Chapter 5

International Comparison of Policies Affecting Green Design

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In recent years, interest in green product design has increased dramatically in the United States and other industrialized nations. Historically, environmental policies have focused on protecting air, water, and land from ''point' sources of pollution (e.g., factories and powerplants). But countries are now recognizing the importance of nonpoint sources, including products (e.g., chlorofluorocarbons (CFCs) and pesticides). Many countries with stringent environmental protection standards show a growing tendency to extend the traditional emphasis on pollution control to include standards for the environmental attributes of products.

The environmental product policies of other nations have important implications for the United States. First, these policies are shaping international markets in which U.S. goods must compete. The policies of other nations on issues such as packaging, mercury in batteries, and automobile recycling have the potential to change the competitive landscape of foreign markets. The success of U.S. companies in these markets will depend, at least in part, on their ability to employ green product design.

Second, product policies may act as nontariff barriers to trade.[1] They are often seen by critics as giving domestic industries an unfair advantage. Examples include the recent U.S. attempt to ban imports of Mexican tuna because of concern about dolphins killed during tuna fishing,[2] Denmark's decision to ban the sale of beer in nonrefillable containers, and Germany's new law requiring companies to recover and recycle their packaging waste.[3] Finally,studying the experience of other industrialized nations can provide lessons for U.S. policymakers.

This chapter surveys some of the more notable policies affecting green design in industrialized countries, with a view toward understanding how U.S. activities compare with those in other countries.[4] Table 5-1 provides a summary.

ENVIRONMENTAL POLICIES AFFECTING PRODUCT DESIGN

Europe

Nearly all European countries are building up a body of product-related environmental law that extends beyond traditional areas of pollution control. There is a strong positive correlation between national wealth and environmental awareness in Europe; thus Germany, the Netherlands, and the Nordic countries (Norway, Sweden, Finland, and Denmark) are in the forefront.

Germany

Germany is particularly active in environmental product policy. In May 1991, Germany enacted its Waste and Packaging Law that gives manufacturers and retailers responsibility for recovering and recycling their own packaging wastes (see box 5-l). This statutory coupling of manufacturing with post-consumer recycling forces manufacturers to account for the solid waste implications of packaging. Germany is considering similar laws that would give manufacturers the responsibility for collecting and recycling durable goods, such as household appliances and automobiles (see below).

Besides recycling, Germany has an active program for labeling environmentally preferred products. The "Blue Angel" eco-labeling scheme has been in operation since 1978 and is the only example of a well-established eco-labeling scheme in Europe. The award is not given to individual products, but to categories of products that meet certain criteria. Supporters of the Blue Angel scheme point to several successes: paint, lacquers, and varnishes that are low in solvents and other hazardous substances

[1] For an overview of the issues involving trade and the environment, see: U.S. Congress, Office of Technology Assessment, *Trade and Environment: Conflicts and Opportunities,* OTA-BP-ITE-94 (Washington, DC: U.S. Government Printing Office, May 1992).

[2] The ban was imposed under the Marine Mammal Protection Act of 1972, Public Law 92-552. Later, a panel of the General Agreement on Tariffs and Trade (GATT) determined that the ban violated GATT's rules of international trade. Ibid.

[3] Frances Cairncross, *Costing the Earth: The Challenge for Governments, the Opportunities for Business* (Boston, MA: Harvard Business School Press, 1992).

[4] The discussion of activities in foreign nations draws heavily from Environmental Resources Limited, ***Environmentally Sound Product Design: Policies and Practices in Western Europe and Japan***, contractor report prepared for the Office of Technology Assessment July 1991.

Table 5-1-Environmental Policies Relating to Products in Other Industrialized Countries

