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Margot J. Pollans

Elisabeth Haub School of Law at Pace University, mpollans@law.pace.edu

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REGULATING FARMING: BALANCING FOOD SAFETY AND ENVIRONMENTAL PROTECTION IN A COOPERATIVE GOVERNANCE REGIME

Margot J. Pollans

INTRODUCTION

In 2010, Congress passed the Food Safety Modernization Act (“Food Safety Act”), authorizing arguably the most significant expansion of federal regulation of farming methods ever undertaken.¹ The Act directs the Federal Food and Drug Administration (“FDA”) to promulgate rules governing any aspect of the growing, harvesting, packing, or storing of raw produce that could implicate food safety.² To implement this mandate, the FDA issued the proposed Standards for the Growing, Harvesting, Packaging, and Holding of Produce for Human Consumption (“Proposed Produce Safety Rule”).³ The rule employs cooperative

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1. FDA Food Safety Modernization Act, Pub. L. No. 111-353, 124 Stat. 3885 (2010) (codified as amended in scattered sections of 21 U.S.C.).

2. *Id.* § 105, 21 U.S.C. § 350h (2012). Food safety in this context refers to the threat of microbial contamination from pathogens such as listeria, salmonella, and *E. coli*. The Centers for Disease Control and Prevention (“CDC”) estimates that in the United States, between 1998 and 2008, contamination of plant commodities resulted in 24,000 hospitalizations and 363 deaths per year. John A. Painter et al., *Attribution of Foodborne Illnesses, Hospitalizations, and Deaths to Food Commodities by Using Outbreak Data, United States, 1998–2008*, 19 EMERGING INFECTIOUS DISEASES 407, 409 (2013).

3. The FDA issued the proposed Produce Safety Rule in January 2013. Standards for the Growing, Harvesting, Packing, and Holding of Produce for Human Consumption, 78 Fed. Reg. 3504 (proposed Jan. 16, 2013) (to be codified at 21 C.F.R. pts. 16, 112) [hereinafter Proposed Produce Safety Rule]. After several extensions, the comment period closed in November 2013. Standards for the Growing, Harvesting, Packing, and Holding of Produce for Human Consumption; Extension of Comment Periods, 78 Fed. Reg. 48,637 (proposed Aug. 9, 2013) (to be codified at 21 C.F.R. pts. 16, 112). In September 2014, the FDA issued a Revised Proposed Produce Safety Rule followed by a second comment period. See Standards for the Growing, Harvesting, Packing, and Holding of Produce for Human Consumption, 79 Fed. Reg. 58,434 (proposed

governance, a mode of regulation that includes farmers in the regulatory process by requiring them to determine site-specific best practices.⁴ Thus, although the FDA provides a framework for farmer decision making, it is farmers themselves who determine the precise details of the regulatory scheme.

The Food Safety Act is the subject of much criticism. Some scholars question its efficacy, others its necessity. Some focus on its potential economic consequences for small farmers and alternative food movements, arguing, among other things, that the statute imposes significant burdens on smaller producers while ignoring the inherent risks of an industrialized food supply.⁵

This Article raises an additional concern: the new food safety program focuses only on microbial food contamination and ignores farming's many environmental harms. Agriculture contributes to water and air pollution, including atmospheric accumulation of greenhouse gases, thus threatening ecosystems and public health and imposing serious distributional costs.⁶ Further, prevalent farming practices such as monoculture, the practice of planting a single crop over a large area, can threaten future crop viability even as they maximize current productivity.⁷ Unlike other industries, which are subject to extensive mandatory environmental regulation, the ill effects of agriculture remain largely unrestricted.⁸ Instead, farmers may choose to participate in voluntary subsidy programs and process-based best practice programs.⁹ As with food safety

Sept. 29, 2014) (to be codified at 21 C.F.R. pt. 112) [hereinafter Revised Proposed Produce Safety Rule]. The FDA has not yet issued a final rule.

4. Cooperative governance is an alternative to either performance standards, which prescribe outcomes, or process standards, which prescribe particular actions (i.e., that a firm use a particular method or install a particular technology). Cary Coglianese & David Lazer, *Management-Based Regulation: Prescribing Private Management to Achieve Public Goals*, 37 LAW & SOC'Y REV. 691, 693–94 (2003).

5. See, e.g., Nicholas Obolensky, *The Food Safety Modernization Act of 2011: Too Little, Too Broad, Too Bad*, 17 ROGER WILLIAMS U. L. REV. 887, 890 (2012); Diana Stuart & Michelle R. Worosz, *Risk, Anti-Reflexivity, and Ethical Neutralization in Industrial Food Processing*, 29 AGRIC. & HUM. VALUES 287, 294 (2012) (describing the risks inherent to centralization of food processing).

6. Jason J. Czarnezki & Elisa K. Prescott, *Environmental and Climate Impacts of Food Production, Processing, Packaging, and Distribution*, in FOOD, AGRICULTURE, AND ENVIRONMENTAL LAW 113, 113–29 (Mary Jane Angelo et al. eds., 2013).

7. *Id.* at 122 (noting that monocultures require increased application of nitrogen fertilizers).

8. There are a handful of mandatory regulatory schemes, including pesticide labeling and concentrated animal feeding operations water pollution permitting, but these address only narrow aspects of the overall environmental problem.

9. By process-based standards, I mean standards that prescribe or proscribe particular practices. For instance, a regulation that directed a farmer not to install a drip irrigation system would be a process-based standard aimed

regulation, many of these schemes incorporate cooperative governance.

At best, the Food Safety Act and its implementing regulations miss an opportunity to mitigate agriculture's significant environmental effects. At worst, they deepen those effects. Some food safety practices may actually harm the environment. Others will simply draw away from farmers' limited resources that could otherwise be used to mitigate environmental harms.

This discussion illustrates a classic administrative law problem: How should regulators manage an industry that generates conflicting regulatory goals? All regulatory schemes require trade-offs between competing priorities, and numerous administrative law tools exist to ensure that those trade-offs reflect reasoned decision making. Cost-benefit analysis, which can be used to balance the goals of a regulation with competing interests, is one such tool. Other solutions focus on mechanisms for interagency collaboration or executive oversight.¹⁰

This Article focuses on the under-explored question of when and by whom these trade-off tools are used. Most standard trade-off management tools—including cost-benefit analysis, environmental impact analysis, and interagency consultation—address *agency* decision making *during* “rulemaking.”

This Article argues that none of those existing tools ensure that trade-offs in agricultural regulation are adequately reasoned. This is because agricultural regulation—for both food safety and environmental protection—employs cooperative governance. *Farmers* determine the details of the regulatory scheme *after* rulemaking is complete. It may, therefore, be difficult for an agency to identify and evaluate trade-offs during rulemaking. Instead, it is farmers themselves, not regulators, who prioritize between food safety and environmental regulatory goals.

There is therefore a mismatch between existing trade-off management tools, which focus on agency decisions during rulemaking, and cooperative agricultural governance, which delegates authority to farmers to conduct trade-offs during rule implementation.

With no effective tool for trade-off management, farmers make decisions with little to no oversight. This allocation of decision making is problematic given that farmers are likely to have a bias in favor of food safety. Food retailers often condition market access on

at reducing excess water use and irrigation runoff. Some literature also refers to this type of regulation as “technology specification.” See, e.g., Robert M. Friedman et al., *Environmental Policy Instrument Choice: The Challenge of Competing Goals*, 10 DUKE ENVTL. L. & POL’Y F. 327, 334 (2000) (providing a typology of environmental regulatory tools).

10. See *infra* Part III (summarizing these tools and the relevant literature).

compliance with best food safety practices;¹¹ for the most part, there is no parallel incentive for farmers to undertake environmental improvements. Farmers also face potential strict liability for harms resulting from the sale of contaminated produce.¹² Liability for environmental harms is limited.¹³ Thus farmers, who have financial motives to address food safety concerns and few parallel incentives to address environmental concerns, are poorly situated, without adequate guidance or oversight, to evaluate trade-offs. Further, because participation in many environmental programs is voluntary, these environmental protection directives may lose out in the face of conflicting and mandatory food safety requirements.¹⁴ Even when there is no direct trade-off, the burden of participation in multiple cooperative governance schemes may reduce participation in voluntary programs.

Although one possible solution might be to change the initial regulatory design—to revoke farmer decision making in favor of more precise rulemaking—doing so would be technically challenging. There is no universally accepted answer to the question of which goal—food safety or environmental protection—is more important; instead, the answer is context dependent. In other words, even when it is possible to identify divergence between regulatory goals early in the process, it may not be feasible to reach a single resolution that should apply to all regulated entities.

This variation is the main regulatory challenge that cooperative governance is meant to solve. As a regulatory design, cooperative governance has gained popularity in recent years because it can reduce both agency enforcement costs and regulated-entity compliance costs, while at the same time allowing for individual, firm-tailored regulation.¹⁵ The primary disadvantage of cooperative governance is that it relies on the decision making of private entities with financial self-interest.¹⁶ Much of the literature on this type of regulatory design focuses on how to incentivize regulated entities to

11. See *infra* notes 65–66 and accompanying text (detailing the rise of retailer food safety mandates); see also FOOD MKTG. INST., PRODUCE SAFETY BEST PRACTICES GUIDE FOR RETAILERS 3 (2014), available at <http://www.fmi.org/docs/default-source/food-safety/produce-safety-best-practices-guide.pdf?sfvrsn=2>.

12. See *infra* notes 168–70 and accompanying text (describing strict liability standard and potential penalties under federal law for food safety violations).

13. Very few environmental harms on farms constitute violations of environmental law. See *infra* note 35 and accompanying text (describing exemptions from environmental laws for farmers).

14. For discussion of the voluntary nature of agricultural environmental regulation, see *infra* notes 36–40 and accompanying text.

15. See *infra* note 62 and accompanying text (describing concept of cooperative governance and identifying its role in food safety regulation).

16. See *infra* note 173 (describing agency costs as one of cooperative governance's primary disadvantages).

faithfully work toward achieving the primary goal of the cooperative governance scheme.¹⁷ This Article broadens the conversation to include trade-off management—how to manage regulated entities where they are working toward multiple goals that may be in tension.

A new systematic tool is needed to identify and evaluate trade-offs during rule implementation. This Article identifies one potential tool that preserves the current allocation of decision making, but calls for increased transparency in private entity decision making. The FDA should require that regulated entities produce publicly available, written assessments of trade-offs between environmental and food safety goals. The Article further recommends that the FDA seek assistance in this endeavor from the United States Department of Agriculture (“USDA”). This approach treats cooperative governance as a mechanism through which an agency delegates some of its decision-making authority to regulated entities. The same accountability and transparency mechanisms that are designed to improve the quality of agency decisions should thus apply to regulated entities’ decisions as well.

After providing a brief overview of regulation in each area, Part I of this Article identifies three types of discordance between produce safety and environmental protection on farms. First, because of limited resources, farmers will have to choose between implementing food safety practices and implementing environmental practices. Second, indirect trade-offs between the two regulatory goals result in damaging collateral consequences for the environment. Food safety regulation may exacerbate a range of existing environmental harms. Third, there is at least one direct clash that may make compliance with food safety law incompatible with participation in certain environmental programs. Part I also addresses the possibility that some environmental protection practices may also improve food safety.

Part II considers when and by whom these trade-offs are evaluated during the regulatory process. It argues that existing trade-off management tools fall short for agricultural regulation because they fail to take into consideration the structure of cooperative governance, which delays many of the regulatory decisions until after rulemaking is over.

Part III offers a typology of trade-off management tools. It categorizes these solutions based on when in the regulatory process each of these tools is used. Part III then proposes a solution aimed at reducing the Food Safety Act’s collateral environmental consequences. It calls on the FDA to require farmers to conduct written evaluations of trade-offs between food safety and environmental protection.

17. See *infra* note 173.

I. FOOD SAFETY AND ENVIRONMENTAL PROTECTION TRADE-OFFS

Farming generates both environmental and food safety risks. Although regulatory responses to the former are limited, in part due to the historical power of the agriculture industry, the latter have received considerable attention in recent years. Ramped-up food safety programs, aimed at farm-related produce contamination, may exacerbate agriculture's already severe environmental harms and make participation in environmental programs more difficult.

A. *Food Safety and Environmental Regulation: The Lay of the Land*

1. *Environmental Regulation*

Modern agriculture imposes significant adverse environmental effects, but few of these effects are regulated.¹⁸ And much of the regulation that does exist is voluntary.

Two types of harm merit particular discussion: harms to off-farm environments and harms to farming resources, such as soil and water. First, farming practices generate numerous environmental externalities that threaten public health via air and water pollution.¹⁹ Agriculture remains one of the leading, if not the most significant, sources of water pollution.²⁰ Also, farm air emissions, which are mostly exempt from Clean Air Act²¹ permitting

18. For a thorough treatment of the environmental harms, see generally, J.B. Ruhl, *Farms, Their Environmental Harms, and Environmental Law: Part I*, 27 *ECOLOGY L. Q.* 263 (2000). Beyond environmental costs, agriculture industry practices can also generate significant social costs related to worker treatment and rural poverty.

19. *Id.* at 287–92.

20. U.S. ENVTL. PROT. AGENCY, EPA 841-F-05-001, *PROTECTING WATER QUALITY FROM AGRICULTURAL RUNOFF* (2005), available at http://water.epa.gov/polwaste/nps/upload/Ag_Runoff_Fact_Sheet.pdf (“In the 2000 *National Water Quality Inventory*, states reported that agricultural nonpoint source (NPS) pollution is the leading source of water quality impacts on surveyed rivers and lakes, the second largest source of impairments to wetlands, and a major contributor to contamination of surveyed estuaries and ground water.”); see also Robert W. Adler, *Agriculture and Water Quality: A Climate-Integrated Perspective*, 37 *VT. L. REV.* 847, 850–57 (2013) (describing the scope of the problem and evidence of EPA and congressional awareness of the problem). Since the 1970 passage of the Clean Water Act, the waters of the United States have become vastly cleaner, but agricultural runoff is not subject to some of the Act's central mechanisms. 33 U.S.C. § 1362(14) (2012) (“The term ‘point source’ . . . does not include agricultural stormwater discharges and return flows from irrigated agriculture.”). Irrigation return flow, sometimes called agricultural return flow, is the surface and subsurface water that leaves the field following application of irrigation. *Return Flow Definition*, NAT'L AGRIC. L. CENTER, <http://nationalaglawcenter.org/ag-law-glossary/glossary-r/> (last visited Apr. 22, 2014).

21. See generally Clean Water Act, 33 U.S.C. §§ 1251–1387 (2012).

requirements, impair air quality and contribute to atmospheric greenhouse gases.²²

The scope of risk from air and water pollution varies depending on the type of farm. At the most harmful end of the spectrum are concentrated animal feeding operations (“CAFO”), where large numbers of animals are housed and fed in close confinement.²³ CAFO pollutants affect health outcomes for employees and neighbors.²⁴ The most serious air pollutants include hydrogen

22. For a thorough treatment of Clean Air Act requirements in the agricultural context, see generally Teresa B. Clemmer, *Agriculture and the Clean Air Act*, in FOOD, AGRICULTURE, AND ENVIRONMENTAL LAW, *supra* note 6, at 163, 163. On the role of agriculture in climate change, see U.S. ENVTL. PROT. AGENCY, EPA 430-R-11-005, INVENTORY OF U.S. GREENHOUSE GAS EMISSIONS AND SINKS: 1990–2009, at 6-1 (2011), available at http://www.epa.gov/climatechange/Downloads/ghgemissions/US-GHG-Inventory-2011-Complete_Report.pdf. In 2009, agriculture generated about 6.3 percent of all greenhouse gas emissions in the United States. *Id.* at tbl.6-1.

23. The EPA defines an animal feeding operation (“AFO”) as:

a lot or facility . . . where . . . [a]nimals . . . have been, are, or will be stabled or confined and fed or maintained for a total of 45 days or more in any 12-month period, and [c]rops, vegetation, forage growth, or post-harvest residues are not sustained in the normal growing season over any portion of the lot or facility.

40 C.F.R. § 122.23(b)(1) (2013). A CAFO is a large or medium AFO or a small AFO that either a state or the EPA has determined is a “significant contributor of pollutants to waters of the United States.” *Id.* § 122.23(b)(2), (c). Large and medium AFOs are defined by the number of confined animals and, particularly for high numbers of fowl (excluding turkeys), the structure of the pollutant discharge system. *Id.* § 122.23(b)(4), (6). CAFO manure is a particularly potent source of environmental harm. U.S. GOV’T ACCOUNTABILITY OFFICE, GAO-08-944, CONCENTRATED ANIMAL FEEDING OPERATIONS: EPA NEEDS MORE INFORMATION AND A CLEARLY DEFINED STRATEGY TO PROTECT AIR AND WATER QUALITY FROM POLLUTANTS OF CONCERN 18 (2008), available at <http://www.gao.gov/assets/290/280229.pdf> (explaining that a large CAFO may produce as much waste as a large city); Terence J. Centner, *Establishing a Rational Basis for Regulating Animal Feeding Operations: A View of the Evidence*, 27 VT. L. REV. 115, 115 (2002) (estimating that animal feedlots contribute pollutants to about sixteen percent of the total impaired waterways in the United States). In traditional animal husbandry, manure is widely dispersed across a large grazing area, and it is reincorporated into the landscape as a natural fertilizer. In CAFOs, it is concentrated in a small area and held in large containment ponds. Jiayang Cheng, *Challenges of CAFO Waste Management*, 129 J. ENVTL. ENGINEERING 391, 391 (2003) (describing the manure management practices used in most CAFOs).

24. U.S. GOV’T ACCOUNTABILITY OFFICE, *supra* note 23, at 24–25 (listing studies identifying health impacts); Centner, *supra* note 23, at 116–17. These impacts raise serious environmental justice concerns because CAFOs are commonly located in “low-income rural areas with disproportionate numbers of people of color who have experienced discrimination and already have poor health conditions for other reasons, including poverty.” LESLIE PRAY ET AL., INST. OF MED. & NAT’L RESEARCH COUNCIL, EXPLORING HEALTH AND ENVIRONMENTAL COSTS OF FOOD: WORKSHOP SUMMARY 40 (2012), available at http://safsf.org/documents/repository/114_09-13-13_13521.pdf; see also Kelley J. Donham et al., *Community Health and Socioeconomic Issues Surrounding*

sulfide and ammonia, both of which often exceed Environmental Protection Agency (“EPA”) standards in surrounding areas.²⁵ CAFOs also inflict quality of life and mental health costs on farm workers and neighbors, primarily due to CAFOs’ putrid smell, which renders surrounding areas nearly uninhabitable.²⁶

CAFOs are not the only farms with such externalities: many fruit, vegetable, grain, and fiber operations rely on a variety of poor management practices that contribute to air and water pollution.²⁷ For instance, pesticide and fertilizer application poses significant localized risks for farm workers and neighbors.²⁸ Further, it poses

Concentrated Animal Feeding Operations, 115 ENVTL. HEALTH PERSP. 317, 318 (2007); Sacoby M. Wilson et al., *Environmental Injustice and the Mississippi Hog Industry*, 110 ENVTL. HEALTH PERSP. 195, 195 (2002); Steve Wing et al., *Environmental Injustice in North Carolina’s Hog Industry*, 108 ENVTL. HEALTH PERSP. 225, 230 (2000) (showing high correlation between hog farm locations and neighborhoods that were both poor and black). Further, farmworkers, who bear the brunt of these health costs, have extremely low wages and few political protections. See Guadalupe T. Luna, *Agriculture, Rural Workers and Free Trade*, 14 N. ILL. U. L. REV. 789, 790 (1994) (explaining that low wages are common and children often accompany parents into the fields to supplement income); Guadalupe T. Luna, *An Infinite Distance?: Agricultural Exceptionalism and Agricultural Labor*, 1 U. PA. J. LAB. & EMP. L. 487, 487 (1998) (describing the lack of protections for migrant and seasonal farmworkers).

25. See Donham et al., *supra* note 24 (noting that on hog farms “at least 25% of confinement workers suffer from respiratory diseases including bronchitis, mucus membrane irritation, asthmalike syndrome, and acute respiratory distress syndrome”). Other air pollutants include “odor” and “endotoxin.” Leah Schinasi et al., *Air Pollution, Lung Function, and Physical Symptoms in Communities Near Concentrated Swine Feeding Operations*, 22 EPIDEMIOLOGY 208, 208 (2011). Neighbors also experience these symptoms. Donham et al., *supra* note 24. In a study of North Carolina residents living within 1.5 miles of a concentrated hog operation, researchers found elevated levels of acute eye irritation, throat irritation, nausea, and respiratory symptoms. Schinasi et al., *supra*, at 209, 211–12 (linking timing of symptoms to physical measures of ambient air quality); see also DOUG GURIAN-SHERMAN, UNION OF CONCERNED SCIENTISTS, CAFOs UNCOVERED: THE UNTOLD COSTS OF CONFINED ANIMAL FEEDING OPERATIONS 54 (2008), available at http://www.ucsusa.org/sites/default/files/legacy/assets/documents/food_and_agriculture/cafos-uncovered.pdf.

26. PRAY ET AL., *supra* note 24, at 41. Neighbors experience increased levels of depression, anxiety, and sleep disturbances. Donham et al., *supra* note 24.

27. See, e.g., *Agricultural Pesticides*, U.S. ENVTL. PROTECTION AGENCY, <http://www.epa.gov/agriculture/ag101/printcrop.html#pestuse> (last visited Feb. 19, 2015) (noting the environmental externalities of pesticide use).

