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The Future of Food Eco-Labeling: Organic, Carbon Footprint, and Environmental Life-Cycle Analysis

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The Future of Food Eco-Labeling: Organic, Carbon Footprint, and Environmental Life-Cycle Analysis

Jason J. Czarnezki*

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I. INTRODUCTION

With books like Michael Pollan's *Omnivore's Dilemma*¹ and movies like *Food Inc.*,² the environmental costs of modern industrial and large-scale food production and consumption have begun to enter public consciousness. The true costs of the modern food system are not adequately reflected by the low prices most consumers seek to pay. Food choices shape our waistlines, the natural landscape, and ecological health. Society has become increasingly aware that choices about food contribute to the climate crisis, cause species loss, impair water and air quality, and accelerate land use degradation. The causes of these environmental costs are many—the livestock industry, diet, agricultural practices like pesticides and fertilization, and large-scale food transportation, processing, packaging and distribution systems.

Recent legal scholarship suggests both that environmental policy will focus more on individual behavior,³ and that consumer informational labeling can be an effective regulatory tool in encouraging eco-friendly choices. Individuals in the United States contribute 30% to 35% of greenhouse gas emissions nationwide, which accounts for 8% of the world's total.⁴ A European Union study showed that groups of products from only three areas, food and drink, private transportation, and housing, are together responsible for 70-80% of the environmental impacts of personal

1. MICHAEL POLLAN, *THE OMNIVORE'S DILEMMA* (2006).

2. *FOOD, INC.* (Magnolia Pictures 2008).

3. See, e.g., Hope M. Babcock, *Assuming Personal Responsibility for Improving the Environment: Moving Toward a New Environmental Norm*, 33 HARV. ENVTL. L. REV. 117 (2009); JASON J. CZARNEZKI, *EVERYDAY ENVIRONMENTALISM: LAW, NATURE, AND INDIVIDUAL BEHAVIOR* (forthcoming 2010); Michael P. Vandenberg, *The Individual as Polluter*, ENVTL. L. REP., Nov. 2005 (Envtl. Law Inst.); Michael P. Vandenberg, *Order Without Social Norms: How Personal Norm Activation Can Protect the Environment*, 99 NW. U. L. REV. 1101 (2005).

4. Anne E. Carlson et al., *The Forum: Creating the Carbon-Neutral Citizen*, 24 ENVTL. F. 46, 46 (2007); Michael P. Vandenberg & Anne Steinemann, *The Carbon-Neutral Individual*, 82 N.Y.U. L. REV. 1673 (2007). In defining individual behavior, Vandenberg and Steinemann include emissions from personal motor vehicle use, personal air travel, mass transport, and emissions attributable to household electricity use.

consumption.⁵

In terms of regulatory policy for food, can information production and dissemination lead to consumer-driven environmental improvement leading to fewer toxins in the environment, decreased greenhouse gas emissions, and more sustainable use of natural resources? What labeling schemes and legal policies best support environmentally-friendly food consumption? In my book, *Everyday Environmentalism: Law, Nature and Individual Behavior*, I argue for the creation of more ambitious informational labeling regimes such as “eco-labeling,” product labels evaluating the ecological and carbon footprint of products including foods, and for promoting a more local and organic food system.⁶ This Article expands on this earlier work and considers the role and implementation of eco-labeling in promoting a sustainable food system.

While the entire American food system (e.g., the Farm Bill) requires modification,⁷ and local, organic, non-industrially processed food systems should be promoted, the incremental step of better food labeling is necessary given the dominant industrial food system and emerging industrial organic market. The objective of an eco-label would be to provide consumers with information about the environmental costs of food choices, resulting in changes in consumer preferences and buying practices. Labeling already exists in an attempt to achieve many important goals, but not others. For example, organic labeling is primarily concerned with prohibiting the use of synthetic chemicals, which may result in less risk to consumers from chemicals in their food and may have some environmental benefits such as less risk to wildlife and soil from pesticides. But such labeling does not explicitly say anything about other environmental concerns such as water usage and greenhouse gas emissions. Likewise, carbon footprint labeling does not address ecological concerns beyond greenhouse gas emissions. The objective of any new food eco-label program would be to achieve a broader objective of “sustainable food” that combines many interests—lowering the carbon footprint of food at

5. B. P. WEIDEMA ET. AL, ENVIRONMENTAL IMPROVEMENT POTENTIALS OF MEAT AND DAIRY PRODUCTS 5, 17 (Peter Eder & Luis Delgado eds., 2008).

6. CZARNEZKI, *supra* note 3, at Introduction and Chapter Four (Food).

7. See, e.g., William S. Eubanks, *Paying the Farm Bill: How One Statute Has Radically Degraded the Natural Environment and How a Newfound Emphasis on Sustainability is the Key to Reviving the Ecosystem*, 27 ENVTL. F. 56 (2010).

all stages (agriculture, distribution, and packaging), reducing consumption, supplying healthier food, promoting sustainable agriculture (less resource intensive and less polluting agriculture), and encouraging water and land use efficiency. Food would have to be environmentally evaluated at all stages of its life cycle from creation to disposal.

Organic labeling programs exist, carbon labeling programs are under development, and environmental life-cycle assessments for foods are under consideration. Both the United States and European Union have developed organic food certification and labeling programs. The United States Organic Foods Production Act (OFPA) establishes a national organic certification program in which agricultural products may be labeled as organic if produced and handled without the use of synthetic substances. European Union regulations on organic production and labeling, at least on paper, exhibit a broader and more ambitious model than their United States counterpart. The European Union organic model attempts to offer a holistic paradigm reflecting animal welfare, environmental pollution, and biological diversity, in addition to chemical and synthetic inputs. Carbon footprint labeling is now occurring in the United Kingdom through the Carbon Trust, and many private companies around the world are engaging in environmental labeling. Food might also be labeled through life-cycle analyses that would include consideration of natural resource and chemical inputs starting at the production process or raw extraction stage, and emissions and pollution outputs during the production, distribution and use, and disposal stages.

This Article discusses public and private efforts to inform consumers about environmentally preferable food choices. Part II describes the environmental consequences of the modern food system. Part III describes existing public and private eco-labeling regimes, including organic labeling, carbon footprint labeling, and country of origin labeling.

Sweden, a leader in reducing greenhouse gases, has recently embarked upon an ambitious carbon labeling and dietary information program. Part IV discusses this Swedish "experiment." The Swedish National Food Administration has developed new dietary guidelines, formally proposed to the European Commission, that give equal weight to climate and health. Additionally, Sweden's largest organic certification organizations have embarked upon a program called "Climate Labelling for

Food” that requires food to be both produced organically and using low-emission production to meet certification requirements.

This Article, in light of the ecological impacts of food and European labeling efforts, considers the future of food eco-labeling in the United States. Part V first discusses the merits of creating a national eco-labeling program similar to the Swedish program or other European Union programs, replacing current federal organic food legislation. Second, Part V considers the extent to which an American state could engage in environmental federalism and develop a stringent eco-labeling program that does not run afoul of the existing government regulations about organic labeling under OFPA. Third, it considers the difficulties in developing an eco-label that considers a wider range of environmental assessments than existing organic and climate labeling programs, focusing in particular on the continuing progress of the European Food Sustainable Consumption and Production Round Table. Finally, Part V addresses the challenges to developing an environmental life-cycle eco-label. Absent unlikely federal legislation, a state with a strong reputation for environmental awareness should, within the confines of the national organic certification program, develop a new environmental life-cycle eco-label that considers and conveys to consumers a wider array of environmental information.

II. FOOD AND THE ENVIRONMENT

Food choices contribute to the climate crisis, cause species loss, impair water and air quality, and accelerate land use degradation. For example, “[a]n estimated 25 percent of the emissions produced by people in industrialized nations can be traced to the food they eat.”⁸ The causes of these environmental costs are many—the livestock industry, a processed and meat-heavy diet, agricultural practices like pesticides and fertilization, and fossil-fuel intensive food transportation, factory processing, packaging and large-scale distribution systems. These are traits of the dominant industrial food model. Given the ecological costs of the industrial food system, as well as the growing industrial organic market that also relies on processed and packaged foods and significant transportation costs, eco-labeling is becoming more

8. Elisabeth Rosenthal, *To Cut Global Warming, Swedes Study Their Plates*, N.Y. TIMES, Oct. 23, 2009, at A6.

necessary. This section discusses some major characteristics of the modern food system that contribute to environmental degradation and are relevant to the development of any food eco-labeling program.

A. *Agricultural Practices*

Many growers of plants—fruits, vegetables, beans, nuts, and grains—engage in high-input and non-organic production, employing synthetic pesticides and fertilizers. Chemical use has perhaps the most direct environmental impact of any agricultural practice. A 2006 study by the U.S. Geological Survey released the following findings:

At least one pesticide was detected in water from all streams studied and . . . pesticide compounds were detected throughout most of the year in water from streams with agricultural (97 percent of the time), urban (97 percent), or mixed-land-use watersheds (94 percent). In addition, organochlorine pesticides (such as DDT) and their degradates and by-products were found in fish and bed-sediment samples from most streams in agricultural, urban, and mixed-land-use watersheds—and in more than half the fish from streams with predominantly undeveloped watersheds. Most of the organochlorine pesticides have not been used in the United States since before the [National Water-Quality Assessment] studies began, but their continued presence demonstrates their persistence in the environment.⁹

In 2004, nearly 500 million pounds of pesticides were used in the United States.¹⁰ In 2007, over 22 million tons of inorganic fertilizer (nitrogen, phosphate, and potash) were used in the United States.¹¹ While this amount has remained fairly steady since the mid-1970s (around 20 million tons), this is over triple the amount

9. U.S. GEOLOGICAL SURVEY, PESTICIDES IN THE NATION'S STREAMS AND GROUND WATER, 1992–2001—A SUMMARY (2006), available at <http://pubs.usgs.gov/fs/2006/3028/>.

10. Craig Osteen & Michael Livingston, *Pest Management Practices, in* AGRICULTURAL RESOURCES AND ENVIRONMENTAL INDICATORS 107, 108 (Keith Wiebe & Noel Gollehon eds., 2006), available at <http://www.ers.usda.gov/publications/arei/eib16/Chapter4/4.3/>.

11. U.S. DEPT OF AGRIC., ERS, U.S. FERTILIZER USE AND PRICE, TABLE 1—U.S. CONSUMPTION OF NITROGEN, PHOSPHATE, AND POTASH, 1960–2007 (June 30, 2010), <http://www.ers.usda.gov/Data/FertilizerUse/>.

used in 1960.¹²

Professor Mary Jane Angelo's article, *Corn, Carbon and Conservation: Rethinking U.S. Agricultural Policy in a Changing Global Environment*, contains a thorough discussion of industrial agriculture's impact on the environment.¹³ Chemical inputs, in the form of fertilizers and pesticides, have the potential, through runoff, to pollute groundwater and streams, induce algae blooms and oxygen depletion in waterways, contribute to soil acidification, kill beneficial insects, and potentially poison wildlife and their reproductive systems. Industrial farming techniques such as over-tilling, a lack of crop rotation, inorganic fertilizers, pesticides, and monoculture mine the soil of its natural nutrients, destroy soil biota and its habitat, and increase erosion. In addition, petroleum remains the single most important ingredient in the modern food system, not only used as fuel for transportation and production of food, but also to produce fertilizers and pesticides.

Water resources, in terms of both quantity and quality, are particularly endangered by the industrial food model.¹⁴ For example, corn (perhaps the iconic example of modern commodity-driven agriculture¹⁵) has a very large "water footprint,"¹⁶ and is a pesticide intensive crop.¹⁷ As weeds become more resistant and more toxic pesticides are used,¹⁸ the ecological costs of runoff increase.

When rain or irrigation water comes into contact with farm fields, certain agricultural chemicals, including water soluble pesticides [such as atrazine] and nutrients, such as nitrites found in fertilizers, easily leach into groundwater. This contamination can render groundwater sources of water unacceptable for drinking. Where ground water naturally flows into surface water, such as is

12. *Id.*

13. Mary Jane Angelo, *Corn, Carbon and Conservation: Rethinking U.S. Agricultural Policy in a Changing Global Environment*, 17 GEO. MASON L. REV. 593 (2010).