Policy	Comment
Economic Commission for Europe (United Nations)	
A task force is developing guidelines for "environmental product profiles," a qualitative description of the environmental impacts of a product for use by commercial and institutional buyers.	Researchers from the Netherlands and Sweden have been among the most active participants in the Task Force.
European Community	
Draft law requiring specific percentages of recovery (recycling, incineration, and comporting) for product packaging.	The draft has been driven largely by German packaging legislation.
EC eco-label.	Principles of the program have been agreed upon, but no date for implementation has been set.
EUREKA	
Eco-design project to gather information and develop methods to stimulate the design of environmentally sound products.	Under the Euro-Environ umbrella program, this project is led by Dutch researchers.
Canada	
The National Packaging Protocol is a voluntary program with packaging reduction targets and dates.	By the year 2000, packaging sent to disposal is to be no more than 50 percent of the amount sent in 1988. Half of this reduction is targeted to come from waste prevention and re-use, and half from recycling. Regulations are to follow if targets are not achieved.
Environmental Choice eco-label.	Over 400 product categories have been recommended for labelling.
Denmark	
Ban on domestically produced nonrefillable bottles and aluminum cans.	The EC took Denmark to the European Court over this ban, which originally revered foreign-produced containers as well, claiming it was an unwarranted restriction on trade. Denmark won the case. Now, deposit, return, and recycling schemes must be setup for imports.
Fee imposed on waste delivered to landfills and incinerators as an incentive to recycling and to support dean technology.	130 DKr ($19) per ton is earmarked for subsidies for dean technology.
Clean Technology Action Plan (1990-92).	A principal aim of the plan is to reduce consumption of nonrenewable materials and to reduce the use of heavy metals and other toxic substances.
Germany	
Packaging Waste Law, passed in 1991, gives manufacturers responsibility for oollecting and recycling various kinds of packaging at specified rates by certain dates.	This legislation is being considered as a model for EC-wide packaging legislation. The packaging collection rates and target dates are considered very ambitious. Concerns have been raised that this law could create special problems for imported goods.
Manufacturer take-back-and-recycle laws have been proposed by the government for automobiles, electronic goods, and other durables.	These proposals, which have not yet been passed, would go into effect in 1994. They have already stimulated auto and computer companies to begin to redesign oars and computers to facilitate recovery and recycling of components and materials.
Mandatory deposit refund on plastic beverage containers (except milk).	Established in 1989, the deposit of DM 0.5 (.$0.28) will remain in place under the new packaging waste law.
Blue Angel product coo-label.	Begun in 1978, this was the first national eco-label program; it now covers 400 products in 66 categories.

Japan		
	Recycling Law, passed in 1991, sets target recycling rates around 60 percent for most discarded materials by the mid-1990s. Includes product redesign strategies for packaging and durable goods.	The law gives the Ministry of International Trade and industry broad powers to set recycling guidelines for specific materials and industries.
	Em-mark product eco-label.	The label covers more than 850 products in 31 categories.
Netherlands		
	National Environmental Policy Plan sets national targets and timetables for implementing dean technology, including redesign of products.	The most comprehensive national environmental policy planning document anywhere in the world. The Netherlands Government has a budget of around$100 million per year to support development of clean technologies and products.
	Voluntary agreements reached with industry targeting 29 priority waste streams and reduction of packaging waste.	Voluntary agreements are considered a more effective means of achieving environmental goals than command-and-control regulations.
Norway		
	Tax on nonreturnable beverage containers.	This tax, which can be as high as $.52 per container, is intended to encourage producers to use refillable packaging.
	Deposit-refund on old car bodies.	The deposit of NKr 1,000 (U.S. $1 43) is refunded with a bonus; the return rate is 90 percent.
Sweden		
	Ban “in principle” on the use of cadmium.	A number of exemptions are permitted.
	Voluntary deposit-refunds for glass and aluminum beverage containers.	Return rates of 80 to 90 percent have been achieved.
United Kingdom		
	Gas tax differential of around 10 percent between leaded and unleaded gas.	Several other countries have similar policies. Sales of unleaded gas rose from negligible to 36 percent in 3 years.

SOURCE: Office of Technology Assessment, 1992.

Box 5-A-Germany's Packaging Law

Germans generate about 32 million tons of municipal waste per year, About 30 percent of that waste is incinerated and nearly all the rest, about 22 million tons annually, ends up in landfills. At this rate, about half of Germany's landfills will fill to capacity and be forced to close within 5 years.

Because packaging accounts for 30 percent of German municipal waste by weight, the country recently enacted a prominent new law regarding the collection and recycling of packaging. The law (The German Federal Ordinance Concerning Avoidance of Packaging Waste) gained final legislative approval in April 1991, and its first provision took effect in December 1991. The law redefines the responsibilities of companies and requires recycling on a massive scale.