28. Agricultural workers face elevated risks of certain types of cancers including lymphatic, hematopoietic, prostate, stomach, and cervical, and they face higher mortality rates for certain cancers, which likely follows from later-stage diagnosis. Paul K. Mills et al., *Cancer in Migrant and Seasonal Hired Farm Workers*, 14 J. AGROMEDICINE 185, 189–90 (2009) (reviewing existing epidemiological studies and reporting on results of a new study of farmworkers in California).

broader geographical risks for drinking water and aquatic habitats.²⁹

Second, many current agricultural practices impose long-term costs, straining natural resources that are essential to food production.³⁰ The environmental harms described above are externalities—they implicate what environmental scientists call *output* sustainability, affecting the environment beyond the farm. But farming also has significant environmental harms that implicate *input* sustainability, affecting agricultural resources such

29. See, e.g., Mary H. Ward et al., *Workgroup Report: Drinking-Water Nitrate and Health—Recent Findings and Research Needs*, 113 ENVTL. HEALTH PERSP. 1607, 1607 (2005) (noting that about twenty-two percent of domestic wells in agricultural regions of the United States exceed nitrate maximum contaminant levels). Fertilizer runoff, from both plant and animal farms, contributes to excessive nutrient loading in many important fisheries, including the Gulf of Mexico and the Chesapeake Bay. See, e.g., Jon Cannon, *Choices and Institutions in Watershed Management*, 25 WM. & MARY ENVTL. L. & POL'Y REV. 379, 395–96 & n.78 (2000) (describing the problem of agricultural runoff in the Chesapeake Bay); J.B. Ruhl & James Salzman, *Climate Change, Dead Zones, and Massive Problems in the Administrative State: A Guide for Whittling Away*, 98 CAL. L. REV. 59, 60 & n.4 (2010) (describing the problem of nutrient flows into the Gulf of Mexico). Nutrient loading causes surface-level algae blooms that cut off sunlight and oxygen, suffocating fish and resulting in large-scale aquatic dead zones. See Margot J. Pollans, Note, *Bundling Public and Private Goods: The Market for Sustainable Organics*, 85 N.Y.U. L. REV. 621, 626 (2010) (describing agricultural runoff's negative effect on aquatic biodiversity).

30. Many experts have expressed concern that these threats to production may create future food shortages. Currently, there is enough food to feed the entire global population. According to recent estimates, worldwide grain production, if divided evenly, could feed every living person 3500 calories per day. GEORGE MCGOVERN, *THE THIRD FREEDOM: ENDING HUNGER IN OUR TIME* 11 (2001) (noting that this figure does not include global production of vegetables, fruit, meat, poultry, oils, nuts, roots, and dairy). But the consensus today among scholars is that to feed ourselves *in the future* we need to address some of agriculture's primary environmental impacts today. Special Rapporteur on the Right to Food, *Report Submitted by the Special Rapporteur on the Right to Food, Olivier De Schutter*, ¶ 3, U.N. Doc. A/HRC/16/49 (Dec. 20, 2010) available at http://www.srfood.org/images/stories/pdf/officialreports/20110308_a-hrc-16-49_agroecology_en.pdf (“[I]ncreasing food production to meet future needs, while necessary, is not sufficient . . . [S]hort-term gains will be offset by long-term losses if it leads to further degradation of ecosystems, threatening future ability to maintain current levels of production.”); David P. Lambert, *The Quest to End Hunger in Our Time: Can Political Will Catch Up with Our Core Values?*, 6 J. FOOD L. & POL'Y 167, 184 (2010) (identifying environmental sustainability as the most central concept in the current debate on food security). Population growth further motivates these concerns. Michael R. Taylor, *The Emerging Merger of Agricultural and Environmental Policy: Building a New Vision for the Future of American Agriculture*, 20 VA. ENVTL. L.J. 169, 184–85 (2001). Some observers estimate that food production must increase by as much as seventy percent by 2050 to account for increased demand. Special Rapporteur on the Right to Food, *supra*, ¶ 7 (citing studies and describing some of the assumptions behind this number).

as soil, water, and biodiversity.³¹ Input harms threaten agriculture itself, creating risks of systemic or regional collapse in the face of soil erosion, water scarcity, and reduced resilience to pests and disease.³²

In the long term, farmers have a financial interest in taking steps to preserve productivity. But, in the short term, steps to do so—for instance, crop rotation, preserving borderlands, reducing tillage, and reducing pesticide application—increase production costs (and these costs cannot easily be passed to consumers).

31. John H. Davidson, *Sustainable Development and Agriculture in the United States*, 32 ENVTL. L. REP. 10,543, 10,543 (2002) (defining “internal” and “external” sustainability); see also SUSANNA DAVIES ET AL., INST. OF DEV. STUDIES, FOOD SECURITY AND THE ENVIRONMENT: CONFLICT OR COMPLEMENTARITY? 1 (1991) (“By environmental sustainability, we mean uses of natural resources which meet the needs of the present without compromising the ability of future generations to meet their own needs.”).

32. See DAVIES ET AL., *supra* note 31, at 2 (noting “complementarities . . . between access to food and a healthy natural resource base”); see also William S. Eubanks II, *A Rotten System: Subsidizing Environmental Degradation and Poor Public Health with Our Nation’s Tax Dollars*, 28 STAN. ENVTL. L.J. 213, 251–73 (2009) (overviewing the myriad of environmental costs of large-scale modern agriculture). Climate change, which is expected to increase water scarcity and accelerate the spread of pests and disease, puts further stress on farm systems. LESTER R. BROWN, FULL PLANET, EMPTY PLATES: THE NEW GEOPOLITICS OF FOOD SCARCITY 83–85 (2012); Larry W. Harrington & Peter R. Hobbs, *Challenge and Threats to Sustainable Food Production*, in ADEQUATE FOOD FOR ALL: CULTURE, SCIENCE, AND TECHNOLOGY OF FOOD IN THE 21ST CENTURY 235, 240 (Wilson G. Pond et al., eds. 2009) (listing climate change among current threats to production sustainability); Graham Frederick Dumas, Note, *A Greener Revolution: Using the Right to Food as a Political Weapon Against Climate Change*, 43 N.Y.U. J. INT’L L. & POL. 107, 112–13 (2010). Scientists predict that climate change’s strongest impacts on agriculture will be in countries closest to the equator. There, rising temperatures will shorten the growing season and facilitate the spread of disease. DAVIES, ET AL., *supra* note 31, at 11–12; Harrington & Hobbs, *supra*. Climate change could actually make domestic agriculture more productive. DAVIES, ET AL., *supra* note 31, at 11–12; Dumas, *supra*, at 113–14. But the United States depends on the global food system for a substantial and growing percentage of food. NORA BROOKS ET AL., U.S. DEPT OF AGRIC., U.S. FOOD IMPORT PATTERNS, 1998–2007 at 6 (2009), available at http://www.ers.usda.gov/media/157859/fau125_1_.pdf (finding that between 1998 and 2007 fruit and nut imports more than doubled, with total imports reaching \$14 billion in 2007). In 2009, total food imports accounted for about seventeen percent of total U.S. food consumption, of which 8.1 billion in imports come from fruits and nuts; 5.8 billion from vegetables; 15.9 billion from beverages; 5.2 billion from coffee, tea, and spices; and 3.7 billion from cocoa. GEORGE S. SERLETIS, U.S. INT’L TRADE COMM’N, U.S. AGRICULTURAL IMPORTS REACHED A RECORD \$86 BILLION IN 2010 MAKING THE UNITED STATES THE WORLD’S LEADING SINGLE-COUNTRY IMPORTER OF FOOD PRODUCTS (2011), available at http://www.usitc.gov/publications/332/AG_Import.pdf; see also RENÉE JOHNSON, CONG. RESEARCH SERV., RL 34468, THE U.S. TRADE SITUATION FOR FRUIT AND VEGETABLE PRODUCTS (2014), available at <http://www.fas.org/sgp/crs/misc/RL34468.pdf>.

Farmers therefore have a short-term incentive to ignore these costs, and they may do so either because they underestimate the severity of the long-term costs, or because they assume that technological innovation will obviate the need to take any current action.³³

Notwithstanding agriculture's widespread environmental costs, farming remains largely unregulated. No environmental regulatory scheme comprehensively addresses the harms described above.³⁴ Among other substantial regulatory gaps, the industry enjoys exemptions from the major federal environmental statutes, including significant parts of the Clean Air Act and Clean Water Act.³⁵

Other programs specifically aimed at reducing the environmental effects of farming are very narrow in scope. For instance, the Clean Water Act regulates water pollution from a subset of CAFOs, but leaves water pollution from many other CAFOs, and most other farms, virtually unregulated.³⁶ The EPA and many states encourage, but do not require, farmers to employ best management practices for reducing runoff, and provide

33. For some farmers, this myopia may follow simply from the fact that many farmers are older (the average age of a farmer is fifty-seven) and likely not expecting to pass their land along to the next generation; instead, they probably expect to sell (or expect their children to sell) to a housing developer, so there is no need to take long-term productivity into account. *Demographics*, U.S. ENVTL. PROTECTION AGENCY, <http://www.epa.gov/agriculture/ag101/demographics.html> (last visited Feb. 19, 2015). For others, the myopia likely stems from inadequate education about need and methods for conservation.

34. See, e.g., SUSAN A. SCHNEIDER, *FOOD, FARMING, AND SUSTAINABILITY: READINGS IN AGRICULTURAL LAW* (2011) (describing some of the critical legal issues facing the farm industry and consumers); Ruhl, *supra* note 18, at 265.

35. Ruhl, *supra* note 18, at 293–309 (cataloging the coverage and exemptions for agriculture under the Clean Air Act and Clean Water Act); Susan A. Schneider, *A Reconsideration of Agricultural Law: A Call for the Law of Food, Farming, and Sustainability*, 34 WM. & MARY ENVTL. L. & POL'Y REV. 935, 935–36 (2010). The agriculture industry also enjoys carve-outs from the Resource Conservation and Recovery Act and the Comprehensive Environmental Response, Cleanup, and Liability Act (a.k.a. "Superfund"), the two toxic waste management and cleanup statutes. Ruhl, *supra* note 18, at 313–15.

36. The Clean Water Act requires the EPA to regulate CAFOs as point sources subject to effluent limits. See Ruhl, *supra* note 18, at 316–18 (describing the history of CAFO regulation and noting that as of 1998 only 2,000 of about 450,000 AFOs had Clean Water Act permits). There is, however, potential to use the Clean Water Act's nonpoint source pollution provisions to impose more mandatory requirements. See, e.g., Douglas R. Williams, *When Voluntary, Incentive-Based Controls Fail: Structuring a Regulatory Response to Agricultural Nonpoint Source Water Pollution*, 9 WASH. U. J.L. & POL'Y 21, 81–82 (2002) (noting the possibility of more expansive regulation under the Clean Water Act's "total maximum daily load" provisions which allow for regulation of nonpoint sources in addition to point sources).

technical assistance to farmers who choose to do so.³⁷ In addition, the USDA's Conservation Stewardship Program pays farmers to adopt conservation practices on working agricultural lands.³⁸ These payments allow farmers to address environmental harms, such as soil erosion and habitat loss, whose costs are not typically reflected in food prices.³⁹ Only five percent of total farm acreage is enrolled in the program.⁴⁰

Finally, there is the organic labeling program, a market-based approach to environmental regulation. The Organic Foods Production Act of 1990 creates an opt-in labeling scheme and, within certain broad constraints, delegates responsibility to farmers to create their own organic management plans.⁴¹ The scheme creates a financial incentive for conventional growers to adopt organic practices in order to earn a share of the organic price premium.⁴²

37. See, e.g., U.S. ENVTL. PROT. AGENCY, NATIONAL MANAGEMENT MEASURES TO CONTROL NONPOINT SOURCE POLLUTION FROM AGRICULTURE (2003), available at http://water.epa.gov/polwaste/nps/agriculture/agmm_index.cfm (providing guidance to states, localities, and tribes on implementing nonpoint source pollution management programs).

38. See *Conservation Stewardship Program—Payment for Performance*, USDA NAT. RESOURCES CONSERVATION SERVICE, http://www.nrcs.usda.gov/wps/portal/nrcs/detailfull/national/programs/financial/csp/?cid=nrcs143_008316 (last visited Feb. 26, 2015). For a description of all of the USDA's various green payment programs, see MEGAN STUBBS, CONG. RESEARCH SERV., R 40763, AGRICULTURAL CONSERVATION: A GUIDE TO PROGRAMS (2013), available at <http://fas.org/sgp/crs/misc/R40763.pdf>. In addition to creating green payment programs, the Agricultural Act of 2014 also requires the USDA to deny various commodity payments and crop insurance to farmers who fail to comply with certain basic conservation compliance requirements related to soil erosion and wetlands protection. 16 U.S.C. § 3811(a) (2012), amended by Agricultural Act of 2014, Pub. L. No. 113-79, 128 Stat. 762 (codified as amended in scattered sections of 7 U.S.C.).

39. On this type of market-based regulatory strategy, see generally Charles F. Sabel & William H. Simon, *Minimalism and Experimentalism in the Administrative State*, 100 GEO. L.J. 53, 54–55 (2011) (discussing the minimalist strategy of administrative law, which is driven by market choices).

40. As of 2012, just shy of fifty million acres were enrolled. NAT'L SUSTAINABLE AGRIC. COAL., CONSERVATION STEWARDSHIP PROGRAM—RANKED BY ACRES AS % OF TOTAL AG LAND (2012), available at <http://sustainableagriculture.net/wp-content/uploads/2012/08/CSP-Acres-2010-2012-Percentage-of-total-farm-acres.pdf> (compiling program participation data from the USDA's Natural Resources Conservation Service with agricultural land data from the USDA's National Agricultural Statistics Service).

41. See Tacy Katherine Hass, *New Governance: Can User-Promulgated Certification Schemes Provide Safer, Higher Quality Food?*, 68 FOOD & DRUG L.J. 77, 87 (2013) (identifying organic labeling as a successful example of new governance); see also Organic Foods Production Act of 1990, 7 U.S.C. § 6506(2) (2012) (requiring that “producers and handlers desiring to participate under [the] program establish an organic plan”).

42. JULIE GUTHMAN, *AGRARIAN DREAMS: THE PARADOX OF ORGANIC FARMING IN CALIFORNIA* 33 (2d ed. 2014) (“The organic designation was . . . one way to generate value.”).

Commentators debate the extent to which organic labeling actually generates environmental benefits.⁴³

The narrow scope and the voluntary nature of these programs reflect political and practical hurdles to agricultural regulation. Historically, the agriculture industry has maintained substantial political influence.⁴⁴ This power is reflected in its ability to avoid onerous regulatory burdens.⁴⁵ The industry also enjoys substantial regulatory benefits—cheap land, research and technical support, and commodity subsidies.⁴⁶ The heterogeneity of agricultural practices, the uncertainty of agricultural science, and the difficulty of measuring agricultural pollution further complicate the regulatory endeavor.⁴⁷

43. See, e.g., Pollans, *supra* note 29, at 640 (considering why the organics program is unsuccessful as an environmental regulation).

44. Scholars have attributed this influence in part to the structure of Congress, which gives enormous power to less populated—i.e. rural—states, and to the lingering power of Thomas Jefferson's vision of the farmer as the lifeblood of American community and democracy. Jim Chen, *Of Agriculture's First Disobedience and Its Fruit*, 48 VAND. L. REV. 1261, 1275–76 (1995) (“The original Constitution so blessed agriculture that farm interests enjoyed nearly two centuries of political dominion through disproportionately favorable representation.”); Richard S. Kirkendall, *Up to Now: A History of American Agriculture from Jefferson to Revolution to Crisis*, 4 AGRIC. & HUM. VALUES 4, 5 (1987) (“In [Jefferson’s] view, . . . farm[s] conferred independence, since the people on it worked for themselves, not others, and it required self-reliance and hard work. Its most important product was the personality type required for a democracy . . .”).

45. In addition to significant carve-outs in environmental law, the agricultural industry also enjoys the benefits of carve-outs from some labor laws, antitrust laws, and bankruptcy laws. See Schneider, *supra* note 35 (citing 7 U.S.C. § 291 (2012); 11 U.S.C. § 303(a) (2012); 29 U.S.C. § 152(3) (2012)).

46. For a historical review of federal policies supporting U.S. agriculture, see ANNE B. W. EFFLAND, U.S. DEP'T OF AGRIC., U.S. FARM POLICY: THE FIRST 200 YEARS 21 (2000), available at http://www.farmlandinfo.org/sites/default/files/US_Farm_Policy_March_2000_1.pdf (describing four periods of federal support: 1785–1890, support via land distribution and settlement; 1830–1914, support via research and education; 1870–1933, support via infrastructure development and free markets; and, 1924–present, support via income stabilization).

47. It was this combination of problems that led the EPA, in the 1970s, to refuse to regulate irrigation return flows under the Clean Water Act. The original language of the Clean Water Act included irrigation return flows as a point source requiring a Clean Water Act discharge permit. See *supra* note 20 (defining irrigation return flow). Expressing concern that given the vast number of farms and variety of farming practices it would be infeasible to permit return flows, the EPA promulgated a rule excluding those flows from the definition of point source. Ruhl, *supra* note 18, at 294 (citing 38 Fed. Reg. 18,000, 18,003 (1973)). The D.C. Circuit struck down the rule, and Congress, agreeing with the EPA, amended the statute to embrace the EPA's interpretation. *Id.* (citing NRDC v. Costle, 568 F.2d 1368 (D.C. Cir. 1977)); see also *infra* Subpart II.B.2 (considering the regulatory challenges posed by this heterogeneity).

2. Food Safety Regulation

Harmful pathogens, including listeria, salmonella, and *E. coli* sicken thousands of people every year.⁴⁸ Between 1998 and 2008, forty-six percent of all foodborne illness outbreaks were attributable to produce.⁴⁹ There are numerous pathways for produce contamination, many of which are linked to human and domestic-animal manure.⁵⁰ Farming practices, including application of biological soil amendments (manure and compost), selection of irrigation water sources, and employee hygiene practices, contribute to food safety risks.⁵¹

In contrast to environmental regulation, food safety regulation is becoming far more comprehensive. The USDA holds regulatory authority over meat, poultry, and dairy safety.⁵² It maintains continuous inspection of slaughter and processing facilities.⁵³ The FDA regulates most of the rest of the food supply and is charged with ensuring that food is safe, nutritious, and accurately labeled.⁵⁴ Among other activities, the FDA sets safety standards for various foods, including the acceptable levels of contaminants and the safety of food additives.⁵⁵ It also coordinates with various state health agencies, which are primarily responsible for the actual inspection of food processing facilities.⁵⁶

The 2010 Food Safety Act preserves this basic division of labor between the USDA and the FDA but dramatically expands the FDA's authority, bringing farms under its direct control for the first

48. See Painter et al., *supra* note 2, at 409–10.

49. *Id.* at 407; see also *id.* at 412–13 (estimating about 23,000 annual hospitalizations from plant-based outbreaks and about 363 annual deaths). Meat safety is also a significant problem. Beef and poultry cause 55 and 278 deaths per year respectively. *Id.* at 413.

50. See, e.g., Douglas A. Powell et al., *Produce in Public: Spinach, Safety, and Public Policy*, in MICROBIAL SAFETY OF FRESH PRODUCE 369, 370–71 (Xuetong Fan et al. eds., 2009) (listing both pre- and postharvest potential pathways for contamination).

51. *Id.*

52. RENÉE JOHNSON, CONG. RESEARCH SERV., RS 22600, THE FEDERAL FOOD SAFETY SYSTEM: A PRIMER 2–4 (2014), available at <http://www.fas.org/sgp/crs/misc/RS22600.pdf>.

53. *Id.* at 5. Within the USDA, the Food Safety Inspection Service has primary responsibility for food safety. *Id.*

54. *Id.* at 4.

55. *Id.* at 5.

56. *Id.* Numerous other agencies, including the EPA, the CDC, and the Department of Homeland Security, also play a role in food safety regulation. See *id.* at 14–15 (listing all relevant agencies and their regulatory responsibilities); see also Richard A. Merrill & Jeffrey K. Francer, *Organizing Federal Food Safety Regulation*, 31 SETON HALL L. REV. 61, 65 (2000) (describing the fragmentation within food safety regulation, exploring problems arising from this fragmentation, including redundancies and regulatory gaps, and calling for reorganization); *infra* Subpart III.B.3 (considering potential advantages of regulatory fragmentation).

time.⁵⁷ Prior to the Food Safety Act, the FDA had authority over farms to conduct investigations of unsanitary conditions or to investigate food safety outbreaks, but this authority was rarely used and was mainly reactive to suspected hazards.⁵⁸ One of the Act's primary goals was to shift from a responsive to a proactive approach.⁵⁹ The bipartisan legislation received substantial industry support.⁶⁰

The Food Safety Act builds on two earlier developments in food safety regulation. First, in the 1990s, the USDA, which regulates meat safety, layered on to its existing animal slaughter inspection process a "hazard analysis and critical control points" ("HACCP") system. This system requires regulated entities to develop firm-specific plans that identify sources of food safety risk and methods for control.⁶¹ This "management-style regulation" shifts the burden for developing specific action plans from regulators to firm managers, maintaining centralized authority for standard development, but allowing plans to be specifically tailored to individual operations.⁶² It also reflects a shift in focus from the end

57. See Charles F. Sabel & William H. Simon, *Contextualizing Regimes: Institutionalization as a Response to the Limits of Interpretation and Policy Engineering*, 110 MICH. L. REV. 1265, 1280 (2012) ("Federal food regulation has focused traditionally on post-farm industrial processing. But for raw fruits and vegetables, most of the 'critical control points' are on the farm.").

58. NAT'L SUSTAINABLE AGRIC. COAL., FOOD SAFETY ON THE FARM: POLICY BRIEF AND RECOMMENDATIONS 9 (2009), available at <http://sustainableagriculture.net/wp-content/uploads/2008/08/NSAC-Food-Safety-Policy-Brief-October-2009.pdf> (describing the status of FDA authority prior to the enactment of the Food Safety Act and explaining that the "FDA ha[d] broad, general authority to regulate at least some on-farm activities, but it rarely [did] so"); see also RENÉE JOHNSON, CONG. RESEARCH SERV., RL 34612, FOOD SAFETY ON THE FARM 5 (2011), available at <http://nationalaglawcenter.org/wp-content/uploads/assets/crs/RL34612.pdf>.

59. H.R. REP. NO. 111-234, at 35 (2009) (noting the statute's goal of "preventing food safety problems" (emphasis added)).

