E-waste policies in the United States: minimalistic federal action and fragmented subnational activities

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24.1 Introduction

Contrary to other countries and the European Union (EU), the United States (US) does not have a uniform nation-wide waste electrical and electronic equipment (E-waste) law. Instead, 25 US states have adopted their own E-waste policies while the other half of the states has not done so. This has resulted in a fragmented patchwork of diverse requirements and levels of stringency across the country. National legislation only imposes a binding landfill ban on an extremely narrow scope of electronic devices and is complemented by some voluntary national programs and standards. Out of the 25, 23 state-level E-waste laws embrace the concept of extended producer responsibility (EPR) with the exception of California and Utah. This chapter provides an overview of US E-waste policies, compare the different subnational initiatives, and trace their evolution over time.

The near-absence of national E-waste legislation does not mean that there were no any attempts pushing for nation-wide legislation. Policy-makers, company representatives, and NGOs launched a number of initiatives over the course of the 1990s and early 2000s. They recognized and highlighted the various environmental and health problems that accompanied the rapidly growing E-waste stream. Activities in the United States occurred around the same time as E-waste policy developments started in Europe. Yet, while the European Union pioneered in adopting a supranational E-waste law that was transposed into national law of all of its Member States, US activities remained less successful. Federal stalemate created a void that partially was filled by state-level legislation.

Fast technological innovation and growing numbers of electronic devices per person created an ever-growing E-waste stream. In 2007, when a wave of subnational E-waste laws started washing over the United States, only about 20% of US E-waste was collected for recycling. Most other E-waste was landfilled where hazardous substances could leach into the environment or was exported to low-income countries where they mainly were recycled by workers of the informal sector, using methods that harmed their health and the environment (US Government

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Accountability Office, 2008; US Environmental Protection Agency, 2008a; US Environmental Protection Agency, 2008b). Confronted with the challenge to keep hazardous E-waste away from landfills and ensuring appropriate recycling, US municipalities, policy-makers and other stakeholders started developing policy solutions that were tailored to local circumstances and politics as well as inspired by developments elsewhere, in most particular Europe (Biedenkopf, 2013).

Section 24.2 describes the minimalistic approach that was taken by the federal US government, in spite of the multiple—yet unsuccessful—initiatives undertaken by policy-makers, company representatives, and NGOs. Federal near-inaction opened a window of opportunity for state governments to adopt their own E-waste policies with California leading the pack. Section 24.3 identifies the factors that shaped California's pioneering efforts. An overview of the wave of subnational E-waste policies that were adopted between 2006 and 2011 is provided in Section 24.4, followed by a description of the fragmentation of the US E-waste policy landscape in Section 24.5 and the identification of various clusters of resembling E-waste laws in Section 24.6. This chapter is based on the analysis of various types of policy documents and the individual E-waste laws. Expert interviews that were conducted in 2010 (Biedenkopf, 2011) informed the tracing of policy developments in California and at the federal level. The concluding section provides some reflections on the implications of the fragmented US E-waste policy structure.

24.2 A minimalistic approach: federal E-waste policy

Federal US E-waste policy is a story of many attempts with few results. A uniform national E-waste law is wanting. Instead, policies are fragmented and largely rely on subnational entrepreneurship and decisions. National legislation only imposes a landfill ban on a very narrow set of electronics. Some voluntary programs and standards complement the national approach. The minimalistic reality of federal E-waste measures clashes with the noteworthy number of E-waste-related federal initiatives. Proposals abound during the early 2000s, yet none of the initiatives bared fruits, eventually opening a window of opportunity for impatient state governments. This section outlines the contours of federal E-waste measures.

Binding rules that pertain to E-waste are extremely scarce. Only a very narrow part of E-waste is regulated under the federal Resource Conservation and Recovery Act (RCRA), namely equipment containing a cathode ray tube (CRT), which is banned from landfills since it is considered hazardous waste. CRTs contain not only significant amounts of lead but also cadmium, zinc, and rare earth metals. If lead or other hazardous substances leach from landfills or improper recycling methods, they can harm human health when ending up in drinking water and food (Tsydenova and Bengtsson, 2011). The RCRA ban thus aims at preventing health and environmental harm. Yet, it neglects a large source of E-waste since it only applies to large businesses and public authorities. End-of-life devices discarded by households and small-quantity generators are exempted (Kang and Schoenung, 2005).

