Kingdom.[175]

In a sign of potential future developments in France, in mid-2023 the French Court of Accounts—which counsels the government on spending—advised the French government to develop "a strategy to reduce cattle herds" in order to achieve methane reduction targets, which the Court found "necessarily call for a significant reduction in livestock."[176] The Court recommended new policies to transition from existing subsidies to supports for sustainable farming and retraining for farmers.[177]

Dietary guidelines are another lever that policymakers can pull to reduce GHG emissions. To date, while most dietary guidelines do not incorporate environmental sustainability, a growing number do.[178] In its recent Roadmap, the FAO recommended that dietary guidelines should include environmental considerations.[179] Many of the supportive policies described above were preceded or accompanied by changes to dietary guidelines. For example, two years before Denmark adopted its comprehensive Action Plan for Plant-Based Foods, updates to its dietary guidelines called for reduction of the recommended adult meat consumption in line with EAT-*Lancet* guidelines.[180]

In other examples, Canada revised its dietary guidelines in 2019 to recommend that Canadians "consume plant-based more often,"[181] and in 2021 the U.K. National Food Strategy, an independent review commissioned by the government, called for a 30% decrease in meat production by 2032.[182] The Nordic Nutrition Recommendations, released in 2023 by the Nordic Council of Ministers,[183] integrates environmental

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175 Björn Ólafsson, *8 Alternative Protein Market Predictions for 2024*, SENTIENT FOOD (Jan. 18, 2024), https://sentientmedia.org/alternative-protein-market-predictions-2024; Mance *supra* note 168.

176 *French Farmers Up in Arms over Call to Cut Cow Numbers for Sake of Climate*, RFI (May 25, 2023), https://www.rfi.fr/en/france/20230525-french-farmers-up-in-arms-over-call-to-cut-cow-numbers-for-sake-of-climate.

177 *Id.*

178 *See* Genevieve James-Martin et al., *Environmental Sustainability in National Food-Based Dietary Guidelines: A Global Review*, 6 LANCET PLANETARY HEALTH e977, e977, e979 (2022) (noting that 37 of 83 national guidelines surveyed mentioned sustainability); *see also Analysis: U.S. Lags Behind Other G20 Nations at Adding Sustainability into Dietary Guidelines*, CTR. FOR BIOLOGICAL DIVERSITY (Sept. 12, 2023), https://biologicaldiversity.org/w/news/press-releases/analysis-us-lags-behind-other-g20-nations-at-adding-sustainability-into-dietary-guidelines-2023-09-12.

179 *See supra* text accompanying note 115.

180 Mance, s*upra* note 168; *see* discussion of the Eat-*Lancet* Commission *supra* notes 69–71 and accompanying text.

181 HEALTH CANADA, CANADA'S DIETARY GUIDELINES FOR HEALTH PROFESSIONALS AND POLICY MAKERS 9 (2019), https://food-guide.canada.ca/sites/default/files/artifact-pdf/CDG-EN-2018.pdf.

182 HENRY DIMBLEBY ET AL., NATIONAL FOOD STRATEGY: THE PLAN 142 (2021), https://assets.publishing.service.gov.uk/media/61684fe3e90e071979dfec4a/national-food-strategy-the-plan.pdf.

183 The Nordic Council of Ministers includes representatives from Denmark, Finland, Iceland, Norway, Sweden, Greenland, the Faroe Islands (an autonomous region of Den-

considerations for the first time. The Nordic Council described the Recommendations as "our bravest step yet" and "well aligned with our global commitments."[184] The Recommendations call for "a predominantly plant-based diet . . . , moderate intake of low fat dairy products, limited intake of red meat and poultry, and minimal intake of processed meat . . . ."[185] While the Recommendations are not binding and implementation is up to each individual country, they are usually widely followed and used for schools, hospitals, and elderly care.[186]

Another area of supportive policy is procurement, i.e., harnessing the government's purchasing power for dietary changes that are beneficial to the environment and to people's health. In a first step in its Farm to Fork Strategy, the European Commission committed to "determin[ing] the best way of setting minimum mandatory criteria for sustainable food procurement."[187] As a national-level example, a French climate law passed in 2021 requires school cafeterias to provide vegetarian meals once a week and public catering to offer vegetarian options.[188]

Many local governments around the world are using their authority and procurement power to move away from high-emitting animal-based foods.[189] For example, sixteen cities have signed onto the Good Food Cities Accelerator, committing to increase healthy plant-based food consumption and align food procurement with the EAT-*Lancet* "Planetary Health Diet" (about half the plate occupied by vegetables and fruit) by 2030.[190] The Good Food Purchasing Program in the United States, in which large municipalities like New York City participate, provides a set of tools and support to empower public institutions to

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mark), and Åland (an autonomous region of Finland). *About the Nordic Council of Ministers*, NORDIC CO-OPERATION, https://www.norden.org/en/information/about-nordic-council-ministers (last visited Oct. 14, 2024).

184 NORDIC COUNCIL OF MINISTERS, NORDIC NUTRITION RECOMMENDATIONS 2023: INTEGRATING ENVIRONMENTAL ASPECTS 7 (2023), https://norden.diva-portal.org/smash/get/diva2:1769986/FULLTEXT06.pdf.

185 *Id.* at 9.

186 Lisbeth Kirk, *Nordic Nutrition Guidelines Advise to Eat Less Meat—But Sweden Revolts*, EUOBSERVER (June 20, 2023), https://euobserver.com/nordics/157165. *But see id.* (noting that, even before the plant-forward Nordic Nutrition Recommendations were published, Sweden's Minister of Rural Affairs came out publicly against reduction of meat consumption).

187 FARM TO FORK STRATEGY, *supra* note 75, at 14.

188 Fiona Harvey, *Outrage and Delight as France Ditches Reliance on Meat in Climate Bill*, GUARDIAN (May 29, 2021), https://www.theguardian.com/world/2021/may/29/france-outrage-delight-meat-ditch-reliance-climate.

189 INT'L PANEL OF EXPERTS ON SUSTAINABLE FOOD SYS., FROM PLATE TO PLANET: HOW LOCAL GOVERNMENTS ARE DRIVING ACTION ON CLIMATE CHANGE THROUGH FOOD 18–19, 22 (2023), https://www.ipes-food.org/_img/upload/files/PlatetoPlanetEN.pdf (noting that national food policies are missing the opportunity to move away from GHG-intensive animal-sourced foods toward plant-based foods, and describing successful local efforts).

190 *Good Food Cities Accelerator*, C40 CITIES, https://www.c40.org/accelerators/good-food-cities (last visited Oct. 20, 2024); *The Planetary Health Diet*, EAT, https://eatforum.org/eat-lancet-commission/the-planetary-health-diet-and-you (last visited Mar. 9, 2024).

purchase food aligned with "five core values: local economies, health, valued workforce, animal welfare, and environmental sustainability."[191] New York City has also taken significant measures to decrease meat consumption, serving plant-based meals as the default option in public hospitals and twice weekly in public schools.[192] The City of Amsterdam adopted a motion put forward by the Party for the Animals aiming to make Amsterdam a "Plant-Based Capital," including plans to offer plant-based options and Vegan Fridays in public facilities and to move toward a set animal-plant protein ratio for public catering by 2030.[193] In a proposed comprehensive approach to food system change, thirty municipalities around the world, including Amsterdam, Edinburgh, and Los Angeles,[194] have called for the negotiation of a "Plant-Based Treaty" by which signatories would commit to: ending land use change for animal agriculture; promoting plant-based foods and transitioning away from animal-based foods; and restoring key ecosystems and reforesting.[195]

A final important type of supportive policy is regulatory approval for animal product alternatives in the context of cultivated meat. Cultivated or cultured meat is animal meat produced by cultivating cells.[196] Cultivated meat has already received regulatory approval for commercial sale in Singapore and the United States, and other countries may soon follow.[197]

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191 *Our Work*, CTR. FOR GOOD FOOD PURCHASING, https://goodfoodpurchasing.org (last visited Oct. 22, 2024); Errol Schweizer, *How New York City Is Revolutionizing Good Food Policy*, FORBES (Mar. 23, 2021, 9:45 AM), https://www.forbes.com/sites/errolschweizer/2021/03/23/how-new-york-city-is-revolutionizing-good-food-policy.

192 Mance, *supra* note 168.

193 *Amsterdam Becomes the First EU Capital City to Endorse the Call for a Plant Based Treaty in Response to the Climate Emergency*, PLANT BASED TREATY (Feb. 1, 2024), https://plantbasedtreaty.org/amsterdam-endorses-pbt.

194 *Plant Based Treaty Endorsers: Cities, Towns, and Regions*, PLANT BASED TREATY, https://plantbasedtreaty.org/cities (last visited Oct. 20, 2024).

195 *The Treaty*, PLANT BASED TREATY, https://plantbasedtreaty.org/the-pbt (last visited Oct. 14, 2024).

196 Elliot Swartz & Claire Bomkamp, *The Science of Cultivated Meat*, GOOD FOOD INST., https://gfi.org/science/the-science-of-cultivated-meat (last visited Oct. 14, 2024).

197 Ólafsson, *supra* note 175.

C. Taxes[198]

Taxes on meat production or consumption have long been contemplated as a possible approach to reducing associated GHG emissions.[199] While a tax of this type could generally be expected to impact low-income households disproportionately because they spend a greater proportion of their income on food, pairing taxes with subsidies can reduce regressivity and encourage shifts to more sustainable diets.[200]

The most prominent current example is the Danish Parliament's approval in late 2024 of the world's first emissions tax on animal agriculture, to take effect in 2030.[201] The tax will apply to emissions from cattle, sheep, and pigs.[202] As with the consensus-building approach that led to the Danish Action Plan for Plant-Based Foods,[203] the proposal was discussed and agreed upon amongst a group including policymakers, labor unions, industry, and environmental groups.[204]

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198 Another possible approach to limiting emissions from GHG-intensive products is rationing, or limiting each person's consumption below a specified cap. A recent survey of respondents from five countries on five continents found that, while rationing was about as accepted as taxation when applied to fossil fuels, taxation was consistently more acceptable than rationing when applied to meat. Oskar Lindgren et al., *Public Acceptability of Climate-Motivated Rationing*, HUMANS. & SOC. SCIS. COMMC'NS., Sept. 26, 2024, No. 1252, at 3. Of the countries surveyed, the United States had the lowest percentage (22%) who responded that meat rationing for climate protection purposes would be acceptable to them. *Id.* at 4. This research has not identified serious consideration of meat rationing anywhere in the world. *Id.* at 1.

199 *E.g.*, Marya Torrez, *Accounting for Taste: Trade Law Implications of Taxing Meat to Fight Climate Change*, 27 GEO. ENV'T L. REV. 61, 62 (2014); *see also* Zia Mehrabi et al., *Livestock Policy for Sustainable Development*, 1 NATURE FOOD 160, 164 (2020) (recommending "[r]aising taxes on food items for populations at risk of overconsumption" and suggesting that "[t]axes may focus on worst products or incorporate carbon and biodiversity costs, although care must be taken to not to [sic] reduce food access for the poor" (internal quotations and citations omitted)).

200 Dariush Mozaffarian et al., *The Real Cost of Food: Can Taxes and Subsidies Improve Public Health?*, 312 JAMA 889, 889 (2014). Increasing prices or imposing taxes may not be effective without supportive interventions. 2018 IPCC REPORT, *supra* note 27, at 383 ("[F]or dietary change, combining supply-side measures with value-driven communication and economic instruments may help make a lasting transition, while an economic instrument, such as enhanced prices or taxation, on its own may not be as robust.").