14. *Id.* at 603 (citing 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, 269-70 (2009)).

15. See, e.g., KING CORN (Mosaic Films 2007); POLLAN, *supra* note 1.

16. Angelo, *supra* note 13, at 604 (citing Adell Amos, *Freshwater Conservation in the Context of Energy and Climate Policy: Assessing Progress and Identifying Challenges in Oregon and the Western United States*, 12 U. DENV. WATER L. REV. 1, 6 (2008)).

17. See, e.g., William Neuman & Andrew Pollack, *Rise of the Superweeds: Herbicide's Wide Use Fosters the Spread of Resistant Pests*, N.Y. TIMES, May 4, 2010, at B1.

18. *Id.*

the case with artesian springs, surfacewaters become contaminated as well Scientific studies demonstrate that agricultural intensification via increased chemical fertilizer and other inputs is directly linked to increased environmental damage. Large quantities of these compounds are carried in rain run-off into waterbodies where they exert their plant growth enhancing effect resulting in overgrowth of algae.¹⁹

In addition to water quality concerns, “[t]he fossil-fuel-intensive inputs required in industrialized agriculture exacerbate the daunting challenge of reducing carbon emissions to stem climate change.”²⁰ Industrial agriculture remains fossil fuel intensive as pesticides, fertilizers, harvesting and tilling machinery, food processing factories, and transportation all use fossil fuels. Agriculture accounts for about 20% of the United States’ fossil fuel consumption as well as 37% of the United States’ and 15% of worldwide greenhouse gas emissions.²¹

B. *The Livestock and Fishing Industries*

Americans raise and kill nearly ten billion animals a year for food, more than 15% of the world’s total (despite accounting for less than 5% of the world’s population).²² The livestock industry has a substantial carbon footprint, contributes to waste runoff and water pollution, and creates potentially harmful ecosystem effects. According to the United Nations Food and Agriculture Organization, meat production accounts for 18% of world’s total greenhouse gas emissions.²³ All transportation forms combined, in contrast, represent 13%.²⁴ In terms of negative environmental impacts caused by personal choice, meat and dairy products are the most greenhouse gas intensive products purchased and contribute to the most environmental impacts.²⁵

19. Angelo, *supra* note 13, at 605-06 (internal citations omitted).

20. *Id.* at 602.

21. *Id.* at 612 (citing William S. Eubanks II, *The Sustainable Farm Bill: A Proposal for Permanent Environmental Change*, 39 ENVTL. L. REP. NEWS & ANALYSIS 10493, 10504, June 2009 (Envtl. Law Inst.)).

22. Mark Bittman, *Rethinking the Meat-Guzzler*, N.Y. TIMES, Jan. 27, 2008, at WK1.

23. FOOD & AGRIC. ORG. OF THE U.N., *Livestock a Major Threat to Environment*, FAO NEWSROOM (Nov. 29, 2009), <http://www.fao.org/newsroom/en/news/2006/1000448/index.html>.

24. Richard Black, *Shun Meat, Says UN Climate Chief*, BBC NEWS, Sept. 7, 2008, <http://news.bbc.co.uk/2/hi/science/nature/7600005.stm>.

25. WEIDEMA, *supra* note 5, at 6 (“The study finds that the consumption of meat

Pasture-fed cattle eat grass, their growth fueled by the sun's energy. Concentrated animal feed operations (CAFOs), however, are now the norm in the modern livestock industry as they produce meat quickly and cheaply. Due to government subsidies, cattle now are fed cheap grain instead of their natural preference of grass.²⁶ Corn feed production uses fertilizer and requires delivery, making animal growth fossil-fueled. Natural inefficiency is coupled with practical inefficiency, compounding the emissions problems, as it takes twenty pounds of grain to produce one pound of beef, four pounds of chicken, or seven pounds of pork.²⁷ Processing plants, making everything from hamburger patties to chicken nuggets, emit greenhouse gases as do the cattle themselves in the form of methane from manure.

Weber and Matthews' findings in *Food-Miles and the Relative Climate Impacts of Food Choices in the United States* illustrate meat's high carbon footprint.²⁸ Shifting one day per week of protein from meat or dairy to vegetables, or even another protein source (fish, chicken, eggs) has the same effect as buying all household food from local providers. A one day per week protein shift from red meat to chicken, fish, or eggs saves the equivalent of 760 miles per year driven, and a one day per week shift to veggies saves 1160 miles per year.²⁹

In addition to the problem of carbon output, the waste stream from CAFOs and processing plants contribute to damaging runoff

and dairy products contributes on average 24% of the environmental impacts from the total final consumption in EU-27, while constituting only 6% of the economic value. . . . The four main product groups (dairy, beef, pork and poultry products) contribute respectively 33-41%, 16-39%, 19-44%, and 5-10% to the impact of meat and dairy products consumption in EU-27 on the different environmental impact categories."'); ØRESUND FOOD NETWORK & ØRESUND ENV'T ACAD., CLIMATE CHANGE AND THE FOOD INDUSTRY: CLIMATE LABELLING FOR FOOD PRODUCTS: POTENTIAL AND LIMITATIONS (Maria Olofsdotter & Jacob Juul, eds. 2008) (citing ARNOLD TUKKER ET AL., ENVIRONMENTAL IMPACT OF PRODUCTS (EIPRO): ANALYSIS OF THE LIFE CYCLE ENVIRONMENTAL IMPACTS RELATED TO THE FINAL CONSUMPTION OF THE EU-25 (2006), http://ec.europa.eu/environment/ipp/pdf/eipro_report.pdf ("Out of 25 top GHG intensive product categories, 52% are related to food production. It was shown that meat, dairy, fats and oils are the most GHG intensive products within the food category. The authors estimated that meat's and meat products' contribution to GWP ranges from about 4 to 12% of all products studied across the EU.")).

26. See, e.g., DANIEL IMHOFF, *FOOD FIGHT: THE CITIZEN'S GUIDE TO A FOOD AND FARM BILL* (2007); POLLAN, *supra* note 1.

27. PAUL ROBERTS, *THE END OF FOOD* 210 (2008).

28. Christopher L. Weber & H. Scott Matthews, *Food-Miles and the Relative Climate Impacts of Food Choices in the United States*, 42 ENVTL. SCI. & TECH. 3508 (2008).

29. *Id.* at 3512-13.

and water pollution. Hogs, chickens, and cows produce mounds of manure, requiring the creation of “poop lagoons” and, like fertilizer, leading to a high nutrient load in runoff. Land simply cannot absorb enough nitrogen and phosphorus, so precipitation washes these nutrients into streams, rivers, and underground aquifers. The nutrients foster the growth of algae, which sucks oxygen from the water and consequently endangers other species.

Fishing practices can also lead to ecological destruction. Monterey Bay Aquarium’s Seafood Watch is well known for developing its pocket guide and rating system for picking sustainable seafood.³⁰ The non-profit aquarium devoted to ocean conservation notes that industrial-scale fishing has led to the decline of fish populations.

By the 1980s, these fishing practices had made it impossible for natural fish stocks to keep up. Seventy percent of the world’s fisheries are now exploited, overexploited or have collapsed. Meanwhile, demand has continued to rise, to about 110 tons in 2006—over eight times what it was in 1950. It’s estimated that by 2030, the world will need an additional 37 million tons of farmed fish per year to maintain current levels of consumption.³¹

Seafood Watch considers the major wild seafood environmental concerns to be overfishing, illegal fishing, habitat destruction, bycatch (i.e., unintended harm to other marine populations), and poor regulation and enforcement.³²

C. Food Processing and Distribution Systems

The large production and distribution systems of modern agriculture and commercial processing are powered by fossil fuels. Thus, the life-cycles of food products have significant carbon footprints. In the United States, food production, from the farm to the store, accounts for 20% of fossil fuel consumption.³³ According

30. MONTEREY BAY AQUARIUM, *Seafood Recommendations*, SEAFOOD WATCH, http://www.montereybayaquarium.org/cr/cr_seafoodwatch/sfw_recommendations.aspx (last visited Nov. 14, 2010).

31. MONTEREY BAY AQUARIUM, *Wild Seafood*, SEAFOOD WATCH, http://www.montereybayaquarium.org/cr/cr_seafoodwatch/issues/wildseafood.aspx (last visited Nov. 14, 2010).

32. *Id.*

33. DAN IMHOFF, PAPER OR PLASTIC: SEARCHING FOR SOLUTIONS TO AN OVERPACKAGED WORLD 102 (2002).

to a study identifying the environmental impact of European consumption conducted for the European Commission, the executive body of the European Union, the “food and drink” category causes 20% to 30% of the various environmental impacts of private consumption.³⁴ In a study of Iowa food production, university researchers found that the “conventional system used four to seventeen times more fuel than the Iowa-based regional and local systems, depending on the system and truck type. The same conventional system released from 5 to 17 times more CO₂ from the burning of this fuel than the Iowa-based regional and local systems.”³⁵ But while there is limited evidence that the carbon footprint of food production is too high and food miles too many, no systemic measurement methodology exists to fully quantify the carbon footprint along food supply chains.³⁶

III. EXISTING ENVIRONMENTAL LABELING REGIMES FOR FOOD

The nature of food labeling has shifted from private marketing and sales efforts to also include public and environmental health. Nutritional labeling began in the United States in 1990 under the Nutrition Labeling and Education Act.³⁷ Under the Organic Foods Production Act of 1990 (OFPA) and the National Organic Program (NOP), the United States government creates production, handling, and labeling standards for organic

34. ØRESUND FOOD NETWORK & ØRESUND ENV'T ACAD., *supra* note 25, at 2 (discussing an analysis that included the full food production and distribution chain ‘from farm to fork’).

35. LEOPOLD CTR. FOR SUSTAINABLE AGRIC., FOOD, FUEL AND FREEWAYS: AN IOWA PERSPECTIVE ON HOW FAR FOOD TRAVELS, FUEL USAGE, AND GREENHOUSE GAS EMISSIONS 1-2 (2001), http://www.leopold.iastate.edu/pubs/staff/ppp/food_mil.pdf (“The *conventional system* represented an integrated retail/wholesale buying system where national sources supply Iowa with produce using large semitrailer trucks. The *Iowa-based regional system* involved a scenario modeled after an existing Iowa-based distribution infrastructure. In this scenario a cooperating network of Iowa farmers would supply produce to Iowa retailers and wholesalers using large semitrailer and midsize trucks. The *local system* represented farmers who market directly to consumers through community supported agriculture (CSA) enterprises and farmers markets, or through institutional markets such as restaurants, hospitals, and conference centers. This system used small light trucks.”).

36. Gareth Edwards-Jones et al., *Testing the Assertion that ‘Local Food is Best’: the Challenges of an Evidence-Based Approach*, 19 TRENDS IN FOOD SCI. & TECH. 265 (2008) (“We conclude that food miles are a poor indicator of the environmental and ethical impacts of food production. Only through combining spatially explicit life cycle assessment with analysis of social issues can the benefits of local food be assessed. This type of analysis is currently lacking for nearly all food chains.”).

37. Nutrition Labeling and Education Act of 1990, 21 U.S.C. § 343 (2010).

agricultural products.³⁸ In January 2009, similar organic product regulations went into effect in the European Union.³⁹ In addition, public and private carbon footprint labeling efforts are being promoted on both sides of the Atlantic. Finally, the United States has enacted “country of origin” labeling legislation that requires retailers to inform consumers about the source of certain foods.⁴⁰ This section describes existing public and private environmental labeling regimes, including organic labeling and carbon footprint labeling. Labeling has become increasingly important for the modern industrial food model which employs large production and processing even within the organic market.

A. Organic Labeling

The organic food market is flourishing. People want chemical-free foods for personal health and environmental reasons. In light of the economic benefits of organic production—organic products sell for much more than conventional ones⁴¹—the modern organic production and distribution system is now dominated by large-scale “industrial organic” or “big organic” producers.⁴² With large scale production, even if organic, comes increased greenhouse gas emissions and questionable agricultural methods. Yet organic production also meets demand for food produced and processed in a chemical free environment. Organic food has almost quadrupled its market share in the last decade,⁴³ and organic food

38. Organic Foods Production Act of 1990, 7 U.S.C. §§ 6501-6523 (2010).

39. Council Regulation 834/2007, The New EU Regulation for Organic Food and Farming, 2007 O.J. (L 189) 1 (EC).

40. AGRIC. MKTG. SERV., *Country of Origin Labeling*, U.S. DEP’T OF AGRIC., available at <http://www.ams.usda.gov/AMSv1.0/Cool> (last visited Nov. 14, 2010).