While the limitation to large businesses and public authorities already significantly reduces RCRA's impact, the focus on CRTs only further reduces it. When compared to, for example, the scope of EU E-waste law, which includes almost all electrical and electronic devices, CRTs from large commercial and public consumers appears quite restrictive. A second shortcoming of the RCRA provision is that it only institutes a landfill ban but falls short of any other requirements with regard to the collection and recycling of E-waste. E-waste exports to low-income countries are not principally prohibited, as is the case in Europe.

While de facto legislative provisions diverge widely between the United States and the EU, recognition of the E-waste problem and initiatives aiming to address it emerged on both sides of the Atlantic at roughly the same time, yet with different results. In the mid-1990s, some policy initiatives pertaining to E-waste and extended product responsibility were launched at the federal US level (Davis et al., 1997). Whereas extended *producer* responsibility focuses on the waste stage, extended *product* responsibility stresses the responsibility of various actors along a product's life cycle (President's Council on Sustainable Development, 1997). Extended product responsibility is a concept quite specific to the US context in which electronics manufacturers initially rejected the idea of EPR due to the fear of being perceived as the sole bearer of responsibility. The concept more explicitly includes the understanding that also other product-cycle actors should take on parts of the responsibility, including retailers, consumers, and recyclers.

In the early 2000s, federal US initiatives moved from elaborating concepts such as extended product responsibility, which can be applied to a range of product groups, to focusing more concretely on E-waste collection and recycling. A 2000 Product Stewardship Forum, held in Boston, resulted in the creation of the Product Stewardship Institute. The institute's objective is promoting product stewardship as a way to solve waste management problems by encouraging product design changes. The National Electronic Product Stewardship Initiative (NEPSI)—an informal dialogue among industry representatives, governmental actors, retailers, NGOs, and recyclers—was incepted in 2001 with the aim to develop a solution for E-waste management in the United States. Yet, it failed to find consensus and achieve its aim. An unsurmountable conflict arose within industry. Different industry representatives could not agree on who should pay for recycling: Television manufacturers adamantly opposed producer responsibility while computer companies were willing to support it (US Government Accountability Office, 2010). This conflict highlights the importance that was attributed to the philosophical difference between extended producer responsibility and extended product responsibility.

A series of legislative proposals for a federal E-waste collection and recycling system were submitted to US Congress between 2002 and 2008. Yet, none of them was adopted. The first in the series of proposals was the draft Computer Hazardous Waste Infrastructure Program Act (HR 5158), which would have established a fee on the sale of computers, monitors, and some other electronic devices to pay for collection and processing of E-waste. This law would thus have been based on an advance recovery fee rather than an extended product/producer responsibility approach. Other unsuccessful legislative proposals that were submitted to Congress

but not adopted addressed aspects as varied as research and innovation incentives, Congress' own E-waste treatment and E-waste exports. A 2008 Concept Paper for a National Electronic Products Stewardship Act aimed at initiating a consultative process and triggering a debate to culminate in a federal extended product responsibility law. A group of eight Members of Congress drafted the paper. However, their entrepreneurship attempt failed and the concept paper never was further developed into a legislative proposal that was officially introduced in the federal US policy-making process.

Not only legislators took initiative, also policy entrepreneurs from a segment of the electronics industry tried their luck. A 2007 industry initiative led by the Electronic Industries Alliance (EIA) developed a framework that reconciled the differences between television and computer manufacturers, which previously brought the NEPSI process to a fall. The proposal was based on a bifurcated approach applying an advance recovery fee to waste televisions and an extended producer responsibility approach to waste computers. The scope of the framework was limited to televisions, computers, and computer monitors. Yet, despite its reconciliatory intentions and similar to the 2008 concept paper, the proposal never garnered sufficient support and no Congress(wo)man ever officially introduced it in the federal legislature.

