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Structuring a Market-Oriented Federal Eco-Information Policy

Peter S. Menell

STRUCTURING A MARKET-ORIENTED FEDERAL ECO-INFORMATION POLICY

PETER S. MENELL*

Among the most notable social trends relating to the environment during the past decade has been the growing interest among consumers in reducing the environmental impact of their lifestyle and consumption choices. A recent Gallup Poll found that more than ninety percent of consumers look for "environmentally safe" products or packaging and are willing to pay more for them.[1] Recognizing this growing public awareness and concern, product manufacturers,[2] environmental organizations, and government agencies increasingly have promoted the idea that consumers can, through informed purchasing, use, and disposal decisions, significantly reduce their impact upon the environment.

At the same time, there has been increasing concern with the costs of regulation.[3] Strong consumer interest in reducing environmental impacts presents policy-makers with an attractive opportunity to address environmental degradation in a way that does not raise regulatory costs. The environmental problems attributable to the extraction of resources, land use, production, transportation, and waste disposal ultimately serve consumer demands. To the extent policy can direct consumers to incorporate the environmental costs of the choices they face into their decisions, it can unleash a potent force for reducing environmental degradation. The principal policy effort addressing environmental degradation has been focused on the supply side of markets—laws and regulations directly controlling emissions of pollution and disposal of wastes. Promoting green consumerism can complement the vast array of environmental laws and regulations by

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* Professor of Law, University of California at Berkeley School of Law (Boalt Hall).

1. Frank Lautenberg, *Pulling the 'Green' Over Our Eyes*, N.Y. TIMES, Apr. 22, 1991, at A17.

2. The Marketing Intelligence Service reported that the percentage of new products making a green marketing claim more than doubled between 1989 and 1990. In the household product category, more than 25% of products claim to be "green." Terri Shaw, *The Selling of 'Green'; Labels Use All the Buzz Words, But What Do They Mean?*, WASH. POST, Feb. 28, 1991, at T9. By contrast, only 0.5% of new products introduced in 1985 carried a green marketing claim. *See Going for Green: Taking Stock of the Green Consumer Movement*, ENVTL. ACTION, Nov./Dec. 1990, at 20.

3. *See generally* Christopher C. DeMuth & Douglas H. Ginsburg, *White House Review of Agency Rulemaking*, 99 HARV. L. REV. 1075 (1986).

altering the demand for products. The challenge for public policy lies in providing appropriate information to and educating consumers about how best to integrate environmental concerns into their decision-making.

While the basic idea of informing consumers about environmental impacts is straightforward, the task of educating the public is daunting. The environmental impacts of consumer product choices are manifold and complex. Most significantly, consumers have little basis for assessing these impacts when choosing among the myriad products on retail shelves or making other daily choices. Even the most diligent consumer cannot accurately assess the environmental effects caused by the extraction of raw materials, production, and transportation of the product before it reaches the store shelf and any subsequent impacts from usage and ultimate disposal. Comparing these impacts across a range of products within a particular category multiplies the problem. Moreover, many other choices—such as what form of transportation to use, where to live, diet—have important environmental consequences, yet most people would not know where to begin to assess the full range of choices.

In the United States, the principal thrust of public policy in this area has been focused on point-of-purchase labeling of environmental claims. Federal and state authorities have enforced truth in advertising laws against product manufacturers making questionable environmental claims. In addition, EPA, the Federal Trade Commission, and numerous states regulate the use of environmental terms. Many other industrialized nations have gone a significant step further by developing national ecolabeling programs. Canada, for example, employs a cradle-to-grave methodology—commonly referred to as Product Life Cycle Assessment (PLCA)—for assessing the environmental effects of products. A government agency awards the right to use a national ecologo to those products meeting specified criteria for low environmental impacts. In March 1992, the European Economic Community (EEC) adopted a similarly ambitious ecolabeling scheme.[4]

These labeling initiatives have been implemented on the national and international levels. Given the premise that labeling programs are the most effective means of informing consumers, this centralized structure reflects the national scope of product markets and economies of scale in information gathering and product evaluation. As I

4. Council Regulation (EEC) No. 880/92 of March 1992 on a Community Eco-Label Award Scheme, 1992 O.J. (L 99) 1.

have argued elsewhere,[5] however, the case for adopting comprehensive government-sponsored ecolabeling programs as the principal means of educating consumers about the environmental impacts of their choices is questionable. A more institutionally sound alternative integrates eco-information policy with the market system and the existing framework of environmental laws and regulation. Such a market-oriented approach calls for a more decentralized, integrated policy framework involving all levels of government. This Article motivates and sketches the federal structure of such a policy approach.

As background to the policy analysis, Part I traces the evolution of eco-information policy. Part II summarizes the case for a market-oriented approach to eco-information policy. Part III explains how a market-oriented approach should be structured and implemented within our federal system.

I. THE EVOLUTION OF ECO-INFORMATION POLICY

Eco-information policy comprises the range of programs aimed at informing consumers about the environmental effects of their lifestyle, purchasing, and disposal decisions. It also encompasses efforts to inform businesses about the ways to reduce their environmental impacts. These programs respond to consumer and business interest in understanding the environmental ramifications of their choices. They also complement more traditional environmental regulatory programs in serving as an additional instrument by which government can reduce environmental degradation. In addition, they educate the public about the complex relationship between human activities and the environment.

The first major eco-information policy focused on energy conservation. In the 1970s, rising energy prices led the United States to require appliance manufacturers to label the energy costs of their products. The Energy Policy and Conservation Act[6] directed the Federal Trade Commission to develop energy efficiency labels for major home appliances. The Department of Energy was given responsibility for developing a consumer education program. The labels ultimately adopted contain the estimated yearly cost to operate the appliance based on the national average electric rate, the estimated cost to oper-

5. *See* Peter S. Menell, Eco-Information Policy: A Comparative Institutional Perspective (Apr. 1993) (John M. Olin Program in Law and Economics, Stanford Law School, Working Paper No. 104).

6. Pub. L. No. 94-163, 89 Stat. 871 (1975) (codified as amended at 42 U.S.C. §§ 6201-6422 (1988 & Supp. V 1993)).

ate the most and least efficient models in the same size and functional class, and a table showing the estimated yearly cost to operate the appliance for varying electric rates and usage habits.[7]

Germany developed the first general environmental labeling policy. Its "Blue Angel" program,[8] established in 1978, covers a broad range of environmental criteria.[9] Industry, consumer interests, and the public propose categories of products to Germany's central environmental agency, the Federal Environmental Agency (FEA). FEA then appoints a committee of experts who define criteria for each product group. Evaluative criteria range from one environmental attribute to a full product life cycle assessment. An independent testing organization, the Institute for Product Safety and Labeling, evaluates whether particular products qualify for a three-year renewable right to use the Blue Angel label. In order to receive certification to use the Blue Angel, a manufacturer's product must meet the selected criteria and the manufacturer must satisfy environmental compliance standards and pay a modest licensing fee that covers the administrative costs of the program. The standards are selected so that approximately fifteen percent of the products in each category qualify for the seal. The criteria for qualification are reviewed periodically. More than 3600 products in 66 product categories have received the Blue Angel certification over the program's history.[10]

Recognizing the multi-faceted nature of environmental effects of consumer products, numerous governments have developed comprehensive environmental labels. Canada's Environmental Choice Program awards the right to use its ecolabel to those products that are environmentally sound throughout their life cycle—production, use, and disposal—without any reduction in quality and safety in comparison to other products in their category. As of May 1991, Canada's Environmental Choice Program had selected thirty-six product categories for evaluation and had established guidelines for eighteen cate-

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7. Rule for Using Energy Costs and Consumer Information Used in Labeling and Advertising for Consumer Appliances Under the Energy Policy and Conservation Act, 44 Fed. Reg. 66,466 (1979) (codified at 16 C.F.R. § 305).

8. The program is named for the symbol of the United Nations Environment Programme (UNEP). The seal consists of UNEP's depiction of a blue angel surrounded by the words "Environment friendly because . . . ."

9. *See* Amy L. Salzhauer, *Obstacles and Opportunities for a Consumer Ecolabel*, ENVIRONMENT, Nov. 1991, at 10, 11-12.

10. *See* UNITED STATES OFFICE OF TECHNOLOGY ASSESSMENT, U.S. CONGRESS, GREEN PRODUCTS BY DESIGN 96 n.82 (1992). More than half of these certifications, however, have been in four categories.

gories.[11] In March 1992, the European Economic Community (EEC) adopted a similar ecolabeling scheme.[12] Its logo, in the form of a flower with the 12 stars of the European flag as petals, will be awarded to the top 10 percent of products in each category that have least environmental impacts over the life cycle of the product.[13]

Thus far, the United States has yet to adopt a comprehensive ecolabeling program such as those described above.[14] A number of states, however, have adopted more modest ecolabeling programs. New York[15] and Rhode Island[16] have developed emblems for "recycled," "recyclable," and "reusable" products meeting specified requirements.[17] Arizona,[18] Connecticut,[19] Illinois,[20] Maine,[21] and New Hampshire,[22] have authorized the development of an official recycling emblem, although have not fully implemented their programs.[23]

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11. *See* U.S. ENVTL. PROTECTION AGENCY, PRODUCT LIFE-CYCLE ASSESSMENT: INVENTORY GUIDELINES AND PRINCIPLES 6 (1992).

12. *See supra* note 4.

13. *See* Matt Haddon, *Making Green Labels Stick*, NEW SCIENTIST, June 20, 1992, at 23, 23-24. The award scheme does not apply to food, drink, or pharmaceutical products. Council Regulation (EEC) No. 880/92 of March 1992 on a Community Eco-Label Scheme, 1992 O.J. (L 99) 1.

14. A number of private entities have begun offering ecolabeling and certification services in the United States. The most prominent of such services have been developed by "Green Seal," established by environmentalists, *see generally* Denis Hayes, *Harnessing Market Forces to Protect the Earth*, ISSUES IN SCI. & TECH., Winter 1990-91, at 46; Michael Parrish, *'Green Seal' Will Certify Environmental Approval*, L.A. TIMES, June 15, 1990, at D1, and "Green Cross," established by a health and safety certification firm, *see* Scientific Certification Systems, *Background Information* (Scientific Certification Systems, Oakland, CA), 1992, at 1. In much the same manner as Canada's Environmental Choice Program, Green Seal establishes minimum environmental criteria for specific product categories on the basis of "cradle-to-grave" evaluation of environmental impacts. Manufacturers meeting Green Seal's standards are eligible to carry Green Seal's "check mark of approval" trademark.

15. Solid Waste Management Act of 1988, ch. 70, § 27-0717.2, 1988 N.Y. Laws 187.

16. R.I. GEN. LAWS 23-18.8-3 (1989 & Supp. 1994) (providing for a recycled and recyclable materials logo and establishing penalties for recycling violations).

17. Under the New York law, "Recycled" products must contain specified minimum amounts of pre- and post-consumer waste. "Recyclable" products must be recyclable through community programs in 75% of the state, have at least a 50% recovery rate in the state, or be recyclable in the jurisdiction in which the product is sold. A "reusable" product must be reusable or refillable five times or more in a program developed and implemented by a manufacturer, distributor, or retailer. Recycling Emblems, N.Y. COMP. CODES R. & REGS. tit. 6, § 368 (1990).