41. Kate L. Harrison, *Organic Plus: Regulating Beyond the Current Organic Standards*, 25 PACE ENVTL. L. REV. 211, 211 (2008) (citing Tom Philpott, *Up Against the Wal-Mart: Big Buyers Make Organic Farmers Feel Smaller than Ever*, GRIST: ENVTL. NEWS & COMMENTARY (Aug. 23, 2006), <http://grist.org/comments/food/2006/08/23/buyers/> for the proposition that “[t]oday, organic foods command a 20-30% price premium over their conventionally produced counterparts.”).

42. Harrison, *supra* note 41, at 212 (citing James Temple, *The ‘O’ Word: Some Organic Farmers Opt Out of Federal System*, CONTRA COSTA TIMES, Oct. 29, 2006, at 6B; HighJump Software, EARTHBOUND FARM GAINS EFFICIENCIES WITH SUPPLY CHAIN EXECUTION SOLUTIONS FROM HIGHJUMP SOFTWARE, (June 14, 2005), <http://www.highjumpsoftware.com/about/news/press/PR20050614-Earthbound.asp>).

43. ORGANIC TRADE ASS’N, EXECUTIVE SUMMARY, ORGANIC TRADE ASSOCIATION’S 2007 MANUFACTURER SURVEY (2007), <http://www.ota.com/pics/documents/2007ExecutiveSummary.pdf> (stating that organic food sales accounted for 0.8% of total food sales in 1997, and 2.8% in 2006).

sales have grown from \$1 billion in 1990 to over \$20 billion today.⁴⁴ But all of this may not have happened without a regulatory model creating a value-added food label like “organic.”

1. *The United States Organic Foods Production Act & National Organic Program.*

Under the Organic Foods Production Act (OFPA) and the National Organic Program (NOP), the United States government creates production, handling, and labeling standards for organic agricultural products. Individuals buy organic products to promote sustainable and chemical-free agriculture, keep their bodies healthy and free of synthetics and pesticides, and protect animal welfare.⁴⁵ OFPA establishes a national organic certification program where agricultural products may be labeled as organic if produced and handled without the use of synthetic substances.⁴⁶ The program prohibits using synthetic fertilizers, growth hormones and antibiotics in livestock, and adding synthetic ingredients during processing.⁴⁷

Agricultural practices must follow an organic plan approved by an accredited certifying agent and the producer and handler of the product.⁴⁸ OFPA creates process-based standards but does not implement standards or require tests for actual chemical content in food, nor assessment of overall land use practices. Thus, “certified organic” labeling informs consumers about the food production process, but does not directly describe food quality or environmental considerations, though organic food is still likely to have fewer chemicals than conventional counterparts.⁴⁹

44. ORGANIC TRADE ASS'N, THE ORGANIC INDUSTRY, <http://www.ota.com/pics/documents/Mini%20fact%201-08%20confirming.pdf>.

45. Gemma C. Harper & Aikaterini Makatouni, *Consumer Perception of Organic Food Production and Farm Animal Welfare*, 104 BRITISH FOOD J. 287 (2002).

46. Organic Foods Production Act, 7 U.S.C. § 6504(1)-(3) (2010).

47. §§ 6508(b)(1), 6509(c)(3), 6510.

48. §§ 6504-6505.

49. Michelle T. Friedland, *You Call That Organic?—The USDA's Misleading Food Regulations*, 13 N.Y.U. ENVTL. L.J. 379, 398-99 (2005). However, Friedland notes that:

Because food produced in accordance with the NOP regulations will not be intentionally sprayed with pesticides or intentionally grown or raised using genetically engineered seed or other inputs, the likelihood of the presence of pesticide residue or genetically engineered content will clearly be lower than in foods intentionally produced with pesticides and genetic engineering techniques. But organic food will not be free of such

The NOP, created under OFPA, establishes a four-tiered labeling system for organic foods.⁵⁰ First, a product can be labeled “100 percent organic” and carry the United States Department of Agriculture and certifying agent seals if it contains 100% organically produced ingredients as defined by OFPA as free from synthetic substances.⁵¹ Second, a product must contain at least 95% organic ingredients to be labeled simply “organic” and use the USDA and private certifying agent seals.⁵² Third, a product with at least 70% organically produced ingredients can be labeled “made with organic ingredients” and carry the seal of a private certifying agent.⁵³ For products containing less than 70% organic ingredients, organic ingredients may be listed on label, but neither the word “organic” nor any seal can be used.

Small farmers who gross less than \$5,000 annually and only sell directly to consumers via farmers markets and family farm stands can avoid the certification process by simply signing a declaration of compliance that their practices meet organic standards.⁵⁴ However, if these farmers sell any of their products through conventional distribution channels, they may not use the term “certified organic” on products without also obtaining official certification, a process that can be expensive and time-consuming.⁵⁵

contamination. Evidence clearly indicates that both pesticides and genetically engineered plant materials often drift beyond their intended applications, and organic food, like any food, may be accidentally contaminated.

Id.

50. 7 C.F.R. § 205.301 (2010). In addition to looking for “organic” labeled foods, consumers can look at five-digit PLU codes. Organic foods all start with 9.

51. *Id.* §§ 205.301(a), 205.303. OFPA defines “synthetic” as “a substance that is formulated or manufactured by a chemical process or by a process that chemically changes a substance extracted from naturally occurring plant, animal, or mineral sources, except that such term shall not apply to substances created by natural occurring biological processes.” 7 U.S.C. § 6502(12).

52. 7 C.F.R. §§ 205.301(b), 205.303.

53. *Id.* § 205.301(c).

54. Harrison, *supra* note 41, at 219 (citing Andrew J. Nicholas, *As the Organic Industry Gets Its House in Order, the Time Has Come for National Standards on Genetically Modified Foods*, 15 LOY. CONSUMER L. REV. 277, 285 (2003)).

55. *Id.*

2. *The European Union Organic Program.*

Like the United States, the European Union has established organic product legislation detailing production rules for plants, livestock and processed products, their labeling and control, and import rules.⁵⁶ Compliance with European Union organic farming regulations permits display of the European Union's own organic food logo. The European Union regulations on organic production and labeling, at least on their face, exhibit a broader and more ambitious model than their United States counterpart.⁵⁷ The European Union organic model attempts to offer a more holistic paradigm considering animal welfare, environmental pollution, biological diversity, and renewable energy, in addition to chemical and synthetic inputs. According to the European Commission website:

The goal of this new legal framework is to set a new course for the continued development of organic farming. Sustainable cultivation systems and a variety of high-quality products are the aim. In this process, even greater emphasis is to be placed in future on environmental protection, biodiversity and high standards of animal protection. Organic production must respect natural systems and cycles. Sustainable production should be

56. Commission Regulation 889/2008, 2008 O.J. (L 250) 1 (EC), http://ec.europa.eu/agriculture/organic/eu-policy/legislation_en (last visited Nov. 14, 2010) (laying down detailed rules for the implementation of Council Regulation 834/2007, 2007 O.J. (L 189) 1 (EC), on organic production and labeling of organic products with regard to organic production, labeling and control); Commission Regulation 1254/2008, 2008 O.J. (L 337) 1 (EC) (amending Commission Regulation 889/2008, 2008 O.J. (L 250) 1 (EC), and laying down detailed rules for implementation of Council Regulation 834/2007, 2007 O.J. (L 189) 1 (EC), on organic production and labeling of organic products with regard to organic production, labeling and control); INT'L FED'N OF ORGANIC AGRIC. MOVEMENTS EU GROUP, THE NEW EU REGULATION FOR ORGANIC FOOD AND FARMING 14 (2007), <http://www.ifoam-eu.org> (last visited Nov. 14, 2010) ("The major part of the revision of the EU regulatory framework for organic farming is now finished. The agreement reached in the Council in 2007 led to the publication of Council Regulation (EC) No. 834/2007 in the Official Journal of July 20, 2007. Since then, it has been completed with two sets of implementing rules in 2008: Commission Regulation (EC) No. 889/2008 on detailed production rules for plants, livestock and processed products including yeast, and their labeling and control, and Commission Regulation (EC) No. 1235/2008 on detailed rules for imports."); EUROPEAN COMMISSION, ORGANIC FARMING, LEGISLATION, http://ec.europa.eu/agriculture/organic/eu-policy/legislation_en (last visited Nov. 14, 2010).

57. Council Regulation 834/2007, On Organic Production and Labelling of Organic Products and Repealing Regulation (EC) No. 2092/91, 2007 O.J. (L 189) 1 (EC).

achieved insofar as possible with the help of biological and mechanical production processes, through land-related production and without the use [*sic*] genetically modified organisms.⁵⁸

As a result, the Europeans are ahead of the curve in terms of food labeling and production. For example, egg labeling is compulsory. All eggs produced in the European Union must be stamped with a code to show whether they arrive from a free-range environment, a barn, or a caged battery, and egg packing must indicate the method of production.⁵⁹

Like the American counterpart, European foods can only be labeled “organic” and carry the European Union organic logo if at least 95% of their agricultural ingredients are organic.⁶⁰ Similarly, non-organic food may be listed as organic in the list of ingredients, and genetically modified organisms are prohibited in organic production.⁶¹

B. Carbon Footprint Labeling

Michael Pollan wrote, “[t]he way we feed ourselves contributes more greenhouse gases to the atmosphere than anything else we do – as much as 37 percent, according to one study.”⁶² When buying a food product, in addition to wanting to know if the production process was chemically intensive, a consumer may wish to know the carbon footprint of the product. Food can be energy intensive given factory processing and distribution methods powered by fossil fuels (also known as “food miles”).

Therefore, the impetus for carbon labels is that by providing consumers with information about the carbon content of a product, they will be able to make informed decisions about the

58. EUROPEAN COMMISSION, ORGANIC FARMING, LEGISLATION, http://ec.europa.eu/agriculture/organic/eu-policy/legislation_en (last visited Nov. 14, 2010).

59. Council Regulation 2052/2003, Amending Regulation (EEC) No. 1907/90 on Certain Marketing Standards for Eggs, 2003 O.J. (L 305) 1 (EC).

60. EUROPEAN COMMISSION, ORGANIC FARMING, LEGISLATION, http://ec.europa.eu/agriculture/organic/eu-policy/legislation_en (last visited Nov. 14, 2010); Council Regulation 834/2007, The New EU Regulation for Organic Food and Farming, 2007 O.J. (L 189) 1 (EC).

61. EUROPEAN COMMISSION, ORGANIC FARMING, LEGISLATION, http://ec.europa.eu/agriculture/organic/eu-policy/legislation_en (last visited Nov. 14, 2010).

62. Michael Pollan, *Farmer in Chief*, N.Y. TIMES MAG., Oct. 12, 2008, at MM62.

goods they purchase and ultimately choose products with a smaller carbon footprint, and therefore less carbon emissions. This will decrease carbon footprints from individuals and consequently lead to a reduction in carbon emissions worldwide.⁶³

Carbon input data into production is generated through life-cycle analyses based on individual data, national averages, or a hybrid of the two.⁶⁴ The goal of such information generation, and ultimately labeling, is to allow consumers to pick more environmentally-friendly purchases and encourage manufacturers to reduce the environmental impact resulting from the good's production.⁶⁵

Carbon labeling is gaining traction both through governmental implementation and through private industry seeking to tap into new consumer markets. Carbon footprint information is not only being conveyed on food, but on other goods as well. For example, in the United States, both California and New York have developed carbon emission labeling for new motor vehicles.⁶⁶ California has now gone further in proposing a voluntary carbon labeling program aimed at standardizing the labeling of life-cycle carbon footprints for products sold in the state.⁶⁷

Despite movement in the United States, European countries, and Great Britain in particular, are leading the way on carbon labeling. The Carbon Trust was created by the British government in 2001 as an independent company tasked with accelerating the move to a low carbon economy,⁶⁸ and its standard for measuring carbon labeling (known as PAS 2050) has since developed into the industry norm.⁶⁹

63. Stacey R. O'Neill, *Consuming for the Environment: A Proposal for Carbon Labels in the United States*, 39 CAL. W. INT'L L.J. 393, 396 (2009).