Although a significant federal E-waste law never materialized, alternative approaches and voluntary programs were developed. In 2003, the Plug-In To eCycling initiative encouraged electronics manufacturers, retailers, and mobile phone service providers to commit to using recyclers and refurbishers who comply with EPA guidelines (US Government Accountability Office, 2010). In 2008, the Responsible Recycling (R2) Practices—a nonbinding certification program for electronics recyclers—were released. In response to the absence of R2 provisions that ban E-waste exports, NGOs launched the competing e-Stewards standard, as a more stringent certification program since it includes the international dimension. The 2006 Electronic Product Environmental Assessment Tool (EPEAT) was launched by the federal Environmental Protection Agency and focuses on institutional buyers such as government bodies. It assists them in comparing products' environmental performances. While EPEAT includes criteria pertaining to the collection and recycling of E-waste, it comprises a much broader set of environmental criteria such as energy efficiency. EPEAT's impact was amplified by a 2007 Executive Order that requires all federal agencies to purchase at least 95% of their total electronic devices EPEAT-certified. More recently, the 2011 National Strategy for Electronics Stewardship sets four overarching goals and provides recommendations for the federal government, companies, and consumers. The goals include enhanced research and technology development, ensure the federal government's leadership, increase effective E-waste management in the United States, and reduce harm from US E-waste exports.

Despite the plethora of federal proposals and initiatives, only voluntary or public procurement measures have been adopted. The RCRA landfill ban is a small exception but given its minuscule scope compared to the E-waste challenge, it cannot be considered a sufficient approach. As in many other areas, the inability to adopt

federal US legislation has resulted in some alternative approaches that address parts of the problem. The most notable of these alternative approaches are EPEAT in combination with public procurement requirements, and the R2 and e-Stewards standards. The federal legislative void moreover gave rise to a number of state-level initiatives, which has led to a fragmented patchwork of diverse provisions and requirements. The first to adopt its own subnational E-waste law was California, whose policy-making process is traced in Section 24.3.

24.3 The pioneer: California

California pioneered in adopting subnational US E-waste legislation in 2003. E-waste was perceived as an important policy problem due to a California-specific landfill ban broader than the federal RCRA ban and heightened public pressure. The policy-making process was polarized. Time pressure arising from the California legislative process eventually triggered the governor to push for an advance recovery fee-based E-waste law. This section describes the main factors and developments that culminated in the adoption of the California E-waste Recycling Act.

As of January 1, 2005, California consumers are charged a fee when they purchase a device covered by the law. This fee covers the costs of E-waste collection and recycling. The law is the only of the US subnational E-waste laws based on an advance recovery fee paid by consumers at the time of purchase. The product scope is limited when compared to international E-waste laws such as the European approach. It only covers video display devices. Attempts to expand the product scope to all personal computers instead of only monitors (AB 3001, AB 1535) were introduced in 2006 and 2007 but not adopted. A 2009 legislative proposal to include fluorescent lamps (AB 1173) was vetoed by the governor. Various legislative proposals for product stewardship laws with a broad scope were introduced in 2009 and 2010 but failed. A 2018 legislative proposal to amend the E-waste Recycling Act would expand the scope of the law to mirror the very comprehensive scope of the EU WEEE Directive. Moreover, it would alter the California law's approach to an extended producer responsibility one, making manufacturers financially responsible for E-waste recycling. Yet, at the time of writing this chapter (June 2019), the proposal's fate had not been decided.

The agenda-setting phase of the California E-waste Recycling Act is marked by the recognition of some crucial problems pertaining to E-waste. Those policy problems elevated E-waste on the political agenda and policy-makers perceived them as important enough to dedicate sufficient resources and attention to E-waste policy. In particular California's categorization of E-waste as hazardous waste and growing public pressure fueled by NGO campaigns were two important developments.

The first development that raised the urgency of the E-waste problem relates to a more stringent landfill ban than the national one. Contrary to the federal

government, the California Department of Toxic Substances Control classified E-waste as hazardous waste and clearly stated in a 2002 letter in response to local governments' request for clarification that all E-waste was considered hazardous waste. This classification meant that E-waste, including from regular households, could no longer be landfilled. This created tremendous problem pressure on policy-makers to find a solution since local governments were faced with large amounts of E-waste in the absence of adequate collection and treatment infrastructure. Collecting and recycling E-waste is costly and local governments did not have sufficient resources to establish and provide those services. This led to the general recognition of E-waste as an urgent policy problem.