201 Isabelle Yr Carlsson, *Denmark Will Be First to Impose CO2 Tax on Farms, Government Says*, REUTERS (June 25, 2024, 3:30 AM), https://www.reuters.com/sustainability/denmark-will-be-first-impose-co2-tax-farms-government-says-2024-06-25; Somini Sengupta, *Taxing Farm Animals' Farts and Burps? Denmark Gives It a Try*, N.Y. TIMES (Nov. 26, 2024), https://www.nytimes.com/2024/11/26/climate/denmark-methane-farm-animal-tax.html.

202 Jan M. Olsen, *Gassy Cows and Pigs Will Face a Carbon Tax in Denmark, a World First*, ASSOCIATED PRESS, https://apnews.com/article/denmark-cow-tax-greenhouse-gases-9a570518639e0a1990806fd1a05ac11a (June 26, 2024, 8:19 AM).

203 The Danish Action Plan included a commitment to eventually institute an agricultural emissions tax. *See infra* note 327 and accompanying text.

204 Carlsson, *supra* note 201.

A tax on cow emissions proposed in New Zealand in 2022 by the center-left Labour Party was scrapped after the center-right National Party gained control in the October 2023 election.[205] The proposal had resulted in farmer protests and an outcry from the meat and dairy industries,[206] which have embraced the new government's plan.[207]

In 2022, the German government announced plans to spend €1 billion on investing in improving farmed animal housing and husbandry systems, for "animal welfare and climate protection."[208] One option being discussed to fund the proposal and other reforms to the animal agriculture sector is a tax on meat modeled on the existing coffee tax.[209]

D. Buyouts

Animal buyout programs, i.e., "schemes that compensate for the loss or decline in the value of production assets on livestock farms on the condition that production will be ceased permanently,"[210] are the most direct policy mechanism available to shrink the herd. While not common, animal buyouts have been used historically by governments for various reasons.[211] Past examples include the voluntary 1986 "Whole-Herd Buyout" program in the United States aimed at reducing the milk supply,[212] voluntary buyouts in the Netherlands and Flanders (the autonomous northern region of Belgium where Brussels in located)

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[205] Rachel Pannett, *How New Zealand Plans to Tackle Climate Change: Taxing Cow Burps*, WASH. POST (Feb. 1, 2023), https://www.washingtonpost.com/climate-solutions/interactive/2023/new-zealand-cows-burps-methane-tax; Renju Jose & Lucy Craymer, *New Zealand's National Party Clinches Deal to Form Government*, REUTERS (Nov. 23, 2023), https://www.reuters.com/world/asia-pacific/new-zealands-national-party-reaches-deal-form-government-2023-11-23; *New Zealand Scraps 'Burp Tax' on Livestock After Backlash from Farmers*, AL JAZEERA (June 11, 2024), https://www.aljazeera.com/economy/2024/6/11/new-zealand-scraps-burp-tax-on-livestock-after-backlash-from-farmers. A previous proposed tax in New Zealand on methane emissions, put forward in 2003, was dropped after industry opposition. BLINDSPOT, *supra* note 83, at 27.

[206] Pannett, *supra* note 205; *New Zealand Scraps 'Burp Tax' on Livestock*, *supra* note 205.

[207] Tracy Withers, *New Zealand Farmers Welcome Opposition's Agriculture Emissions Policy*, BLOOMBERG (June 11, 2023), https://www.bloomberg.com/news/articles/2023-06-12/new-zealand-farmers-welcome-opposition-s-agriculture-emissions-policy.

[208] Boezeman et al., *supra* note 80, at 8.

[209] Olivia Logan, *German Minister Announces Plan for Excise Tax on Meat*, I AM EXPAT (Feb. 7, 2024), https://www.iamexpat.de/lifestyle/lifestyle-news/german-minister-announces-plan-excise-tax-meat; Bundesministerium für Ernährung und Landwirtschaft [BMEL], Konzept zur Einführung einer Verbrauchsteuer auf bestimmte tierische Produkte [Concept for an Excise Duty on Certain Animal Products] (translation on file with author).

[210] Boezeman et al., *supra* note 80, at 4.

[211] *Id.* at 5–6.

[212] *Id.* at 6; Robert A. Hamilton, *U.S. Offers Dairymen a Buyout*, N.Y. TIMES (Mar. 23, 1986), https://www.nytimes.com/1986/03/23/nyregion/us-offers-dairymen-a-buyout.html; Mich. Farm Bureau, *Results of Past U.S. Dairy Supply Management—Will History Repeat Itself?*, MICH. FARM NEWS (May 13, 2019), https://www.michiganfarmnews.com/results-of-past-us-dairy-supply-management-will-history-repeat-itself.

starting around 2000 to reduce manure in order to comply with EU rules on nitrogen pollution,[213] and mandatory buyouts of mink in the Netherlands that were initially implemented in 2013 based on animal welfare concerns and then accelerated for public health reasons after coronavirus infections spread through mink farms.[214]

In order to achieve the intended population reductions and benefits, buyout programs must be carefully structured. For example, one expert advises that voluntary dairy cow buyout policies must ensure: additionality—in other words, that the animals who are removed are actually productive dairy cows (and not already at the end of milk production when they would be slaughtered anyway); that removed cows are not replaced, via some assurance of long-term stock diminishment; and that the program is attractive to farmers (a challenge when dairy production is profitable).[215]

In a leading example, the Dutch government appears to have been the first in the world to utilize an animal buyout program with an explicit purpose of reducing GHG emissions.[216] A 2019 pig buyout program that was initially requested by farmers to address odor problems was later granted additional government funding as a way of reaching climate and nitrogen pollution goals.[217] In addition, the 2019 Dutch Climate Agreement—the national policy to achieve emissions reductions in-line with the Paris Agreement—included plans for a voluntary buyout of dairy farmers in peat meadow areas, which are notable for their emissions reduction potential and biodiversity.[218] Provinces submitted initial buyout plans in late 2023.[219]

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213 Boezeman et al., *supra* note 80, at 6.

214 *Id.* at 4, 6; *Dutch to Permanently Ban Mink Farming from April 2021*, NL TIMES (Aug. 27, 2020), https://nltimes.nl/2020/08/27/dutch-permanently-ban-mink-farming-april-2021.

215 Jan Dutkiewicz, *Ireland Isn't Culling Cows for Climate. But Maybe It Should Be?*, BULL. OF THE ATOMIC SCIENTISTS (Oct. 25, 2023) [hereinafter Dutkiewicz, *Ireland Isn't Culling Cows*], https://thebulletin.org/2023/10/ireland-isnt-culling-cows-for-climate-but-maybe-they-should-be; *see also* Bruce L. Dixon et al., *Supply Impact of the Milk Diversion and Dairy Termination Programs*, AM. J. AGRIC. ECON. 633, 639 (1991) (evaluating buy-out programs and noting effectiveness limitations, including that some producers reentered the market immediately after the required cessation period and that strong product demand may have encouraged nonparticipating producers to increase production).

216 Boezeman et al., *supra* note 80, at 6, 9.

217 *Id.* at 7, 10; *European Commission: 'Dutch Plans to Buy Out Pig Farmers Are in Accordance with the EU Rules on State Aid*,' LOYENS & LOEFF (Oct. 23, 2019), https://www.loyensloeff.com/insights/news—events/news/european-commission-dutch-plans-to-buy-out-pig-farmers-are-in-accordance-with-the-eu-rules-on-state-aid.

218 Boezeman et al., *supra* note 80, at 7, 10; GOV'T OF THE NETHERLANDS, CLIMATE AGREEMENT 143–44 (2019), https://www.government.nl/documents/reports/2019/06/28/climate-agreement.

219 *Kamerbrief voortgang provinciale gebiedsprogramma's en eerste maatregelpakketten*, RIJKSOVERHEID (Oct. 24, 2023), https://www.rijksoverheid.nl/ministeries/ministerie-van-landbouw-natuur-en-voedselkwaliteit/documenten/kamerstukken/2023/10/24/voortgang-provinciale-gebiedsprogramma-s-en-eerste-maatregelpakketten; Letter from Christianne van der Wal-Zeggelink, Minister for Nature & Nitrogen, to the President of the House of

The Netherlands is perhaps a predictable place for the first buyouts related to climate goals, given that it has high farm animal densities, a serious nitrogen pollution problem with more than half of all nitrogen pollution coming from manure,[220] and a history of utilizing animal buyout programs for other purposes (e.g., odor control and reducing nitrogen pollution).[221] Nitrogen pollution can harm biodiversity and also contributes to climate change.[222] Measures that reduce nitrogen pollution also reduce emissions of the GHG nitrous oxide, the majority of which is formed when microbes process excess nitrogen from farmed animal manure and urine and from synthetic nitrogen fertilizer.[223]

Acute pressure on the Dutch government to reduce nitrogen pollution arose from a lawsuit filed in 2018 by a Dutch NGO against the national government.[224] The lawsuit alleged that high levels of nitrogen pollution in certain protected areas violated the EU Habitats Directive.[225] Eventually, the Court of Justice of the European Union agreed.[226] In response, the government announced plans to reduce the herd by as much as a third,[227] eventually identifying significant funds (€24.3 billion) for the transition, including to buy out 3,000 "peak emitter" farms at up to 120% of their value.[228] As of late 2024, 1,474 farmers had submitted applications for one or both of the buyout programs, with nearly a third committing to a buyout.[229] As described below in Part V.B, this Dutch "stikstofcrisis" (nitrogen crisis) resulted in widespread farmer protest and a significant political shakeup in the Netherlands. Indeed, buyout plans—while amongst the most direct

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Representatives of the States-General, at 1–2 (Jan. 23, 2024), https://open.overheid.nl/documenten/c9e74d60-5396-45bf-83f2-9132df5ae151/file.

220 Erik Stokstad, *Nitrogen Crisis from Jam-Packed Livestock Operations Has 'Paralyzed' Dutch Economy*, SCIENCE (Dec. 4, 2019), https://www.science.org/content/article/nitrogen-crisis-jam-packed-livestock-operations-has-paralyzed-dutch-economy.

221 Boezeman et al., *supra* note 80, at 6–7.

222 *Facts about Nitrogen Pollution*, U.N. ENV'T PROGRAMME, https://www.unep.org/facts-about-nitrogen-pollution (last visited Mar. 7, 2024).

223 *See* Klaus Butterbach-Bahl et al., *Nitrous Oxide Emissions from Soils: How Well Do We Understand the Processes and Their Controls?*, PHIL. TRANSACTIONS ROYAL SOC'Y LONDON, SERIES B, BIOLOGICAL SCIS., July 2013, No. 20130126, at 1–2 (explaining that dominant sources of both anthropogenic and natural nitrous oxide are "closely related to microbial production processes in soils, sediments and water bodies"); Alfi Syakila & Carolien Kroeze, *The Global Nitrous Oxide Budget Revisited*, 1 GREENHOUSE GAS MEASUREMENT & MGMT. 17–18 (2011) (quantifying global nitrous oxide sources).

224 Case C-293/17, Coöperatie Mobilisation for the Environment UA v. College van Gedeputeerde Staten van Limburg, ECLI:EU:C:2018:882 (Nov. 7, 2018).

225 *Id.* ¶¶ 50, 52; Kasja Pira, *The Dutch Nitrogen Crisis*, ACID NEWS, Dec. 2019, at 3.

226 *Coöperatie Mobilisation for the Environment UA*, ECLI:EU:C:2018:882, ¶¶ 69, 120.