18. ARIZ. REV. STAT. ANN. § 49-833(c) (1990).

19. CONN. GEN. STAT. ANN. § 22a-255c, 255d (West Supp. 1995).

20. ILL. REV. STAT. ch. 111-1/2, para. 7056a (1989).

21. ME. REV. STAT. ANN. tit. 38, § 2141 (West 1991).

22. N.H. REV. STAT. ANN. § 149-N (1991).

23. Some states also have organic food labeling laws. *See* CAL. HEALTH & SAFETY CODE § 26569.24 (West 1995).

A related approach to eco-information policy is the enforcement of truth in advertising laws against misleading claims and the direct regulation of the content of eco-information messages used in advertising products. The Federal Trade Commission, acting under the authority to prevent "unfair or deceptive acts or practices in commerce,"[24] has brought actions against a number of manufacturers making questionable claims.[25] State attorneys general have pursued similar actions under analogous state legislation. In order to aid manufacturers in developing fair and non-deceptive environmental marketing campaigns, the Federal Trade Commission recently issued guidelines for environmental claims.[26] These guidelines provide general principles for making environmental marketing claims, numerous examples of acceptable and misleading claims, and specific guidelines for making marketing claims. EPA also has proposed voluntary guidelines for the use of terms such as "recycled" and "recyclable" in product labeling and advertising,[27] and has sought comment

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California has adopted a negative ecolabeling program which requires product manufacturers to provide a "clear and reasonable warning" for products exposing consumers to a "significant risk." *See id.* § 25249.5; David Roe, *Barking Up the Right Tree*, 13 COLUM. J. ENVTL. L. 275 (1988). Such a warning is required for all listed chemicals for which the manufacturer cannot substantiate that no significant risk exists. "No significant risk" is defined for carcinogens as no more than one excess cancer per 100,000 people exposed for a lifetime. For reproductive toxins, it is defined as no more than 1/1000 of an amount that causes "no observable effect." *See* Paulette L. Stenzel, *Right-To-Know Provisions of California's Proposition 65: The Naivete of the Delaney Clause Revisited*, 15 HARV. ENVTL. L. REV. 493, 499-501 (1991). Unlike the preceding labeling programs, which seek to inform consumers of the overall environmental impacts of a product, this program is focused upon reducing direct toxic risks to consumers. The law informs consumers of the existence of toxic chemicals in the final product, which reflects the use of toxic chemicals in production and alerts consumers to potential problems with the disposal of the product. The significance of this latter message, however, is of questionable relevance to the issue of environmental impacts because products designed for human exposure and/or consumption generally must meet substantially higher standards than general waste disposal requirements.

24. Federal Trade Commission Act, Pub. L. No. 75-447, § 5, 52 Stat. 111, 111 (1938) (codified as amended at 15 U.S.C. § 45(a)(1) (1988 & Supp. V 1993)).

25. *See generally* OFFICE OF POLLUTION PREVENTION AND TOXICS, U.S. ENVTL. PROTECTION AGENCY, EVALUATION OF ENVIRONMENTAL MARKETING TERMS IN THE UNITED STATES 71-102 (1993); Stephen Gardner, *How Green Were My Values: Regulation of Environmental Marketing Claims*, 23 U. TOL. L. REV. 31, 50-52 (1991); Ciannat M. Howett, *The "Green Labeling" Phenomenon: Problems and Trends in the Regulation of Environmental Product Claims*, 11 VIR. ENVTL. L.J. 401, 417-18 (1992).

26. FEDERAL TRADE COMMISSION, GUIDES FOR THE USE OF THE ENVIRONMENTAL MARKETING CLAIMS: THE APPLICATION OF SECTION 5 OF THE FEDERAL TRADE COMMISSION ACT TO ENVIRONMENTAL ADVERTISING AND MARKETING PRACTICES (1992), *reprinted in* 22 Envtl. L. Rep. (Envtl. L. Inst.) 35,503 (Nov. 1992).

27. Environmental Protection Agency Guidance for the Use of the Terms "Recycled" and "Recyclable" and the Recycling Emblem in Environmental Marketing Claims, 56 Fed. Reg. 49,992 (1991).

on the use of other environmental terms.[28] In addition, a ten-state consortium of attorneys general has developed guidelines for responsible environmental advertising.[29]

As these programs illustrate, ecolabeling has been the principal approach to eco-information policy. An alternative approach to eco-information policy has been the establishment and dissemination of environmental principles to guide consumers' purchasing, use, and disposal decisions. Trading upon the well-known 3 R's of elementary school—reading, writing, and arithmetic—environmentalists have coined a green 3 R's hierarchy for household priorities: Reduce, Reuse, and Recycle. EPA has embraced this hierarchy in its consumer handbook.[30] EPA also has disseminated green consumerism principles through its environmental education program, which is targeted principally toward school children. Under the National Environmental Education Act,[31] Congress appropriated $65 million over five years to establish an Office of Environmental Education within EPA that serves as a clearinghouse for green education materials.

EPA currently is pursuing a variety of other eco-information policies directed principally toward businesses. These programs seek to assist companies in reducing pollution and resource use through the provision of information. EPA's Green Lights program promotes the environmental and economic benefits of energy-efficient lighting.[32] In exchange for a commitment to audit lighting utilization in their facilities and install cost-effective new lighting systems, corporations and government agencies joining the program receive assistance in evaluating energy-efficiency and financing options, a broad range of technical support, and training workshops. In addition, participants receive public recognition for participating in the program. EPA's Energy Star Computers Program awards a special logo to computer manufacturers that build specified energy saving devices into their sys-

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28. *Id.* at 49,994.

29. *See generally* STATE ATTORNEYS GENERAL TASK FORCE ON RESPONSIBLE ENVIRONMENTAL ADVERTISING, THE GREEN REPORT II: RECOMMENDATIONS FOR RESPONSIBLE ADVERTISING (1991); STATE ATTORNEYS GENERAL TASK FORCE ON RESPONSIBLE ENVIRONMENTAL ADVERTISING, THE GREEN REPORT: FINDINGS AND PRELIMINARY RECOMMENDATIONS FOR RESPONSIBLE ADVERTISING (1990).

30. EPA's Consumer Guide includes a fourth R: "Respond." OFFICE OF SOLID WASTE & EMERGENCY RESPONSE, U.S. ENVTL. PROTECTION AGENCY, THE CONSUMER'S HANDBOOK FOR REDUCING SOLID WASTE (1992).

31. Pub. L. No. 101-619, 104 Stat. 3325 (1990) (codified at 20 U.S.C. §§ 5501-5510 (Supp. V 1993)).

32. U.S. ENVTL. PROTECTION AGENCY, GREEN LIGHTS: A BRIGHT INVESTMENT IN THE ENVIRONMENT (1992) (program brochure); *see* Harry Freeman et al., *Industrial Pollution Prevention: A Critical Review*, 42 J. AIR & WASTE MGMT. ASS'N 618, 626 (1992).

tems.[33] EPA's Green Buildings Program promotes increased efficiency in heating, ventilation, and air conditioning systems in commercial buildings.[34] More generally, pursuant to the Pollution Prevention Act of 1990, EPA has embarked on a range of voluntary pollution reduction efforts, offering systematic guidance to regulated entities and establishing a source reduction clearinghouse and other informational exchange programs.[35]

Many state and local governments implicitly convey eco-information through their waste regulatory programs.[36] Deposit-refund laws and voluntary and mandatory curbside recycling programs encourage households to recycle beverage containers. In addition, packaging regulation, such as the ban on aseptic packaging (drink box) in Maine[37] and polystyrene cups in Berkeley,[38] convey strong disapproval of these packaging materials.

II. EDUCATING CONSUMERS ABOUT THE ENVIRONMENT: LABELS VERSUS PRICES

The federal structure of eco-information policy turns largely upon the general policy approach. As the preceding section has highlighted, eco-information policy in industrialized nations has been largely centered around a labeling model. As I have argued elsewhere,[39] the efficacy of structuring eco-information policy around product labeling is questionable. Moreover, little attention has been paid to a highly plausible alternative for framing eco-information policy—the price system. Price differentials between products serving the same function generally reflect the relative scarcity of the inputs—raw materials, labor, capital, and land—as well as the costs of complying with applicable regulatory requirements, pollution charges, and

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33. Barbara Rosewicz, *Environment: Desktop PCs Will Save Energy by Snoozing*, WALL ST. J., Aug. 25, 1992, at B1; U.S. ENVTL. PROTECTION AGENCY, ENERGY STAR COMPUTERS (1992) (program announcement).

34. U.S. ENVTL. PROTECTION AGENCY, GREEN BUILDINGS PROGRAM, PHASE 1: VARIABLE SPEED DRIVES (undated) (program announcement).

35. *See generally* Freeman et al., *supra* note 32; E. Lynn Grayson, *The Pollution Prevention Act of 1990: Emergence of a New Environmental Policy*, 22 Envtl. L. Rep. (Envtl. L. Inst.) 10,392 (June 1992).

36. *See generally* Peter S. Menell, *Beyond the Throwaway Society: An Incentive Approach to Regulating Municipal Solid Waste*, 17 ECOLOGY L.Q. 655, 675-79 (1990).

37. *See* OFFICE OF TECHNOLOGY ASSESSMENT, U.S. CONGRESS, FACING AMERICA'S TRASH: WHAT NEXT FOR MUNICIPAL SOLID WASTE? 315 (1989) [hereinafter FACING AMERICA'S TRASH].

38. BERKELEY, CAL., ORDINANCE NO. 5888 (1988) (banning all plastic foam packaging); BERKELEY, CAL., ORDINANCE NO. 5867 (1988) (banning chloroflourocarbon-processed food packaging).

39. *See generally* Menell, *supra* note 5.

potential environmental liabilities. Of course, one of the central motivations for eco-information policy has been concern for those areas in which the market fails to reflect adequately the full environmental costs of consumer choices. If the depletion of raw materials or the effects of pollution are not adequately internalized, then the market system will under-price depletable inputs and polluting products relative to less resource-intensive and cleaner alternatives. This well-recognized distortion, however, has led policy-makers and environmental activists to overlook the potential salutary allocative role that the market system can play. The fact that the market may fail to fully reflect environmental impacts does not establish that the price system has no role to play in constructively guiding consumers toward better environmental choices and behavior. The critical question is whether the price system or ecolabeling provide a better organizing framework for informing consumers about the relative environmental effects of their behavior.

It should be emphasized that the price system must be used intelligently in order to serve as a valuable guide to environmental decision-making. Consumers must recognize that product attributes and quality are important considerations in comparison shopping. Products that are made with inferior materials might not last as long or serve their function as well as better made products. To the extent that a product wears out more quickly or otherwise does not serve the consumer's purposes well, additional resource costs will have to be expended—in repair, early replacement, or substitution with other products. Second, consumers must understand that retail price may have little to say about the environmental impacts of product use and the resource recovery/disposal stages of the product life cycle. For example, buying a poorly insulated refrigerator may cost much more in increased energy bills over its useful life than the savings in product price. As another example, the costs of disposing packaging is not reflected in product prices.

