

Regulating the Farm, The Fork, and Everything in Between

Introduction

In recent years, the destructive impact of the global food system on the environment has come into sharp focus, with activists and scholars calling for significant reform.¹ The harms range from local environmental degradation to the effects of climate change linked to the food system's GHG releases.² These effects are felt acutely in the U.S. and especially in California, the nation's leading food producer and a state uniquely sensitive to climate change.³ Despite this, the American and Californian agriculture sectors remain largely unregulated.

This article proposes that California's legislature enact a statute that would prohibit the sale in the state of any food item whose lifetime environmental impact exceeds certain limits. This life cycle approach prevents any phase of production from escaping regulatory scrutiny and allows producers some flexibility in deciding where along that production line to make needed improvements. The law would likely benefit not only Californians but, as argued below, much of the country. The article also argues, in the alternative, for the adoption of a technology-based standard if the life cycle method proves too burdensome.

The law may face political opposition from California's agriculture industry, legal challenges, and doubt about its feasibility. But the legal, political,⁴ and technical viability of similar laws in both California and the EU, explored in detail below, bodes well for the proposal. Implementing this law will help California limit the damage done to the state's environment by food production and further cement the state as a leader in environmental law.

The Problem: The Environmental Harms of Food in California

The global food system significantly contributes to the despoliation of the planet's ecology, biodiversity, and climate. This is certainly so in the U.S., where farms, along with the production and distribution systems built to service them, cause "habitat loss and degradation, soil erosion and sedimentation, water resources depletion, soil and water salinization, agrochemical releases, animal wastes, nonpoint source water

¹ See, e.g., Michael Pollan, *The Food Movement, Rising*, N.Y. Rev. Books (May 20, 2010) (describing the emergence in recent years of a movement devoted to remaking the food system).

² *Sustainable Agriculture*, Nat. Geo., <https://www.worldwildlife.org/industries/sustainable-agriculture#:~:text=Agriculture%20is%20the%20leading%20source,in%20the%20environment%20for%20generations> (last visited Nov. 16, 2022).

³ Atty. Gen. of Cal., *Climate Change Impacts in California*, <https://oag.ca.gov/environment/impact> (last visited Feb. 23, 2024).

⁴ An important qualification to this comes in the form of recent massive demonstrations across Europe by farmers protesting climate policies that target agriculture. Christina Lu, *Europe's Farmer Protests Are Part of a Bigger Problem*, Foreign Policy, <https://foreignpolicy.com/2024/02/20/europe-farmers-protests-climate-eu-green-deal> (Feb. 20, 2024). Among other things, the protests prove the need to incorporate key stakeholders' perspectives when drafting laws like the one this article suggests.

pollution, and air pollution,”⁵ not to mention the massive release of GHGs, accounting for 10.6% of the national total.⁶

These impacts are especially severe in California, which is battered by a slew of climatic and environmental crises. Climate change is exposing the state’s coast to sea level rise and erosion, driving more severe wildfire seasons, and depleting the Sierra Nevada snowpack, the state’s major water source.⁷ Perhaps most perversely, climate disruptions, driven in part by GHG-intensive agriculture, are damaging *that very agriculture* by triggering extended droughts, saltwater contamination, and increasing the prevalence of pests.⁸ Additionally, as the nation’s leading agricultural region, California’s environment is exposed to many of the more localized harms caused by food systems. The depletion of the state’s groundwater supply is primarily driven by the use of aquifer waters on irrigated farms;⁹ “agriculture is a major source of NOx pollution”, a key component of smog, in the state;¹⁰ and pesticide use has historically threatened California species and habitats.¹¹

Despite these harms, “[f]arms are one of the last uncharted frontiers of environmental regulation in the” U.S.¹² This is so not just for farms, but for the entire food system. The production and distribution of food is a complex, multifaceted process, involving “raw materials extraction, processing, farming, manufacturing, distribution, [and] retail” sales.¹³ This intricate challenge of regulating a food item’s environmental impacts thus makes the sector a prime candidate for regulation through life cycle assessment.

⁵ J.B. Ruhl, Farms, Their Environmental Harms, and Environmental Law, 27 Ecology L.Q. 263, 263 (2000).

⁶ USDA Economic Research Service, *Climate Change*, <https://www.ers.usda.gov/topics/natural-resources-environment/climate-change/> (Last updated Jun. 10, 2022). The vast majority of the industry’s GHG emissions take the form of “nitrous oxide from cropped and grazed soils, methane from enteric fermentation and rice cultivation, nitrous oxide and methane from managed livestock manure.” *Id.*

⁷ Atty. Gen. of Cal., *Climate Change Impacts in California*, <https://oag.ca.gov/environment/impact> (last visited Feb. 23, 2024).