A second development that contributed to E-waste being perceived as policy problem stemmed from E-waste exports to low-income countries. NGOs such as the Basel Action Network, the Silicon Valley Toxics Coalition, and Greenpeace published numerous reports, highlighting the detrimental environmental and health impacts of California-originating E-waste in far-away countries. Monitors with labels that could be traced back to California companies were found in India and China. Newspapers ran this story on their front pages. These activities raised public awareness of the issue and increased public pressure to address the E-waste problem.

In response to the mounting problem pressure, legislators issued a legislative proposal for a collection and recycling system for computer monitors and televisions in February 2002, which however was vetoed by the governor because he did not deem it ambitious enough. Only about one-and-a-half years later, in September 2003, a similar law was adopted.

The debate during the policy-making process that culminated in the adoption of the E-waste Recycling Act was polarized and controversial. There was no industry consensus, which weakened their lobbying efforts while NGOs were relatively united in pushing for E-waste policy. NGOs supported a producer responsibility approach. Television manufacturers advocated an advance recovery fee system, while computer manufacturers did not have a unified position. The American Electronics Association opposed the E-waste legislative proposal outright, while one of its member companies, HP, advocated for a producer responsibility approach. The company already had a system in place to manage its end-of-life products and had established a long-standing partnership with a recycling facility in Roseville, California. It charged consumers a fee when they returned a used monitor. Hence, HP wanted its efforts to be reflected in the Californian E-waste law and level the playing field with other manufacturers who would be required to make similar investments under an E-waste law. Retailers did not favor an advance recovery fee since this approach puts a larger share of the implementation duties in their hands.

Eventually, an advance recovery fee-based law was adopted despite the significant number of advocates for a producer responsibility approach. The reason for this can be found in Governor Davis' eventual support for an advance recovery fee approach. This was the model of the first unsuccessful legislative proposal that had passed both houses of the state legislature but was vetoed by the governor in 2002.

Yet, circumstances had changed: Due to the rules of the California legislative process, an E-waste law had to be adopted fast before the end of the legislative session. Moreover, Governor Davis needed a quick policy success. For those reasons, he pushed for a law of which he knew that there was relatively broad backing. Some pragmatic NGOs shifted to support the governor's position. The California E-waste Recycling Act constitutes a compromise among the different stakeholders and policy-makers. As the pioneer within the US context, the politics and controversy around E-waste legislation at the time seem to have been too high of a hurdle for an ambitious producer responsibility-based approach.

Rising urgency and pressure to adopt E-waste policy in California combined with the federal inability to adopt a nation-wide law in the late 1990s/early 2000s and the anticipation that President George W. Bush's administration would not push for any significant legislative changes provided sufficient impetus for California's pioneering in E-waste policy. As with other environmental policies, California attempted to fill the federal legislative void by adopting avantgarde state-level policy (Biedenkopf, 2017; Carlson, 2008; Vogel, 2018). The coalescence of the different favorable factors resulted in the adoption of the first subnational US E-waste policy in 2003. Yet, the challenging situation of being the first, entering unchartered waters, resulted in the adoption of an advance recovery fee system rather than an extended producer responsibility system. The political circumstances and the governor's position in combination with time pressure made the advance recovery fee the best-possible output at the time.

24.4 2006–11: a subnational wave of E-waste policies

After California pioneered subnational US E-waste policy-making in 2003, Maine followed suit in 2004, and Washington State in 2006. The period between 2007 and 2010 witnessed a wave of E-waste law adoptions in 20 states. Utah and the District of Columbia were the latecomers, adopting laws in 2011 and 2014, respectively. Colorado does not have a full-fledged E-waste law but adopted an E-waste disposal ban in 2012. Fig. 24.1 shows the sequence of US state-level E-waste policy adoptions.

In spring 2004, Maine adopted the second US subnational E-waste law and the first one based on the extended producer responsibility model. Similar to California's law, Maine's E-waste recycling program covers televisions and computer monitors. It makes municipalities responsible for establishing a collection system and gives the responsibility to pay for collection, transportation, and recycling to the manufacturers. Washington State adopted the second extended producer responsibility-based E-waste law in 2006 and heralded the wave of state-level E-waste laws that washed over the country between 2007 and 2011.