227 Andy Bounds, *Dutch Farmers in Uproar over Plans to Curb Animal Numbers to Cut Nitrogen Emissions*, FIN. TIMES (Aug. 2, 2022), https://www.ft.com/content/90e38fb5-e942-4afd-994d-048dc40579a2.

228 Ashoka Mukpo, *In the Clash over Dutch Farming, Europe's Future Arrives*, MONGABAY (Sept. 8, 2023) [hereinafter *Clash over Dutch Farming*], https://news.mongabay.com/2023/09/in-the-clash-over-dutch-farming-europes-future-arrives.

229 *Lbv en Lbv-plus actueel*, RIJKSDIENST VOOR ONDERNEMEND NEDERLAND, https://www.rvo.nl/onderwerpen/lbv-plus-actueel (Nov. 26, 2024).

approaches to reducing GHG emissions from animal agriculture—can face significant opposition and political blowback if not structured and rolled out carefully.

Somewhat similar events played out in Flanders. In 2021, a climate policy committee advised the government that it should reduce animal numbers and encourage dietary shifts as part of meeting climate targets.[230] While the proposal was not taken up, after a ruling by the highest Flemish administrative court in 2021 ordering the government to reduce nitrogen pollution,[231] animal agriculture was again at the center of policy discussions. The responsive plan eventually approved by the government included both voluntary and mandatory animal buyouts, depending on their proximity to and impact on certain protected areas.[232] Uptake on the voluntary offers was low as of early 2024, reportedly with only seven pig farmers having accepted the buyout offer out of the 982 contacted by the government.[233] An industry publication explains: "The low interest in the scheme can be attributed to the economic trend of high pig prices, as well as criticism of the buyout conditions, such as limited benefits for older stables and restrictions on expanding other livestock activities on the farm."[234]

E. Tech Fixes and Climate Efficiency Approaches

> At this point it is naïve to expect that technological improvements alone will slow the impacts of growth and reduce the burden on the biosphere. And yet many still exhibit this naiveté.
>
> ~Kim Stanley Robinson,
> *The Ministry for the Future*[235]

The policy approaches discussed above have the potential to reduce the number of farmed animals or "shrink the herd," with animal food products replaced by more sustainable alternatives. There is another category of interventions that could be described as "climate efficiency" approaches—including feed additives, genetic engineering, and biogas digesters[236]—which aim to reduce emissions from animal agriculture by making each animal (or group of animals) more efficient in climate terms. An example of a climate efficiency policy is Canada's proposal

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230 Boezeman et al., *supra* note 80, at 7.

231 Karel Veuchelen & Els Empereur, *Nitrogen in Flanders: Will the Dust Finally Settle?*, PWC LEGAL (Mar. 27, 2023), https://www.pwclegal.be/en/news/nitrogen-in-flanders---will-the-dust-finally-settle-.html.

232 Boezeman et al., *supra* note 80, at 7–8.

233 *Belgium: Enthusiasm for the Buyout Scheme for Pig Farms Is Not Yet Great*, TRIDGE (Jan. 18, 2024), https://www.tridge.com/news/enthusiasm-for-buyout-scheme-for-flemish-pig-farms.

234 *Id.*

235 ROBINSON, *supra* note 1, at 165.

236 *See* discussion of biogas digesters *infra* notes 272–278 and accompanying text.

that would allow farmers to generate offset credits if they reduce enteric emissions from their cattle through strategies such as changing feed.[237]

Because such approaches do not challenge the fundamental structure or scale of the industry, they have been referred to as "industry-led" and "industry-friendly" and typically receive greater buy-in from industry actors.[238] For example, the authors of a recent survey of animal agriculture and climate policy in four countries in Western Europe note: "In general terms, in all countries, we observe the reproduction of a 'technology versus volume' discourse. Farmers' organisations and their supporting parties stress the importance of eco-efficiency and technical innovation to resolve environmental concerns. Environmental NGOs and green parties advocate reducing livestock production and changing human diets."[239]

This Article does not take the position that climate efficiency approaches are harmful or without merit.[240] The urgency of the climate crisis—which will affect all life on this planet, to varying degrees—demands that we act with urgency on all potentially helpful fronts.[241] But, for the reasons that follow, efficiency approaches by themselves will

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[237] ENV'T & CLIMATE CHANGE CANADA, DRAFT FEDERAL OFFSET PROTOCOL: REDUCING ENTERIC METHANE EMISSIONS FROM BEEF CATTLE 1 (2023), https://www.canada.ca/content/dam/eccc/documents/pdf/climate-change/ghg-offset/REME%20protocol%20-%20EN.pdf.

[238] *E.g.*, Morris & Jacquet, *supra* note 62, at 1 (referring to "industry-led climate 'solutions' that maintain production"); Torrella, *supra* note 107 (describing "industry-friendly changes like tinkering with how livestock are fed and farmed"); Dutkiewicz, *Ireland Isn't Culling Cows*, *supra* note 215 ("Emissions restrictions policies quite simply interfere with a profitable and entrenched business model, which explains why farming groups, where they have participated in discussion about policy proposals, have favored soft interventions like developing methane-inhibiting feed additives over harder interventions like voluntary culls."). One expert draws this analogy: "Much as the coal industry starting hawking 'clean coal' in 2008 to avoid policies promoting a phaseout, the meat industry and its defenders are now arguing for clean cows." Dutkiewicz, *The Comforting Lie of Climate-Friendly Meat*, *supra* note 102.

[239] Boezeman et al., *supra* note 80, at 9; *see also Clash over Dutch Farming*, *supra* note 228 ("[T]echnologies [that reduce emissions] could potentially allow [Dutch] farmers to dodge the tougher approach that some policymakers have in mind: big cuts to the number of livestock in the Netherlands.").

[240] *E.g.*, 2018 IPCC REPORT, *supra* note 27, at 146 ("[E]ven within existing livestock production systems, a transition from extensive to more productive systems bears substantial GHG abatement potential, while improving food availability." (internal citations omitted)); EU ASSESSMENT REPORT 2024, *supra* note 50, at 157 ("[Methane] emissions can be reduced by measures to reduce emissions from enteric fermentation (the digestion process of ruminant livestock such as cattle) and by improved manure management.").

[241] *See* Torrella, *supra* note 107 ("Numerous environmental scientists . . . have called on wealthy countries to cut back on meat and eat more plant-based meals . . . . Down another path lies the more politically palatable, yet far less effective, approach of continuing to eat record amounts of meat in the West while deploying a host of technologies and farming practices, each of which can only marginally shave off livestock emissions. The world needs a mix of both approaches, but policy makers, out of political expediency and corporate capture, are barreling down the second path, a choice they'll likely come to regret as climate change intensifies.").

not be sufficient and should not be pursued at the exclusion of or to the detriment of other approaches.[242]

Indeed, some advocates refer to efficiency approaches to the climate problem of animal agriculture as "false solutions" for several reasons.[243] First, and perhaps most essentially, reducing the GHG emissions of animals in industrial systems does nothing to address the many other externalities of those systems,[244] which include harms to environmental justice communities,[245] zoonotic disease risks[246] and antimicrobial resistance,[247] other public health harms,[248] dangerous and exploitative

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[242] Fredrik Hedenus et al., *The Importance of Reduced Meat and Dairy Consumption for Meeting Stringent Climate Change Targets*, 124 CLIMATIC CHANGE 79, 89 (2014) ("[D]ietary changes are crucial for meeting the 2°C target with high probability."); Willett et al., *supra* note 69, at 472 ("Although food production practices have an important role, many studies highlight that a dietary change towards increased adoption of plant-based diets has high mitigation potential, which is probably needed to limit global warming to a less than 2°C increase.").

[243] *E.g.*, Letter from Ctr. for Biological Diversity et al. to Thomas J. Vilsack, *supra* note 8 ("[F]alse solutions such as feed additives . . . have minimal impact in reducing emissions and aren't scalable, and biogas . . . worsens the problem of pollution and greenhouse gas emissions. Improving agricultural production is only one piece of the puzzle, and ignoring dietary shifts in consumption creates an ineffective and weak climate response.").

[244] *E.g.*, GLOBAL METHANE ASSESSMENT, *supra* note 81, at 116 ("Achieving very low emissions per kilogram of protein may involve large-scale industrialized agriculture, which can have other social and environmental impacts beyond greenhouse gas emissions and hence such policies need to be considered with care."); Cleo Verkuijl et al., *Climate Change, Public Health, and Animal Welfare: Towards a One Health Approach to Reducing Animal Agriculture's Climate Footprint*, FRONTIERS ANIMAL SCI., May 15, 2024, No. 1281450, at 9–10 ("[C]ommon climate mitigation interventions targeting animal agriculture have implications for public health and animal welfare. . . . When seeking to reduce the climate impacts of animal farming, it is thus crucial to look beyond GHG emissions alone: a wider set of social goods merits serious attention."); LIVESTOCK'S LONG SHADOW, *supra* note 59, at 267 ("[T]he livestock sector is a major stressor on many ecosystems and on the planet as whole. Globally it is one of the largest sources of greenhouse gases and one of the leading causal factors in the loss of biodiversity, while in developed and emerging countries it is perhaps the leading source of water pollution.").

[245] *E.g.*, Melba Newsome, *Unchecked Growth of Industrial Animal Farms Spurs Long Fight for Environmental Justice in Eastern NC*, N.C. HEALTH NEWS (Oct. 20, 2021), https://www.northcarolinahealthnews.org/2021/10/20/environmental-justice-and-industrial-farming-in-eastern-nc.

[246] ANN LINDER ET AL., ANIMAL MARKETS & ZOONOTIC DISEASE IN THE UNITED STATES 82 (2023), https://animal.law.harvard.edu/wp-content/uploads/Animal-Markets-and-Zoonotic-Disease-in-the-United-States.pdf ("In [concentrated animal feeding operations (CAFOs)], hundreds of thousands or millions of animals can be held together in intense confinement with limited air flow, making these facilities ripe for pathogen transmission among animals as well as between animals and workers."); *see also* Hayek, *supra* note 97, at 3–4.

[247] Christy Manyi-Loh et al., *Antibiotic Use in Agriculture and Its Consequential Resistance in Environmental Sources: Potential Public Health Implications*, MOLECULES, April 2018, No. 795, at 3–4, 17.

[248] *E.g.*, Nina G.G. Domingo et al., *Air Quality–Related Health Damages of Food*, PNAS, May 10, 2021, No. e2013637118, at 1 ("80% of the 15,900 annual deaths that result from food-related fine particulate matter . . . pollution are attributable to animal-based foods."); Amanda D. Emert et al., *Atmospheric Transport of Particulate Matter and Particulate-*

labor conditions,[249] systemic animal cruelty,[250] biodiversity loss[251] and habitat destruction,[252] soil and water pollution,[253] intensive water use,[254] market consolidation and antitrust abuses,[255] and harms to rural communities.[256] On a related note, while some recommend a species

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Bound Agrochemicals from Beef Cattle Feedlots: Human Health Implications for Downwind Agricultural Communities, SCI. TOTAL ENV'T, October 2023, No. 164678, at 12.

[249] *E.g.*, Fred Gerr, *Meatpacking Plant Workers: A Case Study of a Precarious Workforce*, 18 J. OCCUPATIONAL & ENV'T HYGIENE 154, 157 (2021); Leah Douglas, *Big U.S. Chicken Company, Mountaire, Asks Contractors to Oppose Transparency Rule*, REUTERS (Aug. 5, 2022, 10:04 AM), https://www.reuters.com/world/us/big-us-chicken-company-mountaire-asks-contractors-oppose-transparency-rule-2022-08-05 ("Poultry farmers have said for years that they fear publicly airing grievances with the tournament [payment] system because of potential retaliation from companies . . . .").