⁸ *Id.*

⁹ Dan Charles, *New protections for California’s aquifers are reshaping the state’s Central Valley*, NPR, <https://www.npr.org/2021/10/07/1037369959/new-protections-for-californias-aquifers-are-reshaping-the-states-central-valley> (Oct. 7, 2021); Scott Wilson, *As it enters a third year, California’s drought is strangling the farming industry*, Washington Post, Mar. 21, 2022. The looming disaster this depletion portends has recently come into starker public focus, with major national newspapers covering the crisis. See, e.g., Soumya Karlamanga, *The Dire Consequences of Depleting California’s Groundwater*, N.Y. Times, Aug. 30, 2023.

¹⁰ Almaraz et al., *Agriculture is a major source of NOx pollution in California*, Science Advances, Vol. 4, No. 1.

¹¹ See Ctr. for Biological Diversity, *California Court Ruling Ends Decades of State Pesticide Spraying*, Feb. 26, 2018.

¹² Ruhl, 27 Ecology L.Q. at 263.

¹³ Cucurachi et. al., *Life Cycle Assessment of Food Systems*, One Earth, Volume 1, Issue 3, 293.

The Proposal: LCA for Food

This paper argues that California’s legislature should adopt a statute that limits the life cycle environmental impacts of any food sold in the state. The technical term for the methodology used to measure a product’s environmental impact over the course of its existence is a life cycle assessment (LCA). The law would require that an LCA be performed on all food items sought to be sold in the state and would allow into California markets only those products whose measured impacts meet certain requirements. In particular, this law should cap the amount of greenhouse gases allowed to be released over the course of bringing the food product to market, as well as the soil erosion, water use and pollution, land use and degradation and other environmental harms caused over that period.¹⁴ The following section explores the details of an LCA.

The effect of the law will be to reduce the burden placed on California’s environment by food-related climate change and depletive agricultural practices in the state (and, as is explored below, the benefits of the law will likely radiate beyond California). The law will achieve this by disfavoring high-input, resource-intensive production processes and foods, like livestock and processed food products.¹⁵ Indeed, “[c]limate change air, pollution, biodiversity loss, land use, energy use, water use, and food wastage are the environmental parameters used to measure [ultra-processed foods’ (UPF)] sustainability, they are all interconnected and negatively affected by the [UPF] food system.”¹⁶

What is LCA?

Life cycle assessment (LCA) is a holistic approach to environmental impact analysis that attempts to measure a product’s or process’s effects on the environment from “cradle to grave.” ISO Standards 14040 and 14044 set out the internationally recognized stages of the LCA¹⁷, the most important of which are the “Life Cycle

¹⁴ The actual metrics chosen will have to be determined by the legislature and the responsible state agencies. Presumably, a chief consideration in this choice will be the measurability of the metric. By way of example, there are established methods for assessing soil health and the state of land degradation. *See, e.g.*, USDA Natural Resources Conservation Service, *Soil Health Assessment*, <https://www.nrcs.usda.gov/conservation-basics/natural-resource-concerns/soils/soil-health/soil-health-assessment#:~:text=Soil%20health%20cannot%20be%20measured,processes%2C%20or%20characteristics%20of%20soils> (last visited Jan. 23, 2024); von Keyserlingk et. al., *Approaches to assess land degradation risk: a synthesis*, *Ecology & Society*, Volume 28, Issue 1, Article 53 (synthesizing existing land degradation risk methodologies and advancing an approach that aligns with UN disaster risk reduction strategies). If the proposed law places measurement responsibility with industry, companies will likely comply by retaining relevant experts.

¹⁵ “LCA studies suggest that animal-based foods have typically higher environmental impacts across a wide spectrum of impact categories as compared with plant-based alternatives...The climate-change and land-use impacts of the protein-equivalent for peas, in turn, are over 100-fold and almost 50-fold lower than those of beef.” Cucurachi et. al., *supra* n. 13, at 294.

¹⁶ Garcia et. al., *Ultra-processed foods consumption as a promoting factor of greenhouse gas emissions, water, energy, and land use: A longitudinal assessment*, *Science of the Total Environment*, Volume 891, Article 164417, at 2.

¹⁷ Int’l Org. for Standardization [ISO], ISO 14040:2006 & ISO 14044:2006.

Inventory” (LCI) and the “Life Cycle Impact Assessment” (LCIA). LCI “involves the data collection and the calculation procedure for the quantification of inputs and outputs of the studied system. Inputs and outputs concern energy, raw material and other physical inputs, products and co-products and waste, emissions to air/water/soil, and other environmental aspects.”¹⁸ . During the LCIA, in turn, “LCI results are associated to environmental impact categories and indicators. This is done through LCIA methods which firstly classify emissions into impact categories and secondly characterize them to common units so as to allow comparison.”¹⁹ LCIA is the key tool for sustainability-minded policymakers, as it enables them to quantify and thus regulate a product or process’s environmental impacts.

