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2009

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Climate Change Law Seminar
December 22, 2009

Towards a Greenhouse Gas Labeling Regime for Food

Introduction

This paper proposes that the Federal Government implement greenhouse gas (GHG) labeling standards for food and food products sold within the United States. A labeling regime of this sort would serve two purposes. First, labeling would shift consumer purchasing from "high emission" to "low emission" foods, cutting household emissions profiles in the short term. Second, labeling would encourage a general awareness amongst consumers that food, like any other commodity, has a GHG "price." Ideally, that awareness would ultimately engender non-labeling practices and policies with the potential for deeper emissions cuts

Recent scholarship has explored the possibility of GHG labeling for food, but only at the level of generality.[1] This paper seeks to add specific recommendations about the scope and legal mechanisms of a labeling regime, while synthesizing previous commentary. Part I of this paper describes the relationship between GHG emissions and the international trade in food, with particular emphasis on how changes in consumer behavior could lower emissions associated with the food trade. Part II discusses why labeling is an effective tool for catalyzing changes in consumer behavior, while also noting the downsides and shortcomings of a labeling regime.

Part III describes a model labeling regime for the United States food market. With important exceptions, the model would largely mirror the Department of Agriculture's (USDA's) Certified Organic Program (the Organic Program). The regime would be voluntary, such that wholesalers of food and food products could apply for a "carbon certification." One or more federal agencies would grant the application where the lifecycle emissions from the applicant's

[1] *See, e.g.*, Stacey O'Niell, *Consuming for the Environment: A Proposal for Carbon Labels in the United States*, 39 Cal. W. Int'l L.J 393 (2009); Michael Vendenbergh, *Climate Change: The China Problem*, 81 S. Cal. L. Rev. 905, 947-57 (2008) (discussing product labeling as a way of driving Chinese manufacturing chains towards lower net emissions).

product were significantly lower than similarly-situated products. Part III also suggests legislative and regulatory action sufficient for implementation of the model regime.

I. Food and Greenhouse Gas Emissions: The Importance of Lifecycle Calculations

The global production, transportation, sale, and preparation of food products is a complicated, decentralized process that uses vast amounts of energy—and that consequently emits large quantities of greenhouse gasses into the atmosphere. In 2007, the agricultural sector of the United States economy produced over 400 teragrams of carbon dioxide equivalent (CO_2e) alone.[2] It is estimated that annual food consumption of the average American household emits 8.1 tons of CO_2e per year (by way of contrast, driving a 25 miles per gallon automobile 12 000 miles emits around 4.4 tons of CO_2e).[3]

Attempts to document the link between food consumption and GHG emissions initially focused on "food miles," or the distance between the production site and consumption site of a particular food.[4] In general, food miles are positively correlated with fuel consumption and emissions, leading some observers to advocate "locavorous" consumption—eating only locally grown food—as an appropriate method to reduce individual carbon footprints.[5]

But food miles do not tell the whole story. Food emits greenhouse gasses not only as it moves from one city or port to another, but also as it is grown, packaged, and sold.[6] The sum of

[2] Environmental Protection Agency, *2009 U.S. Greenhouse Gas Inventory Report* (2009).
DC, 2006
[3] Christopher Weber and H. Scott Matthews, *Food-Miles and the Relative Climate Impacts of Food Choices in the United States*, 40 Environmental Science Technology 3508 (2008)
[4] *See* Jane Black, *What's in a Number?*, Slate.com, Sept. 17 2007, *available at http://www.slate.com/id/2200202/pagenum/all/#p2* (detailing the history of food-miles research, and exposing as incomplete the popular belief that the American meal travels 1,500 miles to the table).
[5] *See* Kate Harrison, *Organic Plus: Regulating Beyond the Current Organic Standards*, 25 Pace Envtl. L. Rev. 211, 225-26 (2008).
[6] For example, the production of potato chips requires energy—and thus necessitates GHG emissions—at the following stages: during the planting of potato and sunflower seeds; during the production of fertilizer for those; during the harvest of those seeds; during the processing of the raw materials; during the production of packaging for

these emissions, in addition to emissions stemming from food miles, results in a more accurate "life-cycle analysis" of a given food's GHG profile. A complete lifecycle analysis can mean lengthy calculations of variables including growing season; land-use patterns; the type local energy production; and the emissions profiles of non-food materials consumed in the food's production. The result, however, is a measure of GHG emissions that is far more accurate than food-miles alone.

Recent lifecycle analyses have shown that food-miles are not always a safe proxy for GHG emissions. In many cases, the emissions resulting from food production and processing are disproportionately greater than any emissions from transportation. Within the English lamb market, for instance, food miles are *negatively* correlated with total emissions: because English grazing land requires huge amounts of energy-intensive fertilizer, the production of domestic lamb requires four times the GHG emissions of lamb raised in New Zealand and shipped to England.[7] Likewise, French wines sold in New York have lower lifecycle emissions then their California counterparts, since *ocean shipping*—even trans-Atlantic shipping—is far more efficient than *trucking* wine from Napa to Manhattan.[8]

The calculation of lifecycle emissions suggests that American consumers could cut their food-related GHG emissions in either of two ways. First, consumers could purchase "low-lifecycle" foods instead of otherwise similar "high-lifecycle" foods. A GHG-conscious New Yorker, for instance, could reduce the "wine" component of his footprint by purchasing French wines instead of similar Californian varietals. If large numbers of consumers adopted this

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the chips; during the disposal of scraps from the production process; and during the transportation of the chips to retail locations. *See* Michael Specter, *Big Foot; A Reporter at Large*, The New Yorker, Feb. 25 2008 at 44.