[250] *E.g.*, Nicholas Kristof, *The Ugly Secrets Behind the Costco Chicken*, N.Y. TIMES (Feb. 6, 2021), https://www.nytimes.com/2021/02/06/opinion/sunday/costco-chicken-animal-welfare.html ("[F]uture generations will look back at our mistreatment of livestock and poultry with pain and bafflement."); Letter from Rep. Veronica Escobar et al., Members of Congress, to Thomas J. Vilsack, Sec'y of Agric. & Dr. José Emilio Esteban, Undersec'y for Food Safety, U.S. Food Safety & Inspection Servs. (Dec. 6, 2023), https://escobar.house.gov/uploadedfiles/final_letter_to_secretary_vilsack_and_under_secretary_esteban_.pdf ("[U]ndercover footage has revealed widespread and entirely unnecessary abuse and neglect of pigs—particularly nonambulatory pigs—at certain facilities. In slaughterhouses, workers have been known to try to force [downed pigs] to move by kicking, dragging, shoving, or even electroshocking them" (internal citations and quotations omitted)).

[251] *E.g.*, U.N. FOOD & AGRIC. ORG., THE IMPACT OF LIVESTOCK ON BIODIVERSITY (2019) https://www.fao.org/3/ca4960en/ca4960en.pdf, ("Livestock is among the sectors with highest impacts on biodiversity."); Bradley J. Bergstrom, *Carnivore Conservation: Shifting the Paradigm from Control to Coexistence*, 98 J. MAMMALOGY 1, 2 (2017) (describing the killing of thousands of predator animals and noting that USDA's Wildlife Services' "field operations in the western United States have been criticized for their over-reliance on lethal means of resolving wildlife conflicts with livestock"); Jeremy Burke, *How Eating Meat Creates a 'Dead Zone' the Size of New Jersey in the Gulf of Mexico Every Year*," BUS. INSIDER (Apr. 7, 2018, 8:55 AM), https://www.businessinsider.com/eating-meat-affects-environment-dead-zone-2018-4.

[252] *E.g.*, TIM G. BENTON ET AL., CHATHAM HOUSE, FOOD SYSTEM IMPACTS ON BIODIVERSITY LOSS 6–7 (2021) ("Over the past 50 years, the biggest driver of habitat loss has been the conversion of natural ecosystems for crop production or pasture. . . . The rapid expansion of animal farming has been behind much of this land expansion.").

[253] *E.g.*, Laima Cesoniene et al., *The Impact of Livestock Farming Activity on the Quality of Surface Water*, 26 ENV'T SCI. & POLLUTION RSCH. 32678, 32684 (2019) ("One of the most dangerous pollution sources is intensive livestock facilities, whose production waste has a negative impact on soil and water quality.").

[254] *E.g.*, Brian D. Richter et al., *Water Scarcity and Fish Imperilment Driven by Beef Production*, 3 NATURE SUSTAINABILITY 319, 320 (2020) ("[I]rrigation of cattle-feed crops . . . is the single largest consumptive [water] user at both regional and national scales [in the United States], accounting for 23% of all water consumption nationally, 32% in the western US and 55% in the Colorado River basin.").

[255] *E.g.*, Shefali Sharma, *Mighty Giants: Leaders of the Global Meat Complex*, INST. FOR AGRIC. & TRADE POL'Y (Apr. 10, 2018), https://www.iatp.org/blog/leaders-global-meat-complex; Brianna L. Alderman et al., *Ruffled Feathers: The Chicken Cartel in the United States*, 68 ANTITRUST BULL. 47, 48 (2023); Tom Polansek, *Explainer: How Four Big Companies Control the U.S. Beef Industry*, REUTERS (June 17, 2021, 10:12 AM), https://www.reuters.com/business/how-four-big-companies-control-us-beef-industry-2021-06-17.

[256] *E.g.*, BROTHER DAVID ANDREWS & TIMOTHY J. KAUTZA, PEW COMM'N ON INDUS. FARM ANIMAL PROD., IMPACT OF INDUSTRIAL FARM ANIMAL PRODUCTION ON RURAL

shift to reduce GHG emissions, such shifts (for example, from cows to pigs, or pigs to chickens[257]) do nothing to address these other externalities of industrialized animal agriculture systems.[258] The vast majority of animal products in the United States are raised in industrial settings.[259]

Second, reducing per animal emissions will not necessarily lead to reductions in total emissions if production and consumption of animal products continues to rise as predicted.[260] Also, increasing the productivity of individual animals often requires additional inputs with attendant GHG emissions.[261] Moreover, efficiency improvements can sometimes paradoxically result in increased demand and production (for

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COMMUNITIES 35 (2008) ("[I]ndustrialization [of animal agriculture] draws wealth and life away from the very rural communities it purports to benefit and which once thrived as a result of diverse, and more sustainable, forms of livestock production.").

257 FAO ROADMAP, *supra* note 113, at 12 ("[S]hifting from large ruminant to small ruminant animals for meat products, and from ruminant to monogastric animals, in particular chicken, will reduce the GHG impacts of animal-food based [sic] products."); SUTTON ET AL., *supra* note 28, at 13 (proposing shifting subsidies from "red meat and dairy" to "low-emission foods, like *poultry* or fruits and vegetables" (emphasis added)).

258 Verkuijl et al., *supra* note 244, at 6–8. Looking specifically at animal welfare and the suffering of individual animals, it takes about 100 chickens to get the same amount of meat as one cow. Marina Bolotnikova & Kenny Torrella, *How Big Are Factory Farms? How Mega-Sized Factory Farms Took Over America's Food System, Explained in 9 Charts*, VOX (Feb. 26, 2024, 4:30 AM), https://www.vox.com/future-perfect/24079424/factory-farming-facts-meat-usda-agriculture-census.

259 Hannah Ritchie, *How Many Animals Are Factory Farmed?* OUR WORLD IN DATA (Sept. 25, 2023), https://ourworldindata.org/how-many-animals-are-factory-farmed (citing estimates based on USDA data that 99% of U.S. farm animals are raised on industrial-scale concentrated animal feeding operations, or "CAFOs," as defined by EPA, including 70% of cows, 98% of pigs and egg-laying hens, 99.9% of turkeys, and 99.97% of broiler (meat) chickens).

260 *See* IPCC, CLIMATE CHANGE AND LAND, *supra* note 67, at 440 ("Reductions in GHG emissions intensity (emissions per unit product) from livestock can support reductions in absolute emissions, *provided appropriate governance to limit total production is implemented at the same time* . . . ." (emphasis added)). Indeed, some animal agriculture companies have preferred to report on decreases in their per animal emissions while failing to be clear that overall emissions have increased because of growth in the size of the herd. *See* EMISSIONS IMPOSSIBLE, *supra* note 3, at 14–15. Similarly, campaigns like the "continuous improvement" campaign of the Meat Institute, a U.S.-based trade association, offer industry a comfortable baseline and will not necessarily result in emissions reductions. *See generally* N. AM. MEAT INST., IMPLEMENTING TOOLS: 2024 CONTINUOUS IMPROVEMENT REPORT (2024), https://meatinstitute.org/sites/default/files/documents /20241021%20Protein%20PACT%20continuous%20improvement%20report.pdf.

261 Gert-Jan Nabuurs et al., *Agriculture, Forestry and Other Land Uses*, *in* INTERGOV'TAL PANEL ON CLIMATE CHANGE, CLIMATE CHANGE 2022: MITIGATION OF CLIMATE CHANGE 750, 771 (Priyadarshi R. Shukla et al. eds., 2022) [hereinafter *IPCC Agriculture, Forestry and Other Land Uses*] ("[I]ncreased individual animal productivity generally requires increased inputs (e.g., feed) and this generates increased emissions . . . . In addition, the production of inputs to facilitate increased animal productivity, may indirectly drive further absolute GHG emissions along the feed supply chain.").

example as happened with more efficient cars and air conditioners),[262] or to shifts in production that undo emissions reductions.[263]

Third, many efficiency approaches are as yet unproven and potentially unscalable.[264] For example, an Irish government study found that, even if methane-inhibiting technologies and other mitigation measures were successfully implemented, agriculture would not be able to achieve Paris Agreement targets without also "limiting animal number increases and develop[ing] . . . new science."[265] Moreover, efficiency approaches usually come at a cost, and for that reason producers may be slow to implement them without regulatory pressure.[266] For example, the feed additive Bovaer has been shown to

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[262] This phenomenon is known as the "Jevons Paradox" (named after 19th century economist William Stanley Jevons) or the "Rebound Effect." Jaume Freire González, *The Jevons Paradox and Rebound Effect: Are We Implementing the Right Energy and Climate Change Policies?*, OECD F. NETWORK (Sept. 22, 2022), https://www.oecd-forum.org/posts/the-jevons-paradox-and-rebound-effect-are-we-implementing-the-right-energy-and-climate-change-policies.

[263] *E.g.*, David Styles et al., *Climate Mitigation by Dairy Intensification Depends on Intensive Use of Spared Grassland*, 24 GLOB. CHANGE BIOLOGY 681, 681 (2018) (undertaking life cycle assessment of potential indirect GHG effects of dairy intensification in the United Kingdom and describing replacement beef production in Brazil (because dairy cattle also become beef) resulting in a "small GHG savings for the UK GHG inventory, but . . . a net increase in international GHG emissions"). As observed in the recent EU Assessment Report, "reductions in the production and consumption of GHG-intensive agricultural products (especially livestock products) need to go hand in hand, otherwise emission reduction efforts risk being offset by increased imports (displacing emissions to other countries) or exports (maintaining EU emissions in spite of consumption changes)." EU ASSESSMENT REPORT 2024, *supra* note 50, at 155.

[264] *E.g.*, Dutkiewicz, *The Comforting Lie of Climate-Friendly Meat*, *supra* note 102 ("[T]he technologies proposed to reduce [methane from cows] might look good in small trials. But they haven't been implemented or shown to be effective or affordable at any meaningful scale."); *Novel Meat and Dairy Alternatives Could Help Curb Climate-Harming Emissions*, U.N. ENV'T PROGRAMME (Dec. 8, 2023), https://www.unep.org/news-and-stories/press-release/novel-meat-and-dairy-alternatives-could-help-curb-climate-harming ("[F]eed additives to reduce emissions from animal agriculture . . . have struggled so far to win government support and achieve impacts at the desired scale or speed."); *IPCC Agriculture, Forestry and Other Land Uses*, *supra* note 261, at 830 (identifying the need for more research into technological mitigation measures as a knowledge gap, including research regarding their practical use, feasibility, and impact on absolute GHG emissions).

[265] TEAGASC CLIMATE CTR., MARGINAL ABATEMENT COST CURVE 2023: EXECUTIVE SUMMARY 11 (2023), https://www.teagasc.ie/publications/2023/marginal-abatement-cost-curve-2023---executive-summary.php; *see also id.* at 9 (finding that further research is needed to determine whether feed additives are effective and whether they have constraints or pose risks).

