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Importing extended producer responsibility for electronic equipment into the United States

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Extended Producer Responsibility (EPR) is a policy approach that holds manufacturers accountable for the full costs of their products at every stage in their life cycle. EPR typically involves requiring that producers take back their products at the end of their useful lives, or pay a recycling contractor to do so, thereby internalizing the costs of recycling or disposal in a manufacturer's bottom line. When companies know that they will bear the costs of product return and recycling, they are more likely to redesign their products for easier and safer handling at each step in the life cycle. This approach "enforces a design strategy that takes into account the upstream environmental impacts inherent in the selection, mining and extraction of materials, the health and environmental impacts to workers and surrounding communities during the production process itself, and downstream impacts during use, recycling and disposal of the products" (EPR Working Group 2003, 2). In short, by requiring a company to take its products back, EPR aims to force the company to make the products cleaner in the first place.

The idea of applying EPR policy to electronics arrived in the United States in the 1990s as a welcome import from Europe. This chapter traces EPR's adoption by coalitions of U.S. environmental, labor, and health activists seeking a comprehensive policy solution to the health and safety threats posed by the high-technology industry's internationalization.

The European Union Model and the Soul of Globalization

In the 1990s, American labor, health, and environmental nongovernmental organizations (NGOs) concerned about the electronics' industry's impact sought to turn the process of economic and political globalization to their advantage. Forming the International Campaign for Responsible Technology (ICRT) in the 1990s, NGOs that had worked mainly at the local level first built national and then international ties to share information and strategies and conduct campaigns across borders (see Byster and Smith, "From Grass Roots to Global," this volume). They found a promising, comprehensive policy solution in EPR, as embodied in the European Union's (EU) proposed directives on electronic waste and toxics reduction (see Geiser and Tickner, this volume). Activists recognized that by raising standards for the production and disposal of electronics in Europe, the EU directives offered the best tool for raising standards in the United States without sweeping its toxic waste under developing countries' rugs (Smith and Raphael 2003).

EPR promised to promote *higher* environmental and workplace safety benefits worldwide, rather than shift risk abroad and fuel a downward spiral in standards. By requiring producers to take back their products, redesign them for easier recycling, and phase out some of the most dangerous toxics, the EU's directives sought to reduce risk at each stage of a product's life cycle wherever it occurred in the globalized electronics industry. Rather than exerting downward pressure on environmental and labor

protections, globalization could be turned into a force that conditioned access to major world markets on meeting more stringent norms for design and disposal. In the era of global markets, transnational corporations must meet the highest standards set in any major market because it is expensive to manufacture different product lines for different regional markets. In addition, if companies were to produce more hazardous and less hazardous versions of their products for different markets, they would be opening themselves up to public and regulatory criticism (as well as potential liability) for employing an environmental double standard that poses greater risks to some customers and regions.

The turn to Europe was a response to the new political realities of the 1990s, as well as a struggle for the soul of economic and political globalization itself. Many criticisms of globalization have focused on how the new international trade regime can usurp the power of national governments to maintain strong protections for their workers and the environment (e.g., Falk 1999). However, during the years of Republican presidential administrations from 1980 to 1992, the path to enacting progressive regulations rarely began at the national level. Instead, environmental activists focused on building grassroots support for legislation in the most receptive states, pressuring industry and government for national reforms to resolve a patchwork of different state rules. Because activists were accustomed to seeking the most strategic forum for advancing policy rather than fixating on the federal government, they saw that the EU's formation offered a friendlier counterweight to the rise of supranational organizations like the World Trade Organization (WTO). The route to U.S. reform now might run through Brussels, as well as through the state capitals.