60. See *infra* notes 66–72 and accompanying text (elaborating on industry motives for support of federal action).

61. The traditional meat safety scheme, in place since the early twentieth century, requires end-of-the-line organoleptic (sight, smell, touch) inspection of all animals and carcasses. Originally developed for NASA, HACCP is also used in the juice industry. JOHNSON, *supra* note 52, at 16. Although the bulk of the food safety regime is under the jurisdiction of the FDA, meat, poultry, and eggs are under the jurisdiction of the USDA's Food Safety Inspection Service. *Id.* at 14–17 (showing breakdown of food safety authority among various federal agencies). HACCP reflects a significant shift because it relies on delegation of autonomy to meat processors to allow for flexibility, learning, and adaptation. Sabel & Simon, *supra* note 39, at 55.

62. Coglianese & Lazer, *supra* note 4, at 694 ("Under management-based regulatory strategies, firms are expected to produce plans that comply with general criteria designed to promote the targeted social goal."); Richard B. Stewart, *A New Generation of Environmental Regulation?*, 29 CAP. U. L. REV. 21, 127–28 (2001) (suggesting that this regulatory strategy may be appropriate where "the conduct of organizations may be too far too ranging and

product to the production process. In its Proposed Produce Safety Rule, the FDA adopts a version of the HACCP program for some on-farm food processing and recommends that farms engage in hazard analysis for their agricultural operations.⁶³

Second, also in the 1990s, following a directive from the Clinton Administration's Initiative to Ensure the Safety of Imported and Domestic Fruits and Vegetables, the FDA developed a series of commodity-specific Good Agricultural Practices ("GAP").⁶⁴ Again, this development reflects a shift from product to process. Although these were nonbinding guidance documents, private retailers began requiring compliance with these or with privately developed standards as a condition of wholesale produce purchase.⁶⁵ Growers

dynamic . . . to be successfully contained by external controls" and that the strategy may be useful to overcome "inherent limits on government information"). Within such systems, regulators are responsible for developing criteria for management planning, and, often for approving specific plans, and for auditing firms for compliance. Sabel & Simon, *supra* note 57, at 1278–79 (observing that the shift in the food safety context reflects the fact that microbial hazards are not "well understood, uniform, or stable"); Stewart, *supra*, at 128. Because of this burden shifting, these regimes may also help relieve agency resource shortages, a particular problem for the FDA. See, e.g., SUBCOMM. ON SCI. & TECH., FDA SCIENCE AND MISSION AT RISK 21 (2007), available at http://www.fda.gov/ohrms/dockets/ac/07/briefing/2007-4329b_02_01_FDA%20Report%20on%20Science%20and%20Technology.pdf (finding that funding shortages threatened a variety of important FDA functions across the full scope of its responsibilities); see also Stewart, *supra*, at 127 (observing that this regulatory approach may be useful to overcome "inherent limits on . . . administrative and enforcement resources").

63. Proposed Produce Safety Rule, 78 Fed. Reg. 3504, 3530–32 (proposed Jan. 16, 2013) (to be codified at 21 C.F.R. pts. 16, 112) (concluding that HACCP would be burdensome for farms and tentatively deciding not to require it, but recommending that farmers do it anyway while the FDA is seeking comments on whether it should be required). The FDA proposed a separate rule governing food processing facilities that does require a HACCP-like analysis. Farms that engage in certain kinds of on farm food processing qualify as facilities subject to those requirements. *Id.* at 3520–22 (suggesting that such facilities may be subject to § 418 of the Federal Food, Drug, and Cosmetic Act).

64. Kenneth S. Petersen, *Third-Party Audit Programs for the Fresh-Produce Industry*, in MICROBIAL SAFETY OF FRESH PRODUCE, *supra* note 50, at 321, 321. The FDA's *Guidance for Industry: Guide to Minimize Microbial Food Safety Hazards of Fresh-Cut Fruits and Vegetables* also included good manufacturing practices governing postfarm food processing. *Id.*; see U.S. FOOD & DRUG ADMIN., GUIDANCE FOR INDUSTRY: GUIDE TO MINIMIZE MICROBIAL FOOD SAFETY HAZARDS FOR FRESH FRUITS AND VEGETABLES 5 (1998), available at <http://www.fda.gov/downloads/Food/GuidanceComplianceRegulatoryInformation/GuidanceDocuments/ProduceandPlanProducts/UCM169112.pdf>. The good manufacturing practices were based in part on a 1998 fresh produce safety guidance document published by the International Fresh Produce Association known as GAP. Rita Marie Cain, *Salads, Safety and Speech Under a National Leafy Greens Marketing Agreement*, 67 FOOD & DRUG L.J. 311, 317 (2012).

65. Petersen, *supra* note 64. In 1999, Safeway became the first retailer to impose this requirement; at first it imposed the requirement only for leafy greens, but ultimately extended it to all produce. *Id.* at 322. Albertson's

thus had a strong financial incentive to adopt GAP because doing so would improve their market access.⁶⁶

In 2006, following a significant *E. coli* outbreak, which was ultimately traced to a few fields of spinach in California and which led to a nationwide spinach recall, California marketers implemented the California Leafy Green Marketing Agreement.⁶⁷ The Agreement, which tracks the FDA's leafy green GAP, required that participating marketers commit to purchase only from growers who complied with best practices laid out in the Agreement.⁶⁸ Although participation was voluntary, nearly one hundred percent of California marketers signed on within the first year.⁶⁹ The USDA took steps toward developing a nationwide marketing agreement modeled on the California Agreement, but it terminated proceedings following the Food Safety Act's enactment.⁷⁰

followed suit shortly thereafter. *Id.* In 2006, the USDA began requiring good agricultural and good handling practices—verified by a third-party audit—for sources of school lunch produce. *Id.*

66. See Linda Calvin et al., *The Economics of Food Safety: The 2006 Foodborne Illness Outbreak Linked to Spinach*, in MICROBIAL SAFETY OF FRESH PRODUCE, *supra* note 50, at 399, 409 (observing that long term liability risks incentivized improved food safety practices but that the “more immediate benefit of adopting better food safety practices is that it satisfies many retailers and food service buyers who require third-party audits of grower food safety practices as a precondition of purchase”); RODERICK M. REJESUS, N.C. COOP. EXTENSION, GOOD AGRICULTURAL PRACTICES GAP CERTIFICATION: IS IT WORTH IT? (2009), available at http://www4.ncsu.edu/~rmrejesu/Food_Safety_Risk/ag-709%20final%20printed.pdf (noting that GAP certification provides access to major supermarket chains, school systems, and restaurants, and finding that Mexican green onion growers with GAP certification were less harmed by demand collapse following the outbreak associated with Mexican green onions).

67. A. Bryan Endres & Nicholas R. Johnson, *Integrating Stakeholder Roles in Food Production, Marketing, and Safety Systems: An Evolving Multi-Jurisdictional Approach*, 26 J. ENVTL. L. & LITIG. 29, 51, 66 (2011). Arizona developed a similar agreement shortly thereafter. *About Us*, ARIZ. LEAFY GREENS FOOD SAFETY COMMITTEE, <http://www.arizonaleafygreens.org/about-us/> (last visited Feb. 17, 2015). The California and Arizona agreements together covered nearly ninety percent of all leafy greens grown in the United States. Endres & Johnson, *supra*, at 66–67. Marketing agreements, originally authorized by the Agricultural Adjustment Act of 1933, and then reauthorized after that Act's invalidation in the Agricultural Marketing Agreement Act of 1937, are typically used to control and standardize commodity prices. *Id.* at 67–71. Most marketing agreements are entered into at the request of the USDA to implement marketing orders. *Id.* at 80. Using a marketing agreement to effect food safety policy is therefore quite unusual.

68. Endres & Johnson, *supra* note 67, at 66.

69. *Id.*

70. National Marketing Agreement Regulating Leafy Green Vegetables; Termination of Proceeding on Proposed Marketing Agreement, 78 Fed. Reg. 73,111 (proposed Dec. 5, 2013) (to be codified at 7 C.F.R. pt. 970) [hereinafter Leafy Green Vegetable Proposal].

The Food Safety Act incorporates the GAP model, giving the FDA broad authority over farming practices.⁷¹ The statute directs the FDA to “establish science-based minimum standards for the safe production and harvesting of those types of fruits and vegetables . . . that are raw agricultural commodities.”⁷² The statute also requires the FDA to ensure that the final rules are consistent with the environmental directives of other agencies and with the USDA’s organic certification standards.⁷³ Further, it requires that the FDA allow farmers flexibility; thus, the proposed regulations frequently allow farmers leeway to adopt compliance alternatives.⁷⁴

The resulting Proposed Produce Safety Rule combines traditional process-based regulations with cooperative governance. Included in the specific process directives are a prohibition on the sale of produce that dropped to the ground prior to harvest⁷⁵ and a prohibition on the use of human waste as fertilizer.⁷⁶ Cooperative mechanisms include options to select alternatives for water treatment methods⁷⁷ and an obligation to monitor the farm for animal intrusion “[a]s needed” based on “[the farmer’s] observations and experience.”⁷⁸

The leafy greens industry supported passage of the Food Safety Act, pushing first for a national version of the California Leafy Green Marketing Agreement⁷⁹ and then for the Food Safety Act and

71. Proposed Produce Safety Rule, 78 Fed. Reg. 3504, 3530 (proposed Jan. 16, 2013) (to be codified at 21 C.F.R. pt. 16, 112) (noting that in crafting new rules the FDA drew on its previous experience with food guidance). Although these are proposed, and not final, it is unclear that the overarching structure of this approach will change in the final rules.

72. FDA Food Safety Modernization Act § 105(a)(1)(A), 21 U.S.C. § 350h(a)(1)(A) (2012). The statute specifically directs the FDA to include standards related to “soil amendments, hygiene, packaging, temperature controls, animals in the growing area, and water.” *Id.* § 105(a)(3)(B), 21 U.S.C. § 350h(a)(3)(B). The Food Safety Act also contains numerous provisions regarding food processors, transporters, and foreign suppliers.

73. *Id.* § 105(a)(3)(D), (E), 21 U.S.C. § 350h(a)(3)(D), (E).

74. *Id.* § 105(a)(3)(A), (c)(1)(B), 21 U.S.C. § 350h(a)(3)(A), (c)(1)(B); *see infra* note 180 and accompanying text (describing the industry preference for flexibility).

75. Proposed Produce Safety Rule, 78 Fed. Reg. at 3638.

76. *Id.* at 3636.

77. *Id.* at 3635.

78. *Id.* at 3638.

79. In April 2011, a coalition of regional leafy green growers associations came out in support of a national leafy green marketing agreement. *See* Proposed National Marketing Agreement Regulating Leafy Green Vegetables; Recommended Decision and Opportunity to File Written Exceptions to Proposed Marketing Agreement No. 970, 76 Fed. Reg. 24,292, 24,292–93 (proposed Apr. 29, 2011) (to be codified at 7 C.F.R. pt. 970) (noting that the proposed rule followed a 2007 Advanced Notice of Proposed Rulemaking responding to industry interest in the establishment of a national marketing program and a 2009 petition for rulemaking submitted by a coalition of “producers, handlers, and interested persons representing a cross section of the national fresh and

adoption of Leafy Green Marketing–Agreement-like standards during Food Safety Act rulemaking.⁸⁰ The industry supported federal action for three reasons. First, it sought to restore consumer confidence in leafy greens.⁸¹ After the 2006 *E. coli* spinach outbreak, per capita consumption of spinach fell by about twelve percent.⁸² Second, industry participants sought federal standards in order to preempt the ongoing development of potentially stricter retailer standards, which had created serious burdens and often clashed with one another.⁸³ A single grower could theoretically be subject to multiple sets of standards and face inspection from multiple auditors.⁸⁴ Third, the industry sought to extend the same requirements to other growers to level the playing field.⁸⁵

fresh-cut produce industry”) [hereinafter Proposed Leafy Green Marketing Agreement]. The proposed rules codified the FDA’s GAP guidance standards. *Id.* at 24,335. After the FDA’s publication of proposed Food Safety Act rules, the USDA terminated the rulemaking process for this rule. Leafy Green Vegetable Proposal, 78 Fed. Reg. 73,111 (proposed Dec. 5, 2013) (to be codified at 7 C.F.R. pt. 970).

80. See Hass, *supra* note 41, at 86 (observing that the food industry, including important trade groups such as the National Restaurant Association and the Grocery Manufacturer’s Association, supported the Food Safety Act).

81. Proposed Leafy Green Marketing Agreement, 76 Fed. Reg. at 24,293 (reporting that proponents for a national rule “stated that the proposed agreement would minimize the potential for microbial contamination in production and handling systems and would improve consumer confidence in leafy green vegetables in the United States market”); see also *id.* at 24,323 (“A measure of the benefit of the proposed program is the avoidance of lost sales.”).

82. William K. Hallman et al., *Public Response to the 2006 Recall of Contaminated Spinach*, in MICROBIAL SAFETY OF FRESH PRODUCE, *supra* note 50, at 351, 365; see also Chryssa V. Deliganis, *Death by Apple Juice: The Problem of Foodborne Illness, the Regulatory Response, and Further Suggestions for Reform*, 53 FOOD & DRUG L.J. 681, 712–14 (1998) (describing the public response to the rise of outbreaks in the 1990s). Industry participants acknowledge that development of private safety standards is “part of a ‘process to win back the confidence of consumers.’” Stuart & Worosz, *supra* note 5, at 294. One “veteran food safety auditor” went so far as to say that “in his opinion, about 70% of the items on food safety checklists are irrelevant to food safety.” *Id.*; see *infra* text accompanying note 160 (discussing the importance of consumer perception).

83. Proposed Leafy Green Marketing Agreement, 76 Fed. Reg. at 24,299 (noting proponents’ complaint about the “common practice among fresh produce buyers to develop their own food safety requirements for producers and handlers,” as “these requirements often differ from buyer to buyer, resulting in a complex web of private standards that . . . [are] costly to the producer and handler, and [are] often redundant”).

84. Petersen, *supra* note 64, at 322 (noting that in the absence of a national standard, it was not uncommon for the same operation to be audited multiple times and required to satisfy different requirements of various buyers).

85. Proposed Leafy Green Marketing Agreement, 76 Fed. Reg. at 24,298 (justifying the need for a national agreement by referring to proponents’ statements that “a national program would allow for the coordination of audit verifications for all fresh leafy green vegetables at a national level and would allow for continuity of product quality as it moves between States”); *id.* (noting

B. *Trade-Offs*

The adoption of produce safety regulations, which govern the same farming practices that generate environmental risk, gives rise to three types of trade-offs. First, it generates conflict because farmers have limited resources. Implementing environmental protection and food safety practices can be costly, so farmers will be unable to take all steps that might be desirable. Second, it creates inconsistencies between the goals of environmental protection and food safety. Specifically, food safety regulation has collateral consequences for the environment, exacerbating some of agriculture's already severe environmental harms. Third, it creates at least one direct trade-off for regulated entities, who may be unable to participate in certain aspects of the USDA's environmental programs as a result of the food safety program. The discussion below elaborates on the latter two concerns and observes that the approach to produce safety regulation misses some potential opportunities for mutual reinforcing of food safety and environmental goals. Because the federal produce safety regulations are not yet finalized, this analysis relies on the environmental consequences of the California Leafy Green Marketing Agreement, which imposes similar requirements on produce farmers.

1. *Indirect Trade-Offs: Collateral Consequences*

Some produce safety measures may have collateral environmental consequences. Each of the main focuses of the safety measures—elimination of wildlife, elimination of soil microbes, clean water, worker hygiene, and food packaging—has collateral effects.⁸⁶ This Subpart explores the environmental consequences of the food safety approach to biological soil amendments (including compost and manure).

The Food Safety Act's proposed regulations and their predecessor schemes threaten soil microbial diversity through a series of provisions aimed at discouraging the use of raw manure and compost.⁸⁷ Heavy application of synthetic fertilizers can reduce

that proponents for the rule argued that compliance with GAP outside of California and Arizona was "inconsistent and limited").

86. The Food Safety Act directs the FDA to develop rules regarding each of these categories. FDA Food Safety Modernization Act § 105(a)(3)(B), 21 U.S.C. § 350h(a)(3)(B) (2012). Other potential environmental impacts include overreliance on and depletion of groundwater resources. See Notice of Intent to Prepare an Environmental Impact Statement for the Proposed Rule, Standards for Growing, Harvesting, Packing, and Holding of Produce for Human Consumption, 78 Fed. Reg. 50,358, 50,359 (proposed Aug. 19, 2013) (to be codified at 21 C.F.R. pt. 112).

87. For instance, they impose more stringent recordkeeping, testing, processing, and storage requirements on compost and raw manure than on synthetic fertilizer. COMMODITY SPECIFIC FOOD SAFETY GUIDELINES FOR THE

both microbial biodiversity and microbial biomass.⁸⁸ At the same time, application of compost and raw manure can increase both.⁸⁹

Soil with reduced microbial diversity is less productive and can be environmentally costly to cultivate because it requires higher levels of fertilizer application.⁹⁰ “[H]ealthy soil is defined as a stable system with resilience to stress, high biological diversity and high

PRODUCTION AND HARVEST OF LETTUCE AND LEAFY GREENS 31 (2013), available at <http://www.lgma.ca.gov/wp-content/uploads/2014/09/California-LGMA-metrics-08-26-13-Final.pdf> [hereinafter CALIFORNIA LEAFY GREENS MARKETING AGREEMENT] (requiring management plans that govern the timing of application, storage, source and quality, transportation, time and temperature verification for compost processing, etc.). With regard to raw manure, many of these safety guidelines discourage its use for raw produce fields altogether, particularly where it is not possible to have a lengthy wait time between application and harvest. *Id.* (suggesting no raw manure for lettuce or leafy greens). The FDA GAP are more nuanced, suggesting that “[w]here it is not possible to maximize the time between application and harvest, such as for fresh produce crops which are harvested throughout most of the year, raw manure should not be used.” U.S. FOOD & DRUG ADMIN., *supra* note 64, at 23. Although the USDA organic program recommends a wait time of 120 days between application of raw manure and harvest of produce to be eaten raw, many of the safety programs suggest substantially longer intervals. Compare USDA Organic Foods Production Act Provisions, 7 C.F.R. § 205.203 (2014) (requiring a 120-day interval for products whose edible portion makes direct contact with the soil and a 90-day interval if the edible portion does not), with U.S. FOOD & DRUG ADMIN., *supra* note 64, at 23 (suggesting that growers allow for approximately one year between the application of manure and harvest). The original Proposed Produce Safety Rule recommended a nine-month interval, but, bowing to pressure from farm and environmental interest groups, the FDA eliminated the requirement, choosing instead to designate no specific interval and to leave the issue for future resolution. Revised Proposed Produce Safety Rule, 79 Fed. Reg. 58,434, 58,472 (proposed Sept. 29, 2014) (to be codified at 21 C.F.R. pt. 112) (leaving the requirement for future resolution); Proposed Produce Safety Rule, 78 Fed. Reg. 3504, 3637 (proposed Jan. 16, 2013) (to be codified at 21 C.F.R. pt. 112) (requiring 9 months).

88. Alexander V. Semenov et al., *Estimating the Stability of Escherichia Coli O157:H7 Survival in Manure-Amended Soils with Different Management Histories*, 10 ENVTL. MICROBIOLOGY 1450, 1451 (2008) (“[I]ntensive farming procedures, application of artificial fertilizers, herbicides, etc. [cause] [h]igh levels of stress [that can] decrease microbial diversity.”).

89. See, e.g., Mark Farrell et al., *Microbial Diversity and Activity Are Increased by Compost Amendment of Metal-Contaminated Soil*, 71 FEMS MICROBIOLOGY ECOLOGY 94, 98 (2010) (concluding that soil amendment with compost increased microbial biodiversity more than did soil amendment with synthetic fertilizer). But see Robert E. Mandrell, *Enteric Human Pathogens Associated with Fresh Produce: Sources, Transport, and Ecology*, in MICROBIAL SAFETY OF FRESH PRODUCE, *supra* note 50, at 5, 25 (explaining that manure-amended soil appears to support the survival of some pathogens such as *E. coli* O157:H7 and Salmonella).

90. Claire Kremen & Albie Miles, *Ecosystem Services in Biologically Diversified Versus Conventional Farming Systems: Benefits, Externalities, and Trade-Offs*, 17 ECOLOGY & SOC’Y Art. 40, 3 (2012), available at <http://www.ecologyandsociety.org/vol17/iss4/art40/>.

levels of internal cycling of nutrients.”⁹¹ In other words, healthy soil is alive, not sterile. Healthy soil provides a variety of ecosystem services, including nitrogen fixing and nutrient cycling, which reduce the need for fertilizers.⁹² Synthetic fertilizers are extremely energy intensive; by minimizing the need for them, farms can reduce substantially their overall energy footprints.⁹³ Microbial biodiversity is essential to the stability of the farm environment—improving the ability of the soil to maintain productivity in the face of external stressors.

In addition, discouraging the use of compost and manure exacerbates an entirely different environmental externality related to animal waste and farm energy use. Manure disposal is a serious problem for all animal facilities.⁹⁴ Field application of compost and manure is an essential part of the farm waste management puzzle. Manure from meat and dairy production facilities itself poses a threat to air and water, and limiting fields available for its disposal worsens the problem.⁹⁵

2. *A Direct Trade-Off: Forcing Farmers to Choose*

In at least one instance, food safety regulation, as enforced, may make it difficult for farmers to choose to implement the environmental best practices prescribed by the EPA. This is an example of what Cary Coglianese and others call “comparative regulatory incoherence.”⁹⁶ Even where both regimes provide flexibility, incompatibilities may arise at the back end, as inspectors

91. Semenov et al., *supra* note 88, at 1450.

92. Kremen & Miles, *supra* note 90, at 2; *see also* Semenov, *supra* note 88 (observing that increased biomass and biodiversity “increase[s] resilience and resistance to stress”).

93. ERNST WORRELL ET AL., ENERGY USE AND ENERGY INTENSITY OF THE U.S. CHEMICAL INDUSTRY 5 (2000), available at https://www.energystar.gov/ia/business/industry/industrial_LBNL-44314.pdf (noting that nitrogenous fertilizer production is a “highly energy intensive process”).

94. *See* sources cited *supra* note 23.