The fundamental philosophy behind the German packaging law holds product manufacturers and distributors responsible for the packaging they create and use. The law requires little from consumers, but mandates that companies take back and recycle used packaging, For some types of packaging, the law gives industry an opportunity to establish its own collection and recycling system. If such self-management fails, however, it compels manufacturers and distributors to collect the packaging themselves and arrange for recycling.

The law defines three types of packaging: transport, secondary, and sales. Transport packaging refers to items used to protect or secure products during transportation from the manufacturer to the distributor (e.g., large corrugated shipping containers and wooden pallets). Secondary packaging refers to items used to group, protect, and display the product at the point of sale (e.g., exterior cartons and packaging components that make products tamper-proof). Sales packaging refers to items in direct contact with the product itself (e.g., liquid containers and food wrapping).

The law contains separate deadlines for each type of packaging. Collection of transport packaging by manufacturers and distributors was required beginning December 1, 1991. Collection of secondary packaging by distributors was required beginning April 1, 1992. Sales packaging must be taken back beginning January 1,1993.

Collected packaging must be reused or recycled to the greatest extent possible. Materials not recycled or reused must be materials that: 1) cannot be separated manually or by machine; 2) are soiled or contaminated by substances other than those that the package originally contained; or 3) are not integral parts of the packaging. Recycling must be accomplished independently of the public waste disposal system. Incineration is specifically prohibited.

Additional provisions apply to specific packaging types. Secondary packaging must be removed by distributors (including retailers) before products reach consumers or distributors must provide an opportunity for consumers to remove and return the packaging at the point of sale. The law requires that distributors provide separate containers for different packaging materials and post signs indicating that consumers may return secondary packaging.

The law also contains additional provisions for sales packaging. As with secondary packaging, distributors must accept returned sales packaging at the point of sale. The law also mandates a deposit-refund scheme covering containers for beverages, household cleaners, and spray paints.

The sales packaging previsions can be avoided by manufacturers and distributors who are party to an alternative collection system. First, the alternative system must collect packaging directly from households or establish collection centers. Second, the system must meet strict collection and sorting targets. These targets will be assessed by weight within each "Lander' or district within Germany, and require at least 60 percent collection of most materials by January 1993 and at least 80 percent collection of all materials by July 1995. Third, existing levels of reusable beverage containers must be maintained. This alternative system exempts companies from the provisions for sales packaging only; companies must still take back transportation packaging and secondary packaging directly,

Under pressure from retailers, industry moved rapidly to establish an alternative system under the terms of the law: the Duales System Deutschland (DSD). DSD is a private company established to collect packaging of participating companies. Participating companies pay a licensing fee to use a' 'Green Dot' label that identifies their packages as eligible for collection. Licensing fees of up to 20 pfennig (U.S. $0. 12) per package are expected to raise about 2 billion DM (U.S. $1.2 billion) per year.

Whether reality will match the ***law's*** lofty goals remains to be seen. The law faces several hurdles. First, the mandatory 1995 collection rate of 80 percent for all sales packaging materials far exceeds the rates currently achieved For example, Germany recycled just over 40 percent of paper and paperboard recycling in 1987 and just over 53 percent of glass in 1989. Internationally, 80 percent recycling rates for any material are ram, even in highly motivated neighborhoods. Overall rates of 80 percent are unheard of on a national scale.

Second, although the stated goal of the law is source reduction, it focuses almost exclusively on recycling. Whether the costs of collection and transportation will encourage source reduction remains to be seen. Third, the law does little to enlist the help of consumers in recycling. The entire burden for ensuring the success of the law rides on the efforts of manufacturers and retailers. Finally, the law raises thorny issues regarding international trade. The law's provisions apply to any goods sold within Germany, regardless of their country of origin. Thus, companies that export goods to Germany must arrange for collection and recycling of their packaging.