[7] Andre Barber, Caroline Saunders & Greg Taylor, Lincoln University Agribusiness and Economics Research Unit, *Food Miles – Comparative Energy/Emissions Performance of New Zealand's Agriculture Industry* (July 2006), *available at http://www.lincoln.ac.nz/documents/2328_rr285_s13389.pdf.*

[8] *See* Tyler Colman and Pablo Paster, *Red, White, and 'Green': The Cost of Greenhouse Gas Emissions in the Global Wine Trade*, 20 Journal of Wine Research 15 (2009).

habit—and extended it beyond wine to reach several food groups—there is a significant potential for meaningful GHG reductions.

Secondly, consumers could make wholesale changes to their diet, eschewing *types* of food that, on average, have high lifecycle-emissions. By aggregating life-cycles for all foods sold within the United States, at least one recent study has concluded that type of food (*i.e.*, fruits, vegetables, grains, etc) is an effective proxy for GHG emissions.[9] Specifically, the study shows that red meat—and to a far lesser extent, dairy products—are disproportionately responsible for food-related GHG emissions *regardless* of other variables.[10] The reasons for the disparity are complicated, and include primarily the wasteful biology of larger animals; a bevy of inefficient government subsidies for cattle feed; and the particularly noxious aspects of Concentrated Animal Feed Operations (CAFOs).[11] These characteristics are relatively common throughout the United Sates and the world, making red meat an almost uniformly high-lifecycle food.[12] So while choosing low-lifecycle cow over high lifecycle cow will certainly reduce GHG emissions, eschewing cow for beans—regardless of how those beans are made—will, on average, result in far greater marginal reductions.

Hence the second approach to lowering GHG emissions from food: in addition to favoring low-lifecycle foods over their high-lifecycle counterparts, consumers could avoid (or simply reduce) meat and dairy consumption. Given the cultural attachment between Americans

[9] Weber, *supra* note 3. *See also*, *Climate chief Lord Stern: give up meat to save the planet*, The Times Online, Oct. 27, 2009; Nicolette Hahn Niman, *The Carnivore's Dilemma*, The New York Times, Oct. 30, 2009.
[10] This is simply another way of saying that, on average, the lifecycle emissions for one pound of red meat are far greater than the lifecycle emissions for equivalent volumes of any other food.
[11] *See* Weber, *supra* note 9.
[12] In isolated instances, local conditions (*i.e.*, small farms) can make the GHG profiles of red meat and dairy products competitive with the profiles of vegetarian diets, but the overwhelmingly industrialized nature of the global meat industry means that such instances are exceptions to the rule. *See* George Boody et al., *Multifunctional Agriculture in the United States*, 90 Journal of Environmental Management S112 (2009); *see generally* Niman, *supra* note 10.

and red meat,[13] such a shift is certainly less likely in practice than in theory. Nonetheless, the high GHG emissions associated with red meat are such that even unlikely prophylactic fixes merit consideration.

II. Labeling as a Technique to Discourage Purchase of High-Lifecycle Foods

Any of several policies could shift American food consumption towards a lower net-GHG profile. The federal government might, for instance, place absolute limits on the lifecycle emissions for specific categories of food, or it might place a tax on foods with high lifecycle emissions. It is also conceivable, though unlikely, that pending cap-and-trade legislation will act to create a price signal for food with high lifecycle emissions. Some observers have even recommended that the Environmental Protection Agency regulate food under the Clean Air Act.[14]

A labeling regime would also reduce the GHG profile of the American food market. Such a regime would use clear visual markings, prominently displayed on or near a food product, to reflect that product's lifecycle emissions. Conscientious shoppers would then use the labels to seek out low-lifecycle products, and to avoid high-lifecycle counterparts. Similar regimes have been implemented in isolation—by specific supermarket chains or specific product manufacturers[15]—and California is considering a bill mandating GHG labels for food,[16] but no country has of yet implemented a nation-wide labeling regime for food-related GHG emissions.

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[13] The average American consumes an average of 117 pounds of red meat per year. United States Department of Agriculture Economic Research Services, *Food Availability Statistics*, Feb. 27, 2009 (reporting data for year 2007).
[14] *See* Bryce Y. Hatakeyama, *Massachusetts v. Environmental Protection Agency and the Organic Movement: Can the "USDA Organic" Label Save Us from Nitrous Oxide?*, 17 San Joaquin Agric. L. Rev. 109 (2007-2008).
[15] *See infra* p. 12 and note 35.
[16] *See* Assembly Bill No. 19: An act to add Division 27.5 (commencing with Section 44570) to the Health and Safety Code, relating to product labeling, proposed Dec. 1, 2008, *available at http://www.leginfo.ca.gov/pub/09-10/bill/asm/ab_0001-0050/ab_19_bill_20081201_introduced.pdf*. The bill would implement no labeling standards itself; it would instead delegate GHG rulemaking functions to one or more state regulatory agencies.

This Part describes in general terms the benefits and drawbacks—the "why"—of a labeling regime. Part III of this paper explains the mechanics of such a regime—the how"—in greater detail.

A. Reasons for a Labeling Regime

Put simply, labeling is an attractive policy because it works. In repeated case studies—both real-world and hypothetical—properly executed labeling regimes have demonstrably altered consumer behavior. Given the choice between a "normal" product, and a similar product whose label indicates some type of added-value, consumers routinely choose to purchase the labeled product.[17] The most recent and well-known example is the United States Department of Agriculture Certified Organic Program, which utilizes a seal to indicate foods that are entirely free of pesticides and other synthetic ingredients or additives.[18] While a market for organic food predated the Organic Program,[19] the Program kick-started an explosion in organic sales. Between 1990 (the year Congress enacted the Organic Program) and 2000, sales of organic foods increased from one to twenty billion dollars per year.[20] As of 2006, the organic market constituted almost three percent of the entire food and beverage market, and was expected to grow at rate of twenty percent throughout the end of the decade.[21] Success has not been limited to the United States: the Certified Organic program has stimulated both organic production and organic regulation abroad.[22]