95. Among other problems, CAFO manure contributes significant greenhouse-gas emissions. *See* U.S. ENVTL. PROT. AGENCY, *supra* note 22, at 6-8 to 6-10; *see also supra* notes 23–24 and accompanying text (describing other aspects of the manure glut problem). Discouraging use is perhaps sensible with regard to CAFO manure, which is far more likely to contain risky levels of pathogens and likely also contains antibiotics, metals, and other contaminants. THE CAFO READER: THE TRAGEDY OF INDUSTRIAL ANIMAL FACTORIES 84 (Daniel Imhoff ed., 2010).

96. *See* Cary Coglianese, *Bounded Evaluation: Cognition, Incoherence, and Regulatory Policy*, 54 STAN. L. REV. 1217, 1219–20, 1236 (2002) (“[I]nconsistent decisions [are] likely, if not inevitable, when statutes and regulatory agencies are created at different times and for different purposes.”); *see also* Cass R. Sunstein et al., *Predictably Incoherent Judgments*, 54 STAN. L. REV. 1153, 1186 (2002) (discussing the inconsistency of agencies in levying fines imposed and in deciding what enforcement actions to pursue).

and other enforcement agents channel farmers into more prescribed activities.

This incoherence is evident in the interaction between the USDA's Conservation Stewardship Program and elements of food safety regulations aimed at keeping wildlife off of farms. Through the Conservation Stewardship Program, farmers can receive credit for a variety of activities aimed at preserving farm habitats for wild flora and fauna.⁹⁷ These habitats provide a variety of environmental benefits including filtering runoff before it reaches drinking water or aquatic habitats, reducing soil erosion, and protecting biodiversity.⁹⁸ The Conservation Program provides funding for a variety of wildlife habitat improvements.⁹⁹ Included on the list of improvements are "[e]xtending existing field borders

97. 7 C.F.R. § 1470.1 (2012).

98. As these environmental programs indicate, farm habitat provides environmental value, mitigating some of agriculture's environmental harms. Specifically, habitat not only protects endangered species but also provides ecosystem services. Kremen & Miles, *supra* note 90, at 1 (describing the concepts of ecological and spatial diversity and their importance in the farm environment). Many of these services are critical to farm productivity. For instance, borderlands can provide habitat for pollinators thus reducing the need for honeybee rental. *Id.* at 2. Borderlands can also protect soil and water quality by preventing soil erosion. Melanie Beretti & Diana Stuart, *Food Safety and Environmental Quality Impose Conflicting Demands on Central Coast Growers*, 62 CAL. AGRIC. 68, 69 (2008). Robust ecosystem services reduce the need for artificial inputs, including pollinators, fertilizers, and pesticides, which each create their own environmental harms. Ecosystem services help maintain resiliency to system shock, thereby preserving long-term productivity. Sasha Gennet et al., *Farm Practices for Food Safety: An Emerging Threat to Floodplain and Riparian Ecosystems*, 11 FRONTIERS ECOLOGY & ENV'T 236, 240 (2013); Kremen & Miles, *supra* note 90, at 2; *see also* Beretti & Stuart, *supra*, at 68. Planted (as opposed to bare dirt) borderlands and buffers also play an important role in mitigating farm pollution. Specifically, borderlands can reduce soil erosion and filter other pollutants, such as the chemical contaminants in fertilizers and pesticides. *Buffer Strips: Common Sense Conservation*, USDA NAT. RESOURCES CONSERVATION SERVICE, http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/newsroom/features/?cid=nrcs143_0235 68 (last visited Aug. 8, 2014). By reducing runoff, borderlands can protect aquatic habitats and drinking water from contamination. To keep its drinking water clean, the New York City Department of Environmental Protection partners with farmers in the watershed, paying them to adopt these types of best management practices to reduce runoff. *Agriculture on Private Lands*, NYC ENVTL. PROTECTION, http://www.nyc.gov/html/dep/html/watershed_protection/agriculture.shtml (last visited Aug. 1, 2014); *See also* James Salzman, *Creating Markets for Ecosystem Services: Notes from the Field*, 80 N.Y.U. L. REV. 870, 889–92 (2005) (describing New York City's program as a successful example of a market for ecosystem services); *see supra* note 20 and accompanying text (describing agriculture's threats to drinking water and aquatic habitats). Borderlands can thereby reduce the need for other kinds of expensive pollution controls and cleanup.

99. 7 C.F.R. § 1466.1 (2012).

for water quality protection and wildlife habitat,”¹⁰⁰ “[e]xtending riparian forest buffers for water quality protection and wildlife habitat,”¹⁰¹ “[w]ildlife friendly fencing,”¹⁰² “[r]enovation of a windbreak, shelterbelt or hedgerow for wildlife habitat,”¹⁰³ and “[p]ollinator and/or beneficial insect habitat.”¹⁰⁴ The USDA designed these conservation activities to “improve resource conditions including soil quality, water quality, water quantity, air quality, and habitat quality, as well as energy.”¹⁰⁵

By contrast, both the California Leafy Green Marketing Agreement and the Proposed Produce Safety Rule contain directives

100. NATURAL RES. CONSERVATION SERV., U.S. DEP’T OF AGRIC., ANIMAL ENHANCEMENT ACTIVITY—ANM07—EXTENDING EXISTING FIELD BORDERS FOR WATER QUALITY PROTECTION AND WILDLIFE HABITAT (2014), *available at* http://www.nrcs.usda.gov/wps/PA_NRCSConsumption/download?cid=stelprdb1240342&ext=pdf.

101. NATURAL RES. CONSERVATION SERV., U.S. DEP’T OF AGRIC., ANIMAL ENHANCEMENT ACTIVITY—ANM05—EXTENDING RIPARIAN FOREST BUFFERS FOR WATER QUALITY PROTECTION AND WILDLIFE HABITAT (2014), *available at* http://www.nrcs.usda.gov/wps/PA_NRCSConsumption/download?cid=stelprdb1240341&ext=pdf.

102. NATURAL RES. CONSERVATION SERV., U.S. DEP’T OF AGRIC., ANIMAL ENHANCEMENT ACTIVITY—ANM27—WILDLIFE FRIENDLY FENCING (2014), *available at* http://www.nrcs.usda.gov/wps/PA_NRCSConsumption/download?cid=stelprdb1240352&ext=pdf.

103. NATURAL RES. CONSERVATION SERV., U.S. DEP’T OF AGRIC., PLANT ENHANCEMENT ACTIVITY—PLT06—RENOVATION OF A WINDBREAK, SHELTERBELT OR HEDGEROW FOR WILDLIFE HABITAT (2014), *available at* http://www.nrcs.usda.gov/wps/PA_NRCSConsumption/download?cid=stelprdb1240401&ext=pdf.

104. NATURAL RES. CONSERVATION SERV., U.S. DEP’T OF AGRIC., PLANT ENHANCEMENT ACTIVITY—PLT15—ESTABLISH POLLINATOR AND/OR BENEFICIAL INSECT HABITAT (2014), *available at* http://www.nrcs.usda.gov/wps/PA_NRCSConsumption/download?cid=stelprdb1240402&ext=pdf.

105. *Conservation Stewardship Program*, USDA NAT. RESOURCES CONSERVATION SERVICE, <http://www.nrcs.usda.gov/wps/portal/nrcs/main/national/programs/financial/csp/> (last visited Mar. 15, 2014). Likewise, California environmental laws contain similar directives. State water law authorizes regional water boards to impose discharge requirements for any water polluters—including nonpoint discharge from agricultural sources—or to issue conditional waivers. Many of the regional water boards have issued categorical conditional waivers for agricultural lands, which impose a variety of conditions including educational requirements and conservation measures that parallel those of the Conservation Stewardship Program. For instance, California’s Central Coast Water Board provides a conditional waiver for farmers who agree to participate in a monitoring program and imposes some minimal regulatory requirements for certain types of farms. *See generally* Cent. Coast Reg’l Water Quality Control Bd., *Irrigated Lands Regulatory Program*, CAL. ENVTL. PROTECTION AGENCY, http://www.waterboards.ca.gov/centralcoast/water_issues/programs/ag_waivers/#resources (last visited Aug. 8, 2014) (providing guidance to farmers on how to comply with the conditional waiver requirements); Cent. Coast Reg’l Water Quality Control Bd., *Irrigated Lands Regulatory Program*, CAL. ENVTL. PROTECTION AGENCY, http://www.waterboards.ca.gov/water_issues/programs/agriculture/docs/about_agwaivers.pdf (last visited Apr. 1, 2014) (describing the general program).

discouraging many of those same practices. Reflecting the concern that wild habitat within the farm environment may harbor animals that may contaminate produce, these regimes encourage elimination of that habitat. To minimize wildlife contact with produce, safety auditors encourage such measures as “removal of vegetation that would attract wild animals, removal of acreage from production to create buffer zones from animals, [and] rodent control.”¹⁰⁶ The California Agreement requires a harvesting buffer zone surrounding evidence of an animal incursion, such as scat or tracks.¹⁰⁷ As a result, if an inspector finds evidence of incursion, a farmer may have to throw out a large amount of produce.¹⁰⁸ The requirement therefore creates a powerful financial incentive for farmers to implement these wildlife exclusion measures. The FDA’s Proposed Produce Safety Rule follows this same path, containing incentives that may encourage habitat elimination.¹⁰⁹

The California Leafy Green Marketing Agreement acknowledges the conflict but prioritizes food safety interests. The Agreement notes that “[f]encing, vegetation removal, and destruction of habitat may result in adverse impacts to the environment,” and directs farmers to “check for local, state, and federal laws and regulations that protect riparian habitat and wetland areas, restrict removal of vegetation or habitat, or regulate wildlife deterrence measures, including hazing, harassment, lethal and non-lethal removal, etc.”¹¹⁰ At the same time, however, the

106. Cain, *supra* note 64, at 315.

107. CALIFORNIA LEAFY GREENS MARKETING AGREEMENT, *supra* note 87, at 47. Although the California Leafy Greens Marketing Agreement imposes only a five-foot buffer, anecdotal evidence suggests that auditors and retailers impose substantially larger buffers, requiring that all produce within a twenty-foot radius be thrown away. Janet Raloff, *Lettuce Liability: Programs to Keep Salads Germfree Raise Wildlife and Conservation Concerns*, 172 SCI. NEWS 362, 363 (2007).

108. Raloff, *supra* note 107.

109. Proposed Produce Safety Rule, 78 Fed. Reg. 3504, 3638 (proposed Jan. 16, 2013) (to be codified at 21 C.F.R. pt. 112) (imposing monitoring requirements and requiring farmers to develop and implement wildlife management plans). In revisions to the proposed regulations, the FDA clarified “[t]his regulation does not require covered farms to take measures to exclude animals from outdoor growing areas, or to destroy animal habitat or otherwise clear farm borders around outdoor growing areas or drainages.” Revised Proposed Produce Safety Rule, 79 Fed. Reg. 58,434, 58,473 (proposed Sept. 29, 2014) (to be codified at 21 C.F.R. pt. 112). But this disclaimer does not alter the incentives to do so and does not constrain private third-party inspectors from recommending or requiring that farmers do so. See *infra* notes 116–24 and accompanying text (describing the role of private third-party inspectors).

110. CALIFORNIA LEAFY GREENS MARKETING AGREEMENT, *supra* note 87, at 44. GAP contains a similar directive. U.S. FOOD & DRUG ADMIN., *supra* note 64, at 25 (“Federal, state, or local animal protection requirements must also be considered. However, to the extent possible, where high concentrations of wildlife are a concern, growers should consider establishing good agricultural

Agreement defers to “the designated food safety professional” to determine whether proximity to “animal harborage” constitutes a threat of microbial contamination.¹¹¹

On its face, the Proposed Produce Safety Rule does not expressly limit farmers’ ability to participate in environmental programs. The reflexive element of the Food Safety Act regulations, which allows farmers to select among menus of safety options and tailor those options to individual farms, is meant to create flexibility for farmers.¹¹² In theory, the delegation of broad discretion to local inspectors and third-party auditors should maximize this flexibility.

Post-implementation evidence demonstrates, however, that ex ante flexibility is insufficient where day-to-day enforcement curtails variation. In practice, although inspectors may allow for significant variation in how the law is implemented in different instances, they do not necessarily maximize flexibility for individual farmers. Flexibility hinges on the practices of individual inspectors, who each have their own priorities, incentives, and limitations.¹¹³ Although implementation might vary from one inspector to another, an individual inspector might require exactly the same on-farm modifications from each farmer under his or her purview.

Such lack of flexibility is particularly problematic where inspectors over-enforce the law, forcing farmers to choose between environmental programs and access to produce markets.¹¹⁴ The

practices to deter or redirect wildlife to areas with crops that are not destined for the fresh produce market.”).

111. CALIFORNIA LEAFY GREENS MARKETING AGREEMENT, *supra* note 87, at 44.

112. Proposed Produce Safety Rule, 78 Fed. Reg. at 3531–32. The process standards, which track GAP, also grant some flexibility by allowing farmers to choose among various options or to adopt alternatives, so long as those alternatives are scientifically justified. Eric Orts describes “[r]eflexive law” as “focus[ing] on influencing the ‘self-referential’ capacities of the social institutions subject to regulation” and notes as examples “[a]dministrative enforcement policies encourag[ing] companies to conduct self-evaluative environmental audits” and “voluntary pollution prevention programs and promot[ion of] internal monitoring.” Eric W. Orts, *Reflexive Environmental Law*, 89 NW. U. L. REV. 1227, 1231–33 (1995).

113. For farms with liability insurance, insurance companies may also limit flexibility as a condition of maintaining the policy.

114. By over-enforcement, I mean forced adherence to a stringent and specific set of requirements where the law should theoretically allow for more flexibility and creativity. Under-enforcement is also a serious problem in the food safety context. See Timothy D. Lytton & Lesley K. McAllister, *Oversight in Private Food Safety Auditing: Addressing Auditor Conflict of Interest*, 2014 WIS. L. REV. 289, 291–94. For instance, in 2011, just a few weeks before a listeria outbreak was traced to a field of Jensen Farm cantaloupes, that farm received a stellar audit report from a private auditor. See Dan Flynn, *Jensen Brothers Take Responsibility but Blame PrimusLabs*, FOOD SAFETY NEWS (Oct. 21, 2013), http://www.foodsafetynews.com/2013/10/jensen-brothers-sue-primus-over-third-party-audit-they-say-was-faulty/#.U1ghg-ZdW_Y. The auditor, whom the farm hired at the request of its distributor, allegedly ignored some obvious safety

experience of farmers operating under the California Leafy Green Marketing Agreement suggests that such over-enforcement may occur frequently in produce fields. Auditors may require compliance with more stringent standards than those required by law before certifying growers for commercial buyers such as supermarkets.¹¹⁵

For instance, although the Agreement prohibits harvest within a five-foot radius of evidence of wildlife intrusion, farmers reported that inspectors would reject produce from within a twenty-foot radius.¹¹⁶ Other farmers have reported pressure from inspectors to build fencing and take other measures to exclude wildlife, even where such measures were not absolutely required, and even where they conflicted with conservation practices implemented under state and federal programs.¹¹⁷ Several studies of Central Valley and Central Coast farmers in California, where private regulations have been in place since about 2006, show sizable habitat losses.¹¹⁸ Specifically, many farmers have removed habitat separating fields from one another and from adjacent land uses, leaving behind bare buffer strips.¹¹⁹ Beyond the California Leafy Green Marketing Agreement context, some farmers have reported facing resistance from inspectors where farm-specific practices differed from standard industry practices.¹²⁰

Inspectors have enormous power over farmers. They can shut down entire operations or cause harvests to be rejected by retailers. Although there are some limited opportunities to challenge inspector determinations, successful appeals will often be resolved too late for sale of the crops in question. Further, anecdotal

concerns. *Id.*; see *infra* note 124 (providing more detail about this incident). This anecdote is in keeping with common critiques of inspection practices in the organic farming context. There, commentators express concern that inspectors, who are typically paid by farmers, have few incentives to engage in robust enforcement.

115. These private standards are not publicly available, but anecdotal information from interviews with farmers hints at their contents. Endres & Johnson, *supra* note 67, at 64–65 (describing these “super-metrics”).

116. Raloff, *supra* note 107.

117. Beretti & Stuart, *supra* note 98, at 71.

118. One survey indicated that 88.9 percent of farmers adopted at least one measure to actively discourage or eliminate wildlife. Diana Stuart, *Constrained Choice and Ethical Dilemmas in Land Management: Environmental Quality and Food Safety in California Agriculture*, 22 *J. AGRIC. & ENVTL. ETHICS* 53, 61 (2009).

119. *Id.* at 63–64 (characterizing the ethical dilemma that farmers face between complying with environmental standards and complying with produce safety standards).

120. JOEL SALATIN, *EVERYTHING I WANT TO DO IS ILLEGAL: WAR STORIES FROM THE LOCAL FOOD FRONT* 28–48 (2007) (describing a farmer’s experience with the state inspector at an egg facility).

evidence suggests that inspectors do not hesitate to remind farmers of this power, thereby reducing farmer resistance.¹²¹

Over-enforcement may be attributable to several factors. First, inspectors are only human. Allowing for enforcement variation makes their jobs more complicated and requires a much higher level of expertise than does looking for a set list of safety features. Ecosystems are extremely complex.¹²² As many commentators have recognized, regulating an ecosystem is difficult because “[e]cosystems are dynamic, not static. They are subject to episodic disturbances that shape and reshape them. Yet these natural events are often difficult, and sometimes impossible, to predict.”¹²³ In this context, allowing for flexibility requires inspectors to judge the individual management decisions of each farmer, a task that requires a close understanding of farm ecosystems.

Second, inspectors are limited by program goals and by their own interpretation of these goals. The Food Safety Act and its private precursors give inspectors only a food safety mandate. Inspectors are not authorized to accept that a farmer made a particular food safety decision to accommodate an environmental concern. Environmental concerns are irrelevant from the inspector’s perspective. This is particularly true where the inspectors are also

121. See NAT’L SUSTAINABLE AGRIC. COAL., RE: COMMENTS ON THE PROPOSED RULE FOR STANDARDS FOR THE GROWING, HARVESTING, PACKING, AND HOLDING OF PRODUCE FOR HUMAN CONSUMPTION 137–40 (2013), available at <http://sustainableagriculture.net/wp-content/uploads/2008/08/NSAC-Produced-Rule-Comments-FINAL-11-15-13.pdf> (recounting experiences of several farmers interacting with FDA inspectors).

122. J.B. Ruhl, *Thinking of Environmental Law as a Complex Adaptive System: How to Clean Up the Environment by Making a Mess of Environmental Law*, 34 HOUS. L. REV. 933, 940 (1997) (describing “environmental law [as] fundamentally an endeavor to regulate many complex adaptive systems”).

123. Charles F. Wilkinson, *A Case Study in the Intersection of Law and Science: The 1999 Report of the Committee of Scientists*, 42 ARIZ. L. REV. 307, 315 (2000). Agencies often try to manage complexity by making risk-averse decisions. For instance, not understanding exactly what a species needed for recovery, the United States Fish and Wildlife Service, the primary administrator of the Endangered Species Act, recognized that in order to prevent extinctions it must preserve large areas of endangered species habitat because “habitat preserves options for a species’ eventual recovery.” Federico Cheever, *The Road to Recovery: A New Way of Thinking About the Endangered Species Act*, 23 ECOLOGY L.Q. 1, 57–58 (1996) (quoting Determination of Critical Habitat for the Colorado River Endangered Fishes: Razorback Sucker, Colorado Squawfish, Humpback Chub, and Bonytail Chub, 59 Fed. Reg. 13,374, 13,377 (proposed Mar. 21, 1994) (to be codified at 50 C.F.R. pt. 17)) (identifying “preserv[ing] options” as an essential function of critical habitat designations); see also Jeffrey Rudd, *The Forest Service’s Epistemic Judgments: Enhancing Transparency to Ensure “New Knowledge” Informs Agency Decision-Making Processes*, 23 TEMP. ENVTL. L. & TECH. J. 145 (2004) (describing various reasons for uncertainty and complexity in ecosystem science).

worried about their own potential liability for food safety outbreaks.¹²⁴

Although neither the environmental programs nor the food safety programs mandate, on their faces, that farmers take any specific action, the food safety program, as enforced, may force farmers to choose between the two. As the response of farmers to the California Leafy Green Marketing Agreement demonstrates, in the face of such a choice, farmers are almost certain to adopt the food safety practices that will maximize their market access.

3. *Missed Opportunities*

In addition to generating conflict with environmental goals, the food safety regime misses some opportunities for complementarity. That is, it is possible that environmental protection may also have food safety benefits. Some recent studies point toward this conclusion. These studies suggest that because border habitats are a tool for water purification, they also play a critical role in produce safety.¹²⁵ Just as these “vegetative buffers” can reduce flow of pollutants from fields to waterways, they can also reduce movement of pathogenic organisms into irrigation waterways and onto fields.¹²⁶ For instance, buffer strips can be effective at limiting contamination from one field to another, a particularly important function where a field neighboring ready-to-eat produce is treated with raw manure.¹²⁷ These studies demonstrate that despite the direction of

124. In 2013, the Jensen brothers, two farmers whose cantaloupes caused a twenty-eight-state outbreak of listeria that killed thirty-three people, pleaded guilty to selling adulterated food in interstate commerce. Flynn, *supra* note 114. They then sued PrimusLabs, a food safety consultant and auditor they had hired to assess their fields and packing facilities. *Id.* Inspectors may also be concerned that overly individualized treatment will create the perception of corruption.

125. See Gennet et al., *supra* note 98; R. K. Koelsch et al., *Vegetative Treatment Systems for Management of Open Lot Runoff: Review of Literature*, 22 APPLIED ENGINEERING AGRIC. 141, 141 (2006); Rita L. Nokes et al., *Microbial Water Quality Improvement by Small Scale On-Site Subsurface Wetland Treatment*, A38 J. ENVTL. SCI. & HEALTH 1849, 1849 (2003).

126. Gennet et al., *supra* note 98 (“Numerous studies have shown that non-crop vegetation in and around fields can substantially reduce pollution and the survival and movement of pathogens.”). See generally Koelsch et al., *supra* note 125 (exploring the potential to use vegetative treatment systems as a CAFO manure management strategy and determining that they can be equivalent to conventional technologies); Nokes et al., *supra* note 125 (concluding that small-scale, on-site subsurface wetlands can facilitate removal of enteric bacteria and colphage such as giardia and cryptosporidium).