[266] Ben Elgin, *This Quick Fix Reduces Methane Emissions from Cow Burps*, BLOOMBERG L. (June 28, 2023), https://www.bloomberglaw.com/product/blaw/bloombergterminalnews/bloomberg-terminal-news/RWY8O5T0AFB4 ("[C]orporate giants that have promised huge and rapid cuts to their greenhouse gas emissions, like Danone, Nestle, Starbucks and JBS . . . have publicly declared an interest in using methane-curbing feed additives with the farmers or feedlots who supply their ingredients, but have yet to follow through at any sort of magnitude.").

reduce enteric methane from cows by thirty percent.[267] But it costs about $100 per cow per year and uptake has been slow, even by large companies.[268] In the words of one campaigner: "If you're going to talk about [feed additives], buy them and do this. Invest the money and make it a part of your emission-reduction plan. Some companies are presenting this as a silver bullet, but they're not at all serious about scaling it up, probably because of the cost."[269]

Fourth, even if efficiency approaches were affordable, feasible, and implemented at scale, farmed animals—and cattle in particular—would still be significant sources of GHG emissions. For example, even if the Bezos Earth Fund is correct that its methane-inhibiting research could reduce emissions by as much as thirty percent, "that would still make cows the highest-emission part of the food system."[270] Shifting diets would be more effective.[271]

Fifth, where efficiency approaches make industrial animal agriculture more profitable or even encourage its expansion and entrenchment, such efforts can act contrary to climate mitigation goals. Anaerobic digesters, which are systems that cap manure lagoons to seek to capture emitted methane, are perhaps the best example. As discussed elsewhere in this volume,[272] digesters have been the target of sustained criticism on a number of fronts,[273] including that they can make large-scale animal agriculture more profitable and even encourage expansion of facilities.[274] In California, where digesters have benefitted from

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267 *Id.*

268 *Id.* (noting that JBS had previously vowed to use Bovaer but had then "gone silent" on the topic).

269 *Id.* (quoting Nusa Urbancic, campaigns director at Changing Markets Foundation).

270 Dutkiewicz, *The Comforting Lie of Climate-Friendly Meat*, *supra* note 102.

271 SUTTON ET AL., *supra* note 28, at 13 ("[T]he cost-effective mitigation potential from shifting diets away from meat is about twice as high as that from reducing enteric fermentation and other livestock production mitigation methods."); GLOBAL METHANE ASSESSMENT, *supra* note 81, at 13 ("Behavioural change measures and innovative policies are particularly important to prevent emissions from agriculture, given the limited potential to address the sector's methane emissions through technological measures.").

272 Randall S. Abate, *Putting Lipstick on a Pig: Biogas, Methane Digesters, and the Greenwashing Playbook*, 54 ENV'T L. 545 (2024).

273 *See, e.g.*, RUTHIE LAZENBY, VT. L. & GRADUATE SCH., RETHINKING MANURE BIOGAS: POLICY CONSIDERATIONS TO PROMOTE EQUITY AND PROTECT THE CLIMATE AND ENVIRONMENT 16 (2022), https://www.vermontlaw.edu/sites/default/files/2022-08/Rethinking_Manure_Biogas.pdf (discussing environmental harms resulting from digesters).

274 EU ASSESSMENT REPORT 2024, *supra* note 50, at 169 (noting that biogas digesters have the potential to "increase[] incentives to maintain livestock herd numbers"); MARTIN BOWMAN & KRYSIA WORONIECKA, FEEDBACK, GREEN GAS WITHOUT THE HOT AIR: DEFINING THE TRUE ROLE OF BIOGAS IN A NET ZERO FUTURE 57–60 (2020), https://feedbackglobal.org/wp-content/uploads/2020/09/Feedback-2020-Green-Gas-Without-the-Hot-Air-report.pdf (describing how intensive factory farming of pigs and chickens expanded in Northern Ireland following the institution of biogas subsidies); CHLOË WATERMAN & MOLLY ARMUS, FRIENDS OF THE EARTH, BIOGAS OR BULL****? THE DECEPTIVE PROMISE OF MANURE BIOGAS AS A METHANE SOLUTION 5 (2024), https://foe.org/wp-content/uploads/2024/03/Factory-Farm-Gas-Brief_final-0312.pdf ("CAFOs with digesters are more likely to

substantial government investment and support via the Low Carbon Fuel Standard and other programs,[275] some observers refer to a dangerous "manure gold rush."[276] In a recent piece on biogas digesters, a professor at UC Davis wrote:

> In colonial India, the British government wanted to reduce the number of cobras in Delhi, so it offered a bounty for dead cobras. Profit-seek[ers] responded by breeding cobras to receive the bounty. This phenomenon is known as the "cobra effect." There is a risk of the same thing happening when we pay people to capture methane from dairy cow manure.[277]

Moreover, digesters have benefitted from substantial government investment, an opportunity cost for other more beneficial mitigation approaches.[278]

Sixth, efficiency approaches can distract attention from other policy paths that prioritize the urgent need to reduce overall emissions from animal agriculture. In the parallel context of geoengineering (removing carbon from the atmosphere by technical means),[279] the U.N. Human Rights Council's Advisory Committee has warned that such approaches

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increase their herd sizes relative to statewide populations."); Aaron David Smith, *Cow Poop Is Now a Big Part of California Fuel Policy*, U.C. DAVIS: AG DATA NEWS (Jan. 22, 2024), https://asmith.ucdavis.edu/news/cow-poop-now-big-part-california-fuel-policy ("High profits from operating digesters create the incentive for farmers to expand dairy herds for the purpose of generating manure rather than for producing milk."). *But see* Aaron David Smith, *Where Are California's Dairy Cows?*, U.C. DAVIS: AG DATA NEWS (Feb. 16, 2024), https://asmith.ucdavis.edu/news/how-many-dairy-cows (reviewing recently released USDA agricultural census data and concluding that "[p]erhaps the digester programs accelerated consolidation or inspired some farmers to add cows, but it is difficult make definitive conclusions from these data").

275 Emma Foehringer Merchant, *A Battle Is Underway Over California's Lucrative Dairy Biogas Market*, INSIDE CLIMATE NEWS, https://insideclimatenews.org/news/28122023/milking-it-battle-underway-california-dairy-biogas-market (Dec. 28, 2023) ("[S]ome California dairies have seen a windfall unrelated to agricultural products; 131 of them have received state grants to install anaerobic digesters . . . ."); *see also* Pegga Mosavi, *Manure, Methane, and Money: The Anaerobic Digester Disaster in California*, 29 ANIMAL L. 41, 52–53 (2023).

276 Jessica Fu, *Brown Gold: The Great American Manure Rush Begins*, GUARDIAN (Feb. 2, 2023, 6:00 AM), https://www.theguardian.com/environment/2023/feb/02/manure-renewable-natural-gas-california; Phred Dvorak, *California's Green-Energy Subsidies Spur a Gold Rush in Cow Manure*, WALL ST. J. (Feb. 19, 2022, 9:00 AM), https://www.wsj.com/articles/californias-green-energy-subsidies-spur-a-gold-rush-in-cow-manure-11645279200; Aaron David Smith, *The Dairy Cow Manure Goldrush*, AG DATA NEWS BLOG (Feb. 2, 2022), https://asmith.ucdavis.edu/news/revisiting-value-dairy-cow-manure; *see also IPCC Agriculture, Forestry and Other Land Uses*, *supra* note 261, at 823 ("It is critical that [agricultural] intensification does not drive expansion of unsustainable practices. Increased productivity with associated economic reward could incentivise and reward agricultural land expansion, or environmentally and socially damaging practices . . . .").

277 Aaron David Smith, *Are Manure Subsidies Causing Farmers to Milk More Cows?*, U.C. DAVIS: AG DATA NEWS (Apr. 7, 2023), https://asmith.ucdavis.edu/news/are-digesters.

278 LAZENBY, *supra* note 273, at 9–14.

279 *Geoengineering*, SALATA INST. FOR CLIMATE & SUSTAINABILITY AT HARV. UNIV., https://salatainstitute.harvard.edu/sgrp (last visited Oct. 17, 2024).

may discourage immediate efforts to reduce emissions, "which makes disastrous future scenarios more probable."[280] Denmark's Minister for Global Climate Policy remarked about geoengineering: "It very easily becomes an excuse for not doing all the things that we already can do and that we know will work."[281]

Finally, efficiency approaches may delay large animal agriculture companies from seriously considering transformative change and investing in alternative production models. Looking past posturing about farmers and meat culture, these are profit-focused companies that (at least in theory and setting aside transition costs) should not have a vested interest in continuing to raise and slaughter animals.[282] Large meat and dairy companies have invested in non-animal alternatives[283] (although often not at the scale that they suggest),[284] and may to some extent identify as "protein" producers.[285]

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[280] Impact of New Technologies Intended for Climate Protection on the Enjoyment of Human Rights, Rep. of the Human Rights Council Advisory Comm., ¶ 12, U.N. Doc. A /HRC/54/47 (2023).

[281] Eric Niiler, *Scientists Resort to Once-Unthinkable Solutions to Cool the Planet*, WALL ST. J. (Feb. 14, 2024), https://www.wsj.com/science/environment/geoengineering-projects-cool-planet-weather-f0619bf7 (quoting Dan Jørgensen); *see also Clash over Dutch Farming*, *supra* note 228 ("There is a kind of technological optimism that leads us into delay, and . . . consolidation of existing power. And the [technologies] that do emerge and get funded are the ones that integrate nicely with the current model." (quoting environmental professor Adam Calo)). Responsible use of geoengineering approaches could mean using them in the short term to create time to make the policy and behavior choices that are necessary in the long-term. *See* Niiler, *supra.*

[282] *But see* Mack Graves, *Population Changes and Their Effect on Beef Production*, MEATINGPLACE (Feb. 15. 2024) https://www.meatingplace.com/Industry/Blogs/Details /113370?allowguest=true (arguing that, to "see our industry survive" we must address threats including climate change, dampened population growth, and changing diet recommendations, all of which "are existential threats to our collective livelihoods" that nonetheless "*can be won by beef*" (emphasis added)); *cf.* DANIEL JONES ET AL., FEEDBACK, IT'S BIG LIVESTOCK VERSUS THE PLANET: A CASE TO CUT OFF MEAT AND DAIRY CORPORATIONS' FINANCIAL FODDER 23 (2020), https://feedbackglobal.org/wp-content/uploads/2020/04 /Feedback-Big-Livestock-versus-the-Planet-Final-April-2020.pdf (noting that some meat and dairy company executives view plant-based products "as an addition to, not a subtraction from, their overall existing production models").

[283] Andy Coyne, *Eyeing Alternatives—Meat Companies with Stakes in Meat-Free and Cell-Based Meat*, JUST FOOD (July 13, 2023), https://www.just-food.com/features/eyeing-alternatives-meat-companies-with-stakes-in-meat-free-and-cell-based-meat.

[284] BLINDSPOT, *supra* note 83, at 38–39, 42.

[285] *E.g.*, *Tyson Food Facts*, TYSON FOODS: INV. RELS., https://ir.tyson.com/about-tyson /facts/default.aspx (last visited Oct. 18, 2024) ("Tyson Foods is a modern, multi-national protein-focused food company," but then detailing meat production and meat brands); Melissa Sue Sorrells, *Cargill, ENOUGH Expand Mycoprotein Partnership*, MEATINGPLACE (Feb. 21, 2024), https://www.meatingplace.com/Industry/News/Details /113456?allowguest=true (quoting the managing director of Cargill's meat and dairy alternatives discussing partnership with alternative protein company: "We remain committed to bringing alternative and traditional protein source options to the table").

V. POLITICAL REALITIES: THE EXAMPLE OF FARMER PROTESTS AND RETRENCHMENT IN EUROPE

As with all policy change, each of the approaches described above would benefit some stakeholders and not be aligned with the current interests of others. It is not surprising then that significant political pushback has arisen in response to the acceleration of policy around climate and animal agriculture.