64. *Id.* at 403-04.

65. *Id.* at 401.

66. See CAL. HEALTH & SAFETY CODE § 43200.1 (2010); N.Y. ENVTL. CONSERV. LAW § 19-1103 (2010).

67. O'Neill, *supra* note 63, at 397, 431 (citing Carbon Labeling Act of 2009, CAL. HEALTH & SAFETY CODE § 44570 (2010)).

68. THE CARBON TRUST, <http://www.carbon-label.com/index.htm> (last visited Nov. 14, 2010).

69. Using a cradle-to-grave life-cycle analysis, under the Carbon Trust methodology all GHG emissions should be measured and then converted in carbon dioxide equivalent emissions using 100 year global warming potential (GWP) coefficients. See also *PAS 2050 – Assessing the Life Cycle Greenhouse Gas Emissions of Goods and Services*, BRITISH STANDARDS INSTITUTE, (2009), <http://www.bsigroup.com/upload/Standards%20&%20>

The Carbon Trust Footprinting Company helps individuals and companies, including food and drink producers, effectively use and communicate carbon emissions information. The company's most recognizable achievement is the creation of the "Carbon Reduction Label"—a black footprint with "CO₂" written on it along with the number of grams or kilograms of total greenhouse gas emissions emitted at every stage of the product's life-cycle, including production, transportation, preparation, use and disposal.⁷⁰

In addition to publicly supported carbon information programs, private companies, both for-profits and non-profits, are exploring environmental carbon labeling options. "[L]abeling may occur through inclusion of greenhouse gas emissions-disclosure requirements in existing labels or new labels managed by private standard-setting organizations, or through unilateral action by firms."⁷¹ For example, Home Depot uses an "Eco Options" label⁷² and Timberland footwear displays a "nutritional label" that lists climate impact, chemicals used, and resource consumption.⁷³ Within the food industry, British supermarkets have taken the lead. The chain Tesco announced that it will begin labeling all 70,000 of its products with the quantity, in grams of carbon dioxide equivalent, emitted into the atmosphere through their manufacture and distribution.⁷⁴ In the private, business-like regulatory context, Sweden is once again at the forefront of advocating ecological awareness. "Max, Sweden's largest homegrown chain of burger restaurants, now puts emissions calculations next to each item on its menu boards. Lantmannen, Sweden's largest farming group, has begun placing precise labels

Publications/Energy/PAS2050.pdf.

70. THE CARBON TRUST, <http://www.carbon-label.com/business/label.htm> (last visited Nov. 14, 2010).

71. Michael P. Vandenberg, *Climate Change: The China Problem*, 81 S. CAL. L. REV. 905, 949 (2008).

72. THE HOME DEPOT, <http://www6.homedepot.com/ecoptions/index.html> (last visited Nov. 14, 2010).

73. *Grading Our Products: Timberland's Green Index® Program*, TIMBERLAND, (2009), http://www.timberland.com/graphics/media/tbl/Timberlands_Green_Index_Program_2009_report.pdf. See also Amy Cortese, *Friend of Nature? Let's See Those Shoes*, N.Y. TIMES, Mar. 6, 2007, <http://www.nytimes.com/2007/03/06/business/businessspecial2/07label-sub.html?r=2>.

74. Julia Finch, *Tesco labels will show products' carbon footprints*, THE GUARDIAN, Apr. 16, 2008, <http://www.guardian.co.uk/environment/2008/apr/16/carbonfootprints.tesco>.

on some categories of foods in grocery stores, including chicken, oatmeal, barley and pasta.”⁷⁵

In the non-profit sector, U.S. non-profits like the Carbon Fund have created the “Certified Carbon Free” label, and California’s Climate Conservancy has developed the “Carbon Conscious” label.⁷⁶ Additionally, the Carbon Trust has set up a U.S. office. Such diffusion of label types and objectives suggests that a single government-sponsored eco-label may be the most attractive option.

C. Country of Origin Labeling and Other Food Labels

Country of origin labeling (COOL) requires that a food product inform consumers of its source location.⁷⁷ While the underlying rationale for COOL in the United States is improving the safety of foreign goods and economic protectionism for domestic products,⁷⁸ COOL also allows consumers to choose food products originating closer to their own market, and thus with a lower carbon footprint (i.e., lower food miles). Also, COOL may implicitly provide information to buyers because educated consumers may know, for example, whether produce was grown out of season in a greenhouse or came from an unsustainable fishery based on its source country. COOL requirements were enacted in American law under the Farm Security and Rural Investment Act of 2002 (better known as the 2002 Farm Bill)⁷⁹ and its implementing regulations,⁸⁰ as well as the Food, Conservation and Energy Act of 2008 (the 2008 Farm Bill).⁸¹

Despite objections to COOL by powerful producers and retailers, the idea had much support from consumer and product safety organizations.⁸² Under the American COOL law, retailers,

75. Rosenthal, *supra* note 8.

76. THE CARBON FUND, <http://www.carbonfund.org/> (last visited Nov. 14, 2010); THE CLIMATE CONSERVANCY, <http://www.climateconservancy.org/index.php> (last visited Nov. 14, 2010).

77. For discussions of COOL, see Peter Chang, *Country of Origin Labeling: History and Public Choice Theory*, 64 FOOD & DRUG L.J. 693, 702 (2009); Anastasia Lewandoski, *Legislative Update: Country-of-Origin Labeling*, 9 SUSTAINABLE DEV. L. & POL’Y 62 (2008).

78. Chang, *supra* note 77, at 693.

79. See Farm Security and Rural Investment Act of 2002, Pub. L. No. 107-71, 116 Stat. 134, 533 (codified as amended at 7 U.S.C. § 1638 (2010)).

80. See 7 C.F.R. §§ 60, 65 (2010).

81. Food, Conservation and Energy Act of 2008, Pub. L. 110-234, § 11002, 122 Stat. 923, 1352-1354 (2008).

82. Chang, *supra* note 77, at 702.

such as grocery stores, supermarkets, and club warehouse stores, must provide customers with information regarding the source of certain foods.⁸³ Food products subject to the legislation include cut and ground meats (beef, veal, pork, lamb, goat, and chicken), wild and farm-raised fish and shellfish, fresh and frozen fruits and vegetables, nuts (peanuts, pecans, and macadamia nuts), and ginseng.⁸⁴ In addition, future expansion of COOL legislation may seek to require all food labels to identify the country of final processing or mandate that manufacturers' websites identify each ingredient's country (or countries) of origin.⁸⁵

In addition to organic, carbon footprint, and country of origin labeling, other private food labeling schemes inform consumers about the ecological consequences of their purchases. The purpose of these labels is to make consumers aware that they are making an environmentally friendly choice. Food sector businesses often seek to show such labels on their products since consumers may be willing to pay more for "green" food items. For example, the "Bird Friendly" label, created by the Smithsonian Migratory Bird Center, identifies shade grown and organic coffee that protects bird habitat.⁸⁶ Also, the blue Marine Stewardship Council label certifies sustainable fisheries and seafood businesses.⁸⁷ Similarly, co-op grocers often display and sell food with labels such as "localvore region" (grown or produced within the same geographic area of the store, often within 100 miles) and "locally grown" (made within the same geographic area as the store). There is no shortage of environmental labels for food. *Consumer Reports*, in its Greener Choices website, evaluated 78 labels for food alone, mostly state organic certification logos.⁸⁸

83. AGRIC. MKTG. SERV., COUNTRY OF ORIGIN LABELING, U.S. DEP'T. OF AGRIC. <http://www.ams.usda.gov/AMSv1.0/Cool> (last visited Nov. 14, 2010).

84. *Id.* See also 7 C.F.R. §§ 60, 65 (2010).

85. See Chang, *supra* note 77, at 713 (citing Draft Bill, Food and Drug Globalization Act of 2009, H.R. 759, 111th Cong. (2009)).

86. See MIGRATORY BIRD CTR., <http://nationalzoo.si.edu/scbi/MigratoryBirds/default.cfm> (last visited Nov. 14, 2010).

87. See MARINE STEWARDSHIP COUNCIL, <http://www.msc.org/get-certified> (last visited Nov. 14, 2010).

88. See CONSUMER REPORTS, *Greener Choices: Products for a Better Planet*, <http://www.greenerchoices.org/ecolabels/productArea.cfm?ProductCategoryID=174&ProductAreaID=1&showAll=1> (last visited Nov. 14, 2010).

IV. THE SWEDISH EXPERIMENT

In Sweden, new labels listing the carbon dioxide emissions associated with food production are appearing on grocery items and restaurant menus around the country. On October 23, 2009, the *New York Times* ran an article entitled “*To Cut Global Warming, Swedes Study Their Plates*,”⁸⁹ that refers to the Swedish efforts as a “new experiment.”⁹⁰ This Swedish experiment is driven by two major events: (1) the creation of new national dietary guidelines, and (2) the major organic labels in Sweden embarking on a new initiative called “Klimatmärkning för Mat,” or, in English, “Climate Labelling for Food.”⁹¹

Sweden’s national recommended dietary guidelines aim to give equal weight to climate impacts and public health.⁹² Scandinavia’s organic certification program will begin requiring farmers to convert to low-emissions techniques if they want to display the organic seal.⁹³ “The Swedish effort grew out of a 2005 study by Sweden’s national environmental agency on how personal consumption generates emissions. Researchers found that 25 percent of national per capita emissions—two metric tons per year—was attributable to eating.”⁹⁴ Sweden has proved to be a leader in greenhouse gas emission reductions, and the United States may learn from its efforts.

A. *New Swedish Dietary Guidelines*

The Sweden National Food Administration (SNFA), in collaboration with the Swedish Environmental Protection Agency and based on a scientific assessment published by the Swedish University of Agricultural Sciences, has developed dietary food guidelines that account for and balance health and environmental impacts.⁹⁵ This is a unique approach. Ulf Bohman, Head of the Nutrition Department at the SNFA, said “[w]e’re used to thinking about safety and nutrition as one thing and environmental as

89. Rosenthal, *supra* note 8.

90. *Id.* at 3.

91. Note that the word “labeling” is spelled “labelling” in Europe.

92. Rosenthal, *supra* note 8, ¶ 5.

93. *Id.* ¶ 20.

94. *Id.* ¶ 11.

95. See SWED. NAT’L FOOD ADMIN., THE NATIONAL FOOD ADMINISTRATION’S ENVIRONMENTALLY EFFECTIVE FOOD CHOICES (2009), http://www.slv.se/upload/dokument/miljo/environmentally_effective_food_choices_proposal_eu_2009.pdf.

another.”⁹⁶ If the new food guidelines are religiously heeded, Sweden may cut its emissions from food production by as much as 20 to 50 percent.”⁹⁷

Sweden has notified the European Union of its new dietary guidelines,⁹⁸ and similar concerns about the relationship between diet and the environment have been raised by the European Commission.⁹⁹ As seen in Table 1, the new Swedish guidelines divide dietary choices into six categories and suggest ways to change eating behaviors within each category to promote personal health and a sustainable environment. The six categories are (1) meat including beef, lamb, pork and chicken, (2) fish and shellfish, (3) fruits and berries, vegetables and leguminous plants, (4) potatoes, cereal products and rice, (5) cooking fat, and (6) water.¹⁰⁰

Table 1: Swedish Dietary Guidelines Food Categories and Recommendations¹⁰¹

Food Categories	Recommendations
Meat including beef, lamb, pork and chicken	Eat less and reduce portion size. Eat locally produced and grass-fed meat.
Fish and shellfish	Choose from stable stocks. Pick seafood with existing eco-labels.
Fruits and berries, vegetables and leguminous plants	Choose seasonal and locally grown fruits and vegetables. Pick organic and pesticide-free fruits, berries, and vegetables. Choose fiber-rich vegetables. Eat beans, lentils and peas. Store fruits and vegetables properly.

96. Rosenthal, *supra* note 8, ¶ 5.

97. *Id.* ¶ 11.

98. The European Union was notified pursuant to and in accordance with procedure established by Directive 98/34/ (EC) of the European Parliament and the Council of 22 June 1998. *See* SWED. NAT'L FOOD ADMIN., *supra* note 95.