As a sign of the internationalization of electronics regulation and activism, the ICRT's first step in embracing EPR was to defend Europe's ability to enact it against the U.S. government's and the industry's objections. In 1998, the American Electronics Association (AEA), a major trade association, convinced the U.S. Trade Representative (USTR) and the Mission to the European Union to fight the European directives. The trade associations argued that mandated phase-outs of toxic materials would undermine the "functionality, safety, and reliability" of their products, and "impede the development of new technologies and products, increase costs, and restrict global trade in these products" (Hunter and Lopez 1999). The trade associations also alleged that requiring producers to assume financial responsibility for collecting and processing e-waste violated the General Agreement on Tariffs and Trade (GATT) rules against trade restraints. The U.S. Mission in Brussels agreed, arguing to the EU that the directives raised "unnecessary barriers to trade, particularly the ban on certain materials, burdensome take-back requirements for end-of-life equipment, and mandated design standards" (quoted in Silicon Valley Toxics Coalition [SVTC] 1999).

In response, the ICRT organized efforts to defend the directives from U.S. lobbying. After a key meeting in Europe in 1999 between U.S. activists and their allies in the European NGO community, the Trans-Atlantic Network for Clean Production was formed, with a goal to defend the European directives from U.S. industry attacks. The ICRT wrote a legal rejoinder to the industry's claims, showing how industry had erred in arguing that the EU directives were not protected by General Agreement on Tariffs and Trade's (GATT) exemptions (Clean Computer Campaign 1999). The ICRT also mobilized a coalition of hundreds of labor, environmental, and community organizations

expressing support for the EU directives and calling on then Vice President Albert Gore to rein in the USTR's lobbying efforts. Although industry cast the directives as a matter of "free trade" versus "protectionism," activists used the letter to Gore to transform the debate into one about corporate responsibility, sovereignty, and democracy (ICRT 1999). Later that same year, as part of the major WTO mobilization in Seattle, the ICRT organized a protest against e-waste at Microsoft headquarters to further pressure U.S. industry to back off in its efforts to undermine the EU directives (see Photo 22.1<Photo 22.1>). Microsoft was chosen not only because it was a co-host of the WTO meeting, but also because its constant software updates push demand for more processing speed and drive the pace of computer hardware's rapid obsolescence and the growth of e-waste. As a direct result of this organizing, the USTR attenuated its lobbying in Europe.

Importing EPR into the United States

During the years 2000–02, as approval of the EU legislation was increasingly imminent, an expanding coalition of NGOs took the lead on introducing EPR into U.S. debates. Although local and state governments, electronics recyclers, the U.S. Environmental Protection Agency (EPA), and industry began discussing how to build an electronics recycling infrastructure and allocate recycling costs, they focused on improving practices for dealing with products at the end of their lives. Had NGOs not advocated for an EU-style solution, the problem would have been seen simply as one of paying for managing e-waste responsibly, rather than as an opportunity to address the effects of electronics at each stage of their life cycle.

NGOs faced the challenge of the need to grow acceptance of producer responsibility in arid political soil. In the United States' historically pro-business regulatory context, federal regulators already had imposed a kind of conceptual tariff on the idea of producer responsibility as it entered the country. They transformed EPR into "Extended *Product* Responsibility," a voluntary approach to sharing responsibility for products by all actors, including consumers and government (President's Council on Sustainable Development 1997). This excised the notion that producers alone should assume responsibility because internalizing the full disposal costs of their products would likely force companies to redesign them for the better. The U.S. version of EPR held consumers and government partially accountable for decisions about product design that they had no power to control. NGOs opposed this definition, arguing that, "if everyone is made responsible for everything, no one is responsible for anything" (quoted in Fishbein 1996).

In 2001, a broad coalition formed the national Computer TakeBack Campaign (CTBC), which became the major voice for adopting producer responsibility policies for electronics in the United States (see Wood and Schneider; Appendix D, this volume). The CTBC developed a two-pronged strategy that combined a policy campaign aimed at fostering EPR legislation and industry agreements, with a market-based campaign, designed to build support among consumers and shareholders for producer responsibility (see Appendix C, this volume). The policy campaign supported regulatory and legislative efforts to enact producer responsibility with high environmental and worker safety standards for the recycling industry. The market-based campaign devoted much of its attention to pushing personal computer (PC) industry market leader Dell, Inc., to accept

EPR, but it also generated support from recyclers for responsible recycling practices and recruited institutional buyers to adopt environmental purchasing guidelines that included demanding take-back provisions from electronics vendors.