Environmental LCA for Food & Technical Feasibility

LCA is a highly technical and complex methodology, requiring the selection or creation of uniform environmental impact metrics and the use of those metrics to measure a host of environmental harms.²⁰ This process is made all the more complicated in the food context, where many products contain a range of ingredients each subject to their own production process.²¹ Further, thousands of such food products are then made in or imported into California. Finally, unlike the transport fuel industry – regulated by a law outlined below – which deals in relatively few fuel products²² and is thus easy to place into a framework of reporting requirements for producers and importers, the food industry comprises thousands of economic actors each potentially responsible for measuring and reporting the environmental impact of their products.

Together, the series of relationships in the food industry makes for a process likely difficult to measure and holistically regulate, a key difficulty for an LCA regulatory approach and a fact that arguably favors a tech-based approach. The difficulty of the process will also vary by food category, with more processed, ingredient-intensive foods demanding impact accounting across a vast range of inputs, and locally-grown produce requiring decidedly less.²³ This may, however, turn out to be a quite salient feature rather than a bug. As the law is designed to minimize the environmental impacts of the food system, this reporting structure will reveal the multilayered harms wrought by

¹⁸ *Life Cycle Assessment*, EUROPEAN COMMISSION, <https://eplca.jrc.ec.europa.eu/lifecycleassessment.html> (last visited Feb. 26, 2024).

¹⁹ *Id.*

²⁰ Cucurachi et. al., *One Earth*, Volume 1, Issue 3, Pages 292-297.

²¹ *Ultra-processed foods, diet quality, and health using the NOVA classification system*, FAO at 8, <https://www.fao.org/3/ca5644en/ca5644en.pdf> (last visited Feb. 26, 2024).

²² Cal. Code Regs. tit. 17, § 95482 (listing only 12 main fuel types for regulation).

²³ Though, of course, the producers in the latter category have significantly less access to the tools required to measure impact than do the large conglomerates that dominate the processed food space. This disparity is one of the important challenges that will have to be addressed by the implementing agency. Some potential solutions are exemptions for small producers, direct aid/involvement by the relevant agency, and government funding to put towards measuring impacts.

factor-intensive foods and impose administrative costs on them in having to perform a complicated LCA, thus further disincentivizing their production.

This web of complexity, though daunting at first glance, can be effectively untangled by placing the reporting requirements at the optimal point in the food chain (so to speak), and ensuring that entities at every node of the supply chain, including the transportation vectors between those nodes, are measuring the impacts of their individual activities. That optimal point is a foodstuff's final distributor: the impact assessments generated by nodes further up the chain would be passed along to the distributor, who would then be responsible for reporting the combined total and ensuring compliance with the restrictions. This would simplify the reporting architecture by ensuring that the near-end user of the process, who is best-positioned to be familiar with all elements of the supply chain and likely to be well-resourced, is the most legally responsible. Alternatively, as was done in the LCFS regulations,²⁴ lawmakers and regulators might tailor reporting responsibilities to each sector within the food industry to account for variations in firm size and sophistication. The same goes for punishing violations: liability could be laid solely on the final link in the chain or distributed according to the tailoring principles just discussed. The ultimate decision should be made by the expert agencies charged with implementing the law. Similarly, filling in the rest of the details – including, as mentioned in footnote 18, determining what funding and regulatory carve outs might be required – ought to be left to the relevant administrative agencies.

Why LCA is better than alternatives

LCA is considered by many in the sustainability field to be the optimal approach for assessing and responding to environmental harms caused by multistep production systems.²⁵ The LCA methodology allows for the “holistic coverage of environmental dimensions and for the identification of hotspots, possible trade-offs, and burden shifting among life cycle stages or impact categories.”²⁶ It also prevents lifecycle stages from escaping regulatory notice, which often happens when regulators view products and processes in siloes or as distinct environmental problems. What's more, as alluded to in the quote above, because the law imposes a cap on the entire production life cycle rather than on individual components of it, the law grants producers flexibility in selecting the optimal points in that process to make improvements. This burden shifting may enhance the political salience of this policy to California's food sector.

²⁴ Cal. Code Regs. Tit. 17, § 95483 (assigning responsibilities based on transport fuel sector, with the category of responsible entity often differing between those sectors).

²⁵ “[LCA] is the method typically recommended by international institutions, such as the European Commission and the United Nations Environment Programme, to support policy making for sustainability by quantitatively assessing the environmental impacts during the entire life cycle of a product.” Cucurachi et. al., *One Earth*, Volume 1, Issue 3, Pages 292-297, at 292.

²⁶ Sala et al., *The evolution of life cycle assessment in European policies over three decades*, *The Int'l J. of Life Cycle Assessment* 26, 2295-2314, 2295 (2021).

Why California?

California has for decades been a pathbreaker in the environmental space, having inspired copycat federal legislation and pushed the country towards greener practices.²⁷ What's more, the state's welfare is also uniquely tied to the local environment and the global climate.²⁸ It is thus the ideal U.S. jurisdiction for an LCA food law. California is home to 12% of the U.S. population,²⁹ and 85% of food consumed in the U.S. is domestically grown.³⁰ Assuming California consumes roughly the same proportion of domestically-grown food as the US as a whole, an LCA food law in California would improve the environmental impact profile of approximately 10% of U.S. agriculture.