Drawing from my prior work,[40] this Part contrasts two organizing approaches for eco-information policy: comprehensive ecolabeling, such as the schemes currently in place in Canada and the European Community, and intelligent use of the price system. In order to frame the analysis, the first section discusses the principal objectives of eco-information policy. The second section uses one of the most extensively studied product areas—the choice between waxed paperboard and polystyrene cups—to illustrate the potential operation of compre-

40. *See* Menell, *supra* note 5.

hensive ecolabeling and the price system in guiding consumers toward environmentally preferred choices. The third section expands upon this illustration to assess the efficacy of labeling and prices as the basis for building a coherent eco-information policy.

A. *The Objectives of Eco-Information Policy*

There are two principal motivations for government intervention to regulate or augment the amount and content of information regarding the environmental effects of consumer behavior: to enable consumers to reduce or correct environmental externalities directly and to foster informed consumer choice.

1. Addressing Environmental Externalities.—The production of goods and services frequently result in environmental externalities—impacts on the environment that are not fully reflected in product prices. Such externalities occur because of gaps in environmental regulation, inadequate environmental requirements, and/or inappropriate pollution charges. The most direct manner of addressing these regulatory gaps would, of course, be to improve the regulatory system and impose appropriate environmental charges. Since regulatory reform takes time and may never be perfectly accomplished, eco-information policy may be able to complement the broader environmental regulation program by encouraging consumers to take into account directly the environmental consequences of their decisions.

This role for eco-information policy, however, is challenging in practice. Whereas environmental impacts were significantly underregulated prior to the 1970s, an extensive regulatory structure now controls the emissions of pollutants to the air, water, land, and groundwater. Pollution is an environmental externality only to the extent that its costs are not adequately reflected in product prices. Although significant gaps still remain in the environmental regulatory system,[41] the comprehensiveness of environmental regulation in the United States, especially in comparison to the pre-1970 level, is remarkable.[42] Moreover, the degree of environmental cost internalization is in some circumstances excessive.[43] Of greater significance, the

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41. *See, e.g.*, William F. Pedersen, Jr., *The Future of Federal Solid Waste Regulation*, 16 COLUM. J. ENVTL. L. 109, 113-14, 118-20 (1991) (highlighting the under-inclusion of wastes in the hazardous waste system); Marcia E. Williams & Jonathan Z. Cannon, *Rethinking the Resource Conservation and Recovery Act for the 1990s*, 21 Envtl. L. Rptr. (Envtl. L. Inst.) 10,063, 10,067-68 (1991).

42. *See generally* FRANK P. GRAD, TREATISE ON ENVIRONMENTAL LAW § 1.01 (1995).

43. *See* Pedersen, *supra* note 41, at 119-22 (discussing the under- and over-inclusion of wastes in the hazardous waste system).

command and control system of environmental regulation widely used in the United States imposes excessive regulatory costs with respect to many environmental problems.[44] Finally, even in those areas where regulatory gaps are clearly identified—*e.g.*, hazardous wastes from small generators[45]—it is a daunting task to determine how such externalities are transmitted through the market system of a complex modern economy. Yet, in order to systematically assist consumers in correcting for environmental externalities, eco-information policy must be able to distinguish the relative externalities of a broad range of products.

2. Fostering Informed Consumer Choice.—The unregulated market may fail to provide adequate information about environmental impacts of consumer choice because it is difficult to appropriate sufficient return for generating such information. Perhaps more significantly, product manufacturers have an incentive to misrepresent the environmental attributes of their products so as to increase the appeal of their products. The potential for misleading eco-information in the marketplace is heightened by consumers' generally naive understanding of the environment,[46] the lack of clear standards regarding the relationship between human activities and the environment, and the difficulty of verifying many environmental claims. Thus, there may be a role for the government to play in providing useful information to consumers and in preventing the proliferation of deceptive information.

A related issue concerns the ability of consumers to decipher and appropriately use truthful information about environmental impacts of product and lifestyle choices. Even if consumers had complete and accurate information about the environmental impacts of consumer products, they may lack the cognitive ability to use this information effectively. Cognitive psychologists have found that people exhibit sys-

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44. *See generally* ROBERT W. CRANDALL, CONTROLLING INDUSTRIAL POLLUTION (1983); Bruce A. Ackerman & Richard B. Stewart, *Reforming Environmental Law*, 37 STAN. L. REV. 1333, 1334-40 (1985).

45. 40 C.F.R. § 261.5 (1994); *see* Pedersen, *supra* note 41, at 119.

46. *See* RELATIVE RISK REDUCTION STRATEGIES COMM., U.S. ENVTL. PROTECTION AGENCY, SCIENCE ADVISORY BOARD, REDUCING RISK: SETTING PRIORITIES AND STRATEGIES FOR ENVIRONMENTAL PROTECTION (1990) [hereinafter RELATIVE RISK REDUCTION STRATEGIES] (finding significant differences between public perceptions of environmental risks and scientific assessments); Paul Slovic et al., *Facts Versus Fears: Understanding Perceived Risks*, *in* JUDGMENT UNDER UNCERTAINTY: HEURISTICS AND BIASES 463 (Daniel Kahneman et al. eds., 1982). *But cf.* Donald T. Hornstein, *Reclaiming Environmental Law: A Normative Critique of Comparative Risk Analysis*, 92 COLUM. L. REV. 562, 605-16 (1992) (suggesting alternative explanations for the observed differences in lay and expert risk assessments).

tematic biases in their decision-making, including the simplification of complex information, excessive reliance on available information, and insufficient adjustment of initial perceptions.[47] More fundamentally, consumers may lack the basic mathematical and economic ability to discount future streams of costs or benefits. Studies of household decision-making regarding energy-using products indicate that consumers fail to consistently integrate purchase price and potential energy cost savings over the life of the product, even when they have adequate information about energy costs.[48]

Consequently, the government may have roles to play in both ensuring that consumers receive accurate information and in educating consumers about how to use such information effectively. The usability of information can be judged by three criteria: (1) comprehensibility—whether the information is understandable and easy to apply in making decisions; (2) universality—whether the information enables consumers to compare a broad range of choices in a comparative perspective; and (3) prioritization—whether the information enables consumers to make judgments about the importance of choosing one option relative to others.[49]

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47. One of the first comprehensive syntheses of the field can be found in Amos Tversky & Daniel Kahneman, *Judgment Under Uncertainty: Heuristics and Biases*, 185 SCIENCE 1124 (1974). *See generally* JUDGMENT UNDER UNCERTAINTY: HEURISTICS AND BIASES, *supra* note 46; Baruch Fischhoff et al., *Risk: A Guide to Controversy*, *in* IMPROVING RISK COMMUNICATION app. C (1989); Slovic et al., *supra* note 46.

48. A Pacific Gas and Electric survey found that consumers consider purchase price to be the most important factor in their choice of a refrigerator. Surprisingly, energy efficiency ranked last among the preference factors studied, behind features, brand, suitability, and color. *See* David B. Goldstein, *Refrigerator Reform: Guidelines for Energy Gluttons*, TECH. REV., Feb. 1983, at 36 (summarizing Pacific Gas and Electric study). An empirical study of air conditioner purchases reflects a similar phenomenon. That study found that consumers effectively use a disproportionately high rate of discount in choosing among models. *See* Jerry A. Hausman, *Individual Discount Rates and the Purchase and Utilization of Energy-Using Durables*, 10 BELL J. ECON. 33 (1979); Lee S. Friedman, Bounded Rationality Versus Utility Maximization: A Test in a Residential Energy Market (July 1990) (Graduate School of Public Policy, University of California at Berkeley, Working Paper No. 178); *see also* Richard Staelin, *Appliance Performance Labeling and Point-of-Purchase Information: The Results of Three Experiments*, *in* PRODUCT LABELING AND HEALTH RISKS 55-61 (Louis A. Morris et al. eds., 1980); H. Ruderman et al., *The Behavior of the Market for Energy Efficiency and Residential Appliances Including Heating and Cooling Equipment*, 7 ENERGY J. 101 (1986) (finding implicit discount rates for 1980 purchases of the following household appliances: gas central space heater (56%); oil central space heater (127%); room air conditioner (19%); central air conditioner (18%); electric water heater (816%); gas water heater (155%); refrigerator (78%); and freezer (270%)); Lori Wainright, *Psychology More a Barrier to Energy Efficiency than Technology, Economist Says*, ENVTL. F., Nov./Dec. 1990, at 37.

49. This framework is described in more detail in Menell, *supra* note 5, at 52-56.

B. An Illustrative Example: Disposable Cups

The choice between paper and plastic for products and packaging has been among the most salient eco-information issues over the past several years. Environmental activists have sought to replace polystyrene packaging in fast food service with paper packaging.[50] In response to these efforts, Berkeley, California and Suffolk County, New York have banned the use of polystyrene cups for environmental reasons.[51] In a much heralded publicity campaign in conjunction with the Environmental Defense Fund, McDonald's Corporation has discontinued its the use of polystyrene packaging on environmental grounds.[52]

Partly as a result of this fanfare, the choice between paper and polystyrene products on environmental grounds has been researched extensively. Consequently, good data is available for comparing the operation of eco-information approaches. As but one example from a relatively narrow product area, however, the choice between paper and polystyrene is only illustrative of the operation of eco-information approaches. Nonetheless, it illuminates a number of important factors in the choice of an organizing framework for eco-information policy.

It is unlikely that comprehensive ecolabeling would be able to provide consumers with constructive guidance on the choice between paperboard and polystyrene cups. The categories of analysis for comprehensive ecolabels tend to be relatively narrow, such as "fine paper made from recycled paper" and "newsprint made from recycled paper," the closest categories from the Canadian Environmental Choice Program.[53] The closest plastic category considered by the Canadian program is "products made from recycled plastics."[54] The German

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50. *See* FACING AMERICA'S TRASH, *supra* note 37, at 25-26, 313, 315-16; *see also* THE EARTHWORKS GROUP, THE NEXT STEP: 50 MORE THINGS YOU CAN DO TO SAVE THE EARTH (1991); THE EARTHWORKS GROUP, 50 SIMPLE THINGS YOU CAN DO TO SAVE THE EARTH (1989); JOEL ELKINGTON ET AL., THE GREEN CONSUMER 10 (1990).

51. *See supra* note 38; Menell, *supra* note 36, at 677.

52. *See* Richard A. Denison, *McDonald's Environmental Awareness*, CHI. TRIB., Dec. 29, 1990, at C18. *But see* Jeffrey F. Rayport & George C. Lodge, *Fed a Line, Ronald Goes Green: McDonald's Dropped Plastic Foam Packaging in Response to its Reading of Consumer Opinion, But Consumers Were Wrong*, L.A. TIMES, Nov. 26, 1990, at B5.