Recognizing that there ultimately would be a need for nationwide legislation to ensure a fair, effective take-back and recycling system, the CTBC took part in national negotiations over the outlines of such a system. This began in early 2001 with the formation of the National Electronic Products Stewardship Initiative (NEPSI), a multistakeholder dialog on resolving the e-waste problem, which represented federal regulators' main effort on the issue. NEPSI was funded by the U.S. EPA and coordinated by the Center for Clean Products and Clean Technologies at the University of Tennessee. NEPSI participants included representatives from major computer and television producers, the Electronics Industry Alliance (EIA), state and local governments, recyclers, retailers, and environmental advocates. They agreed on a goal of fostering "the development of a system, which includes a viable financing mechanism, to maximize the collection, reuse, and recycling of used electronics, while considering appropriate incentives to design products that facilitate source reduction, reuse and recycling; reduce toxicity; and increase recycled content" (NEPSI 2001). Industry representatives initially proffered a financing scheme that would have charged consumers who brought back old electronics, which the CTBC saw as a disincentive to recycling. The CTBC and its allies eventually succeeded in breaking down the industry's resistance to charging front-end fees on its products that would be used to finance the recycling infrastructure (NEPSI 2003).

During this multiyear process, following the defeat of the industry's "back-end financing" scheme, it became clear that the industry participants were split between two different "front-end financing" positions. The majority view advocated for a small consumer fee on new equipment to pay for recycling, without any additional obligations on manufacturers. The television industry and IBM supported this plan, largely because they are the major producers of historic waste, for which they would not have borne significant financial responsibility. The minority view—supported by Hewlett-Packard (H-P), as well as by the environmental NGOs—advocated for producers assuming responsibility for taking back and recycling their own obsolete products. After NEPSI disintegrated in disagreement over financing schemes in early 2004, the CTBC achieved a key victory by persuading Dell to join H-P in endorsing a Statement of Principles in support of Producer Responsibility. By organizing around this statement of Principles, the CTBC helped solidify the split within the industry by using its campaign against Dell to bring its position into alignment with its primary competitor—H-P. For its part, H-P had endorsed cost internalization because H-P saw it could give the company a potential competitive advantage as an early investor in building a recycling infrastructure for its own products.

The CTBC's main policy campaign focused on passing local and state initiatives to build momentum for a national solution. State-level stakeholder dialogues involving CTBC representatives predated and paralleled NEPSI, offering forums for exchanging information and discussing policy options among local solid-waste officials, the industry, and activists. This created a groundswell of support for statewide solutions, resulting in a wave of e-waste bills proposed in twenty-four states by June 2003. Although many of the bills failed to incorporate full producer responsibility (Raymond Communications 2002), the momentum for legislation built swiftly.

By building public awareness, the CTBC forced e-waste issues toward the top of the public policy agenda. California was the first state to enact a full-fledged e-waste recycling bill in 2003, but due to last minute lobbying from the television industry and IBM, the bill dropped full, producer-responsibility mandates in favor of requiring only a small, front-end consumer fee to help finance recycling, similar to the existing "bottle bills" that do not provide incentives for design change. In 2004, Maine became the first state to enact a true producer-responsibility law. Minnesota and Massachusetts were close behind in similar efforts with the Minnesota bill coming very close to passage in the 2005 session. It is likely that the states will continue to be the focus of legislative action as long as the industry remains split and as long as the U.S. Congress remains uninvolved.