127. See, e.g., P. Cross et al., *Eliciting Expert Opinion on the Effectiveness and Practicality of Interventions in the Farm and Rural Environment to Reduce Human Exposure to Escherichia Coli O157*, 140 EPIDEMIOLOGY & INFECTION 643, 651 (2011) (noting that buffer strips to separate fields with manure application from ready to eat crops is an effective method for limiting contamination).

recent food safety policy, food safety and environmental concerns are not necessarily at odds.

A similar issue arises in the microbial diversity context. Pathogen survival rates in farm soil depend on a variety of factors tied to existing soil management practices, including bacterial biodiversity and microbial biomass, nutrient loads, and soil temperature.¹²⁸ Soil science research suggests that contaminants such as *E. coli* have lower survival rates in a diverse and thriving soil environment, perhaps because they struggle to compete with other microbes.¹²⁹

In sum, many of the private and public standards that currently govern on-farm produce safety practices generate direct conflict with environmental programs and indirect conflict with environmental goals. Further, the program misses the opportunity to further environmental goals by ignoring potential complementarities between food safety and environmental protection.

II. CHALLENGES TO ACHIEVING MULTI-GOAL REGULATION ON FARMS

The potential for significant trade-offs between food safety and environmental protection invites questions about how, when, and by whom those trade-offs are evaluated. Although the FDA complied with its legal obligations to engage in reasoned trade-off analysis, those efforts were inadequate. The FDA's trade-off analyses cannot account for the fact that farmers make a broad range of decisions about how they will change their behavior to comply with both food safety and environmental programs. In exercising this flexibility, it is ultimately farmers who will make significant trade-off decisions. Further, even where trade-offs can be identified *ex ante*, it is difficult to reach a resolution that can apply across the board.

Focusing on the rulemaking process, the Food Safety Act's existing trade-off management tools ignore post-rulemaking events, where prioritization between food safety and environmental goals ultimately occurs. As a result, regulated entities are left to themselves to prioritize between goals.

Absent adequate oversight, this allocation of decision making is problematic because farmers are likely to be biased in favor of food safety at the expense of environmental protection. They may thus provide more of the former and less of the latter than is in the public interest.

128. Semenov et al., *supra* note 88.

129. Xiuping Jiang et al., *Fate of Escherichia Coli O157:H7 in Manure-Amended Soil*, 68 APPLIED & ENVTL. MICROBIOLOGY 2605, 2608 (2002) (drawing conclusions based on a study of manure amendments to sterilized and unsterilized soils at various temperatures); Semenov et al., *supra* note 88, at 1455 (“[S]oils with higher microbial diversity are more resistant to stress and disturbance, and consequently less susceptible to invasion.”).

A. *The Food Safety Act's Trade-Off Management Tools*

The Food Safety Act employs several trade-off management tools that each fall short, in large part because none address the underlying source of trade-off. Three of these tools—use of cost-benefit analysis, compliance with the National Environmental Policy Act (“NEPA”), and the use of notice-and-comment rulemaking—are standard rulemaking procedures.¹³⁰ A fourth—a congressional directive regarding the relationship between food safety rulemaking and environmental programs—reflects an attempt by Congress to anticipate and evaluate trade-offs before they arise.¹³¹

1. *Rulemaking for Multiple Regulatory Goals: Standard Rulemaking Procedures*

Built into the rulemaking process are a number of tools designed to improve the quality of agency decision making regarding trade-offs between competing regulatory priorities. Cost-benefit and environmental impact analyses are meant to ensure that significant rulemaking processes consider context beyond the narrow policy goals of the particular agencies or statutes in question.¹³² Notice-and-comment rulemaking, in addition to other functions, provides an opportunity for the general public to identify competing regulatory priorities that the agency may have ignored or to which it may not have given adequate consideration.¹³³

For the Food Safety Act, none of these tools was adequate to evaluate trade-offs between food safety and environmental protection during the rulemaking process. Neither cost-benefit analysis nor environmental impact analysis provided for incorporation of information from individual farmers' implementation choices. The notice-and-comment process was the most effective of the three in directing the FDA to address environmental concerns. This process afforded individual farmers the opportunity to participate in the rulemaking process and identify how the rules would affect their farming practices, but only a small subset of farmers participated, and many who did were focused not on the environmental consequences of the proposal, but on the financial consequences.¹³⁴

130. See *infra* Subpart III.B (describing rulemaking trade-off tools).

131. See *infra* Subpart III.A (describing pre-rulemaking trade-off tools).

132. See *infra* Subpart III.B.1 (elaborating on the central role of these types of tools).

133. See *infra* Subpart III.B.1–2 (exploring further how notice-and-comment rulemaking functions as a tool for forcing an agency to consider competing regulatory goals).

134. To view the comments generated by the notice-and-comment process, see *Standards for the Growing, Harvesting, Packing and Holding of Produce for Human Consumption*, REGULATIONS.GOV, <http://www.regulations.gov/#>

In its cost-benefit analysis, the FDA concluded that the benefits of the proposed rule, estimated at \$1036.4 million, would outweigh the expected costs, estimated at \$630.21 million.¹³⁵ But the cost estimate included only direct economic effects—industry compliance costs.¹³⁶ The document considered no ancillary costs or benefits.¹³⁷

It is impossible to know in the abstract whether a more robust cost-benefit analysis would have led to a different outcome. If it did not, it would provide a better justification for the Food Safety Act regulations, providing the FDA ammunition to argue that the Food Safety Act's environmental costs, discussed in Part I, are outweighed by its public health benefits. More likely, however, inclusion of environmental costs would counsel toward revision of at least some parts of the Proposed Produce Safety Rule. Wildlife exclusion rules are a potential example. Rules seeking exclusion of wild animals from farm environments threaten biodiversity and could worsen agriculture's effect on aquatic habitats and drinking water.¹³⁸ Evidence that wildlife poses a serious threat, particularly in regions without CAFOs, is weak.¹³⁹ A cost-benefit analysis that accounts for environmental costs might not justify application of these rules in non-CAFO regions, whereas analysis without environmental costs did.¹⁴⁰ Other aspects of the rule, such as the

!docketBrowser;rpp=25;po=0;dct=PS;D=FDA-2011-N-0921;refD=FDA-2011-N-0921-0001 (last visited Feb. 15, 2015).

135. U.S. FOOD & DRUG ADMIN., ANALYSIS OF ECONOMIC IMPACTS—STANDARDS FOR THE GROWING, HARVESTING, PACKING AND HOLDING OF PRODUCE FOR HUMAN CONSUMPTION 313 (2013), available at <http://www.fda.gov/downloads/Food/FoodSafety/FSMA/UCM334116.pdf> (providing the estimated mean net costs and net benefits of the proposed Regulatory Flexibility Act).

136. The FDA considers labor costs, compliance estimates, and estimates of baseline industry practices. *Id.* at 5.

137. *Id.* at 297–98.

138. See *supra* Part I.B (describing these interactions).

139. Experts agree that, at best, there is uncertainty about the role that wild animals play in contamination. Evidence suggests that their role is limited, and where they do play a role, the critical factor may actually relate to their interaction with cattle and human contamination sources. Sanja Ilic et al., *A Scoping Study Characterizing Prevalence, Risk Factor and Intervention Research, Published Between 1990 and 2010, for Microbial Hazards in Leafy Green Vegetables*, 23 FOOD CONTROL 7, 18 (2012) (reviewing literature and concluding that various studies identifying animal manure as a risk factor are methodologically flawed); Jeff A. Langholz & Michele T. Jay-Russell, *Potential Role of Wildlife in Pathogenic Contamination of Fresh Produce*, 7 HUM.-WILDLIFE INTERACTIONS 140, 140, 151 (2013) (concluding that “although pathogen prevalence has been documented in wildlife at overall low levels, the potential role that wildlife and its habitat play in pathogenic contamination remains unclear and is interwoven with pathogenic risk from human and domesticated animal sources” and finding that many studies showing wildlife contamination were not methodologically sound).

140. See U.S. FOOD & DRUG ADMIN., *supra* note 135, at 70–80.

requirements that employees have access to and use adequate handwashing facilities, would likely survive more robust analysis.¹⁴¹

This analysis begs the question: If the environmental costs are so severe, why did the Office of Information and Regulatory Affairs (“OIRA”) approve the cost-benefit analysis? After all, the analysis itself acknowledges that the two executive orders that mandate the cost-benefit analysis process require the regulation to maximize net benefits to society, including potential environmental costs and benefits.¹⁴² There are several possible explanations for OIRA’s decision. One is that OIRA and the FDA simply ran out of time. The Food Safety Act imposes tight deadlines for the FDA to complete rulemaking.¹⁴³ Although OIRA is not directly bound by that deadline, it may have felt pressure to complete the review, which was already bogged down by the very complicated and technical assessment weighing industry compliance costs against the public health benefits of compliance.

OIRA may also have determined that the environmental costs were too speculative to quantify. Most of the environmental costs described in Subpart I.B follow not from the express directives of the proposed regulations, but from the choices that farmers (and, perhaps more importantly, inspectors and auditors) will make during implementation and enforcement. Although the experience of farmers in California implementing that state’s Leafy Green Marketing Agreement provides strong evidence that environmental consequences will be significant, numerically estimating the precise scope of those consequences involves large uncertainties. For instance, with regard to lost habitat, any potential estimate of the number of acres of planted buffer strips that might be stripped bare would be wildly speculative. So, likewise, would be any estimate as to how many farmers will switch from biological to synthetic

141. Some experts estimate that requiring hand washing may be one of the most effective measures for reducing risks of foodborne illness. See Cross et al., *supra* note 127, at 649 (identifying hand washing as one of the most practical of evaluated expenditures).

142. U.S. FOOD & DRUG ADMIN., *supra* note 135, at 2; see also Exec. Order No. 13,563, 76 Fed. Reg. 3821 (Jan. 21, 2011) (mandating that agencies “select, in choosing among alternative regulatory approaches, those approaches that maximize net benefits (including potential economic, environmental, public health and safety, and other advantages; distributive impacts; and equity)”).

143. 21 U.S.C. § 350h(a)(1)(A) (2012) (giving the agency one year from the passage of the statute to publish draft rules); *id.* § 350h(b)(1) (giving the agency one year from the close of the public comment period on the draft to publish a final rule). The Center for Food Safety brought litigation to enforce these requirements, which resulted in a settlement agreement in which the FDA promised to publish final regulations by October 31, 2015. See Press Release, Ctr. for Food Safety, Victory! Your Food Will Be Safer Thanks to Center for Food Safety Lawsuit (Feb. 20, 2014), <http://www.centerforfoodsafety.org/press-releases/2919/victory-your-food-will-be-safer-thanks-to-center-for-food-safety-lawsuit>.

fertilizers. Thus, although it is certain that there will be environmental costs, it is nearly impossible to know, before the regulations are implemented and individual farmers are surveyed, how extensive those will be. A related concern is that the cost-benefit analysis assesses costs and benefits in the aggregate. Accordingly, even accounting for environmental costs, it may find a rule is cost-justified overall, even when applications in particular regions or on particular farms may not be.¹⁴⁴

Like the executive orders, NEPA requires the rulemaking agency to assess a rule's potential effects prior to implementation.¹⁴⁵ Unlike the cost-benefit analysis process, which typically requires translation of both costs and benefits into dollar figures, an environmental impact statement can rely on a more qualitative analysis.¹⁴⁶ Nevertheless, it remains inadequate in the Food Safety Act context for two reasons. First, as a practical matter, the FDA's environmental analysis may come too late to shape the rulemaking. The agency operated during the early stages of rulemaking under the presumption that no analysis was required.¹⁴⁷ It eventually recognized its obligations many months after publishing a proposed rule.¹⁴⁸ Although it remains possible that the environmental analysis will shape the final rule, its effects are unlikely to be substantial.

Second, as with the cost-benefit analysis, because the precise details of the regulatory scheme will be determined after rulemaking by regulated entities themselves, the complete reliance on ex ante analysis is questionable. Indeed, environmental law scholars criticize the statute for directing agencies to conduct an

144. See *infra* Subpart II.B.2 (elaborating on this concern and providing examples).

145. 42 U.S.C. § 4332(C) (2012).

146. 40 C.F.R. § 1502.2 (2012).

147. When it published the proposed rule in January 2013, the FDA determined that a "categorical exclusion" applied, thus eliminating the need to prepare an Environmental Impact Statement. Environmental Impact Statement for the Proposed Rule, Standards for Growing, Harvesting, Packing, and Holding of Produce for Human Consumption; Public Meeting on Scoping of Environmental Impact Statement and Extension of Comment Period for Environmental Impact Statement, 79 Fed. Reg. 13,593, 13,593 (proposed Mar. 11, 2014) (to be codified at 21 C.F.R. pts. 16, 112).

148. Ultimately, however, the agency agreed to draft an environmental impact statement. On August 19, 2013, it published a Notice of Intent to Prepare an Environmental Impact Statement. Notice of Intent to Prepare an Environmental Impact Statement for the Proposed Rule, Standards for Growing, Harvesting, Packing, and Holding of Produce for Human Consumption, 78 Fed. Reg. 50,358, 50,359 (proposed Aug. 19, 2013) (to be codified at 21 C.F.R. pt. 112). The FDA estimates publication of a draft by December 2014. At this stage, any potential benefit to be gained from reducing environmental impacts in order to avoid more onerous NEPA analysis was lost. See *infra* notes 210–13 and accompanying text (discussing the fact that many NEPA supporters see this incentive as its primary environmental benefit).

analysis at a single point in time.¹⁴⁹ Noting that modern approaches to environmental management are adaptive—designed to develop over time in response to changing circumstances—scholars argue that environmental analysis should likewise change over time.¹⁵⁰

In sum, although cost-benefit and environmental analyses provide the FDA the opportunity to identify broadly the types of environmental harm that could occur, neither mechanism is well suited to account for how costs will arise on individual farms.¹⁵¹

The notice-and-comment process fares better. Because it provides an opportunity for regulated entities to tell an agency how they will change their behavior in response to proposed regulations, it gives the agency a chance to evaluate whether those reactions achieve the appropriate balance between competing regulatory priorities.

In this case, the FDA made a number of significant changes to the proposed rules in response to concerns raised by farmers (and non-governmental organizations and trade groups).¹⁵² For instance, many farmers expressed concern over a proposed waiting period between the application of raw manure to a produce field and harvest.¹⁵³ The concern was both environmental and financial. In response, the FDA eliminated the waiting requirement.

Although the notice-and-comment process may have reduced the environmental costs of the rule, it does not entirely account for the rule's delegation of decision-making, and, in particular, trade-off-making authority to farmers. The inability to address this

149. See Ruhl & Salzman, *supra* note 29, at 98 (arguing that adaptive management “rejects NEPA’s premise that the cumulative effects caused by and affecting an action over time can be reliably predicted at the time the action is designed”).

150. See, e.g., Bradley C. Karkkainen, *Toward a Smarter NEPA: Monitoring and Managing Government’s Environmental Performance*, 102 COLUM. L. REV. 903, 906 (2002) (“NEPA has now settled into a quiescent and underproductive middle age It is time, I shall argue, for a new shake-up.”).

151. See *infra* Subpart II.B (exploring this conclusion in more depth).

152. Compare Proposed Produce Safety Rule, 78 Fed. Reg. 3504, 3506 (proposed Jan. 16, 2013) (to be codified at 21 C.F.R. pts. 16, 112), with Revised Proposed Produce Safety Rule, 79 Fed. Reg. 58,434, 58,436 (proposed Sept. 29, 2014) (to be codified at 21 C.F.R. pt. 112) (proposing amendments to the January 16, 2013 Proposed Produce Safety Rule).

153. For examples of these concerns, see Carolina Farm Stewardship Ass’n, Comment to Proposed Produce Safety Rule, at 48–50 (Nov. 14, 2013), <http://www.regulations.gov/#!documentDetail;D=FDA-2011-N-0921-0561>; Chert Hollow Farm, LLC, Comment to Proposed Produce Safety Rule, at 5–6 (Nov. 14, 2013), <http://www.regulations.gov/#!documentDetail;D=FDA-2011-N-0921-0487>; Future Harvest—A Chesapeake Alliance for Sustainable Agric., Comment to Proposed Produce Safety Rule, at 4–5 (Nov. 15, 2013), <http://www.regulations.gov/#!documentDetail;D=FDA-2011-N-0921-0610>; Nat’l Sustainable Agric. Coal., Comment to Proposed Produce Safety Rule, at 7 (Nov. 15, 2013), <http://www.regulations.gov/#!documentDetail;D=FDA-2011-N-0921-0451>.

problem was due to the fact that, while all farmers will ultimately make trade-offs between food safety and environmental protection, few weighed in on this concern in particular. Instead, most farmers were concerned about the Proposed Produce Safety Rule's feasibility and compliance costs. The notice-and-comment process works well to protect regulatory goals that regulated entities share, but, as here, where many farmers were not primarily concerned with environmental outcomes, the notice-and-comment process will not necessarily reveal the full range of potential environmental costs of the proposed rule.

2. *The Food Safety Act's Environmental Directive*

In drafting the Food Safety Act, Congress recognized the inevitable interaction between safety programs and environmental concerns. Mandating a balance between these two interests, Congress directed the FDA to draft produce safety regulations that "take into consideration, consistent with ensuring enforceable public health protection, conservation and environmental practice standards and policies established by Federal natural resource conservation, wildlife conservation, and environmental agencies."¹⁵⁴ This instruction gives the FDA authority to take environmental consequences into account (particularly as they implicate participation in the environmental programs of other agencies).

The directive's primary failure is its focus on the FDA rather than on regulated entities. Neither Congress nor the FDA instructs regulated entities to consider environmental effects when implementing food safety regulations. The mandate is weak because it is excluded from the reflexive parts of the law—the parts that ask farmers to evaluate and improve their own practices—and is included only as an *ex ante* consideration for the FDA.¹⁵⁵ Again, as with the analytical tools discussed above, this effort at trade-off management puts the onus of considering environmental effects on the regulatory agency despite the fact that the structure of the regulatory scheme shifts substantial regulatory authority to private parties.

B. *Trade-Off Management Challenges*

The underlying problem in the Food Safety Act's approach to trade-off management is that none of the tools provide express oversight of the farmers and inspectors who are, in fact, making the decisions that ultimately impose environmental costs. The Act's

154. FDA Food Safety Modernization Act, 21 U.S.C. § 350h(a)(3)(D) (2012).

155. The weakness of this mandate likely reflects Congress's lack of interest in aggressive environmental regulation. *See supra* text accompanying notes 34–35 (describing congressional resistance to environmental regulation of agriculture).

trade-off management toolkit has not yet caught up with recent innovations in the regulatory toolkit. Cooperative governance seeks to promote efficiency by inviting regulated entities to police themselves.¹⁵⁶ This innovation can have numerous benefits, but may also have unforeseen costs if trade-off management tools are not adapted to match. Two aspects of the agriculture industry justify the need to rethink how trade-off management occurs within cooperative governance schemes. First, where existing tools fail at identifying trade-offs *ex ante*, those trade-offs are left to regulated entities to resolve. Because of their own economic motivations, however, farmers are poorly situated to balance food safety and environmental protection in a manner consistent with the public interest. Second, because of the large number of farms and variation in farming conditions and practices, trade-offs are difficult to resolve on an industry-wide basis.

1. *Structural Bias in Favor of Food Safety*

The structure of agricultural regulation makes it more difficult for farmers to protect the environment, even if they want to. Not only are many aspects of environmental regulations voluntary, but both environmental and food safety regimes rely on cooperative governance, leaving regulated entities the authority to flesh out many of the details of the regulatory regimes. Farmers have flexibility to reconcile food safety and environmental protection goals in a manner suited to the individual farmer's best interests.

This delegation is problematic because neither farmers, nor food safety auditors and inspectors, are well positioned to conduct this balancing. Indeed, as the next few paragraphs will explain, farmers have numerous reasons to prioritize food safety over environmental protection.

Food safety is primarily a private good. As the consumer response to the *E. coli* spinach outbreak indicates, when consumers determine a product is unsafe, they spend their money elsewhere.¹⁵⁷ Surveys also suggest that consumers are willing to pay more for safe

156. See, e.g., Kenneth A. Bamberger, *Regulation as Delegation: Private Firms, Decisionmaking, and Accountability in the Administrative State*, 56 DUKE L.J. 377, 377 (2006); Jody Freeman, *Collaborative Governance in the Administrative State*, 45 UCLA L. REV. 1, 6 (1997) (“[T]he goals of efficacy and legitimacy are better served by a model that views the administrative process as a problem-solving exercise in which parties share responsibility for all stages of the rule-making process.”); Orly Lobel, *The Renew Deal: The Fall of Regulation and the Rise of Governance in Contemporary Legal Thought*, 89 MINN. L. REV. 342, 362–64 (2004).

157. See Deliganis, *supra* note 82, at 693–94 (stating that beverage company Odwalla's sales had not yet recovered two years after a highly publicized *E. coli* outbreak tied to the company's apple juice); Hallman et al., *supra* note 82 (noting that after the 2006 *E. coli* spinach outbreak, per capita consumption of spinach fell by about twelve percent).

food.¹⁵⁸ Environmental protection, by contrast, is a public good, for which fewer consumers are willing to pay more.¹⁵⁹ Accordingly, most industry participants prioritize food safety over environmental protection, particularly where retailers have pressed for better safety practices.¹⁶⁰

For growers, maintaining food safety standards can be essential to maintaining access to markets. Responding to a rise in produce-related foodborne illnesses in the 1980s and 1990s, retailers began enforcing their own standards or requiring GAP certification.¹⁶¹ The 2006 spinach outbreak, which led to a nationwide recall, accelerated industry efforts.¹⁶² Seeking to restore consumer confidence and to

158. Denis W. Stearns, *On (Cr)edibility: Why Food in the United States May Never Be Safe*, 21 STAN. L. & POL'Y REV. 245, 253 & n.28 (2010) (noting that consumers are willing to pay more for safe food).