99. *See* ARNOLD TUKKER, ET AL., ENVIRONMENTAL IMPACTS OF DIET CHANGES IN THE EU: ANNEX REPORT (JRC Eur. Comm'n 2009), http://ftp.jrc.es/EURdoc/EURdoc/EURdoc/JRC50544_Annex1.pdf.

100. SWED. NAT'L FOOD ADMIN., *supra* note 95.

101. *Id.*

Potatoes, cereal products and rice	Choose locally grown potatoes and cereal products. Reduce rice consumption in favor of other grains.
Cooking fat	Choose rapeseed oil or olive oil. Reduce use of palm oil.
Water	Choose tap water whenever possible. Choose locally produced packaged water if necessary.

These recommendations have been suggested for a whole host of environmental reasons in addition to acknowledged health benefits. For example, the guidelines account for the high climate impact of beef due to methane released in cattle digestion, the depletion of many fish stocks, the energy-heavy refrigerated transport required for delicate fruits and vegetables, the fact that fiber-rich root vegetables are more likely to be grown outdoors than in greenhouses requiring fossil fuels, that water-soaked rice fields produce more greenhouse gases than potato farms, that oil palms are often cultivated on former rainforest lands, and even the high carbon footprint of plastic water bottles.¹⁰²

The new Swedish dietary guidelines will potentially impact food-related programs under the jurisdiction of the National Food Administration including school lunch programs, national nutrition recommendations, and nutritional labeling. In addition to disseminating its new dietary guidelines, Sweden is simultaneously pursuing labeling efforts that would directly provide consumers with information about the environmental costs, and carbon footprints in particular, of their food purchases.

B. *Klimatmärkning för Mat = Climate Labeling for Food*

Swedish food certification organizations KRAV and Swedish Seal (Svenskt Sigill in Swedish) are developing a label for climate-friendly products under a program called “Klimatmärkning För Mat” (KFM) or “Climate Labelling For Food” in English.¹⁰³ KRAV in particular has long been the key player in the Swedish organic market.¹⁰⁴ Until recently, it was difficult to market organic

102. See SWED. NAT’L FOOD ADMIN. *supra* note 95.

103. ØRESUND FOOD NETWORK & ØRESUND ENV’T ACAD., *supra* note 25.

104. U.S. DEP’T OF AGRIC. FOREIGN AGRIC. SERV., FOOD AND AGRICULTURAL IMPORT

products in Sweden without the KRAV label, and KRAV remains the dominant domestic organic label.¹⁰⁵ Both KRAV and Swedish Seal had for some time held internal discussion about incorporating climate labeling, also known as carbon footprint labeling, into their certification systems.¹⁰⁶ In 2007, the two parties decided to begin cooperation around producing standards for climate labeling, and were joined in the project by key industry groups and food producers. The Swedish Board of Agriculture also took part as a co-opted member by contributing its expertise.¹⁰⁷ Fortunately, large Swedish retail chains have come to an agreement not to use climate marking as a competitive weapon amongst themselves, but rather to cooperate to avoid multiple labels, end any risk of customer confusion, and pool label development and research resources.¹⁰⁸ Thus, what is appearing to develop, undergirded by the new dietary guidelines, is a comprehensive, country-wide dietary and labeling scheme that incorporates public health, chemical-free foods, and environmental health through lower greenhouse gas emissions.

What does this mean in practice? It means that Sweden's primary organic certification programs, like KRAV, will require farmers and producers to convert to low emission production and processing in order to display their seal. It means that farmers seeking to stay certified may need to change their agricultural practices. For example, foods transported by air will not be eligible for the more stringent label.¹⁰⁹ Imagine the formerly organic tomato produced in a hot house. That tomato could no longer receive the Swedish label since, while it would be produced without synthetic or chemical inputs, the growing environment (i.e., the greenhouse and its lights) likely would be powered by

REGULATIONS AND STANDARDS—NARRATIVE, FAIRS COUNTRY REPORT: SWEDEN 4 (2009), http://gain.fas.usda.gov/Recent%20GAIN%20Publications/Food%20and%20Agricultural%20Import%20Regulations%20and%20Standards%20-%20Narrative_Brussels%20USEU_EU-27_8-7-2009.pdf.

105. *Id.*

106. CLIMATE LABELLING FOR FOOD, PROJECT DESCRIPTION FOR THE PROJECT: STANDARDS FOR CLIMATE MARKING OF FOODS VERSION NO 2.3 1 (2009) [hereinafter "CLIMATE LABELLING 1"].

107. *Id.*

108. *Id.*

109. See ØRESUND FOOD NETWORK & ØRESUND ENV'T ACAD., *supra* note 25, at 12 ("According to Johan Cejje, Head of Standards Development (regelutvecklingschef) at KRAV, products transported by air will not be eligible to be awarded with this label (Local Tidningen, 2007).").

fossil fuels.¹¹⁰ The same could be said for an “organic” apple flown in from New Zealand.¹¹¹

How are standards for climate labeling for food created? According to the KFM initiative, there are basically two available options.¹¹² The first approach is to calculate exact emissions per product based on life cycle analysis measuring total carbon emissions from production to distribution to use to disposal. The KFM project has concluded that such exact calculations, because they would require extensive knowledge about individual product history and continuous updates due to changes in the production methods and modified emission factors, would be prohibitively time consuming and expensive to develop at this time.¹¹³ Despite these difficulties, the ecological and consumer choice advantages of a life-cycle analysis for food are strong and are currently being evaluated by the European Union through its European Food Sustainable Consumption and Production Roundtable, as discussed in Part V below.

The second approach, according to KFM, is to use existing knowledge to create general standards based on conclusions of assembled knowledge.¹¹⁴ For example, certain factors have large carbon impact: use of concentrates based on soy protein, high consumption of fossil fuels, and production of nitrous oxides for artificial fertilizer.¹¹⁵ Using assumptions based on the environmental harm caused by such factors, the hope is that initial standards can be produced quickly and simply in a way that can be developed and refined over time.¹¹⁶ The KFM process can be thought of as creating first and second generations of climate

110. Rosenthal, *supra* note 8, at ¶ 20.

111. See ØRESUND FOOD NETWORK & ØRESUND ENV'T ACAD., *supra* note 25, at 12.

112. For discussion of standard setting techniques, see CLIMATE LABELLING FOR FOOD, PROJECT DESCRIPTION: STANDARDS FOR CLIMATE LABEL FOR FOOD VERSION NO 2009:1 1 (2009), <http://www.klimatmarkningen.se/wp-content/uploads/2009/02/project-description-english.pdf> [hereinafter “CLIMATE LABELLING 2”]. See also CLIMATE LABELLING 1, *supra* note 106, at 1.

113. CLIMATE LABELLING 1, *supra* note 106, at 3 (“Another difficulty is that the climate impact of the product varies throughout the season. The message to the consumers is also unclear because different products are not directly comparable from a nutritional point of view. However, it shall be stressed that the heaviest workload is at the initial stages, for when an LCA analysis is made it is easy to change individual factors and produce analyses for several farms.”).

114. *Id.* at 3.

115. *Id.*

116. *Id.*

standards: “[a] first one that is simpler and includes identified activities that have a large climate impact, to be followed by a second version where we can specify the climate impact of every product.”¹¹⁷

KFM has already created detailed labeling rules for some foods. In addition to organic certification, it provides a labeling system that incorporates greenhouse gas emissions. In an effort to merge with other eco-labeling interests, KFM rules require that users of the new labeling system hold another quality certificate related to environmental protection, animal welfare, or social welfare.¹¹⁸ According to KFM standards, the criteria for achieving the label “shall cover production from the manufacturing of production means to shop’s loading bay, including distribution from the farm gates to the shop’s loading bay.”¹¹⁹

To date, KFM has created rules for the categories of general farm activities, crop production, milk production, greenhouses, and fisheries. As seen in Table 2 below, the KFM rules tap into a number of areas for which standards have been created in an effort to lessen the carbon footprint.

Table 2: Current “Climate Labelling for Food” (KFM) Rule Categories and Areas of Interest¹²⁰

Categories	Areas
General farm activities	Energy consumption on the farm Storage of food and use of refrigerants Transport operations and use of machines within the farm and when selling products Cultivation of organogenic soils
Crop production	Nitrogen flows Use of manure Fertilizers Feed production

117. *Id.*

118. CLIMATE LABELLING FOR FOOD, STANDARD FOR REDUCING CLIMATE IMPACT IN THE PRODUCTION AND DISTRIBUTION OF FOOD VERSION 2009:1 (2009), <http://www.klimatmarkningen.se/wp-content/uploads/2009/02/climate-labelling-for-food-2009-1.pdf> [hereinafter “CLIMATE LABELLING 3”].

119. *Id.* at 2.

120. *Id.* at 1.

	Crop rotation
Milk production	Animal health
	Fodder
	Handling manure
Greenhouses	Energy consumption
	Use of refrigerants
	Transport operations and use of machines within the business and when selling products
Fisheries	Fish stocks; fuel demand

In order to make them eligible to receive the KFM label, future rules are planned for pork, beef and chicken production, egg production, fish production, processed products, packaging, rules for imported products, and general transportation rules.¹²¹

With such a diverse array of environmental standards and with agreement among third-party certification labelers like KRAV and Swedish Seal, as well as the food industry and government, the hope is that the label can be used by several standard owners and certification bodies. KFM's stated objective in creating its label is to "reduce climate impact by creating a marking system for food where the consumers make a conscious climate choice and businesses can strengthen their competitiveness."¹²²

As is often the case, the response to the Swedish dietary guidelines and KFM labeling has not been universally positive, eliciting especially harsh criticism from some types of food producers. For example, the dietary guidelines have been attacked by Europe's meat industry, Norwegian salmon farmers, and Malaysian palm oil growers.¹²³ Similarly, many farmers are not happy since greenhouse produce will lose its organic label, and, for example, farmers with high concentrations of peat soil on their property may no longer be able to grow carrots, since plowing peat releases huge amounts of carbon dioxide.¹²⁴ As with many other labeling systems, there are criticisms that labels will be ignored or improperly used by consumers, and that product comparison remains difficult. On the other hand, the KRAV initiative provides

121. *Id.* at 2.

122. CLIMATE LABELLING 1, *supra* note 106, at 4.

123. Rosenthal, *supra* note 8, at ¶ 18.

124. *Id.*

a consistent labeling regime, and it should make buyers more aware of their general ecological footprint.

V. ENVIRONMENTAL FEDERALISM: A LIFE-CYCLE ECO-LABEL FOR FOOD

The term "environmental federalism" refers to the ability of states to establish more rigorous or creative environmental protection legislation than that of the national government.¹²⁵ This idea is not new. In his dissenting opinion in *New State Ice Co. v. Liebmann*, Justice Brandeis stated, "[i]t is one of the happy incidents of the federal system that a single courageous State may, if its citizens choose, serve as a laboratory; and try novel social and economic experiments without risk to the rest of the country."¹²⁶ Like Sweden, an individual American state should similarly take on such an experiment to establish a comprehensive, creative, and rigorous eco-labeling scheme for food.

The goal behind a state-sponsored voluntary eco-labeling program would be to test an eco-labeling model that merges and moves beyond existing organic, carbon footprint, and country-of-origin labeling.¹²⁷ Such an eco-label would engage in environmental life-cycle analysis from production to use to distribution, in an effort to provide consumers with information about the production's overall ecological footprint. This information is necessary given the existing industrial food market, where large-scale production, chemical usage, and significant transportation miles are the norm. Consumers then can choose products which, in the aggregate, are more likely to have been produced closer to point-of-purchase, have fewer chemical and synthetic additives, require fewer greenhouse gases in production and processing, and were produced more sustainably in terms of water usage and land degradation.

While some scholars have made the very commendable suggestion that an "organic plus" model should be pursued,

125. See generally Robert V. Percival, *Environmental Federalism: Historical Roots and Contemporary Models*, 54 MD. L. REV. 1141 (1995).

126. *New State Ice Co. v. Liebmann*, 285 U.S. 262, 311 (1932) (Brandeis, J., dissenting).