As background, the last several years have seen widespread farmer protests in Europe, and abandonment of core agricultural reforms that would be necessary to achieve the promise of the Green New Deal and the Farm to Fork Strategy.[286] The protests share certain themes and motivations in common, but also differ significantly in their causes and contexts. For example, an interactive map of European farmer protests during 2023 prepared by Politico shows they were motivated by a variety of concerns including: cheap imports, electricity and fuel costs (including the removal of diesel fuel subsidies), low prices for farm products, delays in promised subsidy payments, and the EU requirement to leave four percent of land fallow.[287]

While not all of the farmers' grievances are closely connected to efforts to reduce animal agriculture's GHG emissions,[288] some of them are. Relevant themes include anger about the EU's Green Deal as well as frustration about responses to nitrogen pollution from manure.[289]

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[286] Piet Ruig, *Farm-to-Fork, to Protestors with Pitchforks: The Death of EU's Sustainable Food Policy*, EUOBSERVER (Apr. 28, 2024), https://euobserver.com/green-economy/arf1589b03 ("[F]armers' protests and industry pressures have forced the commission to drop most of the proposals."); PIERRE-MARIE AUBERT, IDDRI, THE FARM TO FORK STRATEGY: REASONS FOR FAILURE AND HOW TO MOVE FORWARD 2–3 (2024), https://www.iddri.org/sites/default/files/PDF/Publications/Catalogue%20Iddri/Autre%20Publication/NOTE%20Veblen%20paper%20agri%20EN.pdf. In late 2023, a pesticide reduction measure at the heart of the Farm to Fork Strategy was voted down by the European Parliament, and then abandoned altogether in early 2024. Ruig, *supra*; Somini Sengupta & Monika Pronczuk, *Making Farming More Climate-Friendly Is Hard. Just Ask Europe's Politicians*, N.Y. TIMES (Feb. 6, 2024), https://www.nytimes.com/2024/02/06/climate/europe-farming-protests-policy.html. Similarly, in April 2024, the European Parliament loosened environmental standards in the Common Agricultural Policy. Thin Lei Win, *Farmers' Protests Are About More Than Green Policies*, LAND CLIMATE (May 2, 2024), https://www.landclimate.org/farmers-protests-are-about-more-than-green-policies.

[287] Hanne Cokelaere & Bartosz Brzeziński, *Europe's Farmer Protests Are Spreading. Here's Where and Why*, POLITICO (Jan. 31, 2024, 9:08 PM), https://www.politico.eu/article/farmer-protest-europe-map-france-siege-paris-germany-poland; *see also* Orla Dwyer, *Analysis: How Do the EU Farmer Protests Relate to Climate Change?*, CARBONBRIEF (Feb. 5, 2024, 4:36 PM), https://www.carbonbrief.org/analysis-how-do-the-eu-farmer-protests-relate-to-climate-change (including a chart of protest motivations by country and dividing protests, roughly evenly, into three categories: climate/emissions, biodiversity/conservation, and neither).

[288] Win, *supra* note 286 (noting that the "protests have consistently been driven by local contexts" but have been framed "as a rebellion against environmental regulations" and policy responses have focused on "dismantling green policies but not much else").

[289] *See, e.g.*, Manuela Andreoni, *Europe Struggles to Balance Climate and Farming*, N.Y. TIMES: CLIMATE FORWARD (Feb. 6, 2024) (discussing farmer frustration with EU's

Following protests, in early 2024 references to cutting non-carbon dioxide agricultural emissions—including methane and nitrous oxide from animal agriculture—were removed in the final version of the European Commission's communication launching the process for setting 2040 climate goals.[290] Advocacy groups described this "last-minute watering down" as a capitulation.[291]

The Netherlands, Ireland, and Flanders have had active farmer protests relating to climate and animal agriculture. Notably, in each of those countries, while many sectors are facing emissions limitations in order to meet binding climate targets, the outcry has been especially loud from farmers. In the Netherlands, a court order prevented the government from issuing permits for all sorts of projects (not just animal agriculture facilities) that emitted nitrogen.[292] Even though "[o]vernight, 18,000 construction projects, including critical infrastructure and housing development, were mothballed," the loudest response came from the farmers.[293] Downtown Brussels was inundated with hundreds of tractors in 2023, as farmers there protested plans to reduce nitrogen pollution in the Flanders region.[294] And in Ireland, where government plans seek a 50% reduction of emissions from the transport sector, 40% from commercial and public buildings, and only

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Green Deal); Stokstad, *supra* note 220 (discussing farmer protests against nitrogen emissions regulations).

290 According to sources who saw a draft version, the European Commission's climate target plan originally called for the agricultural sector to reduce non-CO2 greenhouse gas emissions by at least 30 percent. Angelo Di Mambro, *Agriculture 'Core Area' for EU's 2040 Climate Targets – Commission Report*, EURACTIV (Jan. 29, 2024), https://www.euractiv.com/section/agriculture-food/news/agriculture-core-area-for-eus-2040-climate-targets-commission-report. However, this language is absent from the final document. *Securing Our Future: Europe's 2040 Climate Target and Path to Climate Neutrality by 2050 Building a Sustainable, Just, and Prosperous Society*, COM (2024) 63 final (Feb. 6, 2024); *see also* Alice Hancock, *EU Backs Down on Agricultural Emissions After Farmers' Protests*, FIN. TIMES (Feb. 5, 2024) https://www.ft.com/content/00b344d9-8ff9-4a71-ae31-a76daecb96ab.

291 Press Release, Eurogroup for Animals, 2040 Climate Target—EU Commission Half-Heartedly Recognises the Role of Shifting Diets (Feb. 6, 2024), https://www.eurogroupforanimals.org/news/2040-climate-target-eu-commission-half-heartedly-recognises-role-shifting-diets; *see also* Andreoni, *supra* note 289 ("Bending to farmers' demands, the European Commission . . . softened its recommendations on cutting agricultural pollution.").

292 Ashoko Mukpo, *How Manure Blew Up the Netherlands*, MONGABAY (Sept. 6, 2023) [hereinafter *How Manure Blew Up the Netherlands*], https://news.mongabay.com/2023/09/how-manure-blew-up-the-netherlands.

293 *Id.*; Monika Pronczuk & Claire Moses, *Labeled Climate Culprits, European Farmers Rebel Over New Standards*, N.Y. TIMES (Aug. 26, 2023), https://www.nytimes.com/2023/08/26/world/europe/europe-farmers-climate-change.html ("The government has also imposed measures in the sectors of construction, mobility, and industry. But the biggest challenge lies with the farmers." (quoting spokesman for Dutch Agriculture Ministry)).

294 Angela Symons, *Hundreds of Dutch Farmers Sign Up to Close Their Livestock Farms Under New Scheme*, EURONEWS (Nov. 30, 2023), https://www.euronews.com/green/2023/11/30/dutch-farmers-could-be-paid-to-close-their-livestock-farms-under-new-scheme.

25% from agriculture—agricultural cuts have generated the most vocal opposition.[295]

The Dutch farmer protests are a particularly instructive example of political peril around environmental animal agriculture policy. As described above,[296] after court judgments found that the Dutch government was not compliant with EU directives requiring the protection of natural areas from nitrogen pollution, the government announced its intention to shrink the national herd by as much as a third.[297] The Dutch Minister for Nitrogen and Nature Policy recognized at the time that the plan did not allow for a "future for all [Dutch] farmers," and the plan itself noted that "this approach will be so radical that it will take a great deal from many to shape it."[298]

In response, tens of thousands of farmers blocked roads with tractors, staged mass protests, and set hay and manure on fire.[299] The farmer protests have, in some instances, become linked to or instrumentalized by far-right parties.[300] Right-wing Dutch leader Geert Wilders and Marine le Pen in France expressed support for the farmers, and former U.S. President Donald Trump warned that "climate fanatics" would come next for U.S. farmers.[301] A Dutch academic expert in social movements observed: "Political scientists call it issue expansion. It's a small issue, but it expands because of vicious circles and before you

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295 Rory Carroll, *Irish Farmers Say They Will Be Forced to Cull Cows to Meet Climate Targets*, GUARDIAN (Aug. 29, 2022), https://www.theguardian.com/world/2022/aug/29/irish-farmers-cull-cows-meet-climate-targets.

296 *See supra* notes 224–229 and accompanying text.

297 Mongabay's series on these events in the Netherlands is a thorough and thought-provoking read. Ashoka Mukpo, *The Dutch Farmers' Protests of 2022: A Mongabay Series*, MONGABAY (Sept. 14, 2023), https://news.mongabay.com/2023/09/the-dutch-nitrogen-crisis-a-mongabay-series.

298 MARIT VAN DER HOEK, U.S. DEP'T OF AGRIC. FOREIGN AGRIC. SERV., GOVERNMENT PRESENTS NATIONAL PROGRAM TO REDUCE NITROGEN GREENHOUSE GAS EMISSIONS IN RURAL AREAS 1, 5 (2022), https://apps.fas.usda.gov/newgainapi/api/Report/DownloadReportByFileName?fileName=Government%20Presents%20National%20Program%20to%20Reduce%20Nitrogen%20Greenhouse%20Gas%20Emissions%20in%20Rural%20Areas%20_The%20Hague_Netherlands_NL2022-0035.pdf.

299 *How Manure Blew Up the Netherlands*, *supra* note 292.

300 *E.g.*, Patrick Smith, *How Dutch Farmers Became the Center of a Global Right-Wing Culture War*, NBC NEWS (Dec. 12, 2022), https://www.nbcnews.com/news/world/dutch-farmers-emissions-global-right-wing-culture-war-rcna60269; *see also* Lili Bayer, *German Vice-Chancellor Warns of Extremism as Far-Right Groups Join Farmers' Protest—As It Happened*, GUARDIAN (Jan. 8, 2024), https://www.theguardian.com/world/live/2024/jan/08/germany-farmers-tractors-block-roads-protests-cuts-agricultural-subsidies-pay-europe-latest-updates (discussing far-right groups' infiltration of protests by German farmers over subsidy reductions); Andreoni, *supra* note 289 ("If policymakers push[] too far on initiatives to protect biodiversity and combat climate change, especially without involving farmers in the decision-making process, it could empower far-right populists who want to reverse such policies."); Dwyer, *supra* note 287 (discussing right-wing political groups using farmer frustration as a political tool).

301 Ashoko Mukpo, *In the Netherlands, Pitchforks Fly for an Empire of Cows*, MONGABAY (Sept. 7, 2023) [hereinafter *In the Netherlands, Pitchforks Fly*], https://news.mongabay.com/2023/09/in-the-netherlands-pitchforks-fly-for-an-empire-of-cows.

know it, it's all about the great reset,"[302] referring to a white nationalist conspiracy theory.[303]

In March 2023, the new Farmer-Citizen Movement (BBB), which had run explicitly against the nitrogen reduction policies, stunningly won a larger share of the vote than any other Dutch party.[304] Far-right leader Geert Wilders and his Freedom Party now have the largest bloc of seats in parliament and ministers from his party were appointed to the cabinet for the first time in summer 2024.[305] Wilders ran an anti-EU campaign including a focus on immigration and climate policy, calling for a withdrawal from international climate obligations.[306]

All of this political turmoil has delayed and endangered the prospects for addressing the pressing environmental issue of nitrogen pollution from animal agriculture.[307] If the country cannot reduce nitrogen pollution in high-value conservation areas in line with EU rules and as directed by the Court of Justice of the European Union, it will face substantial fines.[308] Dutch naturalists fear that the fate of fragile habitats hangs in the balance.[309]

As another example, Ireland may eventually face similar challenges. The European Commission successfully sued Ireland for its failures to limit nitrogen pollution, and later issued a ruling condemning Ireland's continuing noncompliance, noting among other things the challenges of "overgrazing" and "agricultural activities causing nitrogen deposition."[310] Like the Netherlands, Ireland has a large animal agriculture industry, with seven million commercially farmed cows for its five million people.[311] Cows are responsible for about one-fifth of all of Ireland's anthropogenic GHG emissions.[312] As part of meeting its Paris Agreement commitment to reach carbon neutrality by 2050, the Irish government has undertaken to reduce GHG emissions from agriculture by 25% by 2030.[313]

An online kerfuffle originating from Ireland illustrates the potential for dramatic reactions to factual policy discussions of the environmental

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302 Smith, *supra* note 300.