The growing recognition of the environmental harm caused by landfilling electronics mounted public pressure to address the problem in most of those states. Many dynamics resemble those that occurred in California with public pressure

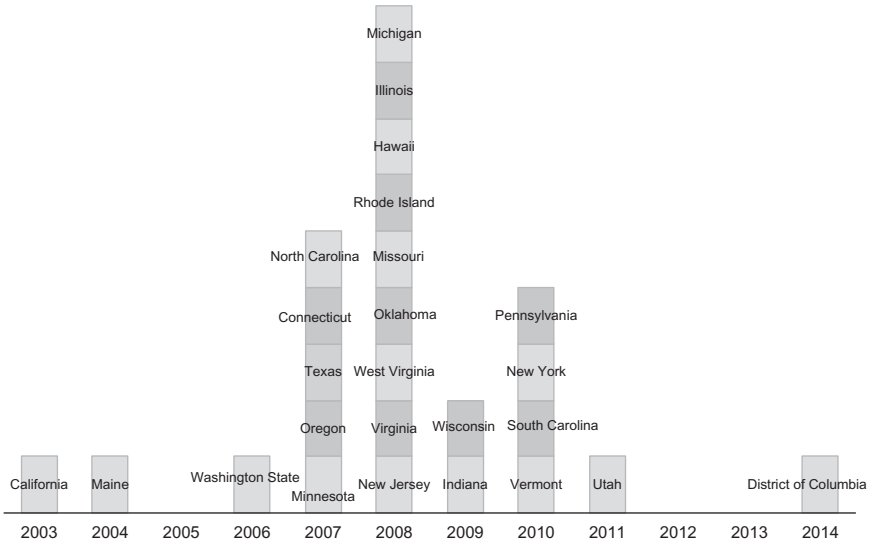

Figure 24.1 Adoption of US subnational E-waste laws.

growing, municipalities not being able to shoulder the burden of appropriate collection and recycling, and different industry segments favoring divergent approaches. In Washington State and Oregon, for example, individual policy entrepreneurs initiated the Northwest Product Stewardship Council, which led to the Western Electronic Product Stewardship Initiative that eventually dissolved in the National Electronic Product Stewardship Initiative. The national initiative however failed to agree on a solution for E-waste management in the entire United States. Anticipating a massive growth of E-waste due to digitalization and the switch from CRT to flat screen-televisions, state legislature, and governors took the matter in their own hands, adopting E-waste policies.

24.5 Fragmentation of E-waste policies

The 25 state-level E-waste policies diverge in provisions related to their scope, labeling, registration, and reporting requirements, reference to recycling standards, the setting of collection targets and whether or not they include a landfill ban. This has led to a patchwork of different variants of E-waste laws, which creates a fragmented approach that poses a challenge for companies that need to comply in multiple or all states. Most laws cover a relatively small product scope that is limited to televisions, computers, and peripherals. This choice was motivated by the intention to start with the highest-volume product categories and those that are most damaging at their disposal stage. A number of states expanded their laws' scope over time. Nonetheless, their laws cover a far narrower scope than the European Union

E-waste law. Although all E-waste laws, apart from those in California and Utah, are based on the extended producer responsibility approach, they fill it in in different manners. Most state-level E-waste laws contain some registration requirements.

All subnational E-waste laws, with the exception of Utah and California, contain the requirement that producers either finance a state-run E-waste collection and recycling program or organize their own collection and recycling program. Producers' responsibility is determined in different ways. In some states it is determined based on their market share while in others it is based on return shares. In market share models, a producer's fee is based on its market share in a given year while, in a return share model, a producer's fee is calculated based on the collected end-of-life devices that carry their brand label. For this reason, labeling requirements are an important element of those E-waste policies that determine a producer's financial responsibility based on its return share. Seven of the states use a market share approach while another seven combine a return share with a market share approach. In the combined approaches, television manufacturers' responsibility is determined based on their market share while computer manufacturers' responsibility is based on their return share. Few states ask manufacturers either to pay an annual fee or to set up their own collection and recycling programs. Six of the states do not specify the ways in which the financial responsibility is determined since manufacturers are required to run their own collection and recycling programs.