159. See Daphna Lewinsohn-Zamir, *Consumer Preferences, Citizen Preferences, and the Provision of Public Goods*, 108 YALE L.J. 377, 382 n.10 (1998) (noting that only one percent of Americans who profess concern for environmental issues donate to environmental organizations, and even the one percent who contribute spend an average of only around \$10 per person, per year).

160. *But see* Endres & Johnson, *supra* note 67, at 55 (explaining why consumers cannot tell whether food is safe); Stearns, *supra* note 158, at 253–54 (arguing that industry participants have little incentive to protect food safety because consumers cannot tell the difference between safe and unsafe food). Perhaps more important to producers than whether consumers can tell if food is safe is whether consumers believe food to be safe. Accordingly, producers have a stake in making it look as if they are taking action. Outbreaks can be extremely costly, not only because people get sick, but also because people stop buying the implicated product, regardless of its source. See REJESUS, *supra* note 66 (providing case studies of spinach, cantaloupe, and green onions to demonstrate the significant impact of outbreaks and FDA recalls on consumer demand). Given that industry has emphasized the importance of restoring consumer confidence, industry participants acknowledge that a primary strategy is the *appearance* of eliminating risk. Stuart & Worosz, *supra* note 5 (“Participants of the [California Leafy Green Marketing Agreement] rule-making process admitted there was a lack of scientific evidence to support rules and that certain measures were included because they ‘look good’ rather than known effectiveness”); see also Stuart, *supra* note 118, at 58 (“Competition between firms, fear of litigation, and/or a tarnished brand name may be driving these industry food safety standards that do not have scientific support.”). Producers have strong incentives to take visible food safety steps. *Cf.* Stearns, *supra* note 158, at 253–54 (noting that because consumers will not pay for an attribute that they cannot verify, producers have no incentive to take safety measures that are not visible).

161. See Deliganis, *supra* note 82, at 688–89 (1998) (describing the rise of foodborne illnesses and discovery of new pathogens); *supra* notes 65–66 and accompanying text (recounting the rise of retailer enforcement of GAP). As of 2010, 1073 farms were GAP certified by USDA auditors. See U.S. FOOD & DRUG ADMIN., *supra* note 135, at 35.

162. Eighty-seven percent of Americans were aware of the recall. Hallman et al., *supra* note 82, at 354; see also Powell et al., *supra* note 50, at 377 (characterizing the 2006 spinach outbreak as a tipping point for regulation of produce).

avoid state-level legislation, California leafy greens marketers developed the California Leafy Green Marketing Agreement.¹⁶³

Under the current scheme, both FDA inspectors and private, third-party auditors have poor incentives to protect environmental interests.¹⁶⁴ Agency inspectors are bound only by the FDA's food safety mission.¹⁶⁵ Private auditors, who may face liability for outbreaks, likewise have no environmental mandate.¹⁶⁶ Neither inspectors nor auditors have any reason to accept a farmer's explanation that he or she made a particular choice in the interest of environmental protection.

Although there is a growing market for "environmentally friendly" food, farmers with unbridled poor environmental practices face fewer incentives to adopt environmental improvements than they do to adopt food safety improvements. Because retailers are not systematically ensuring compliance with environmental best practices, there is no parallel risk of losing market access.¹⁶⁷

Compounding the potential for loss of market access is the potential for criminal and civil liability for food safety failures.

163. Some California legislators attempted to take action to implement a public response, but the industry, with the support of then-Governor Arnold Schwarzenegger, acted quickly to implement its own response in order to preempt the need for state action. Varun Shekhar, *Produce Exceptionalism: Examining the Leafy Greens Marketing Agreement and Its Ability to Improve Food Safety*, 6 J. FOOD L. & POL'Y 267, 280–82 & n.69 (2010) (describing the California legislature's postoutbreak effort as well as the industry and gubernatorial responses); see also Endres & Johnson, *supra* note 67, at 66 (describing the origins of the California Leafy Greens Marketing Agreement). The agreement is quasi-public; the California Department of Food and Agriculture is a party to the agreement and determines whether growers and handlers are in compliance, but the standards are determined by a Leafy Greens Advisor Board that is primarily comprised of industry participants. Shekhar, *supra*, at 283–84, 290 & n.76. Although state agriculture agencies play an enforcement role, private industry participants led the standard-development process, which was done behind closed doors. *Id.* at 283–84, 290 n.99.

164. Eric Biber, *Too Many Things to Do: How to Deal with the Dysfunctions of Multiple-Goal Agencies*, 33 HARV. ENVTL. L. REV. 1, 16 (2009) (arguing that agency employees have an incentive to focus on measurable outcomes because they are visible measures of employee performance); see also *supra* Subpart I.B.2 (regarding inspectors motives to prioritize food safety).

165. *CFSAN—What We Do*, U.S. FOOD & DRUG ADMIN., <http://www.fda.gov/AboutFDA/CentersOffices/OfficeofFoods/CFSAN/WhatWeDo/> (last visited Mar. 16, 2015).

166. See Orts, *supra* note 112, at 1322–23 (arguing that the EPA should preside over auditors).

167. Some scholars have called for development of robust environmental certification schemes to allow consumers to penalize producers for failure to adhere to environmental standards. See, e.g., Jason J. Czarnezki, *The Future of Food Eco-Labeling: Organic, Carbon Footprint, and Environmental Life-Cycle Analysis*, 30 STAN. ENVTL. L.J. 3, 5–6 (2011) (discussing both public and private eco-labeling efforts).

Farmers who sell contaminated produce face strict liability for resulting harms.¹⁶⁸ They may also be subject to the Federal Food Drug and Cosmetic Act's various enforcement mechanisms including product seizure, mandatory recall, and criminal penalties.¹⁶⁹ Parallel risk of prosecution (civil or criminal) for environmental harms is minimal.¹⁷⁰

Further, the Food Safety Act's produce safety regulations create additional financial incentives for farmers to prioritize food safety. They do so by making risk-averse approaches to food safety more cost effective than environmentally friendly alternatives. For instance, the regulations increase the costs of using reusable packaging materials (such as crates used to bring goods to market) by imposing additional sanitation requirements that do not apply to new packaging.¹⁷¹ This preference for single-use packaging over reusable packaging imposes resource costs, requiring additional raw materials and increasing waste.¹⁷²

The result is that food safety will win out most of the time, regardless of whether it is the more important policy priority (no matter the metric for determining importance), and, perhaps, even regardless of whether the farmer values environmental protection.

2. Roadblocks to Resolving Trade-Offs During Rulemaking

Even where it is possible to identify trade-offs with precision during rulemaking, it may be difficult to determine in the aggregate how they ought to be resolved. Because there is substantial variation from one farm to the next, the extent to which a particular practice poses either a safety or an environmental concern also

168. RESTATEMENT (THIRD) OF TORTS: PROD. LIAB. § 1 (1998); *see, e.g.*, *Estate of Stanley Pinkham v. Cargill, Inc.*, 55 A.3d 1, 5-6 (Me. 2012) (describing standard for applying strict liability test to food products).

169. Federal Food, Drug, and Cosmetic Act, 21 U.S.C. §§ 332-334 (2012) (providing injunctions, criminal penalties, and seizure as enforcement mechanisms). The Food Safety Act amended the Food Drug and Cosmetic Act to add mandatory recall authority. FDA Food Safety Modernization Act, Pub. L. No. 111-353, § 206(a), 124 Stat. 3885, 3939-40 (2011) (codified at 21 U.S.C. § 350*l*).

170. Farmers can face prosecution for a narrow range of environmental harms including "takes" of endangered species. *See* Endangered Species Act of 1973, 16 U.S.C. § 1532(19) (2012) (making it unlawful for any person to "take" an endangered species within the United States); *id.* § 1538(a)(1)(A) (defining "take" as "to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct"); *id.* § 1540(a), (b) (providing for civil penalties and criminal prosecution against "any person who knowingly violates" any provision of the Endangered Species Act).

171. Proposed Produce Safety Rule, 78 Fed. Reg. 3406, 3589 (proposed Jan. 16, 2013) (to be codified at 21 C.F.R. pt. 112).

172. For discussion of other examples of regulations that create incentives for farmers to increase their environmental footprints, *see supra* Subpart I.B.1 (discussing indirect trade-offs).

varies. For instance, a farm adjacent to a stream that feeds a municipal water source may want to prioritize use of a buffer strip to filter any potential runoff into that stream. By contrast, a farm near a CAFO might prioritize eliminating any potential habitat for, and building fences against, wild animals that might be tracking contaminants from the animal farm. Cooperative governance is intended to provide just this type of flexibility.¹⁷³ Another way to put this is that although an across-the-board rule might be cost justified, it may be less cost effective than a rule that was tailored to farm-specific circumstances.

From an environmental perspective, preserving farm-level flexibility is extremely important. Despite significant research into methods for increasing crop yields, much remains unknown regarding the sustainability of those yields.¹⁷⁴ In the last century, agricultural scientists have developed techniques to dramatically

173. See, e.g., Bamberger, *supra* note 156, at 380 (“Risk, in particular, arises from the interplay of a variety of factors and manifests itself differently in heterogeneous firms. Its regulation, therefore, often cannot be boiled down to uniform rules governing behavior or mandating particular measurable outcomes.”). The main concern, and it is a serious one, about cooperative governance is that it results in a significant lack of agency control over regulatory outcomes because it relies too much on entities whose economic self-interest often conflicts with public interests. *Id.* at 393 (describing the “prevailing model” of firm behavior as amoral actors seeking to maximize profit). This critique may undermine the viability of some cooperative governance schemes, but, for the purposes of this Article, I accept that cooperative governance is the current status quo for agricultural regulation and ask, within the confines of that scheme, how decision making regarding trade-offs might be improved. See *id.* at 399–400 (arguing that the prevailing model of firms as amoral actors begins to break down as it becomes less clear how to follow legal directives and identifying a variety of mechanisms for encouraging firms to make decisions more aligned with the public interest within the context of cooperative-governance schemes).

174. This is sustainability in the strictest sense: Can current yield levels be maintained? There are two basic camps regarding the best approach to this type of sustainability. The first advocates for precision farming, a large-scale mode of industrialized agriculture that makes use of sensors and other tracking technology to direct inputs—water, fertilizer, pesticides—precisely where they are needed. The second advocates for a return to smaller scale—one that is more labor-intensive—production that follows what agrarian advocate Wes Jackson calls “nature as measure,” to the extent possible, mimicking natural ecosystems. WES JACKSON, *BECOMING NATIVE TO THIS PLACE* 61–86 (1994). Both modes are subject to significant critiques. Neither mode promises the silver bullet to the environmental harms of agriculture. The best solutions likely lie somewhere in the middle. An environmentally sound (i.e. sustainable) farm system is defined not by a particular set of practices, but by resilience to shock and capability to produce food for generations to come. There is no one farming practice or set of practices that ought to be prescribed. Indeed, dramatically different types of farm systems can theoretically be sustainable. ROBERT PAARLBERG, *FOOD POLITICS: WHAT EVERYONE NEEDS TO KNOW* 112, 115–16 (2010); William S. Eubanks III, *Achieving a Sustainable Farm Bill*, in *FOOD, AGRICULTURE, AND ENVIRONMENTAL LAW*, *supra* note 6, at 265, 265–66.

increase crop yields.¹⁷⁵ Because many of these strategies are resource intensive, some scientists now question whether these methods will continue to be productive going forward as water, soil, and fossil-fuel resources are exhausted.¹⁷⁶ In light of this uncertainty, flexibility is important because it allows for experimentation and for preservation of various agricultural techniques.¹⁷⁷

175. In the twentieth century, a coalition of international anti-hunger advocates expended enormous resources to bioengineer wheat and rice plants that would be more productive. Culminating in what is known as the "Green Revolution," these efforts resulted in dramatic increases not only to agricultural production but also to use of chemical inputs and mechanical planting and harvesting. This "productivist" approach to farming reduced food prices and has been celebrated for forestalling famine in many places around the world. Many critics of the Green Revolution cite it as one of the root causes of global inequality and food insecurity, claiming that it increased rural inequality and reduced crop diversity. Carmen G. Gonzalez, *Climate Change, Food Security, and Agrobiodiversity: Toward a Just, Resilient, and Sustainable Food System*, 22 *FORDHAM ENVTL. L. REV.* 493, 502, 506-07 (2011) (identifying a legacy of colonial settlement and financial restructuring driven by the World Bank and the International Monetary Fund as other causes of food insecurity in developing nations). The Green Revolution shifted production from produce crops to commodity crops such as wheat and rice, thus further fostering dependence of the global south on the north. DAVIES ET AL., *supra* note 31. Even proponents of the Green Revolution now recognize that its results are environmentally unsustainable and that any future increases in productivity will require more than genetic modification and chemical inputs. GORDON CONWAY, *THE DOUBLY GREEN REVOLUTION: FOOD FOR ALL IN THE TWENTY-FIRST CENTURY* 41 (1997) ("The new Green Revolution must not only benefit the poor more directly, but must be applicable under highly diverse conditions and be environmentally sustainable. By implication, it must make greater use of indigenous resources, complemented by a far more judicious use of external inputs.").

176. A related concern is that the reliance on monoculture and a narrow range of crop species makes agricultural operations more susceptible to the risks associated with climate change, including the spread of pests and disease. See *supra* notes 30-32 and accompanying text (discussing this concern).

177. The goal of preserving options for the future is inherent in the very concept of sustainability, a framework that seeks to regulate present behavior in order to preserve options for future generations. Uncertainty about future environmental conditions also necessitates preserving regulatory flexibility. For instance, water law scholars point to uncertainty regarding future water demand and availability to justify development of a water ownership and distribution scheme that can allow for a variety of scenarios. See, e.g., Kathleen A. Miller, *Grappling with Uncertainty: Water Planning and Policy in a Changing Climate*, 5 *ENVTL. & ENERGY L. & POL'Y J.* 395, 410-11 (2010) ("[W]hen faced with profound uncertainty, one might want to adopt a decision rule that focuses on minimizing the chances of committing to a decision that one would later regret."). Option preservation has also been recognized as a facet of natural resource valuation. Where there is uncertainty about a resource's potential future uses, it has a "[q]uasi-option value [which] measures the value of preserving options for later use given an expectation of improved knowledge in the future." Wendy Oram & Clay Valverde, Note, *Legal Protection of Surf Breaks: Putting the Brakes on Destruction of Surf*, 13 *STAN. ENVTL. L.J.* 401, 413

Further, because of geographic variation (in topography, hydrology, climate, crops grown, etc.), environmentally appropriate practices vary from farm to farm. A practice that is benign in one area may be highly destructive elsewhere. Thus, depending on the location of the farm, among other factors, the cost-benefit analysis for adopting a particular practice could turn out quite differently. For example, discussing nutrient runoff, USDA economists Jan Lewandrowski and Kevin Ingram considered some potential costs and benefits of taxing nitrogen, an essential nutrient:

[A] tax on nitrogen, if set high enough, would reduce nitrogen runoff from crop lands and thus could help address habitat degradation problems in areas like the Chesapeake Bay Such a tax, however, would also raise production costs for producers whose use of fertilizers does not contribute to these (or other) water quality problems.¹⁷⁸

On the food safety side, even industry proponents of national produce safety regulation have expressed the need for flexibility to account for differences in, for example, “water sources, geography, climate, or size of operation,” any of which could “require slight variations in the types of actions needed to be taken” to achieve compliance.¹⁷⁹

Where two goals—environmental protection and food safety—conflict, which should win out? This variation suggests that prioritization may be difficult to do in the aggregate without farm-specific information. Making such a determination requires a case-specific analysis. The next Part searches the existing toolbox of

(1994). In the agriculture context, preservation of alternative agriculture techniques preserves the potential that one of these techniques may turn out to be essential to ongoing food production. Another example of this arises in the nuclear fuel context. Responding to debates about how and where to bury spent fuel, Richard Stewart has argued for a flexible approach acknowledging the possibility that spent fuel may ultimately prove to be a useful resource. Richard B. Stewart, *U.S. Nuclear Waste Law and Policy: Fixing a Bankrupt System*, 17 N.Y.U. ENVTL. L.J. 783, 784 (2008) (“[R]eprocessing represents a valuable option that should not be foreclosed without good reason. A precautionary approach to nuclear waste policy would preserve options and not be quick to bury nuclear wastes.”).

178. Jan Lewandrowski & Kevin Ingram, *Policy Considerations for Increasing Compatibilities Between Agriculture and Wildlife*, 39 NAT. RESOURCES J. 229, 245 (1999).

179. Proposed Leafy Green Marketing Agreement, 76 Fed. Reg. 24,292, 24,299 (proposed Apr. 29, 2011) (to be codified at 7 C.F.R. pt. 970); see also *id.* at 24,300 (noting that opponents to a national leafy green marketing agreement were concerned that it would take a “one-size fits all” approach that would “reflect the agricultural practices of regions producing the most volume of leafy green vegetables to the detriment of regions producing less volume”).

trade-off management tools for a mechanism to facilitate that analysis and to improve farmer decision making.¹⁸⁰

III. ADAPTING TRADE-OFF MANAGEMENT TOOLS FOR COOPERATIVE GOVERNANCE SCHEMES

Agriculture's trade-offs between food safety and environmental protection are, in many ways, typical of regulation of all industries.¹⁸¹ Auto manufacturers and other producers face similar trade-offs between product safety and environmental footprints. Resource management agencies such as the United States Forest Service and the Office of Surface Mining Reclamation and Enforcement must balance resource extraction and economic growth with environmental protection.¹⁸² These other well-studied trade-offs give rise to a wealth of literature exploring trade-off management tools. This literature focuses on two primary questions: First, how can a single agency achieve all of these conflicting goals? And, second, how do multiple agencies regulating a single industry interact? In search of a solution to the problems outlined in Part II, this Part briefly synthesizes that literature, categorizing tools based on when they are used: 1) pre-rulemaking, 2) rulemaking, and 3) post-rulemaking or implementation. This analysis focuses on seven potential actors: Congress, regulated entities, the primary regulating agency, a second agency, a centralized executive actor (such as OIRA), federal courts, and the general public.

By organizing the tools along a regulatory timeline, this Part demonstrates that the adoption of cooperative governance generates the need for a different kind of tool—one that focuses on a third

180. Another approach would be to take these decisions out of the hands of farmers altogether by developing a comprehensive permitting scheme that requires a farm-by-farm identification of appropriate processes to address both food safety and environmental concerns. Such an approach would achieve the desired flexibility and farm-specific tailoring without relying on farmers to make public interest-minded decisions. It would also be extremely expensive to implement and require congressional action (at least with respect to environmental impacts, the FDA arguably has authority to implement such a requirement with regard to food safety already).

181. See, e.g., Cass R. Sunstein, *Health-Health Trade-Offs*, 63 U. CHI. L. REV. 1533, 1535–36 (1996) (noting that the general problem of health-health trade-offs is ubiquitous).

182. *About OSMRE—Who We Are*, OFF. SURFACE MINING RECLAMATION & ENFORCEMENT, <http://www.osmre.gov/about.shtm> (last modified Oct. 28, 2014) (explaining that the Office of Surface Mining Reclamation and Enforcement is a bureau in the Department of the Interior responsible for “balancing the nation’s need for continued domestic coal production with protection of the environment”); *About the Agency*, U.S. FOREST SERVICE, <http://www.fs.fed.us/about-agency> (last visited Feb. 13, 2015) (stating that the U.S. Forest Service’s mission is “to sustain the health, diversity, and productivity of the nation’s forests and grasslands to meet the needs of present and future generations”).

question: How can agencies provide adequate oversight where trade-off assessment has been delegated to regulated entities? At each point in time, a variety of actors are involved in trade-off analysis.

This Part concludes by proposing a new tool that builds a prioritization process into implementation and enforcement of the Food Safety Act's cooperative governance elements. Drawing on a variety of the systematic rulemaking tools but shifting them to the implementation phase, the proposal seeks to minimize the Food Safety Act's environmental consequences.

A. *Pre-Rulemaking*

Prior to any rulemaking, Congress and, to a lesser extent, the Executive, assign rulemaking authority. This initial decision has a profound effect on how the rest of the process unfolds. The tools necessary for managing trade-offs down the line will depend in large part on this initial allocation. For instance, if Congress delegates authority over an industry to multiple agencies, the risk of conflicting regulatory directives—regulatory incoherence—may be high and might justify authorizing joint rulemaking. Or, if Congress delegates broad authority to a single agency, consultation and strong executive oversight may be necessary to combat agency tunnel vision.

Congress both engages in trade-off management itself and delegates that management to agencies. In the former category, it uses savings clauses to ensure that new enactments do not supersede earlier statutes.¹⁸³ Alternatively, it may expressly prioritize one statutory scheme over another, determining which will trump if conflict occurs. Although Congress does a lot of this prioritization, it is, as many commentators have noted, poorly situated to manage all trade-offs because “[e]very newly introduced bill that delegates some authority to an agency brings with it the risk of duplicating an earlier delegation to a different agency.”¹⁸⁴

183. See, e.g., Jason Marisam, *Duplicative Delegations*, 63 ADMIN. L. REV. 181, 191 (2011) (noting that Congress often relies on broad savings clauses to avoid the need to make more precise determinations about how statutes will interact with one another). The alternative would be for Congress to leave it to agencies and courts to determine whether a new statutory directive supersedes an earlier one.

184. Todd S. Aagaard, *Regulatory Overlap, Overlapping Legal Fields, and Statutory Discontinuities*, 29 VA. ENVTL. L.J. 237, 297 (2011) (pointing out that discontinuities may arise because “Congress may not have been paying attention to a particular problem, especially if it was acting in a hurry”); Marisam, *supra* note 183, at 190 (rejecting the theory that Congress intentionally uses duplicative delegations to spur agency competition, noting that although this may be true some of the time, it does not explain the majority of duplicative delegations). But see Keith Bradley, *The Design of Agency Interactions*, 111 COLUM. L. REV. 745, 748 (2011) (“[A]gency interactions are often an intentional, designed aspect of the structure of American government.”).