53. *See generally* ENVIRONMENT CANADA, IN THE MARKET FOR A BETTER WORLD (1993). The Environmental Choice Program has issued draft guidelines for "Unbleached Paper Products," and "Bleached Paper Products." *Id.*

54. *Id.*

Blue Angel program is limited in similar ways.[55] Thus it is unlikely that both polystyrene and waxed paperboard cups would be considered within the same category. The only paperboard category would likely identify manufacturing criteria such as the use of recycled unbleached paper. If the experience in Canada and West Germany is indicative of the pressures guiding such a program, there is unlikely to be any category for polystyrene cups. Hence, the consumer would face the following options at the grocery store: some waxed paperboard cups made of recycled material with an ecolabel, other waxed paperboard cups without a label, and polystyrene cups without ecolabels.[56] The preferred environmental choice within this framework would be waxed paperboard cups displaying an ecolabel.[57]

By contrast, a market-oriented approach would guide consumers to use price, adjusted for downstream costs and quality, as a reflection of total resource costs of a product. Downstream costs would include use costs (such as water and energy consumption) and disposal costs (including solid waste costs) over the life cycle of the product. In the case of disposable cups, the principal comparison would be purchase

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55. *See* OFFICE OF POLLUTION PREVENTION, U.S. ENVTL. PROTECTION AGENCY, APPLIED DECISION ANALYSIS: ENVIRONMENTAL LABELING IN THE UNITED STATES 8 (1989) [hereinafter APPLIED DECISION ANALYSIS] (list of West German product categories) (draft report).

56. This pattern of categories of ecolabeling exists in various contexts in Canada—no category for rechargeable batteries, but a category for non-rechargeable batteries; no category for disposable diapers, but categories for diaper services and cloth diapers. *See* ENVIRONMENT CANADA, *supra* note 53.

57. According to environmental buying guides, neither paper nor polystyrene cups is the preferred choice. *See* U.S. ENVTL. PROTECTION AGENCY, *supra* note 11, at 11. These guides urge consumers to prefer ceramic mugs or other reusable containers. Even this conventional wisdom, however, may be based more on perceptions than actual environmental effects. A recent study conducted by the Dutch Ministry of the Environment highlights the complexity of the choice between reusable and disposable cups. The study compared the life cycle costs of using a china coffee cup and saucer, including production and washing, and disposable cups and found that the china cup and saucer had to be used 1800 times before their total air pollution impacts fell below single-use polystyrene cups. *See Washed Up*, THE ECONOMIST, Aug. 1, 1992, at 58. Dutch caterers use china cups an average of 3000 times. *Id.* If the china cup is refilled once prior to each washing, then it equals the energy use of single-use polystyrene after 114 uses, landfill volume after 110 uses, and air pollution after 86 uses. As with other product life cycle analyses, this data ignores the costs of labor and most of the costs of capital. This study also overlooks sanitary concerns.

Moreover, the option of reusable cups is not always available. For example, those who would like to drink coffee or tea on the go will need to put it in something. Carrying a mug at all times can be inconvenient. Moreover, reusable mugs often are not feasible for fast food restaurants, picnics, conferences, and parties. Plastic and paperboard containers also have an advantage over ceramic mugs in that they are not easily breakable, which is an important consideration for use by children. Thus, the choice between paper and polystyrene cups often arises, even for the most environmentally prudent consumers.

price, assuming that waxed paperboard and polystyrene cups have comparable quality, reusability, and disposal costs.

Franklin Associates[58] performed the first comprehensive publicly-available study comparing the environmental impacts of paper and polystyrene cups in 1990.[59] The Franklin study was sponsored by the Council for Solid Waste Solutions, a plastics industry trade association. This work has been validated by Professor Martin B. Hocking, a chemist at the University of Victoria, British Columbia, who conducted an independent study reaching similar results.[60]

Table I summarizes Franklin Associates' estimates of the environmental impacts of paper and polystyrene hot cups. It should be noted that this comparison does not include paperboard cups made from recycled material, which was not a significant product category at the time of the study. The study assumes that no recycling of either final product is being done. A somewhat surprising finding of the study is that polystyrene cups use thirty-one percent less total energy in their manufacturing than wax-paperboard cups. Although polystyrene cups consist almost exclusively of petroleum products, the energy savings in their manufacturing and their relatively low material usage per finished product (polystyrene cups consist mostly of air) more than offset the energy consumed in producing paperboard cups.[61]

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58. Franklin Associates is a leading environmental consulting firm which conducted the first life-cycle assessments and has consulted on life-cycle assessment and other environmental issues for EPA. *See* Robert G. Hunt et al., *Resource and Environmental Profile Analysis: A Life Cycle Environmental Assessment for Products and Procedures*, 12 ENVTL. IMPACT ASSESSMENT REV. 245 (1992).

59. FRANKLIN ASSOCIATES, LTD., RESOURCES AND ENVIRONMENTAL PROFILE ANALYSIS OF FOAM POLYSTYRENE AND BLEACHED PAPERBOARD CONTAINERS (1990).

60. Martin B. Hocking, *Paper Versus Polystyrene, A Complex Choice*, 251 SCIENCE 504 (1991). Numerous letters criticizing Hocking's assumptions and his rejoinder are published in the June 7, 1991 issue. *See Letters*, 252 SCIENCE 1361 (1991).

61. The method for calculating total energy use is sensitive to assumptions about the extent to which wood residues and spent liquors are used to generate steam in a paper mill. *Compare* 252 SCIENCE 1361 (1991) (Letter to the Editor by Neil McKibben) *with id.* at 1362 (Response by Martin Hocking). The Franklin study incorporates the use of wood residue and spent liquors for self-generated power in paper mills. *See* FRANKLIN ASSOCIATES, *supra* note 59, at 2-8, 4-5 to -16.

TABLE I
COMPARISON OF ENVIRONMENTAL IMPACTS:
DISPOSABLE CUPS
(per 10,000 units)

Environmental Impacts		Polystyrene	Wax-Coated Paperboard
Energy Consumption (million Btu)		**6.1**	8.8
Air Emissions (lbs)		**13.8**	25.7
Water Pollution (lbs)		**2.5**	4.3
Post-Consumer Solid Waste	lbs	**120.3**	266.2
	cubic feet	13.7	**8.8**
Retail Price (50 cups)		**$ .93**	$ 2.85

Assumptions: Based upon the low recycling rates for both paperboard and polystyrene cups, it is assumed that no recycling occurs.
Sources: Franklin Associates, Inc., Resources and Environmental Profile Analysis of Foam Polystyrene and Bleached Paperboard Containers (June 1990) (prepared for the Council for Solid Waste Solutions) (resource use and environmental impacts); Safeway, Albany, California (April 1992) (price data).

The direct environmental effects also lead to some surprises. The production of polystyrene cups generate forty-six percent less atmospheric emissions than the production of paperboard cups.[62] With regard to water pollution, the production of polystyrene cups results in forty-two percent fewer effluents than the production of paperboard cups.[63] Polystyrene cups produce less solid waste on a weight basis, but take up more landfill space because of their high air content. They have a higher energy content than paperboard cups and hence yield more energy in a waste-to-energy incinerator. Polystyrene cups are somewhat safer in a landfill because they are inert and hence do not leach pollutants into the groundwater nor produce methane, both of which can occur with paperboard.[64]

Based upon this analysis, the preferred environmental choice would appear to be the polystyrene cup, unless of course solid waste

62. Hocking's study provides a breakdown by seven air pollutants. He found that polystyrene cups result in zero or negligible pollution in all categories except pentane, the blowing agent, and sulfur dioxide, which is approximately equivalent for both types of cup. Hocking, *supra* note 60, at 505.

63. After making adjustments to reflect the comments in letters to the editor, the Hocking study finds that the production of polystyrene cups results in dramatically lower effluent volumes, suspended solids, and BOD. Polystyrene production does not produce organochloride effluents, but it does produce more metal salts than paperboard cup production. *See id.*; *Letters*, *supra* note 60, at 1361-62; *id.* at 1362 (Hocking Response).

64. Hocking, *supra* note 60, at 505.

volume was an overriding consideration or using recycled content would have dramatically altered the environmental impacts of paperboard cups. The price system appears to have reflected at least some of the relevant environmental criteria. The lower price reflected, in part, the lower material requirements, environmental impacts, and superior technology for producing, packaging, and transporting polystyrene cups. In addition, the price approach would allow the consumer to factor in other considerations, such as the superior insulating characteristics of polystyrene. By contrast, an ecolabeling program would not have provided any basis for choosing between the polystyrene and paperboard alternatives. At best, it might have fostered a market for paperboard cups made of recycled content, although much of the environmental benefits (and costs) of this product would likely be reflected in the market price.

C. *Comparative Assessment of Labels and Markets as an Organizing Framework for Eco-Information Policy*

The previous example highlights some important ways in which the market (the price system) provides a more appropriate framework for structuring an eco-information policy. This section expands upon the example to sketch the case for building eco-information policy around the market system.

1. Internalizing Externalities.—The example highlights the difficulty of trying to correct for externalities through eco-information policy. Both products use resources and processes that might generate externalities. Even if one product were made of recycled material, it would be a great leap to assume that this was a sufficient and accurate proxy for lower environmental externalities.[65] As is reflected by the life cycle assessments available in numerous product categories—disposable and reusable diapers, orange juice delivery systems—recyclability is one of numerous factors affecting environmental loadings of a product.[66] More generally, government regulation already internalizes a large proportion of environmental impacts into market prices. In many cases, there are many more "internalities," environmental effects reflected in the market price, than externalities. Hence an eco-information policy driven by countermanding market signals to reflect environmental effects may lead consumers to disregard what

65. *See* Menell, *supra* note 5, at 14-19.

66. *See id.* at 28-51.

may be the best information feasibly available about relative environmental impacts.

Ecolabeling based upon product life cycle assessment focuses on resource use and effluent flows. Absolute effluent flows, however, are not synonymous with environmental impacts. Such impacts depend critically upon human population density at the location of outflow, the assimilative capacity of the surrounding ecosystem, and the relative effects of different types of effluents (and in different media—air, water, groundwater). Since PLCA is unable to track the site specificity of impacts and lacks a coherent methodology for conducting impact analysis, ecolabels based on such data are poor indicators of actual pollution concerns. Furthermore, the emphasis on narrow product categories, while providing guidance on intra-category choices, provides little advice on inter-category choices. In addition, PLCA can only roughly capture differences in product use and disposal behavior by different consumers.

By contrast, the price system is sensitive to the effects of pollution (controlling for population densities near outflows and the assimilative capacities of ecosystems) to the extent that regulations and environmental fees appropriately reflect site-specific impacts. Although environmental regulations are far from perfect in this regard,[67] there is significant sensitivity to local factors. Air pollution regulations, for example, are substantially more stringent in regions that have not attained the National Ambient Air Quality Standards.[68] It is simply more expensive to operate a facility generating effluents in an area with higher pollution control costs, transportation costs, disposal fees, and energy costs. Moreover, with regard to the use of products, consumers directly face location-specific energy, water, transportation costs, and waste disposal costs. In addition, the price system captures not only direct resource costs in production and distribution, but also the generation of valuable by-products as well as synergies in markets and economies of scale.

Although the regulatory system is far from perfect, the number and size of regulatory gaps have been substantially reduced over the past twenty-five years. The price system, however, rewards those enterprises that are able to evade environmental requirements. Nonetheless, the extent of regulation and environmental enforcement is growing, as well as the extent of externality pricing. For example,

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67. *See* James E. Krier, *The Irrational National Air Quality Standards: Macro- and Micro-Mistakes*, 22 UCLA L. REV. 323 (1974).

68. PETER S. MENELL & RICHARD B. STEWART, ENVIRONMENTAL LAW AND POLICY 345-64 (1994).

public utilities have recently begun implementing externality surcharges for electricity rates.[69] A growing number of communities use curbside charges for waste disposal.[70] Communities in drought areas increasingly use water metering.