A number of the state-level policies are comparatively strict since they prescribe certain ambition levels. They set minimum collection targets, for example, 80% of sold devices in the previous year in Minnesota or a collection target that is calculated based on a specified weight per capita as in the case of Vermont. Another element that makes some of the laws more ambitious than others is the specification of recycling standards. Some of the laws require that recyclers must comply with the R2 standard as, for example, in South Carolina or, more generally, that recyclers must obtain a third-party accredited certification as in the example of Pennsylvania. Fifteen of the subnational E-waste policies contain an explicit landfill ban for products in the respective law's scope. E-waste exports are only covered by a few state-level laws. For example, California requires that E-waste exports be notified and comply with OECD standards, while New Jersey restricts exports for disposal that pose a risk to public health and the environment.

24.6 Clusters of policy designs

Although each of the laws is unique and the overall E-waste policy approach is rather fragmented, different sets of state-level E-waste laws resemble each other more than others. This can be explained by the fact that they stem from the same initiative. Different actors attempted to play the role of policy entrepreneurs by drafting model rules and submitting their ideas to various state legislatures. Those policy entrepreneurs were company actors, independent experts as well as policy-makers.

One set of subnational E-waste laws has commonly been labeled Dell bills. They received this label because they can be traced back to a blueprint for an E-waste law that originally was developed by the computer manufacturer Dell. Some of those laws have partially identical wording, yet they also differ in some aspects. They are based on the same model that requires manufacturers to adopt and implement a recovery plan that is free of charge to consumers. E-waste collection can be conducted through various means, including mail-back programs and collection events, which are relatively low in infrastructure investment costs. Those tend to be the laws that do not include an approach to determining a manufacturer's financial responsibility. The laws do not prescribe performance standards such as collection targets and recycling standards. Overall, the requirements are relatively light. Texas, North Carolina, Virginia, West Virginia, Oklahoma, Missouri, Hawaii, Michigan, and South Carolina adopted a variant of the Dell bill.

Another set of state-level laws that resemble each other can be found in the Northeastern United States. These laws are based on a model E-waste law that was developed in the context of the Northeast Regional Electronics Management Project, an initiative by the Council of State Governments' Eastern Regional Conference and the Northeast Recycling Council. New York, Vermont and New Jersey adopted similar E-waste laws that introduce comparatively strict requirements. Manufacturers must register, pay for collection and recycling of their products, and label products with their brand. The responsible department defines collection and recycling goals, as well as performance standards. Retailers may only sell labeled products of registered manufacturers and provide information to consumers.

In the country's Northwest, Washington State and Oregon worked closely together and adopted similar laws that also have comparatively strict requirements. In both systems manufacturers must register and participate either in a standard recovery plan or in an approved independent recovery plan. They must label their products with their brand name since the producer responsibility in the standard recovery plan is based on return shares. Collection services must be provided in every county and town with 10,000 or more inhabitants. Collectors and recyclers must register and follow guidelines for environmentally sound management that are issued by the responsible department. Retailers must provide information about E-waste recycling to consumers.

In the Midwestern United States another cluster of similar E-waste laws was adopted that can be traced back to the Midwest Regional Electronic Waste Recycling Policy Initiative. Indiana, Illinois, Wisconsin, and Minnesota adopted E-waste laws that are relatively strict. Manufacturers must register, join, or implement a recycling plan that is free of charge for consumers, provide consumer information, and label their products with their brand. The laws set recycling targets and retailers may only sell labeled products by registered manufacturers and inform consumers about E-waste recycling. Collectors and recyclers must register and comply with specified standards.

Regardless of the different clusters of E-waste policies, none of them is an exact copy of another. Some states initially participated in regional initiatives but eventually adopted a different type of E-waste law. One example is Michigan, which

initially participated in the Midwest Regional Electronic Waste Recycling Policy Initiative but eventually adopted a variant of the Dell bill. The political dynamics in the policy-making process can explain the shift.