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[17] *See, e.g.*, Christine Moorman, *A Quasi Experiment to Assess the Consumer and Informational Determinants of Nutrition Processing Activities*, 15 J. Pub. P. & Mktg. 28, 29 (1996) (demonstrating influence of nutritional labels on consumer choice).
[18] *See* The Organic Foods Production Act of 1990, Pub.L. 101-624, tit. xxi, § 2102, 104 Stat. 3935 (1990) (codified at 7 U.S.C. §§ 6501-23).
[19] *See* Harrison, *supra* note 6, at 213-14.
[20] Organic Trade Assoc., *Industry Statistics and Projected Growth*, http://www.ota.com/organic/mt/business.html (last visited Dec. 2, 2009) (citations omitted).
[21] *Id*.
[22] Donald T. Hornstein, *The Road Also Taken: Lessons from Organic Agriculture for Market-and-Risk-Based Regulation*, 56 Duke L.J. 1541, 1551-52 (2007).

Labeling has achieved similar success where it had no prior market from which to build. In the United States, for instance, the Energy Star program essentially created a market for efficient home appliances where none previously existed. Prior to the Energy Star logo, efficient appliances were difficult to identify, and—due partly to this information gap—efficiency was largely irrelevant for consumers distinguishing one washing machine from another. Since Energy Star began in 1992, 15,000 organizations have joined the program, with labels spanning sixty different product categories.[23] Seventy-five percent of consumers recognize the Energy Star logo,[24] and the program has saved the United States almost sixteen billion dollars in electricity costs.[25] Germany has achieved broadly similar results with its "Blue Angel" labels for home appliances.[26]

The benefits of labeling extend beyond its direct influence of consumer behavior to include "norm activation." As defined by sociologists and psychologists, norm-activation is the process whereby communities come to embrace "informal obligations . . . enforced through an internalized sense of a duty to act, as well as guilt or related emotions for a failure to act."[27] Well-known examples of norm-activation include the recent aversion to public smoking,[28] and the willingness to pay for music despite the availability of free downloads.

Three characteristics of norm-activation are important in the context of GHG labeling. First, norm-activation, by definition, occurs apart from direct government intervention (such as

[23] Environmental Protection Agency, Energy Star Overview of 2008 Achievements 1 (March 1, 2009).
[24] *Id*.
[25] *Id*.
[26] *See*, Success-Stories of the Blue Angel, *http://www.blauer-engel.de/en/blauer_engel/balance/success_stories.php* (last visited Dec. 20, 2009).
[27] *See generally* Michael P. Vandenbergh and Anne C. Steinemann, *The Carbon Neutral Individual*, 82 N.Y.U. L. Rev. 1673, 1703-1719 (2007).
[28] *See* David W. Moore, Gallup News Service, *Increased Support for Smoking Ban in Public Places*, July 20, 2005, *available at http://www.gallup.com/poll/17410/increased-support-smoking-bans-public-places.aspx* (finding that support for public smoking bans due not only to government regulations and bans themselves, but also to a shift in public opinion).

taxes or fines). It instead relies on a feeling of personal responsibility to the community. Secondly, norm activation seems to flourish when visible cues reinforce the norm in question, and especially when visual cues indicate that the norm is widely embraced. Finally, norm-activation is particularly compatible with environmental causes:[29] recycling and organic shopping are both instances in which norm-activation has shaped consumer behavior outside of direct government intervention.

Labeling shares all three characteristics, making GHG labels likely to "activate" (or to help activate) a norm favoring low-lifecycle foods. Labeling is "grass-roots," insofar as it relies on consumers to purchase labeled products and operationalize the regime. It is precisely this type of bottom-up behavior that distinguishes norm-activation from legal techniques for regulating behavior. In addition, labeling is a quintessentially visual technique—both because labels themselves are visual cues, and because the act of purchasing labeled products is a visible act. As such, labeling would remind consumers that the nation has collectively embraced the norm of lower GHG emissions. Finally, GHG labeling—as an exercise in environmental conservation—should fit comfortably in the tradition of recycling and organic shopping. The organic movement, in particular, is a relevant example, since the USDA Organic Label not only increased sales of organic food, but also helped build a broader "organic culture" including books, restaurants, and home-recipes.[30]

[29] *See* Vandenbergh, *supra* note 27, at 1709-1710 (listing and citing empirical studies related to environmental norm activation). Notably, the cited studies should widespread support for ecological norm-activation even when the norms in question provide little or no immediate benefit to the consumer himself. This bodes well for a "low-GHG-food" norm, since low emissions—unlike fat free foods or energy saving appliances—provide little or no immediate benefits to the consumer.

[30] *See* Susan A. Schneider, *Reconnecting Consumers and Producers: On the Path Toward a Sustainable Food and Agriculture Policy,* 14 Drake J. Agric. L. 75, 83-84 (2009) (outlining examples of mass-culture springing, in part, from the organic movement); Vandenbergh, *supra* note 2, at 945-55.

A consumer-norm that embraced foods with low GHG emissions would not produce immediate, quantifiable benefits. In the long run, however, the norm might lead to greater recognition of the labeling regime, and thus to a larger market-share for low-lifecycle foods. In addition, the norm could eventually lead to civic action or shareholder movements in the sphere of food regulation.[31] Finally, the norm could drive private action on two fronts. First, a demand for low GHG food might prompt non-label methods for producing and advertising such food. In addition, the norm could "capture" private elites—executives or board members—who would subsequently change firm behavior regardless of market space or market pressure. This phenomenon is not unprecedented: fair trade coffee, dolphin safe tuna, and sweat-shop-free clothing are all examples in which labels drove the spread of norms amongst both public and private actors.[32]

In sum, labeling would lower the GHG profile of food in two ways. First, labeling would immediately allow conscientious consumers to purchase only low-lifecycle foods. Secondly, a labeling regime would reinforce—if not create—a communal norm that valued low lifecycle foods. That norm, in turn, could lead to more profound changes in the way Americans view the relationship between food and climate change.