While the European Community has been working on unified solid waste guidelines to facilitate free trade, the German law has leapt ahead with the strictest plan of any EC nation, Whatever the outcome, Germany's packaging law represents a bold experiment that will be closely watched on both sides of the Atlantic,

SOURCES: James E. McCarthy, ***Recycling and Reducing Packaging Waste: How the*** United States Compares to Other Countries, 91-802 ENR (Washington, DC: Congressional Research Service, Nov. 8, 1991). "Translation of the Ordinance on the Avoidance of Packaging Waste' 'in Environmental Resources Limited, Environmentally Sound ***Product Design: Policies and Practices in Western Europe and Japan,*** contractor report prepared for the Office of Technology Assessment, July 1991. "Recycling in Germany: A Wall of Waste," ***The*** **EconomiSt,** Nov. 30, 1991, p. 73. Kerstin Wessel, "The German 'Dual system'--An Instrument To Promote **waste** Minimization in the Packaging Sector?' ***Packaging and the Environment--Policies, Strategies and*** Instruments, ***Invitational Expert Seminar, Trolleholm Castle, Sweden,*** Feb. 7-8, 1991 (Lund, Sweden: Department of Induatrial Environmental Economics, Lund university).

now command 50 percent of the German do-it-yourself market, compared with just over 1 percent in the 1970s; over the same period, emission standards for oil and gas heating appliances have improved by more than 30 percent. The program receives only 8 percent of its income from Federal subsidy, with 57 percent coming from the sale of publications and certification.[5]

However, the Blue Angel program is not an unqualified success. Despite its longevity, the program only covers a small percentage of consumer products.[6] Although the initial intention was to consider all of a product's environmental impacts when awarding the Blue Angel label, in practice attention usually focuses on one or two environmental impacts. For example, the program judges spray cans on the elimination of aerosol propellants and judges detergents on wastewater load. Environmental groups have criticized the program, contending that it should consider the entire product life cycle. The feasibility of broadening the selection criteria to include life-cycle impacts is presently under study.

The Netherlands

The Dutch Government produced the National Environmental Policy Plan (NEPP) in 1989 and NEPP Plus in 1990. These are major policy documents outlining plans for harmonizing economic development with the environment through the year 2010. They are widely acknowledged to be the most detailed and comprehensive example of environmental planning anywhere in the world.[7] The plans explicitly include product policy and green design as part of a preventive strategy using "process-integrated environmental technology" to achieve "sustainable development. " The Dutch plan looks forward to "an alternative way of living" with investment in ''clean' technologies coming to dominate new capital investment. The Dutch budget for development of clean technology was about **$90** million in 1990. No other country has long-term policies that address environmental aspects of product design as specifically as the Netherlands.

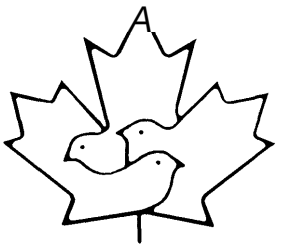
Dutch environmental policy relies increasingly on voluntary agreements negotiated with industry, rather than on command-and-control regulation. For exam-

[5] Ibid., pp. 11-12

[6] Of the labels issued, over half have been in only four product categories (recycled paper, low-pollutant varnishes and coatings, low-emission gas burners, and pH neutral stripping agents for wastewater treatment). ***Environmental Labelling in OECD Countries (Paris:*** Organisation for Economic Cooperation and Development, 1991), p. 48.

[7] ERL, op. cit., footnote 4, p. 22.

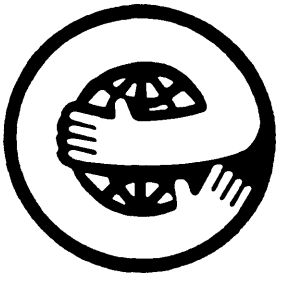
Figure 5-1—Eco-labels Around the World



Canada (Environmental Choice)

Nordic Countries (White Swan)

West Germany (Blue Angel)



Japan (EcoMark)

United States (Scientific Certification Systems)*

United States (Green Seal)

Eco-labels are intended to identify environmentally preferred products for consumers. Above are government-sponsored labels from four foreign programs and two private U.S. labels.

***NOTE: The SCS label will provide comparative data on environmental attributes (see figure 4-l).**

pie, it is part of government policy to identify hazardous substances (e.g., cadmium and chlorine), and to eliminate these substances from every stage of the production process. The Dutch Government has established waste reduction targets for 29 priority waste streams, with action plans to be negotiated as voluntary agreements with industry. The government has recently signed a voluntary agreement on packaging waste, which could be backed up by regulations if negotiated targets are not met within the specified time. Environmental groups in the Netherlands also negotiated a voluntary agreement with retailers on the elimination of polyvinyl chloride (PVC) from packaging in September 1990.