But the possible upsides don't stop there: scholars³¹ have observed that, especially when it comes to environmental law, there is a dynamic at play in the U.S. regulatory space known as the "California effect." This effect, most notably demonstrated by automobile regulations,³² has two components: 1) California is such a large, sought-after consumer market that makers of capital-intensive products, unwilling to exit that market, tend to manufacture all the goods they sell in the U.S. in compliance with California laws due to the redundant expense of production facilities required to make a "California" product and a separate "national product"; 2) many states tend to follow California's lead on environmental regulation, further expanding the impact of the state's laws.³³ Ideally, a food LCA law would shift food production and transportation practices as automobile regulations change the way cars are manufactured. As American agriculture is capital intensive,³⁴ it's possible that a food LCA law in California could spur the sector to follow the same course as the car industry.

²⁷ See generally, DAVID VOGEL, *CALIFORNIA GREENIN': HOW THE GOLDEN STATE BECAME AN ENVIRONMENTAL LEADER* (2018) (examining California's leadership and influence in nationwide environmental regulation efforts).

²⁸ See, e.g., Liza Gross, *Converging Climate Risks Interact to Cause More Harm, Hitting Disadvantaged Californians Hardest*, Inside Climate News (Feb. 2, 2024), <https://insideclimatenews.org/news/02022024/extreme-heat-and-wildfire-smoke-hits-disadvantaged-californians-hardest/>.

²⁹ U.S. CENSUS BUREAU, *Annual Estimates of the Resident Population for the United States, Regions, States, District of Columbia and Puerto Rico: April 1, 2020 to July 1, 2023*, Table within *State Population Totals and Components of Change: 2020—2023*, <https://www.census.gov/data/tables/time-series/demo/popest/2020s-state-total.html> (last visited Feb. 27, 2024).

³⁰ FDA, *FDA Strategy for the Safety of Imported Food* (2022).

³¹ See, e.g., Richard Perkins and Eric Neumayer, *Does the 'California effect' operate across borders? trading- and investing-up in automobile emission standards*, 19 J. Eur. Pub. Pol'y 217 (2012).

³² *Id.*

³³ Woods & Ma, *The impact of California's environmental regulations ripples across the U.S.*, NPR (Sept. 9, 2022) <https://www.npr.org/2022/09/09/1121952184/the-impact-of-californias-environmental-regulations-ripples-across-the-u-s>.

³⁴ Brent Gloy, *Changes in Capital Investment on U.S. Farms*, Agric. Econ. Insights (Jul. 27, 2015), <https://aei.ag/2015/07/27/changes-in-capital-investment-on-u-s-farms/>.

Similar Laws

LCA-based laws are used around the world, particularly in the EU, but, notably, also in California. In the EU, the methodology has been applied to a wide range of products and processes, from the broad sustainable use of natural resources to the regulation and recycling of wastes.³⁵ While the EU's use of LCA in the food sector is still developing, the European Commission recently announced that its "Farm to Fork Strategy" – which, as its name suggests, is an LCA-based initiative – "is at the heart of the European Green Deal aiming to make food systems fair, healthy and environmentally-friendly."³⁶ The Strategy aims to promote food sustainability in the production, processing, wholesale, retail, consumption, and waste phases of the food lifecycle.³⁷ As noted in footnote 4, aspects of the Strategy have inspired intense pushback from farmers, which, in turn, has spurred European lawmakers to modify parts of the law. California lawmakers should keep this stakeholder engagement top of mind when designing any food LCA law.

The most notable example of an LCA law in California is the state's Low Carbon Fuel Standard (LCFS). The LCFS requires producers and importers of transport fuels sold in California to ensure that those fuels meet the state's increasingly stringent carbon standards, which require annual reductions in the "carbon intensity" of fuels.³⁸ This intensity, which is measured using a "life cycle assessment[,] examines the GHG emissions associated with the production, transportation, and use of a given fuel. The life cycle assessment includes direct emissions associated with producing, transporting, and using the fuels, as well as significant indirect effects on GHG emissions, such as changes in land use for some biofuels."³⁹ As the law functions by imposing a total GHG release cap on the entire fuel lifecycle, rather than individual limits on the various lifecycle stages, regulated entities can flexibly determine where to cut emissions. The law has withstood legal challenges, as will be discussed below, and has proven to be highly effective at achieving its stated goals.⁴⁰ Particularly relevant here, the LCFS also overcame intense political pushback,⁴¹ despite California being home to a booming oil industry that produced around 10% of the nation's total supply at the time the law was passed (partly due to the LCFS, this share has dropped to 3%).⁴²

³⁵ Sala et al., *supra* note 30 at 2300.

³⁶ European Commission, *Farm to Fork strategy*,

https://food.ec.europa.eu/horizontal-topics/farm-fork-strategy_en (last visited Nov. 16, 2022).