B. The Limitations of a Labeling Regime

While GHG labeling could shift both consumer behavior and consumer norms in important ways, labeling is not a perfect solution. Labeling is limited in its potential to relay complex information quickly; in its ability to change certain types of human behavior; and in its demographic reach. While these limitations pose no absolute barrier to a labeling regime, they should weigh heavily on the ultimate contours of that regime.

[31] Vandenbergh, supra note 2, at 956
[32] *Id*. at 950-51.

As an initial matter, labels are ill-suited to convey complex or voluminous information, or to convey that information quickly. Studies have shown that simple, direct labels produce the greatest shifts in consumer behavior, whereas labels that are complex (*e.g.*, that include too much information) or vague (too little information) are ineffective.[33] Labels are also ineffective when forced to compete with other labels for consumer attention, a phenomenon known as "label fatigue." Finally, a labeling regime takes time to gain the understanding and acceptance of consumers—it may be years before a labeling regime significantly impacts consumer behavior, let alone activates norms.

Even the best-designed labels cannot influence consumer behavior past certain thresholds. In general, consumers are likely to purchase a "labeled" product over an "unlabeled" counterpart, and many consumers will even pay a premium for the "labeled" product. But for most consumers, this premium must not exceed twenty-five percent in excess of the unlabeled product. Labeling is thus ineffective when it differentiates between products with markedly different costs. In addition, labeling is relatively ineffective when it differentiates between unlike products. So while labeling may work to distinguish one toaster from another, it is unlikely to persuade a consumer to swap a toaster for a microwave oven.

Studies have also cast doubt on the ability of labeling regimes to reach certain demographics, specifically and uneducated.[34] If this phenomenon is real, it is unfortunate in two respects. Most obviously, it would mean that the poor and uneducated would not respond to a model labeling regime. Secondly, the educated and affluent would themselves gain little from the

[33] *See* Schneider, *supra* note 30, at 87-94 (explaining the inability of consumers to decipher labels for "high fructose corn syrup," "naturally raised," and "raised without antibiotics").
[34] *See* Brian Elbel et al., *Calorie Labeling And Food Choices: A First Look At The Effects On Low-Income People In New York City*, Health Affairs, Oct. 6, 2009; Aubrey Parlet, *Student Article: Organic Foods Production: What Consumers Might Not Know About the Use of Synthetic Substances*, 21 Loy. Consumer L. Rev. 392, 404 (2009) (describing how disproportionately so called "organic milk households" pay disproportionate attention to eco-labeling).

regime, albeit for different reasons. Because the educated and the affluent are statistically likely to undertake certain low-emitting behaviors *regardless* of a labeling regime, the regime would make only a slight difference in net consumer behavior.

The shortfalls of labeling regimes are not trivial, but neither are they fatal. To the extent that labeling regimes reach certain segments of the American public, every effort should be made to publicize and promote a GHG label on a national scale. With that caveat in mind, it is worth repeating that prior labeling regimes have eventually gained widespread acceptance and recognition amongst large majorities of the American populace. And while it is true that labels can, at best, leverage finite information to prompt finite shifts in behavior, those shortcomings should simply narrow the scope and ambition of a model regime. Rather than emulating the depth and breadth of a Food and Drug Administration nutritional label, for instance, the a GHG label should instead emphasize simple, easy to understand labels, and should compare like products to the greatest extent possible.

III. A Model Regime

This paper proposes that the federal government implement a GHG labeling regime ("The Model Regime") that (1) is voluntary; (2) compares like products, and (3) uses clear, easy-to-understand labels as a proxy for relative emissions. Under this Regime, domestic and foreign producers of food could apply for a certified "Climate Seal" if their products had significantly lower lifecycle emissions than the average lifecycle emissions for similar products.

The Model Regime is limited in two important respects. By comparing only like-products, the Regime would forgo any attempt at using labels as a proxy for diets low in meat and dairy. Likewise, a voluntary regime—by ensuring that only certain foods appeared with labels—would not allow consumers to compare the GHG intensity of each and every product.

These limitations, while unfortunate from the standpoint of potential GHG cuts, are necessary for both practical and legal reasons. The regime would instead focus on the smaller, but achievable cuts associated with choosing low-GHG foods over otherwise identical high-GHG foods.

A. Threshold Limitations: Why Labels should be Voluntary and Compare Only Like Products

A regime that is (1) voluntary, and (2) focuses only on like products excludes potentially massive reductions in GHG emissions. If consumers could use labels to avoid meat and dairy products, or if consumers could compare the lifecycle emissions of every food products, then the nation would eliminate far more emissions than under the Model Regime. Given those trade-offs, the reasons for a limited regime warrant elaboration.

A like-products focus is necessary to keep labels readable and accessible. Labels for unlike products, by way of contrast, are undesirable in two respects. First, comparing unlike foods would require that consumers compare *absolute* measures of emissions (*e.g.*, t/CO_2e per ounce, or t/CO_2e per pound), which would in turn require some type of numerical rating for every product. Considering that "carbon dioxide equivalent" and similar terms are confusing for the average shopper, such labels are not merely unlikely to change purchasing habits—they have had precisely that effect in test cases.[35] In a recent study examining consumer reactions to the voluntary emissions labels at Tesco (a massive UK grocery chain), researchers found that although consumers expressed a willingness to shop with an eye towards low emissions, they were unable to decipher the numerically-based Tesco labels. Secondly, labeling is an ineffective method for altering dietary habits wholesale. Behavioral psychology makes it likely that labels

[35] *See* Geoffrey Battie & Laura Sale, *Explicit and Implicit Attitudes to Low and High Carbon Footprint Products*, 5 International Journal of Environmental, Cultural, Economic and Social Sustainability 191 (2009) (finding that while consumers expressed a willingness and desire to purchase food according to TESCO's carbon labeling, their measurable, physiological responses to the labels indicated indifference or confusion).

alone will not convince many omnivores to assume a vegetarian diet.[36] Even assuming that consumers could accurately read the necessary labels, therefore, they are unlikely to act upon those labels in any great measure.