The Netherlands has begun work on a national eco-labeling scheme for products, but has expressed a preference for a harmonized European Community (EC) program. Dutch researchers are active in the area of life-cycle analysis. The Netherlands initiated a task force under the aegis of the United Nations Economic Commission for Europe (ECE) to develop guidelines for product "profiling," a descriptive form of life-cycle analysis intended for use by professionals such as designers and procurement agents. In addition, the Dutch have initiated research projects to develop guidelines and information resources to assist designers in making better environmental choices.[8]

Nordic Countries

Sweden, Norway, and Denmark have all been active in the area of environmental product policy. For many years, these countries have employed a wide range of taxes and deposit-refund schemes to limit packaging waste (see below). They have also used a combination of bans and voluntary agreements with industry to encourage green design.[9] Sweden banned "in principle" the use of cadmium in many products over a decade ago, and the idea of "sunsetting" or phasing out the use of various toxic chemicals is quite popular there. Denmark banned nonrefillable beverage containers for beer and soft drinks, and required that bottle designs be government-approved.[10] Denmark has announced a Clean Technology Action Plan to run through 1992 that focuses on reduced consumption of nonrenewable materials

[8] ERL, op. cit., footnote 4, p. 23.

[9] See Christian Ege Jorgensen, "Sunset Chemicals—From a Danish Perspective," *Proceedings of the Global Pollution Prevention '91 International Conference & Exhibition, Lorraine* R. Penn (cd.), Washington, DC, Apr. 3-5, 1991.

[10] Denmark was taken to the EC Court over the ban, which allegedly constituted a restriction on trade. The court ruled in favor of Denmark, but required that designs of imported bottles be exempted from the approval requirements as long as they were nonmetal and were subject to a deposit-refund scheme.

and reduced use of heavy metals and other toxic substances in a variety of products.

The Nordic countries decided in November 1989 to "implement a harmonized, voluntary, and positive Nordic environmental labeling system for products.''11 Criteria for product categories are currently being drawn up, although this program is now at least partially on hold, pending an EC decision on an EC-wide labeling system.

European Community

The European Community is increasingly a driving force behind environmental law in Europe. The number of EC environmental laws adopted has risen from one per year in the 1960s to between 20 and 30 per year in the 1980s.

EC environmental policy has always included a strong emphasis on harmonizing product standards among countries, but such harmonization can be difficult. Much EC environmental legislation and planning has been inspired by Germany (e.g., manufacturer responsibility for packaging waste), the Netherlands (e.g., waste stream prioritization), and the Nordic countries (e.g., reduced heavy metal content and separate collection of batteries). However, the range of environmental legislation varies greatly among European countries, as does the willingness of different countries to pursue future action.

Some countries already have substantial environmental standards in place, and have expressed fears that their own higher standards maybe compromised by a lower EC-wide standard.[12] As a result, the EC tends to set minimum standards that may be exceeded by "greener' countries. Some poorer countries have not placed as high a priority on environmental policy, and they find their national legislation increasingly driven by EC requirements. While EC standards have tended to be relatively stringent, they often acknowledge that poorer countries may have difficulty meeting the standards. The EC sometimes adopts a two-tier approach that gives poorer countries more time to achieve standards demanded by wealthier countries.

The EC began discussions on eco-labeling in 1988, prompted by the need to coordinate product labeling before the advent of the Single European Market in 1992. Plans to launch the system were formally unveiled in November 1990. The criteria for granting the label will be harmonized throughout the EC and will be decided by the European Commission with the assistance of an Advisory Committee. The decision to adopt life-cycle criteria was made after pressure from the Nordic countries (though they were not EC members), who expressed criticism of the more limited criteria applied by Germany's Blue Angel program. At this writing, no date had been set for implementing the EC eco-label (a daisy surrounded by 12 stars).

Japan

Japanese industry's interest in green products has lagged somewhat behind that in Europe and the United States, in part because of a lower level of consumer activism, and in part because there has been little government policy leadership in this area. However, Japan recently identified environmentally sound products and technologies as a major new market opportunity, and is investing large sums in research and development.[13] The close relationship between government and industry in Japan suggests that government proposals-as they develop-may be implemented more quickly than is the case in Europe or the United States.