³⁷ European Commission, *Farm to Fork strategy: For a fair, healthy and environmentally-friendly food system*, https://food.ec.europa.eu/system/files/2020-05/f2f_action-plan_2020_strategy-info_en.pdf (last visited Nov. 16, 2022).

³⁸ Cal. Air Res. Bd., *Low Carbon Fuel Standard: About*, <https://ww2.arb.ca.gov/our-work/programs/low-carbon-fuel-standard/about> (last visited Nov. 16, 2022).

³⁹ *Id.*

⁴⁰ Daniel Sperling, *How (Almost) Everyone Came To Love Low Carbon Fuels In California*, *Forbes*, Oct. 17, 2018.

⁴¹ *Id.*

⁴² U.S. Energy Info. Admin., *Petroleum and Other Liquids: Crude Oil Production*, https://www.eia.gov/dnav/pet/pet_crd_crpdn_adc_mbb1_a.htm (last visited Nov. 16, 2022).

While not LCA-based regulations, there are two other California laws relevant as comparators to the food LCA policy advanced here: Proposition 12, or “the pork law,” – the constitutionality of which, discussed below, was recently affirmed by the Supreme Court – and the recently announced ban of gasoline car sales in the state to go into effect in 2035. The pork law requires that any pork sold in California derive from pigs reared in confinements spacious enough to allow the pigs to physically turn around. Like the LCFS and LCA law proposed here, the pork law only allows into the state products whose out-of-state production features meet certain standards.⁴³ The gasoline car ban is similar, as the majority of manufacturing plants impacted lie outside of California. While the actual point of sale being regulated is transactions with consumers in the state, the effect of the ban will be to push the global automobile industry towards electric vehicle production, given the market power of California’s consumer base.⁴⁴

Political Feasibility

Perhaps the most significant challenge to passing this law would be the political opposition it would likely face from California’s powerful farm sector. The state’s massive agriculture industry, the largest in the country at \$49B in output value,⁴⁵ is a powerful political force at both the state⁴⁶ and federal level.⁴⁷ However, there are several factors that could contribute to its acceptance of the law.

First, if the law were to target only food sold in the state, a substantial portion of food grown in the state would be exempted.⁴⁸ \$20.8B of that \$49B comes from international exports,⁴⁹ removing this 42% of California crops not destined for consumption in-state. What’s more, much of the remaining ~\$29B represents food sold to other states.⁵⁰ Thus, only a minority of California crops would be impacted.⁵¹

⁴³ Emily Hoeven, *California pig law exposes a divided America*, Cal Matters, Oct. 12, 2022.

⁴⁴ Soumya Karlamangla, *What to Know About California’s Ban on New Gasoline-Powered Cars*, N.Y. Times, Aug. 29, 2022.

⁴⁵ Cal. Dept. of Food and Agric., *More than 100 Years Protecting and Promoting Agriculture in the Golden State*, <https://www.cdfa.ca.gov/C DFA-History.html> (last visited Nov. 16, 2022).

⁴⁶ Michael Wines and Jennifer Medina, *Farmers Try Political Force to Twist Open California’s Taps*, N.Y. Times, Dec. 30, 2015.

⁴⁷ Kitty Felde and Viveca Novak, *The Politics of Drought: California Water Interests Prime the Pump in Washington*, Open Secrets, Apr. 10, 2014.

⁴⁸ Alternatively, the law could be designed to cover both food sold in the state and, to the extent this category does not overlap with the former, food grown in the state. This second approach carries the substantial benefit of shielding California from many more of the local harms, discussed above, wrought by the state’s agriculture industry. Regulators may want to weigh the salience of this benefit against the political gains likely to flow from exempting large swathes of the in-state industry.

⁴⁹ Cal. Dept. of Food and Agric., *California Agricultural Statistics Review 2020-2021*.

⁵⁰ Cal. Dept. of Food and Agric., *California Agricultural Production Statistics*, <https://www.cdfa.ca.gov/Statistics/#:~:text=Over%20a%20third%20of%20the,the%202021%20crop%20year%20are%3A&text=Dairy%20Products%2C%20Milk%20%E2%80%94%20247.57%20billion> (last visited Nov. 16, 2022) (noting that “Over a third of the country’s vegetables and three-quarters of the country’s fruits and nuts are grown in California.”).

⁵¹ Of course, much of the food grown for domestic consumption is grown on the same tracts as food destined for export. This could complicate the point made above.

Second, those California-grown food products that would fall under the law would have a significant advantage over comparator products from out of state. Unlike food imported into the state from far-flung farms throughout the U.S. and the rest of the globe, in-state products don't need to travel very far to reach consumers, reducing transportation-associated environmental harms. Additionally, in being produced in a state that so thoroughly regulates the environment, including, to an extent, agriculture,⁵² California products are already “greener” than their out of state counterparts.