A mandatory regime, meanwhile, is untenable because it is relatively likely to violate international law.[37] The interplay of labeling regimes and World Trade Organization (WTO) law is an area rife with unsettled legal questions, but even a conservative sketch of the issues shows that voluntary labeling is more likely than mandatory labeling to pass international muster.

World Trade Organization (WTO) law distinguishes between "product-related" processes and production methods (PR-PPMs), and "non-product-related" processes and production methods (NPR-PPMs). PR-PPMs refer to production methods that alter the internationally traded end-product, such as the use of antibiotic cattle-feed to produce chemically distinctive beef. The WTO generally allows trade restrictions based on PR-PPMs, insofar as such restricts are akin to safety or quality standards.[38] The WTO generally does *not* allow trade restrictions based on NPR-PPMs, or production methods with no discernable impact on the end-product. Because GHG lifecycle-calculations implicate factors that make no real difference in the composition of food—electricity generation, for instance—a labeling regime based on those calculations would likely qualify as a NPR-PPM.

The question is thus whether a lifecycle-based labeling regime, as a NPR-PPM, qualifies as a restriction on trade. Although there is some question as to what standard would apply to this

[36] It is worth remembering that the labeling regime would aim to target such behavior over time, vis-à-vis norm activation.

[37] For brevity's sake, this paper merely outlines how a labeling regime might run afoul of international law. For more thorough analysis, see Steve Bernstein & Erin Hannah, *Non-State Global Standard Setting and the WTO: Legitimacy and the Need for Regulatory Space*, 11 J. Int'l Econ. L. 575 (2008); Jessica Karbowski, *Note: Grocery Store Activism: A WTO Complaint Means to Incentivize Social Responsibility*, 49 Va. J. Int'l L. 727 (2009) (analyzing the current WTO case law and concluding that a voluntary labeling regime is likely to pass muster in most instances).

[38] Hence the Food and Drug Administration's "Nutrition Facts," while mandatory, are legal under WTO law: the nutritional information relates directly to the content of the food itself.

inquiry,[39] two common questions are likely to be (1) whether the labeling regime is discriminatory towards one or more WTO signatories; and (2) whether the labeling regime is *unnecessarily* restrictive.[40] On both points, WTO law is unsettled, but it is not difficult to see how a mandatory labeling regime could violate either standard. A mandatory regime is more likely than a voluntary regime to be unnecessarily restrictive, for instance, since it would require all importers undertake expensive lifecycle analyses for their products or face embargo. A voluntary label, of course, requires no such trade-off.[41]

Moreover, a mandatory regime is more likely to be de facto discriminatory, since it would essentially "red-flag" every product with high GHG lifecycles. This across-the-board "negative labeling"[42] would likely create instances in which American products were uniquely well placed, or where products from one or more foreign countries were particularly disfavored. In both letter and spirit of the law, the WTO frowns upon such favoritism, and it is possible that a few stray challenges to individual product lines could mire the entire labeling regime in complicated, lengthy trade disputes. While it is true that voluntary labeling could also effectively

[39] Specifically, there is some question whether the WTO would apply the Technical Barriers to Trade Agreement—a WTO side-treaty governing most standardized labeling—or background GATT law. The TBT clearly applies to PR-PPMs, but may not apply to NPR-PPMs. Moreover, there is uncertainty as to whether the TBT applies to voluntary regimes at all. *See* Bernstein & Hannah, *supra* note 37, at 585.
[40] Although case law is unsettled under both the TBT and the GATT, both inquiries generally focus on these prongs. *See* Karbowski, *supra* note 37, at 751-773;
[41] *See, e.g.*, Report of the Panel, United States-Restrictions on Imports of Tuna ¶ 155 (Sept. 3, 1991), GATT B.I.S.D. (39th Supp.) (unadopted). "Dolphin-Tuna," while unadopted and thus technically non-precedential, is the clearest glimpse into WTO attitudes on environmental regulation. The ruling struck down embargos the WTO found were (a) attempts to ban import on the basis of NPR-PPMs and (b) attempts by the United States to enforce environmental laws abroad. A voluntary labeling regime is less restrictive and, unlike the embargos in Dolphin-Tuna, would not be based on a comprehensive regulatory and criminal scheme like the Endangered Species Act (the "extraterritorial" law at issue in Dolphin-Tuna).
[42] "Negative labeling" refers to branding products as potentially harmful. The United Kingdom has implemented a voluntary negative labeling regime, such that producers can choose to label their own foods as unhealthy. *See* Margaret Sova McCabe, *Loco Labels and Marketing Madness*: *Improving How Consumers Interpret Information in the American Food Economy*, 17 J.L. & Pol'y 493, 501-502 (2009).

shut out foreign products from American markets, the number of products labeled—and thus the number of potential challenges—is likely to be far smaller under a voluntary regime.[43]

It is also worth noting the colossal enforcement costs associated with a mandatory regime. The federal government would need to conduct enough spot-checks—and enforce enough sanctions—to keep the global food industry honest. Reports have already cited under-enforcement in both the USDA Organic Program,[44] and the FDA's "Nutrition Facts Program,"[45] making it difficult to imagine that the government could adequately enforce a mandatory GHG regime involving tens of thousands of multi-variable calculations, with producers, packagers, and shippers spread throughout the world.