Framing Matters: E-Waste and EPR

The CTBC's progress at introducing EPR also depended on its ability to frame its position effectively. Scholars frequently have emphasized the power of framing in environmental politics (e.g., see Capek 1993; Hannigan 1995; Sandweiss 1998). Frames are ways of defining and understanding public issues and events. A frame identifies social *problems*, names their *causes*, implies a range of *solutions*, and attributes *moral responsibility* by identifying victims, villains, heroes, and heroines (Entman 1993). For example, Americans became increasingly concerned about the environment in the 1960s in part because a number of recognized problems not previously thought of as connected—such as the destruction of wilderness and species, the human health effects of pesticides and industrial chemicals in the workplace and community, and declining air and water quality—were *reframed* as the larger issue of “the environment” (Schoenfeld, Meyer, and Griffin, 1979). This reframing of what had been treated as distinct problems in policy circles and public discourse drew attention to their larger, common causes: an industrialized economy based on unchecked growth and consumption, a view of nature as existing solely for human exploitation, and the lack of public accountability on the part of the state and corporate developers of technology. This new and overarching environmental frame also implied the need for more far-reaching policy solutions, such as limiting growth, phasing out toxic materials, and enforcing greater public transparency of industry and government. The new environmental frame of the 1960s included a sharpened moral vision more willing to attribute ecological destruction to corporate and government decision makers.

This approach helps us to see how the emergence of environmental policy, and struggles over it, are also contests over framing. It turns our attention to questions about which actors possess the power to define problems in the public arena, how they define them strategically, how they use rhetoric to persuade others to accept their frames, and why some frames are more successful than others. It shows how our definitions of problems often shape the range of reasonable responses to them.

Environmental sociologist John A. Hannigan (1995) identified five factors that help account for whether environmental claims succeed or fail at gaining acceptance among the media, policymakers, and the public. We use these factors to examine how the CTBC framed its claims about e-waste and the need for a European-style take-back system. Framing is especially important in the U.S. context, where the news media play a major role in the policy process. As Sigal (1973) noted, the U.S. government, from the

municipal to the federal levels, is large, geographically dispersed, and highly decentralized, making it difficult for officials to communicate with each other.

Authority

Activists' claims typically must be articulated in part through established authorities to gain wide legitimacy. Local and state government representatives have been especially important bearers of the message that the costs of handling e-waste are prohibitive and that industry must internalize and reduce them. The movement of bills through state legislatures provided news pegs for ongoing coverage of the e-waste problem. The range of debate in the mainstream American news media is closely calibrated to the range of views voiced by political elites at any given time (Bennett 1990). When political leaders legitimize EPR as a solution, journalists are more likely to treat its advocates in NGOs as credible and relevant sources.

Cultural Consonance

Successful environmental frames are presented in ways that resonate with existing culture and beliefs. A full-frontal assault on the dominant political-economic paradigm of the United States, on its widespread faith in technological progress, markets, and economic growth, would likely be dismissed in public discourse. Thus, the CTBC showed that producers taking back their products fit with widely shared American values. One tactic has been to discuss EPR as facilitating recycling, which is far more popular than reusing or reducing materials in America's high-consumption society. At the same time, it has been essential to distinguish real EPR from "bottle-bill type" recycling, which has no impact on greening product design, and to explain why EPR is a more effective and comprehensive approach. Another strategy has been to emphasize economic incentives, such as the promise of taxpayer relief and reduced disposal costs to high-volume institutional purchasers. After the EU directives passed, the CTBC appealed to national interests by noting that U.S. companies were demanding lower environmental standards at home than they would have to follow in Europe and thus were offering U.S. taxpayers and consumers second-class treatment.

The CTBC pointed to the health risks of improper handling of e-waste and was most successful when linking these risks with concerns about globalization. Activists first put the problem on the public radar most emphatically with the milestone report and video, *Exporting Harm* (Basel Action Network [BAN] et al. 2002), which exposed U.S. e-waste exports to Asia and the toll on its environment and people (see Puckett, this volume).