Thus, there is good reason to believe that markets subject to reasonably comprehensive environmental controls may provide better information about relative environmental impacts than ecolabels awarded to narrow sub-classes of products. It may well be true that a recycled waxed paperboard cup receiving a government awarded ecolabel has less environmental impact than other cups in the category of waxed paperboard cups, but such a label does not help us in choosing between the waxed paperboard cup and the polystyrene cup. To the extent that product prices reflect a substantial proportion of environmental costs, through either regulatory costs or environmental charges, the market is more likely to provide a better signal of relative environmental effects than labels based upon narrow sub-classes of products.

This is not to say that product prices directly reflect environmental costs. Product prices are a composite of material, labor, capital, regulatory, and other costs. Thus the consumer will not be able to separate out the environmental component. Such information, even if separable, however, would not be particularly useful given the substitutability of inputs. For example, product A might have higher labor costs because the manufacturing process relies upon workers sorting through input material in order to reduce emissions while competing product B might currently invest more in equipment to capture the emissions and safely dispose them. A full accounting of costs would indicate that product A has lower environmental costs but higher labor costs, yet the environmental impacts might be the same so long as both manufacturers are adhering to all applicable environmental regulations. In view of the high degree of environmental cost internalization, ecolabels will not be able to systematically correct for environmental externalities. More likely, they run the risk of undermining the regulated market's ability to reflect the many environmental "internalities." The worthy goal of trying to provide consumers

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69. *See* Bernard S. Black & Richard J. Pierce, Jr., *The Choice Between Markets and Central Planning in Regulating the U.S. Electricity Industry*, 93 COLUM. L. REV. 1339, 1398-99 (1993); *Environmental Externalities and Electricity Planning: A Look at Recent Trends*, GLOBAL ENVTL. CHANGE REPORT, Feb. 15, 1991, at 1.

70. *See* Lisa A. Skumatz, *Variable Rates for Municipal Solid Waste: Implementations, Experience, Economics, and Legislation* (Policy Report No. 160, Reason Foundation, Los Angeles, CA), June 1993.

with sufficient information to correct for environmental externalities in their purchasing decisions generally is infeasible in practice.

2. *Fostering Informed Choice.*—While it is unrealistic for government policy to provide consumers with a systematic basis for correcting for environmental externalities, government nonetheless has an important role to play in assisting consumers in navigating the complex range of choices that they confront in daily life. The efficacy of different eco-information approaches can be evaluated according to their comprehensibility, universality, and ability to enable consumers to prioritize among environmental choices.

a. Comprehensibility.—Ecolabeling is reasonably comprehensible because of its clear environmental stamp of approval within a product category. In effect, ecolabeling dictates choices to environmentally conscious consumers. The main problem is knowing how broad a group of functionally similar products are included within the same category. Because of the limited space on a label for delineating categories[71] and lay consumers' inability to judge omitted information, the comprehensibility of ecolabeling is often illusory in practice.

Ecolabeling may mislead consumers not by directly misinforming but through implicit inferences that consumers are likely to draw. In the disposable cup example, an ecolabel only on cups made of recycled content leads consumers to make the inference that other options, such as polystyrene cups, do not measure up on environmental grounds. Since other products and packaging will often not have even been evaluated, this inference is misleading. This circumstance occurs commonly in the Canadian Environmental Choice Program. Categories exist for reusable cloth diapers and diaper services, but not disposable diapers; ethanol-blended gasoline, but not other gasolines or other fuels (*e.g.*, compressed natural gas); non-rechargeable batteries, but not rechargeable batteries.[72] Germany's Blue Angel program does not label roll-on deodorants, but does label aerosol sprays.[73] Even if an ecolabeling program provided labels for paperboard and polystyrene cup categories, there would still be no basis for comparing across these categories.

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71. *See* SUSAN G. HADDON, READ THE LABEL: REDUCING RISK BY PROVIDING INFORMATION 143-51 (1986) (discussing the difficulties of providing complex information on product labels).

72. *See* ENVIRONMENT CANADA, *supra* note 53.

73. *See* APPLIED DECISION ANALYSIS, *supra* note 55, at 8 (listing product categories); *Eco-babble*, THE ECONOMIST, Sept. 21, 1991, at 84.

By contrast, the price system avoids making a direct claim that it reflects only environmental considerations, yet it provides reasonably good information on resource costs. Through their direct involvement in the market process as workers, consumers, and investors, most people recognize that the market reflects many factors. A government information policy emphasizing the importance of environmental effects among these many factors would not likely lead consumers to think that price is synonymous with environmental impacts, but rather a good statistic for gauging such impacts in an extremely complex economy.

The price system is reasonably straightforward to apply with regard to most consumer decisions. Consumers in a market economy are accustomed to the price system. Comparative shopping is a skill learned early in life and reinforced throughout a person's life, whether in making personal choices or working for others. Most advertising, consumer guides, and other readily accessible materials provide information relevant for comparative shopping. In fact, the unit pricing provided in most grocery stores is specifically designed to aid consumers in using the price system.

The principal area where consumers encounter difficulty in using the price system involves products and activities for which costs occur over time. Automobiles and major appliances have up-front costs as well as significant costs over times: in the case of automobiles, maintenance, gasoline, insurance and energy; in the case of washing machines, water use and energy. Consumers might also have difficulty incorporating costs of ultimate disposal, which may occur weeks or years after purchase, into their purchasing decisions. Cognitive limitations can hinder consumers' effective use of the price system in making these decisions.

b. Universality.—Ecolabeling fares poorly with regard to the universality criterion. By focusing on narrow product categories in order to conform to the limitations of product life cycle analysis, ecolabeling provides reasonably accurate environmental information only within narrow product categories. Where an ecolabel has been awarded to one product (*e.g.*, a recycled paperboard cup), the consumer cannot readily assess how that product compares to functionally similar but compositionally different substitutes (polystyrene). Consumers cannot readily detect omissions in the information that they receive, leading them to infer that the labeled product is environmentally superior. As the disposable cup example highlights, this cognitive bias can be misleading in assessing products across ecolabeling, but not necessarily functional, categories.

More generally, ecolabeling omits many product and packaging categories, as well as consumer behavior not directly based on purchasing, such as the use of appliances and the disposal of wastes. A study of the environmental impacts of washing machines, for example, found that most of the variation in life cycle environmental effects was attributable to how the machines were used and not how they were made.[74] Yet ecolabeling alone cannot capture these aspects of environmental behavior.

The universality of the price signal as a reflection of resource costs provides consumers with a powerful tool for understanding a broad array of consumer choices. Pricing exists through a broad variety of means beyond merely the cash register at a store. For example, the use of an air conditioner is charged through monthly electric bills; littering risks the imposition of a substantial fine (and social and moral stigma); solid waste through curbside fees.

The price system enables consumers to assess not only the full range of choices for cups, but also a broad range of lifestyle and other choices, such as how to commute to work (or whether to telecommute) or the choice between a vegetarian and a meat-centered diet. Because meat production requires many pounds of vegetable protein for each pound of meat protein produced and substantially more additional growing and processing resources,[75] the price system favors a vegetarian diet on a resource basis, so long as the consumer does not purchase vegetables that are particularly costly to grow or must be imported over large distances. Similarly, a trek in the Himalayas, while environmentally inspiring, requires substantially higher transportation costs (and likely higher environmental impacts) than a trek closer to home. By emphasizing the implicit resource trade-offs in all consumer decisions, a market-oriented eco-information policy provides a much more pervasive appreciation of the relationship between human behavior and the environment.

c. Prioritization.—As an ordinal index—that is, merely conveying that products receiving a government-sponsored label are preferable to those in the same category not receiving such a label, but not by how much—ecolabels provide no indication of the relative environmental importance of consumer choices. It is possible that consumers will attach significance to the fact that certain categories are evaluated for labels, inferring that there are particularly important environmental opportunities in those product areas. In view of the arbi-

74. *See Eco-babble*, *supra* note 73, at 85.

75. *See* FRANCIS M. LAPPÉ, DIET FOR A SMALL PLANET 67-71 (1982).

trary process by which product categories are selected for evaluation and the potential bias against other categories (*e.g.*, exclusion of products made of plastic), this relative signal is likely to be misleading.

By contrast, the price system provides a clear system of prioritization. In choosing among types of disposable cups, the consumer faces a cardinal metric—product prices (adjusted for downstream costs such as waste disposal costs where applicable). The relative ranking of choices is reflected in a monetary index which integrates all of the resource costs which are internalized. The consumer can plainly see whether the price differential is a few percent or three hundred percent. With regard to the choice between polystyrene and paperboard cups, a red flag would go up. Unless there are enormous labor cost differences and/or immense environmental externalities attributable only to polystyrene cups, the price system is signalling that polystyrene cups are consuming fewer resources and/or causing less pollution.

3. Further Limitations of Ecolabeling.—Moving beyond the disposable cups example, comprehensive ecolabeling programs have other significant limitations as the organizing principle for eco-information policy. Comprehensive ecolabeling programs base their message to consumers on the results of product life cycle assessments of consumer products, a methodology with severe limitations.[76] Standard methodology, for example, assumes that production processes meet all applicable environmental standards and guidelines.[77] Since the major environmental concerns relate to loadings above the assimilative capacity of the receiving ecosystem, such an assumption largely ignores the problem to be addressed. Moreover, even if it was realistic to track site specific impacts, there is no accepted methodology for translating resource requirements and environmental loadings into a coherent measure of human and ecosystem impacts. Thus we are typically left comparing absolute loadings across different products and production methods. Unlike the disposable cup example, where all of the loadings (except volume of solid waste) favored one option (polystyrene), we often encounter more ambiguous results. For example, disposable diapers use more input materials and generate greater solid waste than cloth diapers, whereas cloth uses more water and results in greater water pollution. Without a methodology for assessing

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76. *See* Menell, *supra* note 5, at 30-39; Paul R. Portney, *The Price is Right: Making Use of Life Cycle Analyses*, ISSUES IN SCI. & TECH., Winter 1993-94, at 69.

77. *See, e.g.*, FRANKLIN ASSOCIATES, LTD., ENERGY AND ENVIRONMENTAL PROFILE ANALYSIS OF CHILDREN'S DISPOSABLE AND CLOTH DIAPERS 2-10 (1990) [hereinafter API STUDY] (Report to the American Paper Institute Diaper Manufacturers Group).

impacts across media, PLCA is incapable of providing clear answers to many of the choices consumers face. Although PLCA is a useful methodology for illuminating some environmental choices, it is not an adequate framework for building a coherent eco-information policy.