B. Parameters of the Model Regime

Thus circumscribed, the Model Regime closely resembles the USDA Organic Program. A thorough description of that program is thus useful as a point of comparison, and as a point of departure.

The Organic Act of 1990 and its derivative regulation award use of the USDA Organic Seal only to products entirely free of certain listed substances.[46] The Secretary of Agriculture is responsible for awarding and policing use of the Seal, tasks he accomplishes through privately

[43] Indeed, Mexico has recently filed a WTO complaint against the United States, alleging that *voluntary* "Dolphin-Safe" tuna-labels—labels much like those proposed—violate WTO law because they specifically target and discriminate against Mexican tuna. A ruling is expected sometime in 2010. *See DSB establishes panel in US-Mexico tuna case*, http://www.wto.org/english/news_e/news09_e/dsb_20apr09_e.htm (last visited Dec. 20, 2009); Cymie Payne, Legal Planet, *Dolphins and Tuna Mix It Up Again*, http://legalplanet.wordpress.com/2009/05/15/dolphins-and-tuna-mix-it-up-again/ (last visited Dec. 20, 2009).

[44] *See* B.P. Baker et al., *Pesticide Residues in Conventional, Integrated Pest Management Grown and Organic Foods: Insights from Three U.S. Data Sets*, 19 Food Additives & Contaminants 427, 432-34 (2002); Mark Alan Kastel, The Cornucopia Institute, *Wal-Mart: The Nation's Largest Grocer Rolls-Out Organic Products: Market Expansion or Market Delusion* 4 (2006) (finding that Wal-Mart's Organic Certified products come in large part from China, where USDA enforcement is lax).

[45] *See also* Schneider, *supra* note 30, at 82 (2009) (outlining inability of Food and Drug Administration to adequately manage its "Generally Regarded as Safe" program); United States Government Accountability Office, *Food Labeling: FDA Needs to Better Leverage Resources, Improve Oversight, and Effectively Use Available Data to Help Consumers Select Healthy Foods*, Sept. 2008, *available at http://www.gao.gov/new.items/d08597.pdf*.

[46] See appendix A.

operated, publically licensed certifying agents. Should a producer or farmer wish to advertise her products using the Organic Seal, she must first apply for "certification."[47] The process requires the submission of detailed paperwork, including records of prior operation (dating back three years) and descriptions of potential changes in the growing or manufacturing process.[48] After receiving certification, the producer or farmer must keep detailed records of her entire operation, and is moreover subject to random inspections from certification agents.[49]

The Model GHG Labeling Regime would, in all essential parts, mirror the Organic Program. Under the Model Regime, an implementing agency would first use national and global data to calculate the average lifecycle emissions for different categories of food. These figures would be the functional equivalent of the Organic Program's list of banned substances, *i.e.*, they would serve as the baseline against which all applicant foods were measured. If a producer or farmer marketed food with significantly lower lifecycle emissions than the regulatory baseline, she would apply for certification from the implementing agency. Using federally-approved statistical methods, the application would entail the producer's own calculation of average lifecycle emissions for the product in question, including estimations of future emissions. The application would further account for changes in season, weather, and other variables subject to periodic change. Certifying agents would double-check the applicant's work and, if satisfied that lifecycle emissions were lower than the national average, approve the applicant's use of a "Carbon Seal." The Carbon Seal, like its Organic predecessor, would be a clear, uncomplicated emblem. After receiving approval, the certified applicant would be required to keep detailed

[47] 7 U.S.C. § 6513(a).
[48] *Id.*, 7 U.S.C. § 6513(f)(2)
[49] 7 U.S.C. §§ 6506(a)(5), 6511(d).

records of production inputs and processes; to undergo occasional audits; and to periodically reapply for certification.

The advantages of this regime are several. First, as the Organic Program has indicated, consumers respond well to labels that (1) represent a perceived ecological benefit; (2) are visually uncomplicated; and (3) distinguish between otherwise like products. The Model Regime cleanly fits this mold, and would thus be expected to shift consumer behavior towards low-lifecycle products. A clear, uncomplicated label is also a visual touchstone, and therefore more likely to activate social norms than a complicated alternative.

Secondly, the Model Regime would be readily enforceable. Administrative sanctions would range from mere denial of an application on one end, to fines for misrepresenting data or for misusing the Seal on the other. Under the Organic Program, certifying agents responsible for similar enforcement duties are employed and paid by the applicants themselves, creating an obvious potential for conflicts of interest.[50] The Model Regime would remedy this oversight by employing federal employees as certifying agents.

Outside of these administrative penalties, the Organic Program has demonstrated how citizen action can further check misuse of a federal label. For the past several years, a citizen group called the "Cornucopia Institute" has successfully checked efforts by the dairy industry to misappropriate the USDA Certified Organic Label. Cornucopia's actions have been two-fold. First, the Cornucopia has reported violations directly to the USDA, which has subsequently negotiated consent decrees with fraudulent dairy farms. Secondly, Cornucopia has instituted a variety of class-action lawsuits against dairy producers who have allegedly marketed "inorganic

[50] National Organic Program,7 C.F.R. §§ 205.400(e), 205.501(a)(16) (2007). *See also* A. Bryan Endres, *An Awkward Adolescence in the Organics Industry: Coming to Terms with Big Organics and Other Legal Challenges for the Industry's Next Ten Years*, 12 Drake J. Agric. L. 17, 32-34 (2007).

products" as "Certified Organic" (the suits are premised on a variety of false advertising and fraud claims). Other citizen groups have staged successful boycotts of dairy producers, who seem particularly prone to violating the Certified Organic guidelines.