In addition, like a lighter judo opponent grappling with a heavier foe, the CTBC used the weight of dominant business rhetoric to take down the industry's own arguments. The campaign showed that producer responsibility, far from being the kind of "command and control" regulation lambasted by U.S. industry in the past, simply *internalizes previously externalized costs of pollution*, offers electronics companies *flexibility to innovate* in how they meet its targets for recycling and chemical phase-outs, and encourages them to *compete on grounds of design and recycling efficiency*.

One of the most challenging issues for the CTBC to frame has been some recyclers' use of cheap prison labor, which undercuts other recyclers' ability to pay

employees a living wage and effectively evades workplace safety regulations, which are loosely enforced behind prison walls. The rise of a ferocious law-and-order mentality in the past decade—fed by the growing political power of prison-related industries and prison guards’ unions, the news media’s obsession with sensationalized crime coverage, and opportunistic “tough on crime” politicians—means there is little sympathy for inmates in America, which now imprisons a larger percentage of its population than any other democracy in the world. In 2003, activists began to take on the issue, carefully framing the problem in a report entitled *A Tale of Two Systems* that contrasted Dell’s use of prison labor to recycle its computers with a H-P recycling facility that did not use prisoners (SVTC and CTBC 2003; see Wood and Schneider, this volume).

Moral Drama

Successful environmental frames typically present problems as morally charged social dramas, as clashes of values embodied in clearly identifiable victims, villains, and heroes. Journalism prizes are not awarded for uncovering tales of moral ambiguity, and political leaders cannot advance legislation by ruminating on an issue’s ethical complexity. To reach both targets, activists needed to clarify the values at stake in the EPR debate. This progress is evident in activists’ use of images, which crystallized the CTBC’s messages in particularly memorable ways. Early efforts, such as a 1999 SVTC report entitled *Just Say No to E-waste* featured mounds of junked computers in city dumps awaiting disposal (see Photo 22.2<Photo 22.2>). These pictures symbolized the impending wave of electronics that would hit the waste stream in coming years, dramatizing the problem of producers’ commitment to rapid obsolescence and the government’s inability to handle the resulting surge of waste. But these images could not represent the sharp sting of injustice perpetrated by one entity against another. Three years later, the *Exporting Harm* report and video captured wide media attention in part because it added human figures to the stage. By revealing to Americans where much of their information-age garbage was going, the report brought home the painful truth that the industry’s toxic products and U.S. policies that encouraged hazardous waste dumping on the world’s poor were destroying communities and lives (see Puckett, this volume).

Like investigative reporters, the CTBC relied on irony to command public attention and dramatize the need for producer responsibility. *Exporting Harm*, as many journalists noted, struck a chord because it revealed that much of the equipment delivered to U.S. recyclers was in fact exported overseas. Thus, responsible Americans who made the extra effort to bring their old computers to a recycling center were in fact the ironic victims of a sham perpetrated by some recyclers. Even the term “e-waste,” popularized by U.S. activists and adopted widely in the media, reversed the public perception of Internet-age progress in all things by suggesting the environmental and health consequences of the throwaway tools of e-mail and e-commerce.

At the same time, the CTBC’s framing of the issues needed to show that not all producers or recyclers were equally guilty. Allying with more responsible industry actors was crucial to gaining support for a strong take-back system. There had to be heroes, or at least models, to show that EPR was feasible. For example, the CTBC followed the *Exporting Harm* report by releasing an electronics recyclers’ pledge of stewardship (Appendix E, this volume), in which numerous private recycling firms agreed to

renounce exporting and dumping e-waste and the use of prison labor. The campaign's report on prison labor in recycling prompted Dell to stop its reliance on inefficient and unsafe facilities at federal penitentiaries by contrasting it with a state-of-the-art H-P recycling operation:

These recycling operations suggest two paths for the future of e-waste recycling in America. One path leads toward efficient, transparent, modern facilities staffed by free labor, possessed of their rights as contemporary employees, able to protect themselves and nearby communities from harm. The other path descends into a closed, Dickensian world of prisoners condemned to dangerous work for little pay under backward conditions. Depending on the path we choose, e-waste recycling can contribute to community economic development and environmental protection, or can become the equivalent of breaking rocks on a high-tech chain gang. (SVTC and CTBC 2003, 5)