303 Aoife Gallagher & Ciarán O'Connor, *The 'Great Reset'*, INST. FOR STRATEGIC DIALOGUE (Mar. 14, 2023), https://www.isdglobal.org/explainers/the-great-reset.

304 *In the Netherlands, Pitchforks Fly*, *supra* note 301.

305 *Dutch Right-Wing Government Installed as Wilders' Shadow Looms Large*, REUTERS (July 2, 2024), https://www.reuters.com/world/europe/dutch-right-wing-government-installed-wilders-shadow-looms-large-2024-07-02.

306 Cagan Koc & Diederik Baazil, *Dutch Far-Right Leader Wilders Scores Shock Election Victory*, BLOOMBERG (Nov. 23, 2023), https://www.bloomberg.com/news/articles/2023-11-22/far-right-leader-wilders-scores-shock-victory-in-dutch-election.

307 *In the Netherlands, Pitchforks Fly*, *supra* note 301.

308 *Clash over Dutch Farming*, *supra* note 228.

309 *How Manure Blew Up the Netherlands*, *supra* note 292; *In the Netherlands, Pitchforks Fly*, *supra* note 301 ("For those who'd hoped the 2019 court ruling meant that Dutch ecosystems might have a fighting chance to recover, the election was a disaster.").

310 Case C-444/21, Eur. Comm'n v. Ireland, ECLI:EU:C:2023:524, ¶ 117 (June 29, 2023).

311 Dutkiewicz, *Ireland Isn't Culling Cows*, *supra* note 215.

312 *Id.*

313 TEAGASC CLIMATE CTR., *supra* note 265, at 6.

impacts of animal agriculture. A 2022 report from a working group of the Irish Department of Agriculture suggested the possibility of a "voluntary exit/reduction scheme" under which farmers would be paid for removing cows and agree not to replace them for at least five years.[314] A similar idea was described in a government document obtained by a journalist, which stated that removing about ten percent of Ireland's dairy cows would be needed to keep binding emissions targets within reach.[315] Even though no such plan was enacted or even formally proposed or debated, an international media firestorm ensued, surrealistically leading to Elon Musk tweeting: "This really needs to stop. Killing some cows doesn't matter for climate change."[316]

Thus, even the suggestion of an Irish government policy to shrink the herd caused international controversy. But Ireland may not be able to achieve its agricultural emission goals without reducing the number of cattle. A 2023 report by Ireland's Agriculture and Food Development Authority found that "limiting animal number increases" will be necessary to reach emissions targets.[317] In the words of one Irish climate scientist: "Various tried and untried methods have been advanced to suggest compliance with the 25% emissions ceiling," but without success; "[o]nly a reduction in numbers can achieve the targets in the short term."[318]

VI. PATHS FORWARD

> [T]he last four years in the Netherlands have been a warning sign for the global environmental movement. When plans to address biodiversity and climate change—whether through decarbonization, expansion of conservation areas, or agriculture reform—collide with people's livelihoods and sense of place in the world, chaos can and will follow. . . . Already, the Netherlands' political miasma has begun to seep across its borders, a cloud descending onto other parts of Europe like ammonia from a megafarm.
>
> ~In the Clash over Dutch Farming,
> Europe's Future Arrives,
> Ashoka Mukpo[319]

> If there is some kind of main message of the Netherlands towards the world, it would be to act now. The environmental and societal costs will be much higher and more painful if we wait too long, for farmers and citizens alike.

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314 Dutkiewicz, *Ireland Isn't Culling Cows*, *supra* note 215.
315 *Id.*
316 *Id.*
317 TEAGASC CLIMATE CTR., *supra* note 265, at 11.
318 Carroll, *supra* note 295.
319 *Clash over Dutch Farming*, *supra* note 228.

~Kirsten Haanraads,
World Wildlife Fund
Netherlands[320]

Building from the preceding discussion and examples, this Part discusses considerations that could be important in advancing policy to mitigate animal agriculture's climate harms. One clear lesson from the political difficulties in the Netherlands is that earlier action, before the threat of a court judgment and potential fines, may have offered policymakers better options and more opportunity to ease into change. With the benefit of hindsight, the Dutch government seems to have missed an earlier opportunity to "draw[] up long-term plans to reform agricultural production before the situation worsened."[321]

The time-sensitivity and lack of maneuverability in the Dutch situation arose in part from the fact that the policy change was driven by a court decision.[322] Should the conclusion be that litigation is an overly rigid tool for such complicated matters as climate and animal agriculture policy? On the other hand, if environmental advocates had not resorted to litigation, pollution could have continued unchecked, ultimately resulting in an even more difficult situation and more harms to nature and society. Indeed, the Dutch advocates reportedly "begged" for attention from policymakers before resorting to litigation.[323] Even without the catalyst of litigation, the current lack of adequate climate mitigation, if continued, will force urgent changes to food systems.[324] Rather than imperiling our food systems, early mitigation action to curtail emissions from agriculture can be expected to lower long-term food prices, reduce hunger risk, and use less water.[325]

Starting policy change sooner also creates time to build consensus and sequence interventions. The Danish Plant-Based Action Plan provides examples of both. The Plan reportedly grew out of a yearslong process of stakeholder discussions including farmers, industry,

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320 *Id.*

321 *In the Netherlands, Pitchforks Fly*, *supra* note 301.

322 *Supra* notes 224–229 and accompanying text.

323 *How Manure Blew Up the Netherlands*, *supra* note 292; *see also* Daina Bray & Thomas Poston, *The Methane Majors: Climate Change and Animal Agriculture Litigation in U.S. Courts*, 49 COLUM. J. ENV'T L. 145, 247 (2024) ("Well-founded litigation might be uniquely positioned to facilitate action—which likely must include reduced production and consumption of animal products—where gridlocked political processes have failed.").

324 BLINDSPOT, *supra* note 83, at 43 ("If we fail to act now, runaway climate change will force us to adapt our eating habits because of collapsing food-production systems, increasing poverty and inequality. If we act quickly, we can manage the transition to healthier and more nature- and climate-friendly diets that are more just and equitable. This is where our choices and opportunities lie."); *see also* SUTTON ET AL., *supra* note 28, at 1 ("[C]onditions are set to deteriorate even further as the world attempts to feed a global population that will grow by 2 billion by 2050. More food means accelerating food production, land use changes, and related emissions, which exacerbate global heating. In turn, global heating will affect future agricultural yields and food security.").

325 SUTTON ET AL., *supra* note 28, at 8–10, 13.

government, and environmental and animal groups.[326] Another key characteristic of the Danish approach is that the initial measures focus on building demand and opportunity (the carrot); it is not until those efforts are well underway that measures like an agriculture carbon tax (the stick) would be implemented.[327] While carrots will not be sufficient by themselves,[328] the sequencing being tried in Denmark seems promising.

Indeed, the role of building in time for sustained discussion amongst stakeholders, allowing them an opportunity to appreciate each other's positions and challenges, emerges as an important strategy for avoiding the most adversarial of outcomes. In 2020, after farmer protests prompted by environmental regulation, Germany created a "Commission on the Future of Agriculture" bringing together consumers, farmers, environmentalists, and researchers.[329] The German coalition was modeled on a similar coalition that had been created around moving away from coal.[330] The Commission succeeded in arriving at a consensus position, with all participants recognizing that the current food system requires reform to achieve both economic and environmental sustainability.[331] Policy makers can look to prior transitions for lessons on both the adversarial battles that can result without creating space for consensus-building, and the new opportunities that can be created by such discussions.

If we might expect the grim realities of our changing climate and the patent harms of industrial animal agriculture to push stakeholders to a consensus around the need for some level of change, what principles should guide our consideration of policy options? Ensuring international equity and a just transition will be critical. As to the first, not all policy approaches and goals are appropriate in all places.[332] As recognized by the EAT-*Lancet* Commission, some populations depend on animal agriculture, and others face nutrition challenges in contexts where available plant-sourced foods may not be sufficient.[333] Moreover,

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326 Bourke, *supra* note 162.

327 *Id.* ("The world-first Danish strategy to encourage plant-based foods may contain a lesson for other nations looking to cut back on meat: build new demand first.").

328 EU ASSESSMENT REPORT 2024, *supra* note 50, at 173 ("EU policies to encourage sustainable diets focus primarily on information provision and voluntary codes of conduct, but these measures are not sufficient by themselves.").

329 BLINDSPOT, *supra* note 83, at 31; AUBERT, *supra* note 286, at 4 (noting that the German Commission "offer[s] grounds for believing that such a dialogue [amongst stakeholders] is possible").

330 *Id.*

331 *Id.*; ZUKUNFTSKOMMISSION LANDWIRTSCHAFT, THE FUTURE OF AGRICULTURE: A COMMON AGENDA 8 (2021), https://www.bmel.de/SharedDocs/Downloads/EN/Publications/abstract-zukunftskommission-landwirtschaft.pdf?__blob=publicationFile&v=4.

332 *See* SUTTON ET AL., *supra* note 28, at 3 ("[C]ountries have different opportunities to combat climate change through the agrifood system.").

333 EAT, *supra* note 70, at 12 ("[T]he role of animal source foods in people's diets must be carefully considered in each context and within local and regional realities."); FAO ROADMAP, *supra* note 113, at 9 ("Sacrificing food security and nutrition for vulnerable

responsibility for historical emissions, scale of consumption of animal products, and stage of development are highly relevant to discussions of which countries should lead the way on dietary change.[334]

In looking at the various approaches around the world—as well as the political repercussions experienced in the Netherlands and elsewhere—a key grounding principle for a discussion of climate policy for animal agriculture is the need for a just transition for farmers, ranchers, and workers.[335] The International Labour Organization defines a just transition as "greening the economy in a way that is as fair and inclusive as possible to everyone concerned, creating decent work opportunities and leaving no one behind."[336] Most discussions of just transitions in climate policy to date have focused on the shift from fossil fuels to renewable energy, but the applicability and utility of this concept to agricultural climate transitions is now also being discussed.[337] Both the European Green Deal and the Farm-to-Fork strategy recognize the importance of a just transition.[338] In the context of climate reform of the food system, a just transition "means reducing emissions while ensuring jobs, good health, livelihoods, and food security to vulnerable groups and smallholder farmers."[339] A Green Party Member of EU Parliament observed earlier this year that one of the flaws in the Farm to Fork Strategy that may have diminished its chances of success was a lack of economic support, particularly for farmers.[340]

It is an understatement to say that achieving a just transition in animal agriculture will be complex.[341] Dietary choices implicate familial

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populations is not an option; meaning increasing pressure on high-consumption consumers and transitioning toward resource-efficient food choices.").