On one hand, the actions of the Cornucopia Institute and like organizations have provided a valuable counterweight to enforcement oversights by USDA itself. Ostensibly, this type of citizen enforcement could work in a carbon labeling regime: citizen groups could check actual lifecycle emissions against those submitted by the applicant producer or manufacturer, and would subsequently report any violations to the federal government. But where the citizen-enforcement at work under the USDA Organic Program sprung from the testimony of employees and neighbors (who both observed clear violations of the organic conditions) enforcement of the Model Regime would require knowledge of corporate data involving transport, labor conditions, etc. In that sense, citizen enforcement of the Model Regime might prove exceedingly difficult.

To that end, the Model Regime—unlike the USDA Organic Program—should include explicit textual hooks for citizen enforcement. At the least, the statutory or regulatory language should make public non-sensitive sets of data as part of the application process, so that citizen groups—to the extent possible—could double check actual data against advertised data. In addition, the Model Regime should forbid a finite number of "high GHG" activities from *any* product using the label. Such activities might, for instance, include the use of specific fertilizers, farming practices (such as using greenhouses) or air shipments. Violations of *these* provisions, unlike cheating the carbon baseline, would attract more citizen attention. A citizen-suit provision is less desirable than either of these suggestions. While such a provision would provide teeth to the few instances where producers were caught making false claims, it would undoubtedly deter some companies from participating in the regime altogether. Litigation costs

would pose a significant threat to participation, with collateral damage to the norm-activation process.

In a final parallel with the USDA Organic Program, the Model Regime would emulate the that Program's exceptions for small farmers. The Organic Program does not apply in full to farmers who gross less than $5,000 per year, and who do not sell their produce to large distribution chains.[51] These farmers can essentially certify themselves as qualified users of the Organic Seal. For several reasons, the Model Regime would largely follow this pattern. First, small farmers are, as a practical matter, less able to undertake the costly lifecycle analysis than larger producers.[52] Secondly, some data indicates that small farms are, on average, an effective proxy for low lifecycle emissions.[53] It is therefore less likely that exempting small farmers would result in the sale of high-lifecycle food Third, small farmers represent a small portion of the overall food industry, and are thus unlikely to impact the overall success of the Model Regime.[54] Finally, including small farmers in the Model Regime avoids a political hard-sell, whereby only large corporations may enjoy the benefits of a Climate Seal.

C. Potential Criticisms of the Model Regime

For all its potential benefits, the Model Regime is, admittedly, imperfect. It is debatable, for instance, whether the regime would produce significant marginal reductions in emissions. Since lifecycle emissions are difficult and time consuming to calculate—and since the regime

[51] 7 U.S.C. §§ 6503(d), 6505(d) (2006).
[52] Indeed, because lifecycle calculations are more technical than Organic certification, this paper recommends loosening the requirements for a small farmer exception.
[53] *See* Harrison, *supra* note 6, at 224-25 (citing study showing that small farms in the United States keep twelve percent more carbon-absorbing woodland than do large farms) ;*see also* A. Christine Green, *The Cost of Low Price Organics: How Corporate Organics Have Weakened Organic Food Production Standards*, 59 Ala. L. Rev. 799, 827-28 (2008) (comparing GHG emissions benefits of large organic farms with their smaller counterparts); Hornstein, *supra* note 22, at 1578-79.
[54] *See* Robert A. Hoppe et al., *United States Department of Agriculture, Structure and Finances of U.S. Farms: Family Farm Report* 4 (2007). *See also*, Green, *supra* note 53, at 805-06 (comparing massive economic and political clout of industrial organic retailers to that of small farmers); Enders, *supra* note 50, at 25-28.

will not compare one *type* of food with another—it is reasonable to ask whether the administrative costs associated with the Model Regime are worth the reductions in GHG emissions. The answer to this objection answer is threefold. First, the cost of lifecycle analyses, while not trivial, are still relatively low. While the necessary calculations are doubtless complicated and involve considerable amounts of statistical expertise, the process, at its core, involves no more than an application of corporate data already at hand. Moreover, the necessary calculations will become less expensive as federal agencies promulgate standardized methodologies and guidelines. Secondly, the benefits of a labeling regime extend beyond short-term emissions reductions to include the long-term benefits of norm activation. Regardless of any short-term reductions in emissions, a cost-benefit-analysis of labeling should acknowledge that the Regime is likely to produce diffuse, difficult-to-quantify benefits over the long run.

But whatever the *absolute* benefit of the Model Regime, labeling is worth pursuing as cost-free to the public as taxpayers. Assuming that the government calibrates the labeling requirements correctly, the Model Regime will prompt manufacturers and distributors to undertake the cost of compliance themselves. Where carbon labels can occupy a market niche, in other words, private actors will ensure that labeled products fill that nice. The regime thus comes at essentially no cost to the public writ large. Given the *potential* for greater emissions-reductions and dietary shifts over time, it would be odd to neglect such low-hanging, easy-to-harvest fruit.

A second objection to the Model Regime questions how, precisely, the federal government will calculate baseline lifecycles. This problem is serious in several respects, and the quantitative expertise required for a complete answer is beyond the reach of this paper. A few observations, however, may be of help. Most importantly, the labeling regimes already deployed

by Tesco, Timberland, and a variety of public entities indicate that robust, workable lifecycle analysis are not beyond all calculation. These and similar programs may provide a suitable foundation for a comprehensive, national program of lifecycle calculations.

A more pressing concern is how to calculate average lifecycles across a nation as large as the United States. Averages across such a large space are potentially meaningless, insofar as they may produce absurd outcomes when applied locally.[55] (By way of contrast, Tesco need only calculate lifecycle emissions as averaged across England—a country no larger than Alabama). This problem likely presents the greatest potential challenge to the Model Regime. If quantitative analysis shows that averaging lifecycle emissions provides a baseline that is unworkable in practice, two solutions may alleviate the problem. First, the government could require that manufacturers calculate lifecycle emissions for their products not as an average, but as applied to specific shipping depots. This, in effect, would use a precise numerator (applicant's emissions) to counterbalance an imprecise denominator (national average emissions). Alternatively, the federal government could use "green lines" to divide the nation into three regions: the two coasts and an interior. The interior region would be relatively large, and would reflect the high proportion of emissions from inland freight transport. To better approximate lifecycles and lifecycle baselines, both the federal government and private companies would calculate lifecycles as applied to each of the three regions. This approach, in other words, would adjust both the numerator and the denominator of the emissions baseline.