One motivation for Japanese environmental policy is an acute crisis of landfill space. Although Japan incinerates 70 percent of its municipal solid waste, major urban areas are having difficulty even finding space to dispose of the incinerator ash residue.[14] In response, the government passed a recycling law in April 1991 that is designed to promote waste recycling.[15] The recycling law mandates recovery rates of around 60 percent for most discarded materials (including glass, paper, aluminum cans, steel cans, and batteries) by the mid-1990s, and it includes product redesign strategies for

11 Nordic Council of Ministers, written procedure, Nov. 6, 1989. Cited in ERL, op. Cit., footnote 4, p. 12.

12 For example, the court case stemming from Denmark's ban on nonrefillable bottles.

13 Jacob M. Schlesinger, "Thinking Green: In Japan, Environment Means an Opportunity for New Technology,'' *Wall Street Journal*, June 3, 1992, p. Al. Neil Gross, "The Green Giant? It May Be Japan,'' *Business Week*, Feb. 24, 1992, pp. 74-75.

14 ERL, op. cit., footnote 4, p. 74.

15 It is formally known as the ''Law for Promotion of Utilization of Recyclable Resources,'' or more commonly as the "Recycling Law."

both packaging and durable goods. Sponsored by the Ministry of International Trade and Industry (MITI), the law provides MITI with broad powers to set recycling guidelines for specific industries and materials. Those interviewed by the Office of Technology Assessment felt that MITI's involvement, as well as its extensive discussions with industry prior to the law's passage, would mean that Japanese industry would move relatively quickly to implement the law.[16]

The ability to move quickly was certainly illustrated in the case of Japan's environmental labeling scheme, the Eco-mark. The details of the scheme were published in February 1989, along with an initial list of approved product categories. In March 1989, 46 products in 7 product categories were approved, including aerosols containing no CFCs. One year later, there were 850 labeled products in 31 categories.[17] The Eco-mark is usually awarded to product categories based on a single environmental attribute, and thus is less rigorous than criteria proposed in EC draft legislation or other national labeling schemes based on the cradle-to-grave approach. However, the Eco-mark was quickly implemented and is reportedly popular with Japanese consumers, who have not traditionally been associated with strong environmental awareness.

ANALYSIS

The integration of product policy into environmental policy and the role of product design in making products more "friendly" to the environment are areas of considerable policy ferment around the world. Twenty-two of the major industrialized countries either have a national eco-labeling program for products, or will have one soon.[18] There are a growing number of product control policies in effect, ranging from outright bans on materials to economic instruments such as product taxes (see table 5-l). All of the countries are attempting to boost recycling; many of these initiatives focus on packaging, which constitutes about one-third of post-consumer waste by weight in many countries.[19]

There are some important differences between the U.S. approach and the approach taken by other countries. In some countries, environmental and/or economic conditions have forced policies that encourage green design. While shrinking permitted landfill capacity is a growing problem in the United States, it is already very serious in Northern Europe and Japan. As a result, the pressure on manufacturers to design smaller, more efficient products and packages is greater than in the United States. Another difference is the dramatically higher fuel prices in Europe and Japan, due in large part to government taxes.[20] These high prices encourage the design of fuel-efficient automobiles, contribute to greater use of public transportation, and promote more energy-efficient buildings and appliances.

The political atmosphere surrounding waste management in Europe has forced drastic policy measures such as Germany's Packaging Waste Law. This law has set the tone for a common policy theme emerging in several European countries: the idea of giving manufacturers responsibility for recovering and recycling their products at the end of their useful life. Manufacturer take-back requirements have intuitive appeal because they give designers direct incentives to consider how the product will be recovered and recycled, thus "closing the loop" among design, manufacturing, and waste management.

The idea of shifting responsibility for managing these materials to manufacturers can be expected to have a growing appeal in the United States as well, particularly given that U.S. cities are collecting recyclable materials at a rate much faster than they are being used. Many U.S. manufacturers, especially those of durable goods, feel that similar legislation is inevitable in the United States in a few years.