Third, beyond the advantage California growers would have over competitors growing the same good, the state's entire agriculture industry would be better positioned than those of other states, with a couple notable exceptions. California's agriculture sector is dominated by dairy cattle, grapes, nuts, and other fruits.⁵³ Other than cattle, these crops have comparatively small GHG and land use footprints,⁵⁴ putting California in a stronger position than states that rely more heavily on pigs and beef cattle. However, nuts require more water than any other food product (other than cheese),⁵⁵ which is disadvantageous to these California growers on that element of the LCA. Pushback is thus likely from these sectors.

Fourth, depending on how the law and associated regulations are designed, regulated entities may pass along the costs of compliance to California consumers, raising both moral and political-feasibility concerns (voters are unlikely to favour a law that increases the price of food). Lawmakers and regulators must take this into consideration and should include provisions to either preclude or at least blunt this undesirable externality, e.g., by using all fines collected from violators of the law to subsidize low-income consumers' food purchases. Lawmakers might even consider going a step further by in some way forbidding food system actors from increasing food prices to offset compliance costs.

Finally, the above-described flexibility the law affords producers, while likely not ideal in their eyes, is better than more rigid alternatives.

Legal Feasibility

This policy could be challenged on constitutional grounds as a violation of the “dormant” commerce clause (DCC), as either facial discrimination against out-of-state commerce, an undue burden on interstate commerce,⁵⁶ or as an impermissible

⁵² Renata Brillinger, *Agriculture & Conservation Groups Applaud the Leadership of the California Legislature on Climate Change*, Cal. Climate and Agric. Network, Sept. 1, 2022.

⁵³ Cal. Dept. of Food and Agric., *California Agricultural Statistics Review 2020-2021*.

⁵⁴ Hannah Ritchie & Max Roser, *Environmental Impacts of Food Production*, Our World in Data, <https://ourworldindata.org/environmental-impacts-of-food> (last visited Nov. 16, 2022).

⁵⁵ *Id.*

⁵⁶ The *Pike* test (named for *Pike v. Bruce Church, Inc.*, 397 U.S. 137 (1970)) covers facially neutral laws that substantially burden interstate commerce. Specifically, the *Pike* court held that “[w]here the statute regulates evenhandedly to effectuate a legitimate local public interest, and its effects on interstate commerce are only incidental, it will be upheld unless the burden imposed on such commerce is clearly

extraterritorial regulation. Both arguments were raised against the LCFS and rejected by the Ninth Circuit in *Rocky Mountain Farmers Union v. Corey*.⁵⁷ Dismissing the extraterritoriality argument, the court found California passed the law to combat climate-change impacts wrought on California by lifecycle fuel emissions in other states, and not as an attempt to paternalistically instruct other states on how to protect their environments; the court called the law “a classic exercise of police power.”⁵⁸ Similarly, the court rejected the “discrimination” commerce clause challenges, finding the LCFS did not facially discriminate against interstate commerce nor discriminate *in effect* by imposing overly burdensome costs (the binding constitutional tests) because there was no imaginable “solution to the perverse incentives that would otherwise undermine any attempt to assess and regulate the carbon impact of different fuels ... [that could succeed] without the ability to differentiate the different production processes and power generation that are used to produce those fuels.”⁵⁹

Even more auspicious is the Supreme Court’s recent decision in *National Pork Producers Council v. Ross*,⁶⁰ a case that challenged the constitutionality of California’s Prop 12 on DCC grounds. Plaintiffs there, conceding that the law did not intentionally discriminate against out-of-state commerce, were forced to “pursue two more ambitious theories[:.]”⁶¹ that the Court has, through previous decisions, imposed an almost per se ban on any law having the “practical effect of controlling commerce outside the [regulating] State,”⁶² and that the law is unconstitutional under the traditional *Pike* test. As the Ninth Circuit had, the Supreme Court rejected both arguments and upheld the law. Justice Gorsuch, writing for the court, firstly held that there is no such per se rule, noting the chaos the adoption of one would wreak on “our interconnected national marketplace, [where] many (maybe most) state laws have the ‘practical effect of controlling’ extraterritorial behavior.”⁶³

Turning to the second theory, Gorsuch refused to balance putative local benefits against any burden to interstate commerce, as plaintiffs argued *Pike* required, because, he reasoned, the state electorate, speaking through the legislature, is far better positioned to weigh such considerations than the Court. He went on to hold that plaintiffs’ *Pike* arguments actually founder at an even more preliminary stage in failing to show in the first place that Prop 12 imposes substantial burdens on interstate commerce. He observed that, rather, the law merely presented pork producers with a set

excessive in relation to the putative local benefits. If a legitimate local purpose is found, then the question becomes one of degree. And the extent of the burden that will be tolerated will, of course, depend on the nature of the local interest involved, and on whether it could be promoted as well with a lesser impact on interstate activities.”

⁵⁷ *Rocky Mountain Farmers Union v. Corey*, 913 F.3d 940 (9th Cir. 2019).

⁵⁸ *Id.* at 953.