Urgency and Visibility

Environmental claims must demonstrate a threat's impact on the present or near future. Oil spills, where immediate effects are dramatized, command public attention more powerfully than the seepage of radon gas into homes, which is a long-term and invisible problem. Activists emphasized the problem's urgency by estimating the health and financial costs of handling e-waste over the coming five years. As states faced mounting budget deficits during the recession and stock market bust of 2000–02, the CTBC argued that states must pass take-back legislation because they could no longer afford to subsidize a wasteful industry.

Agenda for Action

Finally, environmental arguments must include a clear plan of action, including short-term measures that can provide tangible benefits, such as shutting down a polluting facility or cleaning up a fouled stream. The EU directives offered the CTBC a model long-term solution to the problem of e-waste and enabled the CTBC to pursue a proactive strategy rather than a reactive strategy. In the near term, the campaign developed clear steps for its major constituencies and tools for achieving them. It provided government with model local resolutions and state legislation, as well as with information on costs of e-waste and implementation of EPR policies, counterarguments to resistant industry actors, and public support. For activists, the CTBC produced CD-ROM and World Wide Web-based toolkits with numerous ideas for actions (see Wood and Schneider, this volume). For recyclers, the CTBC offered positive publicity from signing the pledge of stewardship and supporting EPR legislation. Soon the recyclers were rewarded when e-Bay agreed to launch a reuse and recycling initiative on its Web site that recommended these recyclers to e-Bay users. For the public, the campaign provided its annual environmental report card on electronics companies to help guide purchasing decisions, as well as information on how and where to recycle e-waste responsibly. For the health care industry's institutional purchasers, the CTBC worked with its affiliate Health Care Without Harm to define clear procurement guidelines for adoption by hospitals

throughout the country. The CTBC also worked with government allies to incorporate its “green purchasing” criteria in a US\$4 billion request for proposals for information technology purchasing on behalf of governments, issued by the Western States Contracting Alliance. Similar green procurement initiatives focused on college and university electronics purchasing.

The Future of EPR in the United States

Producer responsibility for electronics has made impressive inroads in the United States since the late 1990s. The industry has conceded, in the words of an invitation to a recent AEA forum on regulation, that “it is clear that European environmental policy is setting a pattern for the rest of the world” (AEA 2003b). Some of the leading producers have accepted that they will have to incorporate the cost of handling their products at the end of their useful lives into the prices they charge U.S. consumers.

Future advances in adopting EPR in the United States will depend on four factors. First, progress will continue to depend on the success of the EU directives on waste and toxics reduction as they are implemented, as well as more recently adopted take-back laws across Asia. Whether take-back provisions will result in safe recycling jobs at livable wages is an open question that may be answered differently in various parts of the world. We also will have to monitor whether EPR is reducing the furious and wasteful pace of electronics production and consumption, so that the volume of the new waste produced does not outweigh increased recycling. If, for unforeseen reasons, the EU directives cannot sufficiently slow the industry’s merry-go-round business model of instant product obsolescence, legislation may need to create additional incentives for companies to transition to a new model. We need to think more about how reducing overall electronics consumption can become a way of evaluating EPR policies.

Second, the advancement of EPR may continue to face threats from international trade policy. The Central American Free Trade Agreement (CAFTA), adopted by the United States in 2005, prohibited the federal government from adopting a host of preferences that have sometimes been written into procurement policies, including preferences for environmentally sustainable products. Although only nineteen states agreed to be bound by CAFTA’s purchasing restrictions before it passed Congress, the trade agreement requires the federal government to try to persuade state and local governments to accept the treaty’s terms. If the federal government pursues the matter aggressively, for example, by withholding federal money (such as highway funds) unless states comply with CAFTA, then state and local preferences for greener electronics will be vulnerable to challenge. Similar restrictions on government procurement policies were discussed in the Doha round of WTO negotiations until 2004, when members finally agreed to drop them, but the passage of CAFTA may keep the issue alive in the future. If environmental purchasing policies continue to be declared a restraint of trade, the movement for EPR will lose an important lever for change.