127. *Contra* O'Neill, *supra* note 63, at 432 ("However, in a nation where interstate commerce is at the core of our economy and a world where the international marketplace is prominent, such a small, state-based policy is far too limited in scope.").

merging organic labeling with a local or carbon label,¹²⁸ an even more holistic and wholesale change is needed in the form of environmental life-cycle analysis.¹²⁹ The current organic label in the United States is insufficient because it does not give consumers the opportunity to make distinctions between different kinds of organic products (e.g., the carbon footprint of eggs versus beef, or processed organic snacks versus raw organic produce).¹³⁰ The objective of any proposed new food eco-label program should have the broader objective of “sustainable food” that combines multiple interests—lowering the carbon footprint of food at all stages (agriculture, distribution, and packaging); reducing consumption; supplying healthier food; promoting sustainable agriculture (less resource intensive and less polluting agriculture); and encouraging water and land use efficiency. Food would have to be environmentally evaluated at all stages of its life cycle.

The United States National Organic Program is a good start. Sweden’s efforts with its environmental and health based dietary guidelines and organic plus carbon labeling under the “Climate Labelling for Food” evince a significant next step forward in the process of developing a more sustainable food system. But a creative approach using life-cycle analysis, like that used in the European Union Flower Logo program for consumer durables, and ideas currently being studied by the European Food Sustainable Consumption and Production Round Table (“Round Table”), should be the next significant step. Due to the existing marketing power of the “organic” brand in the United States, there are advantages to pursuing an environmental life-cycle eco-labeling program within the confines of the United States Organic Foods Production Act (OFPA) or federally redefining “organic” as something more, similar to the Swedish model.

Admittedly, as discussed in Part V.A, new federal legislation creating an environmental life-cycle eco-label for food would be an ideal model, though perhaps politically unrealistic. A national eco-labeling program could be similar to the Swedish program discussed above, essentially integrating carbon emissions concerns

128. See Harrison, *supra* note 41, at 233.

129. Edwards-Jones et al., *supra* note 36 (“We conclude that food miles are a poor indicator of the environmental and ethical impacts of food production. Only through combining spatially explicit life cycle assessment with analysis of social issues can the benefits of local food be assessed. This type of analysis is currently lacking for nearly all food chains.”).

130. See Harrison, *supra* note 41, at 227-28.

into the current USDA Organic certification model.¹³¹ Or, more ambitiously, the United States Congress could replace current legislation in order to pursue a life-cycle model like that of the European Union Flower Logo or the model under discussion by the European Union Round Table discussed below. Despite the advantages of a national model, Part V argues that an individual state should pursue a voluntary eco-labeling program that goes beyond the current federal organic program in the United States and even the emerging carbon labeling programs in Europe. Such a program could be adopted by other states, or serve as a model for future national legislation.

Part V.B considers how a state food eco-label program can be established without running afoul of existing federal labeling laws, specifically considering whether such an eco-label can be consistent with OFPA. Part V.C addresses the challenges in creating an eco-label based on life-cycle analysis, with specific focus on initiatives taking place in Europe. Asked from a legal standpoint, can an American state create a voluntary label for products sold within a given state that does not run afoul of the existing federal law and that effectively engages in life-cycle analysis of these environmental impacts? Part V.D discusses the practical challenges of designing any eco-label that will successfully impact consumer choice.

A. *The Merits of Federal Legislation*

As stated, new federal legislation creating an environmental life-cycle eco-label for food would be the ideal model, though politically unrealistic given the historic challenges surrounding COOL legislation, including strong lobbying and special interest powers that have impacted organic regulation. A national eco-labeling program could be similar to the Swedish program discussed above, essentially integrating carbon emissions concerns into the current USDA Organic certification model by redefining what it means to be "organic,"¹³² or could develop an "organic plus" label by merging organic labeling with a local or carbon label.¹³³ Or, more ambitiously, the United States Congress could

131. Cf. O'Neill, *supra* note 63 (advocating a federal carbon labeling program implemented by the U.S. Environmental Protection Agency).

132. See *id.* at 408.

133. See Harrison, *supra* note 41, at 213.

replace current legislation and pursue a brand new environmental life-cycle labeling model like that of the European Union Flower Logo or the one under discussion by the European Union Round Table discussed below. Given concerns about a regulatory patchwork among states, product labeling may be better suited to federal standards. A federal standard would avoid subjecting manufacturers to potentially different sets of state standards and confusing consumers by many different labeling schemes. That said, organic food certifiers exist in many states to implement the same federal substantive standards (with variable procedural requirements as discussed below). Thus, under the current National Organic Program, a single state could create a more environmentally conscious food labeling model that surpasses federal standards. This would create two sets of substantive food standards: (1) the existing federal standards implemented by federal government and the states, and (2) a better state standard incorporating far more information and with a much broader purpose than the existing federal program.

A national program could then be modeled after a more ambitious state model, or other states could adopt this state model, similar to the way in which states voluntarily adopt California standards under the Clean Air Act. In addition, and as discussed below, current federal law asks for, but has not yet received, a creative approach for environmental food labeling by an entrepreneurial state. Thus, despite the advantages of a national model, this section argues that an individual state should pursue a voluntary eco-labeling program that goes beyond current federal organic program in the United States and emerging carbon labeling programs in Europe.

B. *A State-Sponsored Environmental Life-Cycle Eco-Label*

At first glance, the legal barriers to creating a new environmental life-cycle eco-label seem formidable, but this is not the case.¹³⁴ Marketing is actually the true barrier to building an effective eco-label that incorporates a wider range of environmental concerns. The United States Organic Food

134. This is not to discount potential World Trade Organization issues that might arise due to eco-labeling. See Erich Vranes, *Climate Labelling and the WTO: The 2010 EU Ecolabelling Programme as a Test Case Under WTO Law* (Vienna Univ. of Econ. & Bus. Admin., Research Inst. for European Affairs, Working Papers Series, Mar. 10, 2010), available at http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1567432.

Production Act (OFPA) monopolizes the use of the term “organic,” requiring all products labeled as “organic” to be certified through the government approved certifiers that comply with all OFPA regulations under the National Organic Program.¹³⁵

This Article urges creation, under state law, of a brand new environmental life-cycle eco-label that considers a wide array of concerns like the use of synthetic substances in the production process, greenhouse gas emissions, and ecological degradation. This program could use any new word or logo, outside of the term “organic,” thus developing and marketing a new label or logo without any of the existing advantages or disadvantages of using the term.¹³⁶ However, the word “organic” has developed significant cache and marketing prowess in the food industry, and sends an important message to consumers (despite the disconnect between consumer understanding of the label’s meaning and the label’s function).¹³⁷ In fact, a criticism of the organic label is that it does not mean what consumers may think it means. For example, consumers may identify “organic” with small farms, local production, healthy foods, and environmental consciousness. These characteristics are often not true of many organic foods. Many consumers are not aware that products labeled “organic” are not 100% organic. Products that are only 95% can be labeled “organic,” and if made with *only* 70% synthetic-free ingredients, can still be labeled “made with organic ingredients.”¹³⁸ A preferable scenario would be to create a more rigorous eco-label that encompasses organic production but also considers a whole host of other environmental concerns at every stage of a food product’s life. In other words, organic foods with a new label might have the ecological-friendly characteristics that many consumers already think they have.

Fortunately, under 7 U.S.C. § 6507(a) of the OFPA, individual U.S. states have the right to seek approval for their own organic certification program.¹³⁹ The statute reads:

135. 7 U.S.C. § 6505(a)(1)(A) (2010).

136. Renate Gertz, *Eco-Labeling—A Case for Deregulation?*, 4 LAW, PROBABILITY & RISK 127, 136 (2005) (pointing out that European Union flower label is meeting only limited success, and it will take a while for the new label to gather traction).

137. See David Conner & Ralph Christy, *The Organic Label: How to Reconcile Its Meaning with Consumer Preferences*, 35 J. FOOD DISTRIBUTION RES. 40 (2004).

138. 7 C.F.R. § 205.301 (2010).

139. 7 U.S.C. § 6507(a) (2010) (“The governing State official may prepare and submit a plan for the establishment of a State organic certification program to the

A State organic certification program ... may contain more restrictive requirements governing the organic certification of farms and handling operations and the production and handling of agricultural products that are to be sold or labeled as organically produced under this chapter than are contained in the program established by the Secretary.¹⁴⁰

In other words, states can create more rigorous food standards and use the term “organic.”¹⁴¹ The implementing regulations go further. They state, “certifying agents certifying production or handling operations within a State with more restrictive requirements, approved by the Secretary, shall require compliance with such requirements as a condition of use of their identifying mark by such operations.”¹⁴² Thus, a more rigorous state certification program can have its own label, mark or logo with which it could mark the more restrictive standards that must be followed.

However, if a state pursues an organic certification program with additional requirements, they (1) must further the goals of the OFPA, (2) may not be inconsistent with the statute, and (3) cannot be discriminatory towards agricultural commodities organically produced in other States in accordance with this chapter.¹⁴³ The stated purposes of OFPA are to establish national standards governing the marketing of certain agricultural products as organically produced products, to assure consumers that organically produced products meet a consistent standard, and to facilitate interstate commerce in fresh and processed food that is

Secretary for approval. A State organic certification program must meet the requirements of this chapter to be approved by the Secretary.”).

140. *Id.* § 6507(b).

141. *See also* Int’l Dairy Foods Ass’n v. Boggs, 2:08-CV-628-29, 2009 WL 937045, at *15 (S.D. Ohio Apr. 2, 2009), *aff’d in part, rev’d in part*, Nos. 09-3515, 09-3526, 2010 WL 3782193 (6th Cir. Sept. 30, 2010) (“The OFPA allows states to create a plan for the establishment of a State organic program only if the plan is submitted to and approved by the Secretary of Agriculture. Such a plan may contain more restrictive requirements governing the organic certification of farms and handling operations and the production and handling of agricultural products that are to be sold or labeled as organically produced and must further the purposes of the Act, not be inconsistent with the Act, and not be discriminatory towards agricultural commodities organically produced in other States.” (internal citations omitted)).

142. 7 C.F.R. § 205.501(21)(b)(2).

143. 7 U.S.C. § 6507(b)(2).

organically produced.¹⁴⁴

Obviously, the state program would be at least as rigorous as the “easier” rules of the federal law and provide a consistent standard for its program. And if the state eco-label is successful, it should increase commerce in organically produced goods, and create a market for food products that go beyond the federal standards.¹⁴⁵ The eco-label would not directly discriminate against food products from other states. A state could not limit the eco-label to local food or food from the label’s home state in a form of intrastate economic protectionism, though presumably the label would be attractive to intrastate farmers and producers.¹⁴⁶ Related, the label would likely neutrally and indirectly discriminate on the basis of distance in terms of average food miles required to get the product to market. In fact, producers from *all* states might seek the label of a single state certification since it would meet federal standards, be more rigorous, and potentially become preferred by environmentally-minded consumers. Consumers often prefer cheese “Made in Wisconsin,” Florida oranges, Vermont maple syrup, Maine lobster, and Washington apples—why not prefer “Organically and Environmentally Certified in the State of X?” According to the First Circuit in the case *Harvey v. Veneman*, OFPA allows and encourages competition in developing more stringent organic standards.¹⁴⁷

A disadvantage of a new state organic certification program is that the certification process cannot be relaxed, since the statute

144. *Id.* § 6501.

145. An analogy can be drawn to California’s ability to set different emissions standards under the Clean Air Act, and the interest of other states, in order to better serve the public health and environment of its citizens, in using these more rigorous standards than federal ones.

146. Similarly, a state eco-label program would need to be a voluntary labeling program so as to avoid any dormant commerce clause concerns putting undue impediments on interstate commerce, and concerns that a mandatory eco-label would make food producers reluctant to supply a given state.

147. *Harvey v. Veneman*, 396 F.3d 28, 45 (1st Cir. 2005) (“OFPA further provides that State certification programs may be more restrictive than the federal program. This provision, incidentally, allows for the type of competition developing more stringent organic standards sought by Harvey. . . .” Furthermore, “nothing in the challenged regulation prevents private certifiers from making truthful claims about the products they certify; it only bars such certifiers from applying more stringent requirements as a condition of use of their USDA accredited certifying mark” (internal citations omitted)). However, OFPA likely bars the use of the word organic by private certifiers that have more restrictive standards, as opposed to state certifiers that apply for more restrictive standards under 7 U.S.C. § 6507.

only authorizes “more restrictive” organic certification rules. This poses a continual problem for small farmers and producers that would meet the organic criteria, but may lack the resources to go through the certification process. The OFPA only provides an exemption for “persons who sell no more than \$5,000 annually in value of agricultural products.”¹⁴⁸ But small and local farmers could gain an advantage through an environmental life-cycle eco-label since it will consider greenhouse gas emissions in both production and food miles.