⁵⁹ *Id.* at 955.

⁶⁰ 598 U.S. 356 (2023).

⁶¹ *Id.* at 371.

⁶² *Id.*

⁶³ *Id.* at 374.

of choices: bring all pork in compliance, segregate “California pigs,” or withdraw from the state’s market. He found that because the “dormant Commerce Clause does not protect a particular structure or metho[d] of operation” (internal quotations omitted), it does not provide shelter from “disrupt[ions to] the existing practices of some industry participants.”⁶⁴ The resonance of this reasoning with the viability of any food LCA law is striking. This case is also especially helpful because Prop 12 involved a harm to California – effectively, the moral injury sustained by its residents in consuming or being surrounded by pork harvested in an unethical manner – that while decidedly legitimate and weighty is considerably more attenuated in its connection to the state than the damages wrought by the global food system.

However, unlike Prop 12, a food LCA law (and, indeed, the technology standard discussed below), would have to be drafted with federal preemption in mind. Section II of the *Ross* opinion begins by acknowledging that though Prop 12 concerns issues Congress certainly has constitutional power to regulate, it has chosen not to and therefore any like state laws have not been preempted.⁶⁵ And while the general absence of federal agriculture legislation and the many carveouts in federal environmental laws means that “no express or implied preemption prevents states from more aggressively regulating farms”,⁶⁶ some of the individual targets of this proposed legislation, addressing, as it does, a foodstuff’s full lifecycle, may already be governed by federal statutes and regulations. Many such federal laws tend to set regulatory floors that permit states to impose even more stringent standards; there are, though, some laws that do set ceilings, capping what states can do.⁶⁷ In the former scenario, preemption is less of an issue for regulatorily ambitious states, as space is left for more aggressive legislation; in the latter, states can only regulate up to a certain limit.

Conversely, some important federal statutes expressly authorize states to regulate in the particular area covered by federal law. For example, “a state controls the generating sources within its borders and can also require out-of-state generators that sell power into the state to meet the same emission standards as in-state generators”⁶⁸

⁶⁴ Gorsuch, in a controlling opinion, wrote for only four justices regarding the extraterritoriality issue in finding that the plaintiffs’ allegations were insufficient to show a substantial burden to interstate commerce under *Pike*. However, five justices (three joining Chief Justice Roberts in a concurrence along with Justice Sotomayor writing separately) indicated that extraterritorial impacts *can* constitute the sort of harms contemplated by *Pike*. The Court was therefore split on this point, and it’s possible that lower courts interpreting *Ross* could follow the lead of those five justices.

⁶⁵ *Ross*, 598 U.S. at 368.

⁶⁶ Ruhl, 27 *Ecology L.Q.* at 293.

⁶⁷ William W. Buzbee, *Asymmetrical Regulation: Risk, Preemption, and the Floor/Ceiling Distinction*, 82 *N.Y.U. L. REV.* 1547 (2007).

⁶⁸ Michael Gerrard, *States and the EPA can still regulate greenhouse gases, despite the Supreme Court’s ruling*, *L.A. Times* (Jul. 7, 2022) <https://www.latimes.com/opinion/story/2022-07-07/epa-ruling-climate-change-greenhouse-gases-state-regulations>.

in large part because the Clean Air Act reserves to states the power to regulate emissions and air pollutants.⁶⁹ Indeed, many states have climate laws on the books.⁷⁰

Accordingly, in designing the law proposed here, legislators and regulators should ensure that regulatory targets and standards are chosen with federal law in mind.

In the Alternative: Technology Standard

While the LCA approach does seem to be the most comprehensive and flexible policy option, the potential complexity of the regulatory design and the difficulty food system actors may face in inventorying their impacts are challenges worth considering. A technology standard could obviate some of these issues while maintaining many of the attractive features of the LCA.

What Is a Technology Standard?

Regulators often have several options to choose from when deciding how best to ensure regulated entities comply with regulatory imperatives: once regulators have decided what objective they'd like to achieve – the reduction of GHG emissions, say – part of regulatory design lies in choosing what actual actions to prescribe to bring about the desired outcome.⁷¹ Regulators choose a target for oversight – e.g., a smokestack, or, in this case, nodes and vectors of the food system – and then select some basis or approach to align the target's output with the imperative.⁷² There are a suite of approaches typically used in the environmental space, the most common being technology-based, health/environment-based, and a balancing of risks and benefits.⁷³

The health/environment category, as its label suggests, regulates actors by prohibiting them from causing ecological or human injury beyond a certain level.⁷⁴ In focusing on harms to the environment and residents of California wrought by the food system, an LCA can be considered a sort of environment/health-based standard. Conversely, technology-based standards tend to regulate activity by requiring that targets of regulation employ certain technologies known to reduce the impact of the target activity.⁷⁵ Within this broad approach, there are sub-standards of varying stringency: between the Clean Air and Clean Water Acts, for example, regulators impose

⁶⁹ 42 U.S. Code § 7416.