And such duplication of regulatory authority “create[s] a possibility of regulatory dysfunction, with uncoordinated agencies working at cross-purposes.”¹⁸⁵

Accordingly, although Congress’s own efforts at trade-off management are significant, its delegation of that management to other actors is a far more important force.¹⁸⁶ Congress determines who will be responsible for minimizing duplication and incoherence among regulatory functions and directives. It can, for instance, delegate responsibility for an entire regulatory program to a single agency, or divide up responsibilities among several agencies. And it often prescribes the use of other trade-off management tools. For instance, it may set up a formal consultation relationship between two agencies.¹⁸⁷ Or, it may expressly direct an agency to ensure that complying with a new regulatory scheme will not make it impossible for a regulatory entity to comply with an old one. The Food Safety Act, for example, directs the FDA to ensure that the Proposed Produce Safety Rule does “not include any requirements that conflict with or duplicate the requirements of the national organic program.”¹⁸⁸

Perhaps Congress’s most significant contribution in this arena is its enactment of generic trade-off management tools such as the Administrative Procedure Act,¹⁸⁹ NEPA,¹⁹⁰ the Regulatory Flexibility Act,¹⁹¹ and the Paperwork Reduction Act.¹⁹² Among

185. See Aagaard, *supra* note 184, at 298 (arguing that although dysfunction is always a possible outcome, it is not the inevitable result of overlap).

186. Congress also exercises back-end oversight and after-the-fact trade-off management through the use of committee oversight, control of agency budgets, and legislative amendments. Bradley, *supra* note 183, at 747. Although these are each important tools, none are relevant to the discussion here because they serve to correct mistakes in regulatory design and administration. Program design should not rely on these post hoc tools except to the extent designers, including Congress, can proceed despite uncertainty about the effectiveness of program design, knowing that these tools exist to correct mistakes in the future.

187. For further discussion of consultation, see *infra* Subpart III.B.3.

188. FDA Food Safety Modernization Act, Pub. L. No. 111-353, § 419(a)(3)(E), 124 Stat. 3885, 3900 (2011) (to be codified at 21 U.S.C. § 350h(a)(3)(E)).

189. Administrative Procedure Act, ch. 324, 60 Stat. 237 (1946) (codified as amended at 5 U.S.C. §§ 551–559 (2012)) (explaining the Act was designed “[t]o improve the administration of justice by prescribing fair administrative procedure”).

190. National Environmental Policy Act of 1969, Pub. L. No. 91-190, 83 Stat. 852 (1970) (codified as amended at 42 U.S.C. §§ 4321–4347 (2012)) (identifying one of its purposes as declaring “a national policy which will encourage productive and enjoyable harmony between man and his environment”).

191. Regulatory Flexibility Act, Pub. L. No. 96-354, 94 Stat. 1164 (1980) (codified as amended at 5 U.S.C. §§ 601–612 (2012)) (seeking “to improve Federal rulemaking by creating procedures to analyze the availability of more flexible regulatory approaches for small entities”).

192. Paperwork Reduction Act of 1980, Pub. L. No. 96-511, 94 Stat. 2812 (codified as amended at 44 U.S.C. §§ 3501–3520 (2012)) (explaining the Act is

other things, these statutes require regulating agencies to assess the effects of regulatory actions on competing goals.¹⁹³ They impose systematic requirements that agencies engage in at least some trade-off management during rulemaking, and they require agencies to invite the public into that process.

B. Rulemaking

Rulemaking is the primary focus of administrative trade-off analysis. Critical tools include notice and comment rulemaking, cost-benefit analysis, environmental impact analysis, and interagency consultation. These tools emphasize analyzing the facts on the ground at a particular point in time and typically do not provide an opportunity for future reevaluation.¹⁹⁴ The following discussion focuses on four sets of essential players during the rulemaking process: the primary regulatory agency, the general public, secondary agencies, and the executive.

1. Primary Regulatory Agency

As many scholars have pointed out, regulatory trade-offs are often ignored because agencies “suffer from both limited information and (even more importantly) *selective attention*.”¹⁹⁵ Exhibiting what Richard Stewart calls agency “tunnel vision,” regulatory agencies have difficulty addressing the full range of costs of their actions.¹⁹⁶ Agencies “tend to be driven by their organizational missions and the interests of their organized client constituencies.”¹⁹⁷ This problem is so significant that the agency, or subagency, home for specific programs often becomes a source of political contention. For instance, during a 1994 fight over how to modernize and reorganize the USDA, environmental and industry groups faced off over whether the Soil Conservation Service, which implemented some of

designed “[t]o reduce paperwork and enhance the economy and efficiency of the Government and the private sector by improving Federal information policymaking”).

193. See *infra* Subpart III.B.1 (describing how agencies assess the effects of regulatory actions on competing goals).

194. It is important to note, however, that these rulemaking tools can be used to support development of rules governing management of trade-offs that arise during implementation. Subpart III.B.2 recommends this approach, suggesting that the FDA use its rulemaking authority, and the information it gathers through cost-benefit analysis and environmental impact assessment, to develop a systematic post-rulemaking trade-off management tool.

195. Sunstein, *supra* note 181, at 1536.

196. Stewart, *supra* note 62, at 35–36 (introducing the phrase “tunnel vision” to describe how agencies can become “insensitiv[e] to the broader range of interests, values, and considerations at stake in their decisions”).

197. *Id.* at 35; see also Samuel J. Rascoff & Richard L. Revesz, *The Biases of Risk Trade-off Analysis: Towards Parity in Environmental and Health-and-Safety Regulation*, 69 U. CHI. L. REV. 1763, 1767 (2002) (discussing how “[t]unnel vision” prevents agencies from considering ancillary effects).

USDA's conservation programs, should be housed in the newly formed Natural Resources Conservation Service, a department with an environmental mission, or the newly formed Farm Services Administration, the successor to an earlier service whose primary mission was to protect farm revenue.¹⁹⁸ Industry interest groups fought for the latter, afraid that the Natural Resources Conservation Service would be hostile to farmers.¹⁹⁹ Environmental groups fought for the former (and won), fearing that the Farm Services Administration would not take conservation seriously.²⁰⁰

Even agencies with express dual mandates struggle to implement both. For instance, the Forest Service, which has environmental and resource extraction mandates, was accused for many years of failing to implement the former.²⁰¹

Notwithstanding their significant role in creating (or exacerbating) conflict between various regulatory goals, agencies can also do much of the work necessary to mitigate it. By implementing a variety of congressional and executive mandates, the primary regulatory agency is at the front line for gathering and assessing information related to both direct and indirect trade-offs. Three such mandates are of particular importance: the Administrative Procedure Act, Executive Orders 12,866 and 13,563, and NEPA.²⁰²

Applicable to almost all rulemaking, the Administrative Procedure Act mandates a notice and comment process that opens the door for public participation.²⁰³ The commenting public can dramatically expand the range of factors that an agency considers.²⁰⁴

198. Alan R. Malasky & William E. Penn, *USDA Reorganization—Fact or Fiction?*, 25 U. MEM. L. REV. 1161, 1167, 1171–72 (1995) (describing the legislation authorizing the reorganization of the USDA and the politics surrounding its enactment).

199. *Id.*

200. *Id.*

201. Biber, *supra* note 164, at 2–3 (recounting the Forest Service's struggle to be a dual-missioned agency); see also Jason Waanders, *Growing a Greener Future? USDA and Natural Resource Conservation*, 29 ENVTL. L. 235, 237 (1999) (suggesting that one hurdle for the Forest Service in implementing its environmental mission was its placement within the USDA, which suggested that national forests were akin to crops to be grown and harvested). The Office of Surface Mining has the same problem.

202. See also Unfunded Mandates Reform Act of 1995, 2 U.S.C. §§ 1501–1571 (2012); Regulatory Flexibility Act, 5 U.S.C. §§ 601–612 (2012); Paperwork Reduction Act of 1980, 44 U.S.C §§ 3501–3520 (2012) (requiring agencies to assess particular effects of rulemaking and consider strategies for mitigating those affects, where necessary).

203. 5 U.S.C. § 553 (2012).

204. See *infra* Subpart III.B.2 (elaborating on the role of the public in administrative rulemaking).

Executive Orders 12,866 and 13,563 require agencies, where permitted by statute, to conduct a cost-benefit analysis of the proposed rulemaking.²⁰⁵ The orders require that agencies make choices to maximize net benefits, taking the full scope of costs and benefits into account.²⁰⁶ Thus, to the extent that the costs of discordance are identifiable and quantifiable, cost-benefit analysis should ensure that, in promulgating significant rules, agencies consider the full scope of the rules' effects, including risk-risk trade-offs. The results of such an analysis depend, of course, on the scope and methodology of the analysis.²⁰⁷

Further, Executive Orders 12,866 and 13,563 require that the primary regulatory agency seek OIRA's approval before finalizing rules, thus involving another agency with a nonspecific mission.²⁰⁸ Instead, OIRA's mission is to increase the efficiency of federal rulemaking and ensure that rulemaking is necessary, is cost effective, and promotes the president's priorities.²⁰⁹

Finally, NEPA requires agencies to draft Environmental Impact Statements (or environmental assessments, depending on the scope of the potential environmental harm) evaluating how a proposed rule will affect the environment.²¹⁰ As a procedural statute, the Act requires only that the agency give adequate consideration to

205. See Exec. Order. No. 13,563, 76 Fed. Reg. 52,847 (Jan. 18, 2011); Exec. Order No. 12,866, 58 Fed. Reg. 51,735 (Sept. 30, 1993).

206. See Exec. Order. No. 13,563, 76 Fed. Reg. 52,847. (Jan. 18, 2011); Exec. Order No. 12,866, 58 Fed. Reg. 51,735 (Sept. 30, 1993).

207. See generally MICHAEL L. LIVERMORE & RICHARD L. REVESZ, *RETAKING RATIONALITY: HOW COST-BENEFIT ANALYSIS CAN BETTER PROTECT THE ENVIRONMENT AND OUR HEALTH* (2011) (arguing for improved methodology). The viability of cost-benefit analysis to improve agency decision making is, of course, contested. See, e.g., John Bronsteen et al., *Well-Being Analysis vs. Cost-Benefit Analysis*, 62 DUKE L.J. 1603, 1607–08 (2013) (expressing concerns that cost-benefit analysis depends too heavily on the conversion of benefits into dollar values and instead proposing a well-being analysis which relies upon psychological data regarding quality of life).

208. See Exec. Order. No. 13,563, 76 Fed. Reg. 52,847 (Jan. 18, 2011); Exec. Order No. 12,866, 58 Fed. Reg. 51,735 (Sept. 30, 1993).

209. Memorandum from Leon E. Panetta, Dir. of the Office of Mgmt. & Budget, to Heads of Exec. Dep'ts & Agencies, Guidance for Implementing E.O. 12,866 (Oct. 12, 1993), available at http://www.whitehouse.gov/sites/default/files/omb/assets/inforeg/eo12866_implementation_guidance.pdf. For further discussion of OIRA's role, see *infra* Subpart III.B.4. The relationship between agencies and OIRA is occasionally fraught, as some agencies resist its oversight. See, e.g., Nina A. Mendelson & Jonathan B. Wiener, *Responding to Agency Avoidance of OIRA*, 37 HARV. J.L. & PUB. POL'Y 447, 448–49 (2014) (suggesting that agencies may attempt to avoid OIRA oversight where they find it burdensome); Jennifer Nou, *Agency Self-Insulation Under Presidential Review*, 126 HARV. L. REV. 1755, 1760–61 (2013) (suggesting that agencies engage in strategic self-insulation).

210. The statute also imposes its own public participation requirements, in addition to those mandated by the APA.

environmental effects and does not require that it mitigate them.²¹¹ Many critics argue that the Act is ineffective at protecting the environment and results in the production of large, costly, and uninformative documents.²¹² But defenders claim that, at a minimum, the statute forces agency decision makers to take environmental interests into account and creates incentives to reduce the most serious of a project's environmental harms in order to avoid some of the Act's more burdensome requirements.²¹³

2. *The General Public*

The public, including individual citizens and interest groups, are, in many ways, the police of administrative law.²¹⁴ Through public comment processes, which allow the public to weigh in both on rulemaking proceedings themselves and on rulemaking trade-off analyses, the general public can identify potential collateral consequences that the regulating agency may have missed. In doing so, public commenters force the agency, at a minimum, to respond to their concerns. This "crowdsourcing" of trade-off identification can play a significant role in mitigating agency tunnel vision, particularly since participating members of the public can use citizen suits to enforce the agency's obligation to respond to comments.²¹⁵

3. *Secondary Agencies*

Operating in what Jody Freeman and Jim Rossi called "shared regulatory space," secondary agencies (by which I mean an agency other than the one with primary regulatory authority) can help manage trade-offs through a variety of formal and informal

211. 42 U.S.C. § 4332(C) (2012) (imposing the requirement that federal agencies "include in every recommendation or report on proposals for legislation and other major Federal actions significantly affecting the quality of the human environment, a detailed statement . . . on . . . the environmental impact of the proposed action," but imposing no mitigation requirement).

212. See, e.g., Karkkainen, *supra* note 150, at 905 (summarizing the critiques of NEPA).

213. *Id.* at 906–08 (criticizing the statute for its erroneous assumption that it is possible to put together an ex ante comprehensive and accurate assessment of a project's environmental impacts and calling instead to revisit the impact assessment through ongoing monitoring and project reassessment).

214. See Jon D. Michaels, *An Enduring, Evolving Separation of Powers*, 115 COLUM. L. REV. (forthcoming Spring 2015) (manuscript at 20), available at <http://ssrn.com/abstract=2444396> (identifying "civil society" as an important check on the power of agency leadership).

215. Administrative Procedure Act of 1946, 5 U.S.C. § 702 (2012) (guaranteeing a right of review of any agency action for any aggrieved party); see Michaels, *supra* note 214 (manuscript at 21 & n.125 (citing several cases to support the proposition that failure to respond to comments is an actionable offense)).

coordination mechanisms.²¹⁶ These mechanisms include joint rulemaking, consultation, and cooperative agreements. Joint rulemaking, which is fairly rare, allows two agencies to develop a set of regulations together.²¹⁷ For instance, in 2009 the EPA and the National Highway Traffic Safety Administration undertook joint rulemaking to establish emission standards (over which the EPA had authority) and fuel efficiency standards (over which the Highway Administration had authority).²¹⁸ Independent rules might have employed different standard-setting methodologies and compliance requirements that would have made compliance with both quite onerous and complicated.²¹⁹

216. See generally Jody Freeman & Jim Rossi, *Agency Coordination in Shared Regulatory Space*, 125 HARV. L. REV. 1131 (2012). In their work, Freeman and Rossi describe each of these mechanisms and assess their effectiveness relative to a variety of measures including efficiency and accountability. *Id.*; see also Bradley, *supra* note 183 (“[A]n administrative agency’s most important checks are often other agencies.”). This view of shared regulatory space in a complex and overlapping bureaucracy rejects older views of the unitary executive, and it embraces the notion that the existence of shared regulatory space may improve agency decision making. See, e.g., Eric Biber, *The More the Merrier: Multiple Agencies and the Future of Administrative Law Scholarship*, 125 HARV. L. REV. F. 78, 78 (2012) (identifying a trend in newer administrative law scholarship to focus on “how multiple agencies interact,” rather than on the behavior of individual agencies); Jacob E. Gersen, *Overlapping and Underlapping Jurisdiction in Administrative Law*, 2006 SUP. CT. REV. 201, 203; see also Anne Joseph O’Connell, *The Architecture of Smart Intelligence: Structuring and Overseeing Agencies in the Post-9/11 World*, 94 CAL. L. REV. 1655, 1657 (2006) (identifying lost safeguards and lost benefits of agency competition as a cost of agency unification). Relatedly, this view also embraces overlap in agency jurisdiction as a mechanism for what Neal Kumar Katyal calls a “second-best” checks and balances. Neal Kumar Katyal, *Internal Separation of Powers: Checking Today’s Most Dangerous Branch from Within*, 115 YALE L.J. 2314, 2316 (2006) (arguing that separation and overlap of various executive foreign policy functions can serve as an internal check on presidential power). This scholarship moves beyond the premise that “[a]dministrative law is built primarily around the solo strategy, in which each agency operates as an autonomous unit and is accountable as an autonomous unit to its respective legislature, public, and courts.” Ruhl & Salzman, *supra* note 29, at 113.

217. Freeman & Rossi, *supra* note 216, at 1166 (describing joint rulemaking as “an interagency regulatory negotiation”).

218. See Biber, *supra* note 216, at 80 (observing that this type of joint rulemaking is an example of “collaboration among agencies—in other words, agencies working together to achieve a common goal”). This type of collaborative approach may reduce compliance costs for regulated entities and reduce some direct trade-offs, but it is unlikely to be employed frequently to reduce indirect trade-offs.

219. See Freeman & Rossi, *supra* note 216, at 1169–70 (describing the benefits of the EPA-Highway Administration joint rulemaking). Agencies might also coordinate to ensure that two sets of rules are coherent with one another. For instance, in the mid-1990s, the EPA and the Occupational Safety and Health Administration coordinated regarding regulations requiring firms to develop toxic chemical safety plans; as a result, firms were able to develop a

Short of joint rulemaking, consultation provides agencies with opportunities to weigh in on the activities of other agencies, ensuring that certain goals are prioritized or at least adequately considered.²²⁰ Some statutes make consultation mandatory. For instance, the Endangered Species Act requires that an action-taking agency consult with the Fish and Wildlife Service if the agency determines that the planned action “will likely affect” an endangered species.²²¹ The Service is then tasked with determining whether the action will “jeopardize the continued existence” of the species or destroy or adversely modify its critical habitat.²²² Consultation can also occur even earlier in the regulatory process, before an agency has settled on an action to take. For instance, the National Institute of Occupational Health and Safety, within the Department of Health and Human Services, advises the Occupational Safety and Health Administration, a section of the Department of Labor; the latter agency develops its rulemaking priorities based in part on the direction from the former agency.²²³ Consultation, whether it provides the second agency with a veto power or merely allows it to provide advice, provides the second agency an opportunity to “attempt to change another agency’s position as that second agency pursues a different, somewhat conflicting goal.”²²⁴

Finally, agencies regularly enter into various forms of cooperative agreements aimed at delineating jurisdiction; establishing procedures for information sharing, coordinating review, approval, and enforcement processes; and agreeing to

single management plan that was compliant with both agencies’ regulations. Coglianesi & Lazer, *supra* note 4, at 699.

220. Cf. Rachel E. Barkow, *Insulating Agencies: Avoiding Capture Through Institutional Design*, 89 TEX. L. REV. 15, 51 (2010) (identifying consultation as one tool available to monitor independent agencies because consultation provides an opportunity for the consulting agency to “sound fire alarms to interested groups early in the . . . regulatory decision-making process”).

221. Considering how interagency interactions can help a single agency achieve multiple goals, Eric Biber refers to this type of consultation as an example of “agency as regulator” where the second agency has veto power over the primary agency’s action. See Biber, *supra* note 164, at 45–58 (also putting OIRA into this category).

222. 16 U.S.C. § 1536(a)(2), (3); Oliver A. Houck, *The Endangered Species Act and Its Implementation by the U.S. Departments of Interior and Commerce*, 64 U. COLO. L. REV. 277, 316 (1993) (observing that the strength of the requirement is that it is “unambiguous and absolute”).

223. Bradley, *supra* note 184, at 753–54.

224. Biber, *supra* note 216, at 80 (citing J.R. DeShazo & Jody Freeman, *Public Agencies as Lobbyists*, 105 COLUM. L. REV. 2217, 2221 (2005) (“[A]gencies can be prompted to take their secondary missions more seriously when Congress enhances interagency lobbying by increasing the power of *other* agencies, which derive relevant expertise and interests from their own statutory mandates, to lobby the implementing agency.”)).

collaborate.²²⁵ Such agreements allow agencies to divide up workload in areas of overlapping responsibility, and thus reduce the duplication of administrative effort.²²⁶ They also allow agencies working together to harmonize regulatory activity.

Agency coordination, whether mandated or agency initiated, can be difficult and costly to achieve. But it can also be an effective tool for combatting the costs of overlapping agency jurisdiction (which often results in direct trade-offs) and agency tunnel vision (which can cause both direct and indirect trade-offs).

Although not squarely within the category of secondary agencies, numerous regulatory regimes employ multi-agency efforts to ensure that various interests are protected in the implementation of a single regulatory program. Perhaps the most famous example of this is the “God Squad,” which has the power to lift certain Endangered Species Act protections where it would be in the national interest to do so.²²⁷ The God Squad, formally the Endangered Species Committee, is made up of the Secretary of Agriculture, the Secretary of the Army, the Chairman of the Council of Economic Advisors, the EPA Administrator, the Secretary of the Interior, the Administrator of the National Oceanic and Atmospheric Administration, and a seventh member, who is appointed by the president on a case-by-case basis to represent the affected state.²²⁸ Each member of the committee represents the various interests of his or her home agency or state in reaching a decision on individual petitions for exemption.

iv. Executive Oversight

Like Congress, the White House also plays a dual role of managing trade-offs itself and directing others to do so through the delegation of authority and mandated use of management tools. Perhaps the most important of these tools is centralized rulemaking review. Using executive orders, every president since Reagan has centralized oversight of agency rulemaking through OIRA.²²⁹

225. Freeman & Rossi, *supra* note 216, at 1161–65 (providing examples of these cooperative agreements).

226. See Marisam, *supra* note 183, at 212 (characterizing this type of effort as “agency abdication” of authority).

227. Jan Hasselman, *Holes in the Endangered Species Act Safety Net: The Role of Agency “Discretion” in Section 7 Consultation*, 25 STAN. ENVTL. L.J. 125, 131 (2006).

228. See generally Jared des Rosiers, Note, *The Exemption Process Under the Endangered Species Act: How the “God Squad” Works and Why*, 66 NOTRE DAME L. REV. 825, 853–54 (1991) (laying out the God Squad process).