While state entities exist as USDA organic certifiers, none have exercised their authority to develop more rigorous standards than those required by federal law. At present there are nineteen states that are state organic certifiers,¹⁴⁹ but none have applied to the Secretary under 7 U.S.C. § 6507 to certify organic food under more restrictive *substantive* state standards under a State Organic Program. Most states simply manage organic certification programs by adopting the National Organic Program (NOP) standards.¹⁵⁰ While states have sought more restrictive programs from the USDA Secretary, these standards are not substantive and instead create additional procedural requirements like registration for organic food producers and private certifiers and applicable fee tables.

For example, California applied to have a state organic program with additional procedural requirements not identified in the OFPA.¹⁵¹ California requires registration by organic producers

148. 7 U.S.C. § 6505(d) (2010).

149. The states that have organic certification programs through state agencies are: California, Colorado, Iowa, Idaho, Kentucky, Louisiana, Maryland, Mississippi, Montana, Nevada, New Hampshire, New Jersey, New Mexico, Oklahoma, Oregon, Rhode Island, Texas, Utah, and Washington. AGRIC. MKTG. SERV., *National Organic Program*, U.S. DEP'T OF AGRIC. (Nov. 12, 2010), <http://www.ams.usda.gov/AMSV1.0/ams.fetchTemplateData.do?template=TemplateJ&navID=NationalOrganicProgram&leftNav=NationalOrganicProgram&page=NOPACAs&description=USDA%20Accredited%20Certifying%20Agents&acct=nopgeninfo>.

150. See, e.g., CAL. DEP'T OF FOOD AND AGRIC., *California Organic Program*, http://www.cdfa.ca.gov/is/i_&c/organic.html (last visited Nov. 14, 2010) (incorporating the NOP regulations by reference in Title 3 California Code of Regulations Article 6.1).

151. After passing the California Organic Products Act in 2003, the state applied to have a State Organic Program and was approved in 2004, despite not meeting all the criteria, because the Secretary of Agriculture thought compliance would eventually occur. A March 2010 audit report, however, finds that California is still not in compliance with the NOP. Thus, although they applied and have operated some version of an organic certification program, California's program is not fully

through the submission of “public information sheets,” maintenance of detailed records (about livestock history, substances applied to fields, and agricultural practices), and labeling rules that prohibit the use of the terms “transitional organic” and “organic when available.” It also defines how organic producers can describe the percentage of organic ingredients.¹⁵² While no substantive standards under the California Organic Products Act of 2003 are more rigorous than those of the OFPA and NOP, the Act does create room for rules about organic products not subject to federal organic certification rules.¹⁵³ The State of Washington established similar procedural requirements regarding registration,¹⁵⁴ but also developed its own separate standard for mushrooms.¹⁵⁵ No specific federal organic standard yet exists explicitly for mushrooms, and mushroom farmers generally use the standard organic crop regulations, which are less applicable to mushroom harvesting.

In any case, no state so far has created more restrictive substantive organic standards that attempt to engage in environmental life-cycle analysis.¹⁵⁶ While federal organic

operational and cannot be considered more stringent than the federal program from a substantive or procedural standpoint. *See* OFFICE OF INSPECTOR GEN., U.S. DEP’T OF AGRIC., OVERSIGHT OF THE NATIONAL ORGANIC PROGRAM, AUDIT REPORT 01601-03-Hy 2, 4, 14-16, 20 (March 2010); MIGUEL A. CACERES, U.S. DEP’T OF AGRIC., LIVESTOCK AND SEED PROGRAM AUDIT, REVIEW, AND COMPLIANCE BRANCH QUALITY SYSTEM AUDIT REPORT, NP3140MA NC ANNUAL UPDATE REPORT MCCO SALINAS CA 1-2 (June 17, 2003).

152. CAL. FOOD & AGRIC. CODE § 46013 (2010) (requiring public information sheet); *Id.* § 46028 (records requirement); *Id.* § 46024(h) (prohibiting use of term “transitional organic”); *Id.* § 46027 (prohibiting use of term “organic when available”); CAL. HEALTH & SAFETY CODE § 110838 (2010) (defining how to describe the percentage of organic ingredients).

153. CAL. HEALTH & SAFETY CODE § 110835 (“The director may adopt regulations allowing or prohibiting the use of substances in the processing of products that are exempt or excluded from certification under the NOP, and animal food and cosmetics sold as organic.”). To this end, California has adopted rules for cosmetic products.

154. WASH. STATE DEP’T OF AGRIC., ORGANIC FOOD PROGRAM, ORGANIC RULES AND REGULATIONS 58-81, (2008), http://agr.wa.gov/FoodAnimal/Organic/Certificate/2008/ProcessorHandlerRetailerBroker/NewApplicant/OFOrganicRulesandRegs1_08.pdf.

155. WASH. ADMIN. CODE § 16-157-120 (2010).

156. State implementation and requests for additional procedural elements to implement national organic standards shed little light on the potential success or failure in developing a more expansive eco-labeling system, except that some states have struggled to implement and comply with the National Organic Program (e.g., California as discussed in note 152).

certification has too narrow a definition, the word “organic” has built up marketing prowess that cannot be ignored.¹⁵⁷ An environmental life-cycle eco-label could do more to inform consumers about environmentally-friendly foods, and could incorporate the value of the term “organic” if properly conforming to the OFPA. Such an eco-label might accomplish precisely what people already think the organic label does, and if producers could not meet the more restrictive standards, they could still simply use the existing USDA Organic label.

C. *Environmental Life-Cycle Analysis for Food*

What is environmental life-cycle analysis for food? Food eco-labels can be based on an assessment of the food’s life-cycle: its raw materials, production process, distribution, use, and disposal, including consideration of pollution, waste, and carbon footprint. “The main objective of eco-labeling programs is to harness market forces and channel them towards promoting more environmentally friendly patterns of production.”¹⁵⁸ However, quality eco-labeling of food requires accurate and verifiable information, and it must provide life-cycle information on production, processing, and distribution. Consumers must have access to aggregated information that considers the chemical additives, land stewardship practices, and fossil fuel consumption required to bring any food to market.

An effective environmental life-cycle eco-labeling system for food would inform consumers about the environmental costs of their food purchases and provide a baseline comparison for food in different production categories. An eco-label seal should be available for products within a food category meeting defined environmental criteria. While eco-labels would be based on a technocratic assessment of a product’s life-cycle providing consumers with a visual seal, products also could list descriptive information of interest such as location of production or carbon footprint.

Outside of the food industry, many life-cycle labeling schemes already exist. For example, the European Union’s voluntary flower

157. See Marvin T. Batte, *Putting Money Where Their Mouths Are: Consumer Willingness to Pay for Multi-Ingredient, Processed Organic Food Products*, 32 FOOD POL’Y 145 (2007).

158. Surya P. Subedi, *Balancing International Trade with Environmental Protection: International Legal Aspects of Eco-Labels*, 25 BROOK. J. INT’L L. 373, 375 (1999).

logo program indicates products that are more environmentally friendly than conventional products based on a life-cycle ecological assessment.¹⁵⁹ But the European Union flower logo eco-label is not used for food, and the European Union is only beginning to consider what life-cycle analysis for food would look like, as discussed below. The European Union uses five administrative layers to implement its eco-label scheme, and has developed product groups and ecological criteria to harmonize environmental labeling in its member countries.¹⁶⁰ The eco-label can be affixed to those products that meet established product group criteria for the entire life-cycle of the product.

The flower logo, however, has met only limited success since the label is still widely unknown and is taking time to gather traction with consumers.¹⁶¹ This lends additional support for the argument to continue using the already built-up cache of “organic” in pursuing more rigorous food labeling options. The European Union flower logo program is an ambitious project since its goal is to introduce one eco-label for the outset, intended eventually to replace all national labels within the European Union, including those on food.¹⁶² In July 2008, the European Commission presented a proposal to widen the scope of European Union eco-labeling efforts, “taking in the particularly complex food and drink market.”¹⁶³ There is no doubt that life-cycle eco-labeling for food is ambitious. According to the Environmental Audit Committee in the United Kingdom House of Commons:

Attempts to reach lifecycle footprints even for basic products can result in complex calculations based on a highly hypothetical average usage. . . . [A] carrot could be eaten raw, cooked in a microwave, or boiled in a pan of water. It is difficult to see how any in use measurement for food and drink products could ever be of genuine use to a consumer, whereas labels allowing them to

159. See EUROPEAN COMMISSION ENVIRONMENT, *EU Eco-label*, http://ec.europa.eu/environment/ecolabel/index_en.htm (last visited Nov. 14, 2010).

160. JULIAN MORRIS, GREEN GOODS?: CONSUMERS, PRODUCT LABELS AND THE ENVIRONMENT 42 (1997).

161. Gertz, *supra* note 136, at 128.

162. *Id.*

163. U.K. HOUSE OF COMMONS, ENVIRONMENTAL AUDIT COMMITTEE – SECOND REPORT OF SESSION 2008-09: ENVIRONMENTAL LABELLING, ¶ 21 (Mar. 3, 2009), <http://www.publications.parliament.uk/pa/cm200809/cmselect/cmenvaud/243/24302.htm> (last visited Nov. 14, 2010).

select locally-produced or organically grown carrots could engage their interest and have a significant impact in at least one environmental dimension.¹⁶⁴

In addition to continuing movement in the European Union, individual European countries have led in the creation of eco-labels outside the food context with the Nordic Council Program (of Norway, Sweden, and Finland) and Germany's Blue Angel Program.¹⁶⁵ In Germany's Blue Angel Program, an environmental label jury comprised of representatives from environmental groups, science organizations, consumer associations, industry, trade unions, and the media reviews life-cycle reports to determine if the "Umweltzeichen" ("environmental label") is appropriate.¹⁶⁶

Germany's program, the oldest eco-labeling program in Europe, is perhaps the most successful as German consumers make frequent and continuous use of the eco-label as a means of obtaining product information and shopping accordingly.¹⁶⁷ Given the success of eco-labeling in Germany and Scandinavia, one concern about any state-sponsored eco-label in the United States is whether it could only achieve a degree of success in a geographic location with a relatively high environmental consciousness among its population.¹⁶⁸ That said, this may prove beneficial if the state-sponsored environmental life-cycle eco-label is developed by a state like Vermont or Oregon that has high ecological awareness *and* a national reputation for environmentalism.¹⁶⁹ Like building on the "organic" label, the state could build on its own "green" reputation, perhaps even generating state revenue by certifying the most environmentally-friendly food products in the country.

The European Commission, with the support of the United Nations Environmental Programme, European Environment

164. *Id.* ¶ 62.

165. Other public and private eco-labels include Green Seal, Sweden's Bra Miljöval (Good Environmental Choice), Canada's EcoLogo; Japan's Eco-Mark. Also see the ISO 14024 standards for eco-labelling, available at http://www.iso.org/iso/catalogue_detail.htm?csnumber=23145.

166. Subedi, *supra* note 158, at 378.

167. Gertz, *supra* note 136, at 136.

168. *See id.*

169. Brian Wingfield & Miriam Marcus, *America's Greenest States*, FORBES (Oct. 17, 2007), <http://www.forbes.com/2007/10/16/environment-energy-vermont-biz-beltway-cxbw-mm1017greenstates.html> (referring to the top three "greenest" states of Vermont, Oregon, and Washington as being "synonymous with environmentalism.").