The experience of those nations that have pursued ecolabeling programs suggests that comprehensive ecolabeling, even if based on state-of-the-art product life cycle assessment, is prone to severe distortion as a result of the political economy of environmental policy. Although the formulation of ecolabeling programs appears to be neutral, the implementation has been heavily influenced by perceptions of what is environmentally sound. As discussed earlier, the Canadian and European Community programs exclude products and packaging made of plastics, with limited exceptions for products made of recycled plastics, despite numerous studies showing environmental advantages to the use of plastics.[78] A recent article about ecolabeling programs notes that

> [s]chemes are likely to concentrate on products whose use environmentalists want to promote (biodegradable engine oil in Canada, building materials made from waste paper in Germany). The testers will tend to neglect more common items, whose effect on the environment may worry shoppers but be difficult to measure or simply bore environmentalists.[79]

The methodology of ecolabeling programs invites political influence in implementation. Product life cycle analysis was developed in part to provide a more systematic basis for evaluation. Because of cost and data limitations, however, PLCA requires numerous simplifying assumptions which makes the analysis prone to manipulation in practice. When the stakes are significant, the use of PLCA inevitably results in a battle of the experts, with different industries using well-financed consultants to promote particular policy outcomes or question unfavorable outcomes. Bureaucrats will have to either confront highly politicized labeling decisions or avoid considering categories likely to engender controversy. Although the use of independent re-

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78. *See* WILLIAM RATHJE & CULLEN MURPHY, RUBBISH! THE ARCHAEOLOGY OF GARBAGE 216-20 (1992) (reporting study of American and Mexican waste disposal showing that skillful packaging of food products significantly reduces wastage of foods, resulting in substantially less solid waste per household in the U.S. compared to Mexico City). *See generally Environmentalism Too Strong to Suffer Setbacks of the 1970s*, ENVTL. COMPLIANCE UPDATE, Feb. 1992 (describing a 1988 German study finding that a ban on plastic packaging would quadruple the weight of packaging, double packaging volume, double energy consumption, and double the cost to consumers).

79. *See Eco-babble*, *supra* note 73, at 85.

view panels is designed to reduce these problems, it is unlikely that manufacturers who have much to gain or lose from labeling standards will refrain from lobbying government officials at any and all levels of potential influence.

Ecolabeling programs also invite trade protectionism in the guise of environmental protection.[80] Germany's ecolabeling systems and packaging return regulations have been attacked as discouraging foreign competition in product markets and recycling.[81] Complaints of trade protectionism already have been raised with regard to the European Community's nascent ecolabeling program.[82] Brazilian businesses have complained that foreign manufacturers have been excluded from working groups developing category definitions and product standards. They are also concerned that labeling standards will favor domestic resources. The fact that environmental labeling programs might discourage imports does not mean that they would not produce environmental benefits or that such benefits do not justify a reduction in trade. Rather, it points to the potential for ecolabeling programs to serve as instruments in protectionist battles.[83] They create perverse incentives for domestic industries to influence programs less for environmental objectives than protectionist gains.

4. Additional Advantages of a Market-Oriented Approach.—Unlike ecolabels, which limit consumers' choices to buying or not buying a particular labeled product, the price system affords consumers much wider latitude to prioritize and channel their investments to improve the environment. For example, even if wax-coated paperboard cups had lower material usage and environmental loadings (contrary to Ta-

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80. *See generally* Richard B. Stewart, *International Trade and the Environment: Lessons from the Federal Experience*, 49 WASH. & LEE L. REV. 1329, 1333-35 (1992) (discussing the political economy of product standards); *The Greening of Protectionism*, THE ECONOMIST, Feb. 27, 1993, at 25; Marc Levinson, *The Green Gang's*, NEWSWEEK, Aug. 3, 1992, at 58.

81. *See* Joachim Schypek, *Germany on Trial Over Green Packaging: Green Light for German Packaging*, MARKETING, July 2, 1992, at 14.

82. *EC Eco-Label Program Raises Concerns for Brazilian Business, Government Officials*, Int'l Env't Rep. (BNA) 43-44 (Jan. 27, 1993); Amanda Marcus & John Pearson, *Is the Future Written in the Stars; Environmental Labeling of Paper Products*, 33 PAPER & PULP INT'L 96 (1991) (commenting that "[a] country with ample wastepaper and few natural resources, for example, could be tempted to label as unfriendly an imported virgin-fiber pulp, even if the complete life cycle of the product proved Greener than a local waste-based equivalent").

83. *See, e.g., Malaysia: Minister Says Timber Body Should Be Expanded*, GREENWIRE, Nov. 12, 1992, at 1 (highlighting Australia's mandatory ecolabeling of only tropical timber, despite a World Wide Fund for Nature study finding that clear-cutting of temperate and boreal timber are also damaging to the environment); *cf.* Nancy Dunne & Bernard Simon, *Canada-U.S. Beer War Gets Green Tinge: Environmental Issues Creeping into an Old Dispute*, FIN. TIMES, July 31, 1992, at 4.

ble 1) but remained three times more costly than polystyrene cups, the environment likely would be better served if consumers purchased polystyrene cups and donated the price differential to preserve valuable ecosystems. For example, for every 93 cents spent on disposable cups, consumers could donate $1.92 to the Nature Conservancy. Rarely will the benefit to the environment of consumers favoring a particular product be of this magnitude. Ecolabeling in effect bundles the consumer's product choice and his or her environmental investment. The fungibility offered by the price system enables a decoupling of consumption and environmental investments, which may more effectively protect the environment.

In addition to its direct allocative function, the price system can serve as a valuable eco-educational device. Consumers are familiar with the operation of markets as general allocational mechanisms through comparison shopping and hence can be readily taught about its relevance to environmental criteria. With some supplemental information, such as the energy and water costs involved in the use stage of appliances and the disposal costs of various waste materials, consumers can readily develop an ability to perform rough life cycle costing of products. Over time, this process would become intuitive to most consumers in much the way that other comparative shopping techniques have become inculcated. In this way, the price system can serve as a dynamic learning device, bringing consumers satisfaction in terms of money saved and the knowledge that they are reducing their impacts on the environment.

A market-oriented approach would complement other elements of eco-information policy, such as energy efficiency labeling, EPA's green lights and other business information, and incentive programs.[84] These programs seek to educate consumers and businesses about ways of saving money and reducing electricity usage simultaneously (without loss in quality of service).

A market-oriented approach also comports with the clear trend of environmental policy toward market-based instruments.[85] A tradeable emission program was remarkably successful in phasing out air-

84. *See supra* text accompanying notes 24-35.

85. *See* MENELL & STEWART, *supra* note 68, at 374-425, 517-25, 609-12; Robert W. Hahn & Robert N. Stavins, *Incentive-Based Environmental Regulation: A New Era from an Old Idea?*, 18 ECOLOGY L.Q. 1 (1991); Robert W. Hahn & Roger G. Noll, *Environmental Markets in the Year 2000*, 3 J. RISK & UNCERTAINTY 351 (1990); *cf.* ORGANIZATION FOR ECONOMIC COOPERATION & DEVELOPMENT, ENVIRONMENTAL LABELING IN OECD COUNTRIES (1991) [hereinafter OECD] (identifying more than 150 different applications of economic instruments in 14 countries).

borne lead between 1985 and 1987.[86] A major reform in the Clean Air Act Amendments of 1990 was the adoption of a tradeable emission system for reducing sulfur oxide emissions and addressing acid deposition.[87] After two decades of disappointing progress in addressing air pollution, Los Angeles and other pollution-choked areas are moving toward market-oriented policies.[88] Policies directly internalizing the costs of environmental externalities are also gaining support and being implemented. At the local level, communities are increasingly internalizing the costs of solid waste disposal through unit pricing of mixed refuse disposal.[89] Economic incentive-based approaches have been offered to address hazardous waste problems as well.[90] Electrical utility regulators have begun incorporating pollution externality charges into planning and ratemaking decisions.[91] Energy taxation generally has become a focal point of deficit reduction and environmental protection.[92] Federal policy-makers have also begun to internalize the costs of resource exploitation and ecosystem disruption on federal lands.[93] Other promising and creative applications of economic incentive approaches to environmental regulation are being seriously considered.[94]

5. Overall Assessment.—In the real world of complex and costly information, imperfect institutions, and cognitive limitations, it is unrealistic to expect government policy to inform consumers perfectly about the environmental consequences of their product and lifestyle

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86. *See* Hahn & Stavins, *supra* note 85, at 17.

87. *See* MENELL & STEWART, *supra* note 68, at 406-14.

88. *Id.* at 415-17.

89. *See* Menell, *supra* note 36, at 676.

90. *See* Robert W. Hahn, *An Evaluation of Options for Reducing Hazardous Waste*, 12 HARV. ENVTL. L. REV. 201 (1988); Clifford Russell, *Economic Incentives in the Management of Hazardous Wastes*, 13 COLUM. J. ENVTL. L. 257 (1988). Denmark has adopted a deposit-refund system for high mercury content and cadmium batteries. *See* OECD, *supra* note 85, at 83-88.

91. *See Environmental Externalities and Electricity Planning: A Look at Recent Trends*, 3 GLOBAL ENVTL. CHANGE REPORT, Feb. 15, 1991, at 1.

92. *See generally* PROGRESSIVE POLICY INSTITUTE, THE GREENING OF AMERICA'S TAXES (1992) (calling for adoption of "green charges" to make consumers as well as industries "experience the cost" of cleaning up the environment and reducing pollution); *New Taxes Should Make Consumers, Industries 'Experience Cost' of Cleanups, Institute Urges*, 22 Env't Rep. (BNA) 2376 (Feb. 14, 1992).

93. *See* Timothy Egan, *Sweeping Reversal of U.S. Land Policy Sought by Clinton*, N.Y. TIMES, Feb. 24, 1993, at A1.

94. *See, e.g.*, Leo Levenson & Deborah Gordon, *Drive+: Promoting Cleaner and More Fuel Efficient Motor Vehicles Through a Self-Financing System of State Sales Tax Incentives*, 9 J. POL'Y ANALYSIS & MGMT. 409 (1990); *Vehicle "Feebates" Become Policy in Ontario*, 3 GLOBAL ENVTL. CHANGE REPORT, July 3, 1991, at 1 (adopting a sales tax/rebate scheme that penalizes cars with below-average fuel efficiency and rewards those with above-average fuel efficiency).

choices. The goal of public policy must be to design the best system in view of these limitations and constraints.

The principal approach to eco-information policy throughout the industrialized world has been the use of point-of-purchase labels to guide consumers to "preferred" environmental choices.[95] Although other policies are also being pursued, ecolabeling programs are increasingly seen as a comprehensive solution to the problem of confusing green marketing claims and a powerful incentive device to reduce environmental impacts. As the preceding analysis demonstrated, however, the efficacy of this approach is highly questionable, especially in comparison to intelligent use of the price system. Ecolabeling provides consumers with a detailed (and imperfect) view of but a few trees, but obscures the larger forest of options. By contrast, the price system offers consumers a simple, flexible, and readily available guide to the broad range of choices. While imperfect, it provides the better organizing framework for structuring eco-information policy.

This is not to suggest that ecolabels have no value in informing consumers or reducing environmental degradation. Ecolabels can be effective in encouraging manufacturers to improve environmental performance of products within product categories. A market-oriented approach also creates such incentives, but there is no question that the cognitive limitations of businesses and consumers might justify limited use of ecolabel "prizes" in carefully selected product categories. Nonetheless, such an effort must not undercut the important role of the market in providing the key guidepost to consumers in developing a framework for integrating environmental concerns into their product and lifestyle choices.