24.7 Conclusions

The overview of US E-waste policy provided in this chapter highlights its complex and fragmented nature. The United States is split in half, with 25 states filling the federal void of near-absent E-waste provisions while the other 25 states have not taken action. In those states voluntary programs may exist but no binding rules that would level the playing field among manufacturers. But also among those states that have adopted E-waste policy divergence can be noted with, for example, the so-called Dell bills imposing much lighter requirements than, for example, some of the Northeastern or Northwestern states. Regardless of their divergences, almost all state-level E-waste laws cover a very limited product scope of televisions and computers. New York stands out with a law that spans the most ambitious scope, including products as diverse as fax machines, music players, digital converter boxes, video game consoles, and small-scale servers in both business-to-consumers and business-to-business transactions.

A subnational E-waste policy wave washed over the United States in 2006–11. Yet, no additional E-waste developments have unfolded since 2011. A number of those states that had E-waste policies already in place altered their laws but no new laws were adopted, with the exception of the 2014 District of Columbia law. The 50–50 division among US states seems to have been cemented, set to prevail for the foreseeable future.

For companies, this means that the difficult-to-navigate patchwork of E-waste provisions will persist. Companies that are active on a national scale are required to monitor the various policy developments and determine their compliance obligations on a state-by-state basis. While these compliance challenges could have softened some manufacturers' stance on and opposition to possible federal E-waste policy, they certainly have not triggered a strong push. Divergences in industry positions persist, weakening any possible legislative initiative, which in any case has been extremely unlikely during the Trump administration. A great degree of issue salience, political prioritization, and leadership would be required to successfully shepherd a legislative proposal through the process.

References

Biedenkopf, K., 2011. Policy Recycling? The External Effects of EU Environmental Legislation on the United States. PhD dissertation defended at the Vrije Universiteit Brussel, Brussels.

Biedenkopf, K., 2013. The multilevel dynamics of EU and U.S. environmental policy: a case study of electronic waste. In: Echinard, Y., et al., (Eds.), L'Union Européenne et Les États-Unis. Processus, Politiques et Projets. Larcier, Brussels, pp. 189–210.

Biedenkopf, K., 2017. Gubernatorial entrepreneurship and U.S. federal-state interaction: the case of subnational regional greenhouse gas emissions trading. Environ. Plan. C: Polit. Space 35 (8), 1378–1400.

Carlson, A.E., 2008. California Motor Vehicle Standards and Federalism: Lessons for the European Union. Institute of Governmental Studies, University of California, Berkeley, Working Paper, 2008/4.

Davis, G.A., et al., 1997. Extended Product Responsibility: A New Principle for Product-Oriented Pollution Prevention. Prepared under Cooperative Agreement with the United States Environmental Protection Agency Office of Solid Waste, Washington, DC.

Kang, H.-Y., Schoenung, J.M., 2005. Electronic waste recycling: a review of U.S. infrastructure and technology options. Resour. Conserv. Recycl. 45 (4), 368–400.

President's Council on Sustainable Development, 1997. Proceedings of the Workshop on Extended Product Responsibility. Washington, DC: Prepared by Eastern Research Group, Inc.

Tsydenova, O., Bengtsson, M., 2011. Chemical hazards associated with treatment of waste electrical and electronic equipment. Waste Manag. 31 (1), 45–58.

US Environmental Protection Agency, 2008a. Electronic Waste Management in the United States. Approach 1. EPA 530-R-08-009. Washington, DC.

US Environmental Protection Agency, 2008b. Fact Sheet: Management of Electronic Waste in the United States. Available at: <http://www.epa.gov/waste/conserve/materials/ecycling/manage.htm> (accessed 05.05.11.).

US Government Accountability Office, 2008. Electronic Waste: EPA Needs to Better Control Harmful U.S. Exports Through Stronger Enforcement and More Comprehensive Regulation. GAO-08-1044. Washington, DC.

US Government Accountability Office, 2010. Electronic Waste: Considerations for Promoting Environmentally Sound Reuse and Recycling. GAO-10-626. Washington, DC.

Vogel, D., 2018. California Greenin': How the Golden State Became an Environmental Leader. Princeton University Press, Princeton.