⁷⁰ David Hodas, *State Initiatives*, in *GLOBAL CLIMATE CHANGE AND U.S. LAW* 343, 343 (Michael B. Gerrard ed., 2007).

⁷¹ Robert Percival et al., *Environmental Regulation: Law, Science, and Policy* 150 (Aspen Casebook, 9th ed. 2021).

⁷² *Id.* at 150–153.

⁷³ *Id.* at 153.

⁷⁴ *Id.*; see also Michael A. Livermore & Richard L. Revesz, *Rethinking Health-Based Environmental Standards*, 89 N.Y.U L. Rev. 1184 (2014).

⁷⁵ Percival, *Environmental Regulation* at 153; see also *Setting Emissions Standards Based on Technology Performance*, Env't Prot. Agency, <https://www.epa.gov/clean-air-act-overview/setting-emissions-standards-based-technology-performance> (last visited Dec. 4, 2023).

best available technology economically achievable (“BAT”), best demonstrated control technology (“BDT”), and best practicable control technology (“BPT”) standards, as well as many others, that differ in their level of consideration for the practical and economic difficulty to the regulated entity in adopting a new technology.⁷⁶

Here, a tech standard would likely require that some percentage of the nodes and vectors involved in bringing foodstuffs to California consumers utilize some form of “best” technology in their wheelhouse. Regulators could tailor the law by selecting what proportion and sorts of those participants must comply with the standard (e.g., exempting certain small or far-off actors) and choosing from among the spectrum of practicability considerations discussed above. Ideally, regulators would select something like a BAT or BDT standard, which tend to be a bit tougher in their requirements in mandating the adoption of technologies that may be more expensive to implement or at a more nascent stage of development.

Arguments For and Against a Technology Standard

A tech-based approach offers a number of advantages and drawbacks. First, a tech standard would avoid the reporting complexity of an LCA approach by simply requiring regulated actors to employ technologies that best balance environmental protection and the level of economic achievability selected by regulators. Inventorying the myriad environmental burdens imposed by a complex web of interactions, such as a food system, can be time and resource intensive.⁷⁷ This is especially so for smaller operators who may lack the sophistication to even conduct these measurements. A tech standard, on the other hand, would simply require regulated entities to adopt a technology identified by regulators as optimal or determine for themselves, based on a high-level balance between environmental protection and implementability identified by regulators, what technology to use. An LCA standard would potentially lead to the same outcome, anyway, as targets would have to update their processes by adopting technologies that reduce their environmental impacts to selected levels.

Additionally, a tech standard would be “self-updating”: as technology improves, regulated entities would be required to evolve their practices without any change to the underlying regulations themselves, which would simply require the use of the “best technology.” This is where tech standards are sometimes especially superior to health-based ones, which often freeze in a certain level of environmental protection based on then-available technologies.⁷⁸ When technological developments then lead to achievable reductions to health and environmental impacts the health-based regulators could not have foreseen, the regulations are suddenly behind the times. Tech-based standards avoid this.

⁷⁶ Richard J. Lazarus, *The Making of Environmental Law* 301–02 (2nd ed. 2023).

⁷⁷ See Cucurachi et al., *supra* n. 11.

⁷⁸ See Livermore & Revesz, *supra* n. 56 at 1200.

Conversely, these standards can be somewhat toothless if the state of technology existing at the time the regulation goes into effect is relatively juvenile. By requiring only that regulated entities adopt the best available, a tech standard, without being paired with other regulatory tools, can fall short of being truly technology-forcing. Of course, this situation would change as the relevant technology developed – the stagnancy would only be a concern where the technology is slow to evolve past that initial stage. An LCA, on the other hand, will always require targets to improve their practices where they fail to adequately avoid certain environmental harms.

Additionally, due to the intricacy and attenuation of relationships in the food system web, participants well upstream of the ultimate distribution point may not know the good they're manufacturing or modifying is destined for California. This creates an information gap regulators would have to address, potentially by investigating these chains themselves or otherwise requiring final distributors to put all their suppliers on notice. That said, the same issue arises in the LCA context, further strengthening the idea of placing reporting requirements on the final distributor in that regulatory regime.

Conclusion

The wide-ranging environmental and climatic harms caused by the agriculture industry have escaped regulatory scrutiny for too long. As the nation's leader in both food production and progressive environmentalism, California is better positioned than any other state to address this problem, and will likely inspire others to follow its example. An LCA-based law is the most appropriate and effective way to reduce these impacts: it is a proven methodology recommended and practiced by powerful institutions around the world, regulates the entire life cycle of the food product, and provides industry actors flexibility in determining where adjustments can best be made. California has already successfully implemented similar laws that have survived intense political and legal challenges – it can do so again here. At the very least, a tech-based standard should be introduced, so that the environmental harms of the food chain are finally taken into consideration. This paper urges the legislature to consider these measures, which would protect the state against the devastating consequences of unregulated food production and serve as yet another example of California's leadership on the global stage.