There are also social and cultural differences in Europe and Japan that may foster the development

16 *ERL,* op. cit., footnote *4,* p. *76.*

17 ERL, op. cit., footnote 4, p. 80.

18 Catherine Arnst, "Some *22* Nationals Could Have 'Green Label' Schemes by '93," *Toronto Star,* Nov. *6,* 1991, p. D6.

19 James E. McCarthy, *Recycling* and *Reducing Packaging Waste: How the United States Compares to Other Countries, 91-802-* (Washington, DC: Congressional Research Service, Nov. 8, 1991).

20 For example, gasoline prices in European nations are two to four times the price of gasoline in the United States, with almost all of the difference due to government taxes. Japanese gasoline prices are more than three times higher, with about half of the difference due to taxes. Energy Information Adminstration, *Indicators of Energy Efficiency: An International Comparison,* EIA Service Report, SR/EMEU/90-02, July 1990.

of green design more rapidly than in the United States. In many other countries, government and industry work together more comfortably than in the United States, where the relationship tends to be more confrontational. Although Europe continues to rely heavily on command-and-control environmental regulations, the greener European countries are more likely to seek voluntary agreements with industry to achieve environmental goals, rather than enforcing compliance with regulations through the legal system. Large government subsidies to industry for development of 'clean technology' are prevalent in the Netherlands and Denmark.[21] The closer relationship between government and industry may explain why several other countries have national eco-labels for products, while the United States leaves labeling efforts to the private sector.

Attitudes toward weighing environmental risks and benefits also differ somewhat between the United States and some European countries. New initiatives in Europe, such as the German packaging waste law or carbon taxes on fuels, tend not to be subjected to the kind of cost-benefit analysis that would be expected in the United States.

Finally, in countries like Germany, Sweden, Denmark, and the Netherlands, the policy debate is qualitatively different from that in the United States. These European nations produce national policy documents that state broad environmental goals such as resource conservation and "sustainable economic development' '—with explicit targets and timetables. U.S. policies focus more narrowly on protecting consumers from harmful products and protecting the environment from various waste streams. Using the terminology of chapter 3, these countries are developing policies from the perspective of the resource management and eco-development paradigms, while the United States is operating from the environmental protection paradigm.

With the approach of the Single Market in 1992, the member counties of the European Community are wrestling with the problem of harmonizing their different environmental product standards and recycling laws. These laws have proved contentious in the past, and no resolution is in sight.[22] The United States faces similar problems in managing the multitude of divergent environmental product regulations in various States. Recent controversies over whether countries can restrict imports of goods deemed harmful to health or the environment, or whether such restrictions constitute nontariff barriers to trade, suggest that the harmonization of international environmental product policies will be a thorny problem for future negotiations under the General Agreement on Tariffs and Trade (GATT) and other international agreements.

CONCLUSION

On the whole, the United States cannot be said to be "behind" other countries in the development of environmental policies that encourage green product design. Indeed, many European countries look enviously at U.S. environmental policies such as auto emissions standards, or the timetable for phaseout of CFC production and use, which are among the most aggressive in the world. Some U.S. companies are acknowledged world leaders in waste prevention techniques.

After investigating the policies of other nations, the Office of Technology Assessment finds no models that the United States should directly imitate. In fact, many observers believe that some of the more extreme measures, such as Germany's mandatory take-back provisions for packaging waste, will prove to be costly and difficult to implement.[23] This does not mean that the United States should ignore the potential of green product design, only that the policies pursued abroad should not be copied wholesale.

The rapid evolution of environmental product policy, and its increasingly international flavor, suggests that the United States needs a proactive Federal involvement. First, such involvement can ensure that the experiences of other nations are closely monitored. Second, Federal involvement can provide a focal point for policies that protect the environment while reducing barriers to international trade. In the next chapter, options for greater Federal involvement are discussed.

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21 For example, the Netherlands Government provided $90 million in 1990 to subsidize clean technology development. As a percentage of gross national product, this would be the equivalent of about a $2 billion program in the United States.

22 Frances Cairncross, ''How Europe's Companies Reposition To Recycle,' *Harvard Business Review,* March-April 1992, p. 34.

23 ''Environmentalism Runs Riot, '' *The Economist,* Aug. 8, 1992, pp. 11-12.