D. Legal Authority for Implementing the Model Regime

[55] To take one (purely hypothetical and unsupported) illustration, the average emissions for lobster would likely be quite high, since producers must ship the crustacean large distances inland. If a lobsterman in California invents a low emissions technique for catching lobster, his lobsters would fall below the national average and thus qualify for the Climate Seal. But this result would be nonsensical for a resident of Maine, where emissions from the catching of *local* lobsters are likely to be less than those associated with shipping California lobsters cross-country.

For multiple reasons, the model regime should be implemented via congressional action.[56] First, a "Labeling Act" would necessitate a relatively quick, public forum for hashing out details regarding the Model Regime's scope and size. Past labeling regimes—and food safety standards in general—have often suffered a prolonged regulatory quagmire, with competing interest groups forestalling even relatively simple rulemakings. In particular, the food lobby in the United States has leveraged its clout to shape, delay, and expedite rulemakings as it sees fit. In some cases, the lobby's actions have strained objective claims of advocacy in the statutory interest, such as when industry lobbying prompted the initial Organic Standards to permit certain types nuclear waste under the "Certified Organic" seal.[57] Congressional action will not entirely eliminate such manipulation, but it will expedite and publicize the "sausage-making" process surrounding the labeling standards.

Secondly, the Model Regime most likely requires congressional authorization, since existing grants of authority do not cover the possibility of carbon labeling. The Food Drug and Cosmetic Act—under which the FDA regulates nutritional labels and standards like "100% whole wheat"—is insufficiently broad. The Act allows the FDA to proscribe labels for "fill," "identity," and "quality."[58] "Quality" is undefined, and could presumably accommodate a carbon label, but the Act goes on to exempt produce from any labeling requirements whatsoever. The Organic Act, meanwhile, clearly limits its scope to organic products, and is in any case concerned *only* with products immediately derived from organic produce. A proper GHG labeling act would cover the shortfalls of each statute currently in force, covering both produce

[56] *See* McCabe, *supra* note 42, at 501-507 (detailing regulatory battles between industry and consumer groups over labeling specifications for salt).
[57] Harris, supra note 6, at 217-19.
[58] *See* 21 U.S.C. § 341. The relevant text, in full, reads: "Whenever in the judgment of the Secretary such action will promote honesty and fair dealing in the interest of consumers, he shall promulgate regulations fixing and establishing for any food, under its common or usual name so far as practicable, a reasonable definition and standard of identity, a reasonable standard of quality, or reasonable standards of fill of container."

and non-produce food products. This paper does not consider, in full, the precise allocation of regulatory authority under a model regime. As a cursory recommendation, however, it is possible that FDA and USDA could share authority—USDA would calculate and enforce baselines for all produce and farm-raised products, while FDA oversaw similar measures for the remainder of the U.S. food market.

V. Conclusion

Paper has endeavored to articulate the benefits and rough mechanics of a GHG labeling regime for food products sold in the United States. In sum, the Regime should use relative lifecycle emissions to distinguish "high lifecycle" foods from their "low lifecycle" counterparts. This information would not only allow conscientious consumers to cut their GHG emissions in the short term, but would also foster a low-carbon norm. This type of "norm activation," while facially less valuable than actual emissions cuts, is nonetheless valuable in a nation where only sixty percent of the public is concerned about the long-term effects of climate change.[59] And while the proposed emissions cuts and norm activations are surely modest goals, they are available as essentially no cost: in essence, the government need only shoulder the small administrative costs to create and police market-space for low-lifecycle foods. Private industry will undertake the more expensive (but still relatively cheap) work of calculating specific lifecycle analyses.

The Model Regime should be voluntary (to avoid conflict with WTO law) and should eschew comparing unlike products (to avoid consumer confusion). Moreover, the Model Regime should use clear, easy-to-read labels, and should generally model the USDA Organic Program's regulatory apparatus—including its exceptions for small farmers. Unlike the Organic Program,

[59] Lydia Saad, Gallup, *Increased Number Think Global Warming Is "Exaggerated"*, March 11, 2009.

however, the model regime should include slightly more robust enforcement measures, namely: certifying agents employed by the federal government; applications made in part or in whole to the public; and artificial "prohibited activities." To avoid prolonged rule-making and subsequent litigation, the Model Regime should be implemented via congressional action, or not at all.

It remains to be seen whether or not "average lifecycle emissions" is a meaningful term in a nation as large and as developed as the United States. While recent studies and voluntary labeling regimes hint that such techniques are practical, the Model Regime requires calculations and public-private cooperation on a scale hitherto unexplored. The answer to this question requires statistical expertise beyond the scope of this paper—and, it would seem, most research currently available.

Should further research indicate the Model Regime is practical, the implications extend beyond the comparison of like-foods. Similar models could be applied to household goods writ large; some commentators have already suggested labeling regimes for personal hygiene products, aquiculture (*e.g.*, farmed fish), and pet food.[60] Like food products, these goods produce only modest GHG emissions (relative to the global total), but represent low-hanging fruit. In addition, the frequent turnover of such products helps—more so that capital purchases—to create and reinforce a low-carbon norm.

[60] Endres, *supra* note 50, at 48-54.

Appendix A: Examples of Food Labels

The USDA Certified Organic Label.

Tesco's voluntary carbon footprint label.