III. IMPLEMENTING A MARKET-ORIENTED ECO-INFORMATION POLICY WITHIN THE U.S. FEDERAL SYSTEM

A market-oriented approach to eco-information policy seeks to promote and improve the market as a signal of the social resource costs of consumer decisions about products and lifestyle choices. To achieve this objective most effectively, eco-information policy should guide both the demand and supply for products. It can steer demand by educating consumers about the market mechanism as an eco-information source. It can influence supply by internalizing the environmental impacts of resource extraction, processing, production, and distribution.

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95. *See* Marlise Simons, *The European Community's Green Seals of Approval: 12 Countries, 340 Million Shoppers, One Planet*, N.Y. TIMES, Apr. 11, 1993, at E5; OECD, *supra* note 85.

The United States already has an elaborate set of institutions and policies integrating environmental concerns into the market economy. Eco-information should take advantage of, reinforce, and improve these institutions. Eco-information should have a clear and intuitive message, so as to enable cognitively limited consumers to integrate sound principles into their daily lives. In view of the centrality of markets and environmental regulation to this framework, eco-information policy must also be pervasive, coherently infusing its logic into the many government policies affecting the environment.

A market-oriented eco-information policy, therefore, requires the involvement of the broad range of agencies—federal, state, and local—affecting the regulation of the environment. Many of the policies outlined below—such as resource management and pollution regulation generally, regulatory enforcement, and transportation policy—have their primary impact upon the supply side of the market by influencing product costs. They also have relevance to a market-oriented eco-information policy by enhancing the extent to which market prices reflect social costs and by bolstering environmental consumers' confidence in the marketplace.

A. Federal Responsibilities

1. Central Authority, Planning, and Coordination.—Although many elements of a market-oriented eco-information policy should be decentralized, it is essential that the program have a central authority in order to develop the overall campaign and to coordinate and provide a clearinghouse for the decentralized elements. The Environmental Protection Agency has many of the technical, policy, and organizational capacities to perform this function. It is critical, however, that eco-information policy be coordinated and developed at a high level in the agency. Since eco-information policy needs to be integrated into policy development, legislation, and planning for all elements of environmental policy, this effort must be part of overall planning and implementation at the agency.

It is also essential that the eco-information policy authority be apart from the particular media divisions of EPA. Currently much of the public information campaign is run out of the Office of Solid Waste, which has resulted in an overemphasis on solid waste issues and the disposal end of the product life cycle. EPA's principal guide on green consumerism, *The Consumer's Handbook for Reducing Solid*

Waste,[96] reinforces the instruction that solid waste impacts should be the principal concern of environmental consumers.[97] Eco-information policy must encompass the full product life cycle—from extraction of raw materials through recovery and/or ultimate disposal.

The basic functions of the "Eco-Information Division" should include policy coordination and development, a public information campaign, a clearinghouse for eco-information policy, and research funding.

a. Policy Coordination and Development.—EPA's Eco-Information Division should review all aspects of environmental policy to assess opportunities for improving the degree of market internalization of environmental costs and to identify opportunities for encouraging consumers and businesses to voluntarily reduce adverse environmental impacts through eco-information and education efforts. The Division should be involved in legislative initiatives and policy implementation.

b. Public Information Campaign.—EPA's public information campaign should focus on two elements: (1) forcefully conveying the message that intelligent use of the price system provides valuable information about social resource costs; and (2) developing and disseminating a broader understanding of how consumers can prioritize so as to make good environmental choices.

Intelligent use of the price system largely builds upon the concept of comparative shopping. As noted above, consumers should learn to incorporate downstream costs—such as use and disposal—and product quality in making decisions. In addition, the public information campaign should emphasize the fungible nature of the price system—the idea that a consumer may be able to do more for the environment by purchasing a less expensive product option and donating the differential to direct environmental protection efforts, such as ecosystem acquisition and protection.

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96. EPA originally issued this handbook in October 1990 under the title *The Environmental Consumer's Handbook*. In response to strong criticisms from industry, *see* Martha M. Hamilton, *EPA Pulls Consumer Handbook; Industry Complaints Prompt Action*, WASH. POST, Apr. 23, 1991, at D1, EPA withdrew the guide and reissued it in slightly modified form in August 1992 under the title *The Consumer's Handbook for Reducing Solid Waste*. As EPA's principal public document addressing how to be a responsible consumer, however, the change of title did little to alter the underlying message.

97. *Cf.* Thomas C. Downs, *"Environmentally Friendly" Product Advertising: Its Future Requires a New Regulatory Authority*, 42 AM. U. L. REV. 155, 192 n.180 (1992) (illustrating the focus of information policy on solid waste impacts).

A more challenging element of the public information campaign would be to develop metaphors and other educational devices to provide consumers with a overarching view of the broad range of environmental choices that they explicitly and implicitly make in their daily lives. Most eco-information efforts to date either uncritically promote simplistic and largely untested principles of environmentalism or focus narrowly on particular choices—such as the choice between cloth and disposable diapers. There has been relatively little attention devoted to framing environmental issues in a comprehensive and useful manner. Consumers have a distorted view of a few trees in a largely unfathomable forest of environmental issues. Government-sponsored eco-education efforts should be directed toward putting the forest into better perspective.

An alternative way of organizing eco-information would be according to the daily activities of representative people. During the course of a day, people engage in a broad range of activities affecting the environment, with the purchasing of products as a component. The most effective ways for consumers to sensibly evaluate their impact on the environment would be to have the broad range of activities in their life evaluated within an intuitive framework.

A useful analogy is provided by the development of the nutrition pyramid, which presents in a simple pictorial form, sound and reasonably comprehensive advice on good eating habits.[98] Similarly, the EPA could develop a methodology that presents a reasonably complete comparison of the daily activities of representative people. It should include commuting choices, diet, consumer product choices, cleaning (dry cleaning, home laundry), energy use in the home, disposal activities, and vacation choices. By looking across daily activities, such an approach can provide consumers with a fuller appreciation of the relative importance of different activities. Such an approach, for example, would likely highlight the excessive attention to packaging and the under-emphasis on energy conservation opportunities. Since so little has been done in this regard, policy-makers as well as consumers would learn much from the enterprise. This approach would also reinforce the message that individuals can save money and protect the environment by prioritizing their use of resources. To a significant extent, it would enable individuals to conduct environmental audits of their own daily lives.

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98. Mairan Burros, *U.S. Agrees to Rank Food with a Symbol of a Pyramid*, N.Y. TIMES, Apr. 28, 1992, at B1.

A complementary approach should look at the broad range of environmental issues in order to provide citizens and policy-makers with an appreciation of the relative importance of environmental problems and the cost-effectiveness of alternative policy instruments. The comparative risk assessment process was a useful start to this effort.[99] Despite the methodological and scientific difficulties of this task,[100] such a program is critical to developing a coherent and integrated environmental program and educating the public about the relative importance of environmental issues.

c. Clearinghouse for Eco-Information Policy.—EPA's Eco-Information Division should serve as an information clearinghouse for federal, state, and local agencies, school boards, and other bodies interested in educating the public about environmental issues. This office should actively develop a network of outlets for its publications and public service materials.

d. Research Funding.—In view of the cognitive limitations of consumers and businesses in effectively incorporating environmental concerns into their decision-making, EPA should fund research efforts to study the most effective ways of conveying eco-information policy. These studies should range from academic research on policy and cognitive psychology to pilot programs, focus groups, educational film projects, and the development of educational publications and computer software for primary and secondary education. This work should be coordinated with other agencies and institutions involved in disseminating eco-information—including schools, EPA's business incentive programs, and public utilities involved with environmental auditing.

EPA should also fund efforts to develop and refine a costing methodology and data base to capture the full range of consumer and household choices bearing on the environment. The determination of cost components depends on a broad range of factors that vary regionally and locally. EPA should play the central role of developing the methodology and coordinating the compilation of data by other entities. EPA should also play a role in developing methodologies, including product life cycle assessment and environmental auditing,

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99. *See* OFFICE OF POLICY ANALYSIS, U.S. ENVTL. PROTECTION AGENCY, UNFINISHED BUSINESS: A COMPARATIVE ASSESSMENT OF ENVIRONMENTAL PROBLEMS (1987); RELATIVE RISK REDUCTION STRATEGIES, *supra* note 46.

100. *See generally* Hornstein, *supra* note 46; Fischhoff et al., *supra* note 47, app. C, at 269-81.

that may be useful to businesses in assessing their environmental performance.

2. *Environmental Auditing and Incentive Programs.*—Studies of organizational behavior reveal that business enterprises exhibit "bounded rationality" or irrational tendencies in decision-making.[101] The complexity of business decisions, the necessary element of human cognition in decision-making, and the organizational limitations of businesses cause firms as well as individuals to behave in ways that diverge from "rational behavior," traditionally defined. For example, as in household decision-making, empirical studies show that firms use inefficient implicit discount rates in adopting energy efficient technologies.[102]

EPA's Green Programs,[103] such as Green Lights, have promoted the basic message of a market-oriented eco-information policy: that conservation investments can be both cost-effective and good for the environment. These programs have an important role to play in incorporating savings from conservation and other environmental savings into their decision-making frameworks. EPA in conjunction with other federal agencies should look for additional opportunities to encourage businesses to voluntarily improve their environmental performance. There is good reason to believe, for example, that many farmers could reduce environmental degradation and improve profitability through lower impact farming methods. EPA and the Department of Agriculture should study the feasibility of auditing and incentive programs in this sector of the economy.

3. *Energy Efficiency Labeling.*—The energy efficiency labeling program in place in the United States is based upon a price information approach. Mandatory appliance efficiency labels (Energy Guide) disclose how the estimated annual energy cost of a particular model compares with the range of models in the same size category.[104] They also provide a guide for estimating annual energy cost based on cost per kilowatt hour.

This labeling approach comports well with a market-oriented eco-information policy. In fact, encouraging consumers to view price as

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101. *See generally* Herbert A. Simon, *Rational Decision Making in Business Organizations*, 69 AM. ECON. REV. 493 (1979); Daniel J. Isenberg, *How Senior Managers Think*, HARV. BUS. REV., Nov./Dec. 1984, at 80-90.

102. *See* OFFICE OF TECHNOLOGY ASSESSMENT, U.S. CONGRESS, BUILDING ENERGY EFFICIENCY 73-84 (1992).

103. *See supra* text accompanying notes 32-35.

104. 44 Fed. Reg. 66,492 (1979) (final energy efficiency label regulations).

an indication of resource use would legitimize the environmental basis for Energy Guide labels.[105] A market-oriented eco-information policy should educate consumers about how to incorporate life-cycle costing—discounting future energy costs and considering other downstream costs such as disposal and waste use—into good environmental decision-making.

4. Resource Management and Pollution Regulation.—As highlighted earlier, the price system only internalizes those resource costs captured by the market system or imposed on manufacturers through government or private (*e.g.*, nuisance suits) regulation. Government policies should ensure that all environmental impacts are appropriately reflected in market prices. In many contexts, fees and market-based regulatory approaches are the most efficient mechanism for internalizing resource and pollution costs. For example, government pricing policies can ensure that resource acquisition on public lands—a major source of minerals, timber, and other resources—adequately reflects social costs of depletion and extraction. Government policies should directly incorporate the environmental externalities associated with resource extraction, water diversion and use, and pollution from the burning of fossil fuels and waste disposal into the costs of energy and water services. With regard to pollution, emission and effluent fees or market-based emission trading systems are institutionally sound ways of reflecting external costs. While some progress has been made in the few years in implementing these approaches, much greater use of these approaches is needed, both to reform ineffective and distortionary command and control regulation and to improve the operation of the price system as an eco-information institution.