Third, EPR’s success will depend on the quality of state and national laws on e-waste. Although legislation is mushrooming at the state level, future efforts to bring an *effective* version of producer responsibility to the United States will depend on whether regulators and legislators settle for a quick-fix waste-management solution— similar to the bottle-bill approach—or commit fully to an EPR system that forces the reinvention of

electronics by internalizing the costs of toxic materials and inefficient design in producers' bottom lines.

Fourth, the success of the long-term EPR campaign in the United States depends on the CTBC's ability to attract more industry support through future efforts similar to the Dell campaign. By continuing to split the industry and then working with those companies that embrace EPR, the CTBC will be more likely to win over policy makers than if the industry presents a united front against EPR. By pointing out that some leading companies support the environmentally preferable solution to e-waste, the campaign must further isolate those who call for merely assessing a consumer fee on new equipment sold. EPR advocates will need to show that this approach confers an unfair competitive advantage on companies most responsible for historic e-waste (such as IBM and television producers) and will fail to relieve taxpayers by generating insufficient financing for recycling legacy waste.

More specifically, model legislation in the United States, at the state or national level, will need to incorporate the following elements (see CTBC 2003):

- A definition of "electronic equipment" broad enough to include historic waste (such as old televisions and computers and their peripherals) and any new gear that includes a circuit board, complex circuitry, signal processing, or electronics that contains one or more hazardous substances;
- Requirements that brand owners and producers take financial responsibility for developing and operating a system for taking back products;
- Performance goals and timetables that spur producer accountability and better product design;
- A comprehensive scope that covers all manufacturers and brand owners, regardless of their sales channels or end users;
- A system for collecting historic waste (equipment sold and discarded prior to passage of the law) financed according to producers' current market shares, or their share of products returned at end-of-life, or other fair methods of allocating costs across the industry;
- Release of taxpayers from all liability for costs of collection, handling, transporting, storing, recycling or disposing of e-waste;
- A ban on disposing of e-waste in landfills and incinerators, which risk severe environmental and health harms to the public;
- Phase-outs of the most hazardous materials used in production, including but not limited to lead, mercury, polyvinyl chloride, and brominated flame retardants;
- A requirement that all electronics containing hazardous materials carry labels disclosing the materials and safe disposal practices;
- Verifiable performance standards for electronics recyclers, including reporting and penalties for violations, worker health and safety regulations, no use of prison labor, and no export of hazardous waste;
- Procurement guidelines for public agencies' information technology purchasing that give preferences to more environmentally benign equipment, and rule out equipment not in full compliance with the legislation;

- Effective means of enforcement, including requirements for periodic reporting by producers, public availability of such reports, and a multistakeholder advisory board to review compliance; and
- A commitment to fostering local economic development and job creation through electronics recycling and increased re-use.

Conclusion

The arrival of EPR on U.S. shores as a policy solution to the e-waste crisis of the late 1990s was born of several developments. The EU provided model legislation and a way of thinking about producer responsibility as the larger solution to risks posed by electronics throughout their lifecycle. Because of the electronics industry's extension into global markets, the European laws have generated pressure on brand-name producers to raise environmental standards for their products worldwide. However, in contrast to Europe, in the United States, NGOs' advocacy has advanced EPR more than policy makers' efforts, and EPR has proceeded through different channels: a market-based campaign and a policy effort that bubbled up from local governments. Finally, in a nation of decentralized governance and a media-saturated political culture, NGOs' attention to framing EPR in the news and policy discourse has been especially important. The progress of EPR's adoption in the United States will continue to rely on staving off efforts to use international trade policy to trump state laws, on the success or failure of EPR in Europe and Asia, on the comprehensiveness of state and national legislation, and on NGOs' ability to attract industry support for EPR.