334 *E.g.*, Mehrabi et al., *supra* note 199, at 162 ("Addressing poverty-limited access versus the demand choices of rich citizens involves balancing very different goals.").

335 Danielle Nierenberg et al., *Devising a Just Transition for Sustainable Livestock Agriculture*, AGRIC. DIVE (Nov. 20, 2023), https://www.agriculturedive.com/news/livestock-emissions-agriculture-cop28-just-transition-oped/700100.

336 *Climate Change and Financing a Just Transition*, INT'L LABOUR ORG. (July 9, 2024), https://www.ilo.org/resource/other/climate-change-and-financing-just-transition.

337 Cleo Verkuijl et al., *A Just Transition in Animal Agriculture Is Necessary for More Effective and Equitable One Health Outcomes*, CABI ONE HEALTH, Oct. 12, 2023, No. ohcs202300021, at 2.

338 FARM TO FORK STRATEGY, *supra* note 75, at 4 ("Ensuring a sustainable livelihood for primary producers, who still lag behind in terms of income, is essential for the success of the [COVID-19 pandemic] recovery and the transition."). In its recent document launching the process to identify steps toward 2040 climate targets, the European Commission observed: "[D]iverse and family-owned farms and those who combine crop and animal production are the backbone of EU farming and should be accompanied in the transition to a climate-neutral land sector, taking into account its social, environmental and economic dimension." *Securing Our Future*, *supra* note 290, at 21–22.

339 SUTTON ET AL., *supra* note 28, at 20.

340 Ruig, *supra* note 286.

341 *See* David De Pue et al., *A Farmer's Perspective on Farm Relocation: Lessons Learnt from Relocated Farmers in Belgium and the Netherlands*, 64 J. ENV'T PLAN. & MGMT. 1474, 1479–92 (2021) (describing, in the parallel context of relocating farmers, the complexity of

and cultural traditions, nutrition, livelihoods, significant industry profits and power, and more.[342] Electoral timeframes are in many ways poorly suited for this challenge. While food system reform may benefit farmers in the medium and long run—by improving resilience in the face of climate change, reducing environmental damage, and creating new income streams—substantial investment will be required to assist those most affected.[343] Delaying the necessary changes can result in a "Pyrrhic victory" for farmers, who may then face more drastic changes and a loss of social support down the road.[344] And given that farmers directly experience the realities of a changing climate, many of them are in favor of adaptation. One Italian farmer criticized the EU Commission's decision to lessen environmental regulation in the Common Agriculture Policy, explaining: "Climate change is there. This is not a political opinion. We are not environmentalists. We are peasants. But we see that it's costly to work against nature."[345]

Engaging with farmers and others who work within the industrial animal agriculture system to ensure a just transition will be essential. One Dutch farmer put it this way: "The farmers are the victims of this whole system. And the agri-industry is earning the money."[346] Tim Benton, director of research on food production and the environment at the Chatham House think tank in London, also encourages a focus on the farmers' perspective:

> The EU's reversal on agriculture-specific climate goals highlights the need for a meticulously-planned 'just transition'—a shift toward climate-friendly farming that doesn't ignore farmers' economic needs. Farmers are increasingly fed up with being seen as the whipping boy of food-systems emissions, in terms of them being told they are bad people and bad

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factors required to promote smooth transitions, both in terms of the farmers' situation and characteristics and the procedural and financial supports provided).

342 *Project: Just Transitions in Animal Agriculture*, STOCKHOLM ENV'T INST., https://www.sei.org/projects/just-transitions-animal-agriculture (last visited Nov. 14, 2024).

343 Kerstine Appunn, *Farming Commission's Proposals Require Next Govt to Undertake Food System Transformation – Merkel*, CLEAN ENERGY WIRE (July 6, 2021, 1:25 PM), https://www.cleanenergywire.org/news/farming-commmissions-proposals-require-next-govt-undertake-food-system-transformation-merkel ("[T]he current food system is neither economically nor ecologically sustainable but that the transformation would be cheaper for society and farmers in the medium term than the current system." (quoting German Environment Minister Svenja Schulze)).

344 Guyomard et al., *supra* note 14, at 10.

345 Win, *supra* note 288.

346 *In the Netherlands, Pitchforks Fly*, *supra* note 301; *see also* Pronczuk & Moses, *supra* note 293 ("Many farmers say they are not resistant to addressing the problem of climate change, and they note that their livelihoods are more directly affected by it than those of many others. But they say the burden should be more evenly spread."); Andreoni, *supra* note 289 ("What the farmers I have spoken to have told me is that the burden and the cost of fighting climate change should be shared more evenly.").

> managers of the land. If we are going to do transitions, then we have to bring people along with us.[347]

Another fundamental question in terms of supporting those most affected by the transition is who should bear the cost. While there is of course a role for government support—which could be achieved in part by reducing or eliminating subsidies for meat[348]—others assert that the agribusinesses that have long benefited from externalizing the costs of their environmental harms should be held accountable,[349] either by policy-driven resource shifts or, where necessary, by litigation.

Whether and how these approaches could be effectively translated to the U.S. context is an urgent question, particularly in light of the scale of the U.S. industry and its emissions. To date, U.S. climate policies have focused on voluntary and incentive-based approaches to animal agriculture.[350] In her insightful article, *Is Meat the New Tobacco?*, Professor Lingxi Chenyang posits that reducing meat demand may actually be easier in some respects than it was to reduce tobacco demand.[351] She recommends two categories of U.S. federal policy reforms as a starting point: (i) removing barriers to information about how industrial meat is produced[352] (such as by repealing ag-gag laws),[353] reforming the federal checkoff programs that collect funds from producers for generic promotion of animal products,[354] reforming federal certification programs to incorporate climate sustainability goals, and (ii) implementing place-based substitutions starting with schools and the National School Lunch Program.[355] While acknowledging that these

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347 Max Graham, *What Europe's Egg-Hurling Farmers Can Teach Us About Climate Progress*, GRIST (Feb. 20, 2024), https://grist.org/agriculture/europe-farmer-protests-eu-climate-progress.

348 *See supra* notes 79, 158 and accompanying text.

349 *Clash over Dutch Farming*, *supra* note 228 ("I think if the government makes clear that behind the nitrogen crisis, there are big corporations that have contributed to it and are still profiting from it, and also show their willingness to hold them accountable for their role and ask them to pay their fair share to finance a just transition, that could be a way out." (quoting Wouter Kolk, campaign leader at environmental group Milieudefensie)).

350 *See, e.g.*, Brown & Hill, *supra* note 8 ("[T]he U.S.' efforts to transform American agriculture are based on 'incentive-driven and market-based' mechanisms.").

351 Lingxi Chenyang, *Is Meat the New Tobacco? Regulating Food in the Age of Climate Change*, 49 ENV'T L. REP. 10344, 10352–57 (2019).

352 *E.g.*, *People Don't See Industrial Meat as a Key Cause of Global Warming—Poll*, MADRE BRAVA (Mar. 17, 2023), https://madrebrava.org/insight/people-don-t-see-industrial-meat-as-a-key-cause-of-global-warming-poll ("[W]hen a simple definition of industrial meat was provided . . . citizens . . . showed concern about the impacts of the industrial meat system.").

353 State "ag-gag" laws seek to criminalize whistleblowing and undercover investigations of food production. Justin Marceau, *Ag Gag Past, Present, and Future*, 38 SEATTLE U. L.R. 1317, 1332 (2015).

354 *See* Chenyang, *supra* note 351, at 10358 ("Mandatory contribution to generic promotional efforts removes incentives for individual producers to differentiate and market their commodity on production attributes like climate sustainability.").

355 *Id.* at 10357–61.

reforms will not by themselves significantly reduce meat consumption, she presents them as "steps in the right direction" to "create a friendlier environment for more drastic regulatory measures."[356] Her approach is thus sensitive to the sequencing of interventions, and similar to the Danish effort in that respect. While the United States doubtless has further to go than even high-producing countries in Europe, starting with more modest legal reforms to help change the atmosphere could be a way in.

VII. CONCLUSION

> We cannot continue doing animal agriculture as we now practice it and is accepted. Let me change that just a bit: if we want to have a healthier population, reduce the incidence of respiratory illnesses and cancer-causing agents, and if we wish to have a healthier environment, with cleaner water, renewable resources, replenishable soil, wildlife habitat, and overall cleaner air to breathe, then we cannot continue doing animal agriculture as we now practice it and is widely accepted.
>
> ~Former U.S. Senator from Iowa Tom Harkin, remarks at *Industrial Farm Animal Production, the Environment, and Public Health* conference at Drake University (2024)[357]

Politicians and policy makers are beginning to acknowledge that the industrial animal agriculture system is not sustainable on its current trajectory.[358] Having surveyed this developing policy landscape, one is left with the impression that progress is not inevitable—far from it, in light of significant political pushback—but that there is an emerging scaffold of both international signaling and national and provincial policy onto which future efforts can be built. Such efforts must be informed by prior clashes between environmental protection and livelihoods, seeking to redirect government support away from large-scale agribusiness and toward ensuring a just transition for communities.

If politicians fall short, private actors will increasingly look for other avenues, through litigation or otherwise.[359] In the first prominent move of its kind, in March 2024 the Dutch supermarket chain Jumbo stopped offering price promotions (i.e., discounts) on fresh beef, pork,

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[356] *Id.* at 10346; *see also id.* at 10351 ("[N]on-price regulatory intervention[s] . . . are generally less expensive to implement than subsidies, and require less political willpower to adopt than taxes.").

[357] Harkin Inst., *Tom Harkin Remarks 2024 09 25*, YOUTUBE (Sept. 25, 2024), https://www.youtube.com/watch?v=HOSsmeBMsg0&t=192s. Senator Harkin's remarks are especially notable because Iowa is ground zero for industrial pork production in the United States. *Iowa Leads States in Hog Production*, U.S. DEP'T OF AGRIC. (Mar. 13, 2024), https://www.ers.usda.gov/data-products/chart-gallery/gallery/chart-detail/?chartId=108733.

[358] MARIT VAN DER HOEK, *supra* note 298, at 7 ("[T]he herd will have to be smaller, there is no escaping that." (quoting position of Dutch political party D66)).

[359] Bray & Poston, *supra* note 323, at 247.

and chicken.[360] The company has also lowered prices of its own-brand meat substitutes to reach price parity, explaining these changes as part of the company's work toward "the protein transition."[361] Perhaps it is not surprising that this innovation would come in the Netherlands, amidst the striking mix of innovation and obstacles that have arisen there. Perhaps the supermarket was inspired by the municipal meat advertising bans in Dutch cities. Or perhaps, in response to the furor of the farmer protests and political turmoil, the company thought it could help support the transition using its own toolbox.

Reigning in industrial animal agriculture's emissions, and remedying its many other harms, will require a multitude of actors and solutions. If we are unable to muster the political will to address the harms of animal agriculture before the changing climate further imperils our food systems, we will have missed a critical opportunity to protect our collective future.

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[360] Dayeeta Das, *Jumbo to Cease Price Promotions on Fresh Meat in the Netherlands*, EUR. SUPERMKT. MAG. (Mar. 15, 2024), https://www.esmmagazine.com/retail/jumbo-to-cease-price-promotions-on-fresh-meat-in-the-netherlands-261595; *see also* Toby L.S. Watt et al., *Reducing Consumption of Unhealthy Foods and Beverages Through Banning Price Promotions: What Is the Evidence and Will It Work?*, 23 PUB. HEALTH NUTRITION 2228, 2228 (2020) (concluding that "price promotions increase purchasing of unhealthy food").

[361] Das, *supra* note 360.