5. Regulatory Enforcement.—Regulatory enforcement is critical to market internalization of environmental externalities. EPA enforcement policy and sentencing guidelines for environmental crimes should create incentives for firms to conduct regular environmental compliance audits in order to identify problems and opportunities for cost-saving improvements.

In addition to traditional enforcement tools, the power of the consumer marketplace can provide government enforcers with an important tool in deterring environmental pollution. Prosecutors should be given authority to require recalcitrant polluters to carry

105. Studies of the effects of the Energy Guide have found that the labels have raised consumer awareness of energy efficiency issues but have not significantly affected consumers' buying decisions. *See* APPLIED DECISION ANALYSIS, *supra* note 55, at 33-37.

non-compliance labels on their products. Since prosecutors are significantly insulated from the political influences of environmental regulators, there would be less potential than in traditional labeling programs for political interference. Moreover, unlike labeling based on PLCA, which measures absolute effluent loadings and assumes regulatory compliance, this type of labeling would directly relate to adverse environmental impacts because it would reflect environmental impacts exceeding regulatory thresholds.

6. Consumer Protection.—In order to protect the informational integrity of the market, truth in advertising legislation must be enforced. Although a market-oriented eco-information policy reduces reliance on environmental claims, manufacturers will continue to expand the environmental appeal of their products through environmental claims. Therefore, FTC and EPA oversight of such claims is a valuable supplement to a market-oriented approach.

It should be recognized, however, that this type of enforcement is of limited utility. Since neither the FTC nor state prosecutors have authority or the institutional capacity to affirmatively provide consumers with a broad understanding of the range of environmental impacts, truth in advertising enforcement will focus upon the refinement of terms like "degradable," "recycled," and "recyclable" which are themselves only imperfectly related to environmental concerns.

7. International Trade Policy.—The market's reliability depends significantly on the extent and degree of gaps in cost-internalizing regulation. While this may be a tolerable assumption with regard to resources extracted and products produced in the United States, comparable environmental safeguards are lacking in much of the lesser developed and industrializing nations of the world. Hence lower priced resources and goods from these countries may reflect in part environmentally destructive practices. Because of sovereignty and other concerns, the United States is limited in its ability to influence the environmental protections of other countries. Nonetheless, the United States can use international trade policy, foreign assistance, and diplomacy to improve environmental protection in other countries, including its trading partners. The North American Free Trade Agreement (NAFTA) environmental side provisions are an example of such a regime. The United States might also consider countervailing tariffs to compensate for inadequate environmental standards

abroad, although the threshold for imposing such duties should be appropriately high.[106]

B. State and Local Responsibilities

1. Pollution Regulation and Regulatory Enforcement.—Much of the burden of implementing and enforcing pollution regulation falls upon state and local agencies. In addition, many of the environmental regulatory schemes leave state and local officials substantial flexibility in designing policy. States have increasingly experimented with market-based policies in the past decade in order to achieve environmental goals more efficiently.[107] These policies have the added benefit of transmitting the social cost of environmental degradation upon those who are responsible for its creation. State and local officials should be encouraged to expand the use of market-oriented environmental policies such as tradeable permits and fee-based approaches.

2. Natural Resource Policy.—Similarly, state and local authorities manage a substantial portion of our nation's water and other resources. As above, these agencies should impose the costs of these resources upon those using them.

3. Public Utility Regulation.—Consumers make numerous environmental choices in their homes through the use of electric, gas, and water consuming appliances. The cost of these utilities are determined by state regulatory bodies. A number of states have begun internalizing environmental externalities through surcharges to utility rates.[108] An alternative approach would be to subject utilities to emission fees or tradeable permit systems in regulating pollution. Greater efforts to internalize the social costs of electricity, gas, and water usage will improve the basis on which consumers make appliance purchase and usage decisions.

As noted earlier, however, consumers have particular difficulty in integrating life cycle costs—such as energy and water costs—into their decision-making. One of the most promising environmental education institutions is residential utility auditing. It provides consumers with a comprehensive view of two of the most significant ways in which they deplete resources and cause pollution in everyday life: home en-

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106. *Cf.* Richard B. Stewart, *Environmental Regulation and International Competitiveness*, 102 YALE L.J. 2039 (1993).

107. Peter Passell, *Economic Scene: Illinois Is Looking to Market Forces to Help Reduce its Smog*, N.Y. TIMES, Mar. 20, 1995, at D2.

108. *See* Black & Pierce, *supra* note 69, at 1398-99.

ergy and water usage. Since the environmental impacts of these resource uses vary regionally, a utility-based eco-information approach is well tailored to providing accurate information. In addition, because residential utility auditing captures a household's attention for a relatively long period of time, it can go much further than simple labeling or price information in educating consumers. If combined with more general education about the role of the price system in conveying eco-information, such programs can play a key role in helping consumers overcome the cognitive limitations associated with life-cycle costing.

Public utilities conduct a range of eco-information activities designed to conserve resources. Many electric utilities, for example, provide brochures on ways of saving energy and offer free home energy audits to assess options for energy conservation.[109] In some cases, these programs subsidize energy conservation investments such as the installation of low flow showerheads and flourescent bulbs, provide direct rebates for energy efficient appliances, and offer grants and subsidized loans for the installation of insulation and other weatherization technologies. In drought-prone areas, water utilities provide similar informational and audit services to promote water conservation.

Utility auditing programs have typically relied upon household requests for auditing, which has often resulted in relatively low participation rates. In addition, many programs have focused upon particular elements of energy conservation, such as weatherization,[110] rather than the full range of energy conservation options (including appliances). Utility auditing programs should be viewed as a key feature of eco-information efforts. Through face-to-face meetings, a cadre of well-educated environmental utility auditors can aid households in saving money and resources.

Because of cognitive limitations of households generally, liquidity constraints on some poorer households, and distorted incentives of some decision-makers (*e.g.*, apartment owners), many households will resist installing conservation technologies and appliances that are cost-effective. Public utilities or the government could develop programs whereby the up-front costs of cost-effective conservation technologies could be borne by the government, with energy savings paying off the conservation measures over time.

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109. *See supra* note 48.

110. *See, e.g.*, Paul C. Stern, *Blind Spots in Policy Analysis: What Economics Doesn't Say About Energy Use*, 5 J. POL'Y ANALYSIS & MGMT. 200, 211 (1986).

4. Education Policy.—Primary and secondary education provide a vital opportunity to shape future consumers' appreciation of the linkage between their consumption and lifestyle choices and the environment. It is the best stage at which to inculcate such important concepts as life-cycle costing, discounting, and basic economics. Although states and local bodies (school boards) determine the curriculum and select the materials used in public schools, EPA should develop basic educational materials to integrate an appreciation of environmental issues into everyday decision-making. As noted above, such materials could specifically address those areas in which consumers have cognitive limitations. For example, life-cycle costing of a refrigerator, emphasizing the way in which a careful consumer would incorporate purchase price and energy costs in making choices, can be used to teach basic mathematics and elementary economics in a real world setting. More generally, school curricula should introduce students to the manner in which the market system allocates resources and the role of environmental regulation in moderating market forces.

5. Consumer Protection.—As discussed above, manufacturers will continue to expand the environmental appeal of their products through environmental claims. Therefore, state attorneys general have and should continue to play a role in ensuring the integrity of market advertising.

6. Land Use Planning and Transportation Policy.—Land use planning and transportation play an important role in the quality of the human environment. Zoning patterns, highway design, and mass transportation largely determine the congestion and ecosystem stresses of the communities in which most Americans live. City planners and transportation officials should pursue policies that confront households with the social costs of alternative commuting patterns. Bridge and toll charges, local taxes, parking costs, and other policies can internalize these costs. Households should be encouraged to directly quantify these costs when making decisions about where and how to live.

7. Solid Waste Disposal.—As in the production and use stages of the product life-cycle, government policies should internalize the social costs of resource recovery and solid waste disposal through appropriate incentive mechanisms or regulatory controls.[111] Proper pricing

111. *Cf.* Pedersen, *supra* note 41, at 104; Menell, *supra* note 36.

and regulation of recovery and disposal options will make recycling more competitive in those areas where it competes with underpriced landfills and incinerators. In this way, the market can effectively channel wastes back to productive uses or into safe disposal technologies depending on the relative social costs of each option.

The key to influencing household and consumer behavior is for municipalities or their contractors to implement unit pricing of solid waste. Whereas most communities have traditionally paid for waste disposal out of property taxes or other fees that do not reflect the marginal cost of disposal, an increasing number of communities have adopted volume or weight-based curbside fees for mixed refuse in combination with free collection of recyclables. By raising the marginal cost of waste going to landfill or incineration, such policies create strong incentives for households to reduce the amount of waste that they generate, to separate recyclable wastes such as newspapers and containers, and to compost yard and food wastes.[112]

Unit pricing of mixed refuse along with free collection of recyclables effectively educates consumers and households about the social costs of municipal solid waste. Like at the production and use stages, educational programs should emphasize how consumers can save money and reduce environmental impacts by purchasing products with less waste and separating wastes at the curbside or community recycling centers. In addition, consumers can readily see in a relative sense the social cost of waste disposal. This will put in perspective the relative importance of solid waste concerns in their community. For example, by combining purchase price with disposal costs, consumers will directly face the solid waste cost of disposable diapers and compare these them to the costs of home laundering or a diaper service. Households in suburban communities will readily see that yard waste and newspapers are substantially greater solid waste concerns than packaging. They will also be able to reduce their environmental impacts directly by composting yard wastes and separating newspapers, as well as containers.

CONCLUSION

The federal structure of eco-information policy turns significantly on questions of institutional choice and policy design. The trend in

112. Curbside fees are not feasible in apartment buildings and other high density living communities. In these communities, centralized recycling centers and other programs can channel wastes to appropriate recovery and disposal facilities. *See* Menell, *supra* note 36, at 732-34.

recent years toward the development of national ecolabeling programs as the principal means of aiding consumers in lessening the environmental impacts of their consumption decisions has been based upon an inadequate understanding of the objectives for this policy area and questionable assumptions about the feasibility and efficacy of point-of-purchase labeling. Ecolabeling reinforces a highly limited understanding of the opportunities for consumers to lessen environmental impacts and perpetuates common misperceptions about the environmental impacts of consumer choices. Rather than supplant the price system with a limited, costly, imprecise, and potentially manipulable alternative, eco-information policy should be integrated directly into the price system and the environmental regulatory regime.

As this Article has highlighted, a market-oriented approach to eco-information policy calls for a broad integrated array of policies at the federal, state, and local levels. Many of these policies are already being pursued—in the form of market-based approaches to environmental regulation, environmental auditing and incentive programs, and cost internalization in utility rate-setting—although their relationship to eco-information policy and the potential for coordination and synergy have been largely overlooked. A market-oriented eco-information policy can play an important role in harmonizing the fundamental principles of environmental policy—protection of public health, internalization of externalities, and use of market forces as the principal institution for allocating resources—and making them understandable to the public-at-large.