Agency, and experts of several member states, is currently laying the groundwork for a life-cycle eco-labeling scheme for food with its creation, in 2009, of the European Food Sustainable Consumption and Production Round Table ("Round Table"). The agenda of the Round Table is to use environmental assessment methods to "examine key sustainability challenges along the food value chain (e.g., climate change, water conservation, resource efficiency and waste reduction) and develop adequate strategies to address them."¹⁷⁰ More practically, the Round Table seeks to establish reliable life-cycle environmental assessment methodologies for foods, and determine the best way to supply information to consumers to enable them to make informed choices.¹⁷¹ More specifically stated, the key objectives of the Round Table are to:

- (1) Identify scientifically reliable and uniform environmental assessment methodologies for food and drink products, including product category specifications where relevant, considering their significant impacts across the entire product life-cycle;
- (2) Identify suitable communication tools to consumers and other stakeholders and develop guidance on their use, looking at all channels and means of communication;
- (3) Promote and report on continuous environmental improvement along the entire food supply chain and engage in an open dialogue with its stakeholders.¹⁷²

In early 2010, the Round Table drafted a document laying down Guiding Principles to develop "a harmonised framework methodology for the environmental assessment specifically of food and drink products."¹⁷³ The Guiding Principles document lists

170. Joint Press Release, *Key Food Chain Partners to Launch Sustainability Roundtable 1* (Feb. 26, 2009), <http://www.ciaa.eu/documents/pressreleases/PREFSCPRTfinal260209.pdf>.

171. Press Release, European Food Sustainable Consumption and Production Round Table, European Food SCP Round Table Welcomes 14 New Member Organisations 1 (Dec. 9, 2009), http://www.ciaa.eu/documents/press_releases/Food%20SCP%20RT%20Press%20Release%20FINAL%20091209.pdf.

172. *Id.* at 2.

173. European Food Sustainable Consumption and Production Round Table, *Voluntary Environmental Assessment and Communication of Environmental Information along the Food Chain, Including to Consumers: Guiding Principles 2-3* (Mar. 15, 2010), <http://www.foodscp.eu/files/consultation/FoodSCPRTGuidingPrinciplesforConsult>

seven key questions to be researched in order to create its methodology.

- (1) How to measure, verify, collect and consolidate environmental information along the entire food chain in an efficient way?
- (2) How to consider the various environmental aspects and/or impacts of the production and consumption of different categories of food and drink products in a consistent framework methodology?
- (3) How to consider specificities of highly diverse food and drink products with different beneficial and adverse environmental impacts at different stages of their life-cycle?
- (4) What costs and benefits are involved as well as what challenges are the various food chain operators, including SMEs [small and medium enterprises], facing or going to face in this respect?
- (5) How should a uniform environmental assessment methodology be designed in order to support the identification of continuous environmental improvement potentials at all stages of the food chain?
- (6) How effective are existing and emerging environmental information tools along the food chain and vis-à-vis the consumer? What kind of information is relevant for consumers? What type of questions could we and should we expect consumers and food chain partners to have now and in the near future? How can consumer confusion be avoided?
- (7) What is already available at the European and international level to help assess and communicate the potential environmental impacts associated with the production and consumption of food and drink products?¹⁷⁴

These questions are important as, at present, no commonly applied methodology exists to assess and communicate environmental information along the food chain, including to consumers.¹⁷⁵ The Guiding Principles in creating its methodology are seen in Table 3 below.

ation.pdf.

174. *Id.*

175. *Id.* at 1.

Table 3: Guiding Principles for Voluntary Environmental Assessment and Communication of Environmental Information Along the Food Chain, Including to Consumers¹⁷⁶

The lead principle:

Environmental information communicated along the food chain, including to consumers, shall be scientifically reliable and consistent, understandable and not misleading, so as to support informed choice.

I. Principles for the voluntary environmental assessment of food and drink products

Principle 1: Identify and analyse the environmental aspects at all life-cycle stages

Principle 2: Assess the significant potential environmental impacts along the life-cycle

Principle 3: Apply recognised scientific methodologies

Principle 4: Periodically review and update the environmental assessment

II. Principles for the voluntary communication of environmental information

Principle 5: Provide information in an easily understandable and comparable way so as to support informed choice

Principle 6: Ensure clarity regarding the scope and meaning of environmental information

Principle 7: Ensure transparency of information and underlying methodologies and assumptions

III. Principles for both voluntary environmental assessment and communication

Principle 8: Ensure that all food chain actors can apply the assessment methodology and communication tools without disproportionate burden

Principle 9: Support innovation

Principle 10: Safeguard the Single Market and international trade

After reviewing its accumulated information and using its

176. *Id.* at 8-11.

Guiding Principles, the Round Table hopes to accomplish its goals by 2011.¹⁷⁷ The Round Table's goal structure and future methodology may provide a replicable avenue for creating a comprehensive eco-labeling in the United States.

D. *Implementing an Eco-Labeling Program*

Practically implementing a state-sponsored (or federally legislated) organic certification program and eco-label based on environmental life-cycle analysis is no small task. An eco-label informational and certification scheme can provide engaged consumers with a measurable analysis created by experts, and provide a single point of product comparison for the less engaged consumer. How would an eco-labeling scheme potentially be implemented?¹⁷⁸

First, a group of experts, under direction of a state agency, must pick food categories, identified by the significance of their adverse environmental impacts, where eco-labels would make significant improvement to environment. These categories might include meats and seafood, pesticide-intensive produce like berries, spinach and potatoes, and heavily processed foods. For example, research on carbon footprinting shows that there are product categories that have high variability in footprints within a singular category, so it makes sense to inform consumers about these differences, as it "will give them genuine options that make a difference" since "consumers need options, not just information."¹⁷⁹

Second, an environmental life-cycle analysis methodology must be developed and used. A life-cycle analysis would include consideration of natural resource and chemical inputs (starting at the production process or raw extraction stage), and emissions and pollution output during the production, distribution and use, and disposal stages. The key is to inventory materials that make up food and allow for food production, but equally important and more

177. See European Food Sustainable Consumption and Production Roundtable, *supra* note 171, at 1.

178. For a discussion of a potential eco-label model, see MORRIS, *supra* note 160, at 30-34. See also CZARNEZKI, *supra* note 3.

179. Tom Berry, Dan Crossley & Jemima Jewell, *Check-out Carbon: The Role of Carbon Labelling in Delivering a Low-carbon Shopping Basket*, FORUM FOR THE FUTURE 7, 12 (June 2008), <http://www.forumforthefuture.org/files/Checkout%20carbon%20FINAL300608.pdf>.

difficult to determine is how to inventory their environmental impact. As stated earlier in discussion of the Carbon Trust in Part III, British PAS 2050 is a publicly available specification for assessing product life-cycle greenhouse gas emissions, and perhaps it could be modified to apply to food as opposed to goods and services. Food miles, the distance food travels from farm to table, should also be considered. To calculate how far a food product travelled, a Weighted Average Source Distance (WASD) is the most commonly used tool, calculating a single distance figure that combines information on the distances from production to point of sale and the amount of food product transported.¹⁸⁰

As noted by the European Food Sustainable Consumption and Production Round Table ("Round Table"), no widely accepted environmental life-cycle assessment methodology for food exists. To both determine the key food categories and the environmental footprint of food products, a state could, rather than determine its own methodology, use the Round Table's process as a model to determine the appropriate environmental life-cycle methodology, asking the same questions and using the same principles, with consideration of the American domestic market and analyzing existing informational regulatory tools in the United States. Or, the state could use the Round Table's methodology, waiting until substantial portions of the Round Table's assessment process is completed.

Third, products must be evaluated according to that scientific criteria and a seal awarded to those products surpassing a designated benchmark. It is key to determine what factors influence the success of any eco-labeling program. In other words, what labels work? It is hard to over-emphasize the importance of first identifying what food categories would help the environment if their carbon, chemical, and waste footprints were reduced. What is also known is that centralized government eco-labels are more effective than numerous private ones, and that simple, clear, obvious and transparent seal-of-approval logos and labels have generally shaped consumer behavior more than the complex information-disclosure labels.¹⁸¹

Rather than simply requiring products to meet certain criteria

180. ØRESUND FOOD NETWORK & ØRESUND ENV'T ACAD., *supra* note 25, at 8-9.

181. See Abhijit Banerjee & Barry D. Solomon, *Eco-Labeling for Energy Efficiency and Sustainability: A Meta-Evaluation of US Programs*, 31 ENERGY POL'Y 109 (2003); Berry et al., *supra* note 179, at 5.

to be eligible for a particular seal or logo, it would be possible to require “environmental product declarations” (EPD) similar to nutritional facts currently required under the Nutrition Labeling and Education Act of 1990. EPDs are “industry-created statements containing a variety of information about the composition and environmental characteristics of a product based on life-cycle assessment.”¹⁸² This approach would inform consumers about a wide range of life-cycle environmental concerns associated with the product such as water usage, chemicals used, pollution and carbon emissions, and waste disposal. Presumably, the environmental characteristics listed would be those categories of most significance as part of the environmental life-cycle analysis methodology. Unlike an eco-label seal, an EPD alone would disclose information “in a neutral way that enables consumer evaluation but that does not seek to judge the environmental characteristics of a product.”¹⁸³

Part of developing an eco-label for food, as being pursued by the European Union Round Table, is determining how to best convey information to consumers in a manner that will effectively shift buying preferences. For example, would a logo or seal for products that meet a particular environmental standard in addition to an EPD label overwhelm consumers with information?¹⁸⁴ In addition, eco-labels require a good quality assurance scheme, which would benefit from governmental ownership of the label, and a successful marketing program.¹⁸⁵ Absent unlikely federal legislation, a state-sponsored “organic” environmental label can embody these characteristics—*“Organically and Environmentally Certified in the State of X.”*

182. Nancy J. King & Brian J. King, *Creating Incentives for Sustainable Buildings: A Comparative Law Approach Featuring the United States and the European Union*, 23 VA. ENVTL. L.J. 397, n.232 (2005) (citing European Commission, Summary of Discussions at the 2nd Integrated Product Policy Expert Workshop: Environmental Product Declarations (ISO 14025 Technical Report) 2 (2001), <http://ec.europa.eu/environment/ipp/pdf/epd.pdf> (last visited Nov. 14, 2010)).

183. *Id.*

184. I note that a mandatory EPD labeling requirement, unlike a voluntary eco-label seal, would most certainly require federal legislation.

185. See Helen Nilsson, Burcu Tunçer & Åke Thidell, *The Use of Eco-Labeling Like Initiatives on Food Products to Promote Quality Assurance—Is There Enough Credibility?*, 12 J. CLEANER PRODUCTION 517 (2004).

VI. CONCLUSION

The ecological consequences of the modern diet are simply too high. Produce is farmed with inorganic fertilizer and pesticides, processed foods are made in fossil-fuel burning factories, and we have witnessed an increase in food miles as consumers can buy anything in any season from anywhere on the planet. This path is simply unsustainable, and unhealthy for people and the environment in which we live.

Development of the organic food market in the United States and worldwide has been, for the most part, a positive development. The marketing and economic success of the National Organic Program and the Organic Foods Product Act will continue to grow the industrial organic food market in the United States until it becomes a, and perhaps *the*, dominant market. Other nations, like Sweden, have moved a step ahead, taking environmental protection into consideration when establishing national dietary guidelines, and attempting to incorporate greenhouse gas emissions into their organic labeling scheme. This Article suggests going even further. The European Commission is already assembling experts to design an effective environmental life-cycle assessment methodology and label scheme for food. Absent federal legislation overhauling the national organic certification program or scrapping that program entirely in favor of a more sustainable food eco-label, this Article suggests that an American state with a strong reputation for environmental awareness should, within the confines of the national organic certification program, develop a new environmental life-cycle eco-label that considers a wider array of environmental information that can be conveyed to consumers.

Improved eco-labeling, the subject of this Article, is only a start. In addition to improving labeling schemes and legal policies to support environmentally-friendly food consumption, the market of available food products must be improved. Legal policies and marketing should better support local, low-input, and non-industrial unprocessed food markets through streamlined organic certification for small farmers, low-carbon diets, community-supported agriculture, farmers' markets, and increased consumer access to sustainable food products. The industrial conventional food market will continue to shift to organic production (to the point when perhaps organic food rivals the conventional food market). Demand for value-added products (i.e., those with the organic label, and with an environmental life-cycle label in the

future) will increase. With these trends, improved eco-labeling regimes will enhance consumer awareness by revealing the environmental costs of consumer purchases, and will create shifts in consumer choice and, consequently, the norms of food production and distribution by farmers and corporations.