229. Michael A. Livermore & Richard L. Revesz, *Regulatory Review, Capture, and Agency Inaction*, 101 GEO. L.J. 1337, 1339 (2013); see also Marisam, *supra* note 183, at 204–05 (describing OIRA as an “antiduplication institution[] that operate[s] without direct presidential communication with [the] agency head[]”). Like the relationship between OIRA and agencies, the

Michael Livermore and Richard Revesz argue that this centralized review is an important tool for combatting agency capture by organized interest groups.²³⁰ Because OIRA is a generalist institution, it is less subject to capture itself.²³¹ Here, I extend this logic to include not just capture by specific organized interests, but agency tunnel vision, i.e., capture by particular goals.²³² OIRA can force agencies to incorporate other regulatory goals into rulemaking processes by refusing to approve a cost-benefit analysis that fails to consider a regulation's collateral consequences.

The White House also manages trade-offs through various other ad hoc mechanisms. One such important mechanism is the creation of cross-agency regulatory initiatives. The White House will often designate a "czar" to guide these processes.²³³ The czar can then convey White House priorities and facilitate informal agency communication.

C. *Post-Rulemaking and Implementation*

Once a rule is finalized, there are a variety of opportunities for managing unanticipated trade-offs (whether they were unanticipated because they were unforeseeable or because of some breakdown in the planning process). None of these tools provide a systematic mechanism for identifying and evaluating trade-offs, and they are invoked only when a particular actor is dissatisfied with the regulatory outcome. Two actors are particularly important in the post-rulemaking realm: federal courts and regulated entities.

Federal courts frequently resolve disputes among competing regulatory directives and direct agencies to take other factors into consideration during rulemaking processes.²³⁴ Although courts play

relationship between the President and OIRA is not uncomplicated. As Jennifer Nou points out, the "President[] delegate[s] regulatory review to a number of agents . . . who themselves disagree and conflict over what the President desires." See Nou, *supra* note 209, at 1761; see also Cass R. Sunstein, *The Office of Information and Regulatory Affairs: Myths and Realities*, 126 HARV. L. REV. 1838, 1840–43 (2013) (arguing that numerous individuals, offices (including the White House), and other agencies drive OIRA decision making).

230. Livermore & Revesz, *supra* note 229, at 1340–41 (criticizing the two traditional justifications for centralized review: "increasing presidential power over the administrative state and checking agency overzealousness" which manifests as over-regulation).

231. See *id.* at 1341 (proposing reforms to further reduce OIRA's capture potential, and arguing that OIRA can reduce the influence of any one interest group in a rulemaking process because it solicits input from multiple agencies, seeking a variety of institutional perspectives and interests).

232. Tunnel vision could follow from, or be made worse by, well-organized special interests, but it could also arise independently.

233. Marisam, *supra* note 183, at 207–08.

234. For an example of judicial resolution of a direct conflict between competing regulatory schemes, see *Seneca-Cayuga Tribe of Oklahoma v. National Indian Gaming Commission*, 327 F.3d 1019, 1022–24 (10th Cir. 2003)

a significant role in resolving trade-offs, their role is less essential when considering, *ex ante*, how to design a trade-off management scheme.²³⁵ There may, however, be some circumstances where it is desirable to forego planned trade-off management and rely only on the courts. For instance, where there is a low probability that a direct trade-off will actually arise, it may be more efficient to see if a trade-off actually occurs before doing anything about it.²³⁶

Although regulated entities are not typically included in analysis of trade-off management, they play a critical role. Here, it is the absence of a particular trade-off management tool that is significant. The more flexibility regulated entities have, the more substantial their role in trade-off management. Where flexibility is limited, regulated entities, who often are the first to discover regulatory incoherence, must seek resolution through advocacy before the agencies, the courts, or both.

In many circumstances, however, where regulated entities have more flexibility, they avoid potential direct trade-offs themselves through their approaches to regulatory compliance. This might occur where separate agencies regulating the same industrial practice each set performance standards. “[P]erformance-based regulation[s] set[] performance goals and allow[] individuals and firms to decide how to meet them.”²³⁷ Armed with this flexibility, firms can design compliance strategies that reconcile various regulatory obligations, preventing regulatory schemes from becoming mutually exclusive.

It may also occur where, as in the agriculture context, the regulating agencies rely heavily on cooperative governance. Cooperative governance schemes like HACCP and organics

(resolving a conflict between a statute authorizing use of a particular gaming device and another statute prohibiting use of that device). For an example of a judicial directive to any agency to consider additional goals in a regulatory process, see *Competitive Enterprise Institute v. National Highway Traffic Safety Administration*, 956 F.2d 321, 323–24 (D.C. Cir. 1992) (holding that the Highway Administration was obliged to consider the argument that higher fuel-efficiency standards would force auto manufacturers to produce less-safe cars).

235. See *supra* note 186 (making the same argument regarding Congress’s numerous backend oversight tools). To some small degree, the potential for judicial action creates an incentive for agencies to comply with their existing trade-off management obligations, but this is hardly an independent trade-off management tool.

236. The efficiency may arise at least in part from the fact that in some circumstances the regulated entity is in the best position to determine if a trade-off exists. In such a circumstance, the regulated entity identifies the trade-off in the first instance and returns to the agency or goes to court to seek resolution. See *supra* Subpart III.B.1 (discussing the role of regulated entities in more detail).

237. Cary Coglianese et al., *Performance-Based Regulation: Prospects and Limitations in Health, Safety, and Environmental Protection*, 55 ADMIN. L. REV. 705, 706 (2003).

regulation, both of which ask regulated entities to develop facility management plans, invite regulated entities into the regulatory process, giving them significant flexibility and authority over onsite regulatory implementation.²³⁸ By exercising this authority, regulated entities themselves prioritize among various regulatory goals.²³⁹

This category also includes congressional oversight via hearings, appropriations, and statutory amendment. Agencies can also engage in post hoc trade-off management through enforcement decisions, guidance documents, and revised rulemaking.

D. Designing a New Trade-Off Management Scheme for Agriculture

This timeline reveals that no existing trade-off management tool provides a systematic approach to post-rulemaking assessment. The primary post-rulemaking tools are ad hoc, and no tool creates accountability for regulated entities' trade-off decisions. But, as Part II demonstrated, agricultural regulation, which employs cooperative governance, leaves the resolution of many of the precise details of regulation to be decided by regulated entities after rulemaking is complete. The common use of voluntary standards, the reliance on cooperative governance, and the wide variation in farm conditions all point toward the adoption of a trade-off management tool that can be employed systematically during post-rulemaking implementation of the Food Safety Act.²⁴⁰

Although literature on cooperative governance has focused on the general question of how to improve firm decision making with regard to the cooperative scheme's primary regulatory goal—rather than on the more specific question of how to constrain regulated entities' trade-offs among competing regulatory goals—that

238. See Stewart, *supra* note 62 (suggesting that this regulatory strategy may be appropriate where “the conduct of organizations [is] too far ranging and dynamic . . . to be successfully contained by external controls” and that the strategy may be useful to overcome “inherent limits on government information”); *supra* notes 61, 63 and accompanying text (describing HACCP); *supra* note 87 (describing the federal organics program).

239. Of course, agencies—through inspectors, auditors, and other enforcers—are involved in this process.

240. Another approach to resolving this problem would be to change the underlying incentives that farmers are responding to. For instance, if supermarkets only accepted environmentally friendly produce, farmers would have a strong financial incentive to take environmental concerns more seriously. The same would be true if they faced more aggressive and mandatory environmental regulation. Although such mechanisms will ultimately be necessary to address agriculture's underlying environmental harms, the discussion here focuses on mitigating the additional environmental harm caused by the implementation of the Food Safety Act in particular and is thus limited to mechanisms that could be developed within the framework of that statute.

literature can nevertheless offer some useful insights in designing a new tool. The following proposal draws both on that literature and on the rulemaking trade-off management tools described above to design a program to create accountability for regulated entities. The primary goal of this program is to ensure that the Food Safety Act's collateral environmental consequences are justified.

Relying entirely on its Food Safety Act rulemaking authority, the FDA could mandate that farmers comply with the Act's environmental directive, requiring them to engage in express balancing of food safety and environmental goals. It could also enlist the help of the USDA to aid in oversight of that balancing.

To do this, the FDA could incorporate the Food Safety Act's environmental mandate into the reflexive portions of the regulations; that is, the portions that provide flexibility and mandate recordkeeping to support that flexibility. Specifically, the FDA could direct farmers to identify the primary environmental impacts of their food safety choices and select alternatives where the effects are severe.

These assessments, which combine elements of an agency's environmental impact statement and cost-benefit analysis obligations, would include a written conclusion regarding (1) how steps to protect food safety would affect environmental outcomes (and their participation in environmental programs), and (2) whether the effect is acceptable given the level of food safety risk. This innovation would obligate farmers to make express (and thus reviewable) decisions regarding potential trade-offs.

This writing requirement has several potential benefits. For those farmers already inclined to make environmental goals a priority, it could provide a mechanism by which to justify that choice to inspectors and auditors. For these farmers, the written analysis reduces the risk that, by prioritizing the environmental concern, the farmer will lose market access.²⁴¹ This would be particularly true if this innovation were accompanied by a statutory amendment increasing the liability standard from strict liability to negligence vis-à-vis food-safety-related harm resulting from specific actions taken to protect environmental interests.²⁴²

For farmers without such inclination, the writing obligation may raise environmental consciousness. For many farmers for whom environmental effects were not previously a factor in their decision making, the writing exercise would force express

241. See Stuart, *supra* note 118, at 54 (describing the ethical challenge faced by farmers who feel obligated to protect the environment but are afraid of losing market access).

242. To qualify for the safe harbor, the farmer would need both the FDA and USDA to sign off on the plan, establishing both that the environmental interest was legitimate and that the food safety risk was acceptable. This safe harbor is the only element of the proposal that would require statutory action.

consideration of those effects and might thus improve the quality of decision making even absent robust agency oversight.²⁴³

A public disclosure requirement could reduce the risk that some farmers will continue to downplay environmental concerns.²⁴⁴ Manipulating their information advantage over inspectors, many farmers will likely draft assessments supporting their preferred course of action without undertaking genuine balancing. Although the writing requirement cannot entirely correct this problem, it can mitigate the problem, particularly if assessments are made public.²⁴⁵ Local residents and nonprofit organizations may have better information about the local environment than do inspectors and could play an important enforcement role.²⁴⁶ The threat of reputational harm could also improve decision-making quality for some farmers.

These evaluations would further serve as an information gathering tool. By creating a public body of information about environmental conditions on individual farms, the evaluations could serve as a useful tool for developing future environmental regulatory programs. Both state and federal regulators could draw on this bank of information to establish location-appropriate regulatory standards and to ramp up enforcement of existing environmental programs that could be, but generally are not, applied to farms.²⁴⁷

243. Kenneth Bamberger describes this type of requirement as “attention regulation.” Bamberger, *supra* note 156, at 447–48. By getting individuals to devote attention to and feel responsibility for a particular decision, a regulation can improve decision-making outcomes even without comprehensive oversight. *See id.* (identifying examples from financial regulation).

244. *Id.* at 450 (“[T]he very process of reporting promotes the type of cognitive accountability that results from reviewability.”).

245. On the importance of public disclosure, see Orts, *supra* note 112, at 1323 (identifying “[p]ublic disclosure [as] the backbone” of successful reflexive law); *cf.* Freeman, *supra* note 156, at 30 (arguing that public interest groups and nonprofit organizations can play a critical role in oversight and enforcement). A more extreme version of this requirement would be to mandate notice and comment on each assessment, but given the large number of regulated entities—2.1 million as of 2012—the resulting regulatory burden would be crippling. U.S. DEP’T OF AGRIC., AC-12-A-51, 2012 CENSUS OF AGRICULTURE: UNITED STATES SUMMARY AND STATE DATA (2014).

246. Making written assessments public gives the local community an opportunity to weigh in on the farming choices that have community-wide impacts. This recommendation parallels provisions in other environmental programs that give community members an active role in enforcement. For instance, under the Clean Water Act, pollution discharge permits and firm monitoring are made public so that citizens may sue to enforce permit violations. 33 U.S.C. §§ 1318–1319 (2012). Relying on the community to engage in policing does, however, raise important questions about the equal existence of such groups from one rural community to another.

247. For instance, state governments have substantial leeway to apply various aspects of the Clean Air Act to farms, but generally choose not to do so. *See generally* Clemmer, *supra* note 22 (describing potential avenues for using the Clean Air Act to address air pollution from farms).

For many farmers, fulfilling this obligation may test the bounds of their expertise. The larger of these farmers will likely turn to consultants, as they will for food safety compliance more generally. But the FDA should also seek to mitigate this concern by providing comprehensive guidance.²⁴⁸ In conjunction with the USDA and with local extension services, the FDA should assist farmers with the technical challenges involved in completing these evaluations.²⁴⁹

Another concern for many farmers would be compliance costs. Before implementing this proposal, the FDA should identify its marginal cost, beyond that already imposed by the Food Safety Act's extensive recordkeeping and safety planning requirements. This marginal cost would likely be minimal. Further, smaller operations are already exempt from many of the Act's more onerous requirements.²⁵⁰ These operations should be exempt from this proposal as well. But the cap for the carve-out is fairly low—\$500,000 annual revenue.²⁵¹ To determine whether to exempt an even larger pool of farms, the FDA should conduct an empirical analysis estimating compliance costs and assessing potential impact on profit margins and economic viability.²⁵²

The FDA should also establish guidelines for private auditors and inspectors to review these written determinations. Here,

248. Technical guidance will be critical, particularly for small- and medium-sized farms that could not afford to hire a consultant to conduct the evaluation. It can also constitute what Michael Dorf and Charles Sabel call "benchmarking," or "provid[ing] effective measures of performance . . . [that] take account of local diversity and resulting differences in the direction of local innovation." See Michael C. Dorf & Charles F. Sabel, *A Constitution of Democratic Experimentalism*, 98 COLUM. L. REV. 267, 345–46, 348 (1998) ("Benchmarking does not produce laboratory protocols by which successful experiments can be reproduced elsewhere. Rather, it reveals or leads to the discovery of unsuspected goals and indicates the guiding principles and related kinds of means for obtaining them.").

249. The extension services are operations of the land grant colleges. *Extension*, U.S. DEP'T OF AGRIC., <http://nifa.usda.gov/extension> (last visited Apr. 2, 2015). The program provides educational services in rural areas and is often an important resource of technical information (related to both agricultural methods and USDA programs) for farmers. See *id.*

250. Under the Food Safety Act's Tester-Hagan Amendment, farms grossing under \$500,000 annually and selling over fifty percent of their produce direct to restaurants and consumers are exempt from many of the Act's requirements. FDA Food Safety Modernization Act, 21 U.S.C. § 350h(f) (2012); Peter Anderson, Comment, *Empowering Local and Sustainable Food: Does the Food Safety Modernization Act's Tester-Hagan Amendment Remove Enough Barriers?*, 9 J.L. ECON. & POL'Y 145, 147 (2012).

251. 21 U.S.C. § 350h(f)(1) (2012).

252. Although smaller operations are equally likely to have poor environmental practices, the scope of those harms will almost certainly be smaller. For many of these small farmers, the social costs of going out of business (which include costs related to local food access, employment, etc.) would likely outweigh the benefits of compliance with this proposal.

collaboration with the USDA would be beneficial.²⁵³ The USDA has both expertise on farming practices and considerable experience working directly with farmers. In particular, the USDA's Natural Resources Conservation Service, which oversees the green payment programs, would be an ideal partner.²⁵⁴ In addition to providing expertise, collaboration with the Natural Resources Conservation Service has the added benefit of introducing an environmental mission to counterbalance the FDA's food safety mission.²⁵⁵ Working with FDA officials, the Natural Resources Conservation Service would be well positioned to advocate for environmental goals.²⁵⁶

Success of this program would require the FDA to regulate the behavior of private third-party auditors. Historically, these auditors have had substantial influence over farmer behavior by controlling farmers' access to markets.²⁵⁷ These auditors have no formal role in the Food Safety Act regulatory scheme, but it is likely that retailers will continue to require their stamp of approval, particularly as the FDA intends "inspection . . . to be only a relatively minor part of [its] overall compliance effort."²⁵⁸ Accordingly, the FDA should promulgate rules requiring these auditors to follow the same standards as public inspectors in balancing food safety and environmental protections. To receive certification to practice, auditors should be required to receive training in how to implement these standards.²⁵⁹

These innovations preserve the benefits of cooperative governance, taking advantage of farmers' location-specific expertise

253. The statute allows the FDA to collaborate with the USDA and state-level agriculture agencies on enforcement.

254. *Financial Assistance*, USDA NAT. RESOURCES CONSERVATION SERVICE, <http://www.nrcs.usda.gov/wps/portal/nrcs/main/national/programs/financial/> (last visited Feb. 13, 2015).

255. See *supra* Subpart III.B.3 (describing the advantages of having agencies with competing goals collaborate).

256. Collaboration with the EPA may better serve this end, but there is no existing statutory mechanism authorizing it.

257. See *supra* Subpart I.B.2 (describing the role of third-party auditors in implementing the California Leafy Green Marketing Agreement).

258. Proposed Produce Safety Rule, 78 Fed. Reg. 3504, 3619 (proposed Jan. 16, 2013) (to be codified at 21 C.F.R. pts. 16, 112). As the FDA explained, "With a community as large and diverse as the produce farming industry, it is not reasonable to expect that industry-wide compliance can be gained primarily through inspection and enforcement . . ." *Id.* at 3609. The statute does provide a formal role for third-party auditors in certifying foreign suppliers, and the FDA is in the process of drafting rules to govern auditor standards. In the introduction to the Proposed Produce Safety Rule, the FDA acknowledges that it expects third-party auditors to continue to play an important role for domestic producers. *Id.* at 3531, 3610.

259. Eric Orts suggests that auditor accreditation "should lead ordinarily to presumptions against . . . legal liability . . . except in cases of gross negligence, recklessness, or fraud." Orts, *supra* note 112, at 1322–23.

and providing them flexibility. At the same time, they add oversight to farmers' decisions regarding prioritization between food safety and environmental goals, a set of decisions that, under the current scheme, is not policed.

This proposal also preserves a role for ex ante environmental impact and cost-benefit analysis. These tools will provide the FDA with the background information that it needs to develop guidance for farmers and oversight criteria to be used by inspectors and third-party auditors.

CONCLUSION

The reforms proposed in this Article aim to evaluate potential trade-offs between the new food safety regime and environmental protection goals and programs. They do not address the shortfalls of existing environmental programs. Environmental regulation of agriculture is the next frontier for the environmental movement. Environmental advocates have targeted farming as it relates to water use, water quality, energy use, biodiversity, and toxics. In recent years, many of the national environmental organizations that have played critical roles in other areas have turned their attention to the farm.²⁶⁰ Although comprehensive regulation in this area is far from inevitable, it is likely that these groups will continue to make inroads.²⁶¹

Scholars and advocates have proposed a wide variety of new regulatory schemes designed to respond to the particular environmental costs of agriculture. For instance, focusing on transparency problems, some have proposed eco-labeling schemes.²⁶²

260. For instance, the Sierra Club and the Natural Resources Defense Council have both developed agricultural initiatives. *See Agriculture and Food*, SIERRA CLUB, <http://www.sierraclub.org/policy/agriculture> (last visited Feb. 18, 2015); *Safe, Sustainable Food*, NRDC, <http://www.nrdc.org/food/> (last visited Feb. 18, 2015).

261. For example, California is taking steps to help farmers become more water efficient, as severe drought threatens production. U.S. DEP'T OF AGRIC., US DEPARTMENT OF AGRICULTURE CLIMATE CHANGE ADAPTATION PLAN 29 (2014), available at http://www.usda.gov/oce/climate_change/adaptation/USDA_Climate_Change_Adaptation_Plan_FULL.pdf. Similarly, the USDA recently announced a major initiative to help farmers become more resilient to climate change. *Id.* at 2. This example suggests that the environmental issues that are likely to get the most immediate attention are those threatening agricultural productivity. *Id.* at 9. The USDA's long time focus on soil erosion, a concern for the federal government since the Dust Bowl era, is another example of this phenomenon. *75 Years Helping People Help the Land: A Brief History of NRCS*, USDA NAT. RESOURCES CONSERVATION SERVICE, http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/about/history/?cid=nrcs143_021392 (last visited Feb. 18, 2015).

262. *See, e.g.*, Jason J. Czarnezki, *The Future of Food Eco-Labeling: A Comparative Analysis*, in *FOOD, AGRICULTURE, AND ENVIRONMENTAL LAW*, *supra* note 6, at 301, 301–23 (exploring potential eco-labeling schemes designed to

Some have called for expanded green payment programs that would allow farmers to adopt ecological improvements without forcing them to internalize the costs of those actions.²⁶³ Other proposals include creative schemes to use nuisance law and toxic cleanup laws to regulate CAFO manure.²⁶⁴

Each of these programs would likely improve the status quo from an environmental perspective. It is possible, however, that additional conflict may arise as environmental regulation is ramped up. This trade-off could cut in the opposite direction, sacrificing food safety concerns to achieve environmental goals. Or it could track the types of trade-offs described in Part I, sacrificing environmental goals to maximize food safety. The discussion here has implications for program design for each of these proposals. So long as cooperative governance and voluntariness remain hallmarks of agricultural regulation, there will be a need to adopt trade-off management tools to prevent the prioritization function from being delegated entirely to regulated entities.

promote “sustainable food”); *see also* Stewart, *supra* note 62, at 97 (describing eco-labeling schemes as “market-based information strategies . . . to provide consumers and investors with information regarding the environmental performance of products and firms”).

263. *See, e.g.*, J.B. Ruhl, *Agriculture and Ecosystem Services: Paying Farmers to Do the New Right Thing*, in FOOD, AGRICULTURE, AND ENVIRONMENTAL LAW, *supra* note 6, at 241, 260–61 (describing potential for expanding green payment tools to promote “farm multifunctionality,” an approach that treats farms both as sources of provisions and as sources of ecosystem services); Salzman, *supra* note 98, at 872 (arguing that it makes sense to invest in natural capital and exploring various approaches to structure ecosystem markets); *see also* Stewart, *supra* note 62, at 98 (describing this type of program as a “[p]ure subsid[y] to polluters” and treating it as a partial but not complete substitute for command-and-control regulation).

264. *See* Terence J. Centner, *Nutrient Pollution from Land Applications of Manure: Discerning a Remedy for Pollution*, 21 STAN. L. & POL’Y REV. 213, 218–20 (2010).