Perspectives on Product Stewardship

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Chapter 3

Producer Responsibility in the United States: Definitions and Core Principles

Product stewardship is a policy that seeks to change the ways in which products and packaging are designed and waste is managed and financed. It is a paradigm shift and reorganization of relationships among manufacturers, retailers, consumers, recycling and waste management companies, and governments—those who make, sell, use, and manage leftover products and packaging. It is a system that responds to the need for these stakeholders to share responsibility for the costs and initiatives required to protect public health and the environment from the impacts of the products we use every day. It is about ensuring that the materials we use to enrich our lives have maximum value and minimal impact during their entire life cycle, from creation and use to their potential reuse and return to the earth. This chapter explores the principles and goals of the product stewardship and Extended Producer Responsibility (EPR) movement in the United States, as well as the roles of important stakeholders.

WHAT ARE PRODUCT STEWARDSHIP AND EXTENDED PRODUCER RESPONSIBILITY?

"Product stewardship" is the act of preventing the health, safety, environmental, and social impacts of products and packaging throughout all lifecycle stages, while also maximizing economic benefits.[1] The Product Stewardship Institute (PSI) developed the nation's first *Principles of Product Stewardship*

1. "Product Stewardship and Extended Producer Responsibility," Product Stewardship Institute (2011), accessed February 24, 2023, https://productstewardship.us/wp-content/uploads/2022/12/2022_update_product_stewards.pdf.

in 2001[2] and, along with the California Product Stewardship Council and the Product Policy Institute (now Upstream), updated them in 2011 to harmonize terminology in the United States and streamline the development of programs, policies, and legislation. "Extended producer responsibility" (EPR) is a mandatory type of product stewardship that includes, at a minimum, the requirement that the producer's responsibility for their product extends to post-consumer management of that product and its packaging[3] (see figure 3.1).

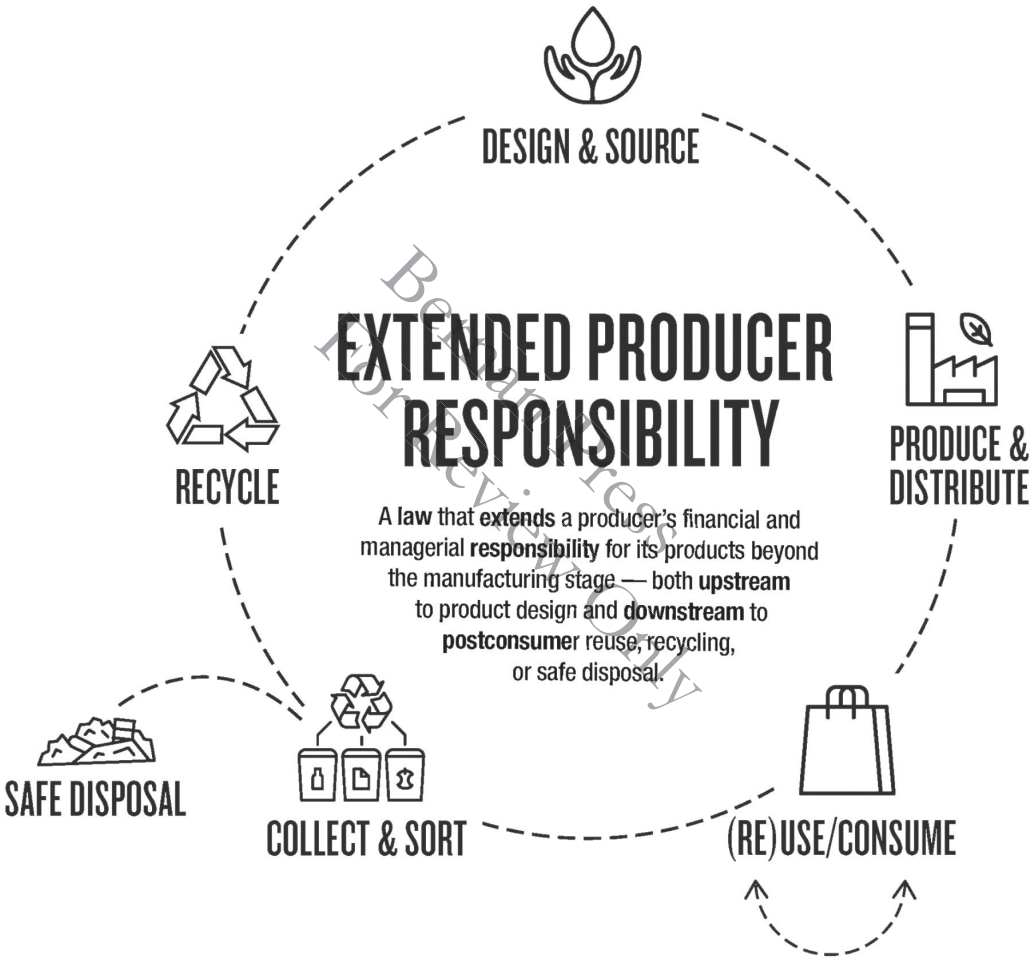

Figure 3.1 Extended Producer Responsibility (EPR)

2. "Principles of Product Stewardship," Product Stewardship Institute (2001), accessed February 24, 2023, https://productstewardship.us/wp-content/uploads/2022/12/2022_update_principles_of_pr.pdf.

3. "Product Stewardship and Extended Producer Responsibility," Product Stewardship Institute (2011), accessed February 24, 2023, https://productstewardship.us/wp-content/uploads/2022/12/2022_update_product_stewards.pdf.

There are two important features of EPR policy:

1. shifting primary financial, and often management, responsibility upstream to the brand owner or product manufacturer (typically referred to as the producer) and away from the public sector, with government oversight; and
2. incentivizing producers to incorporate environmental considerations into the design of their products and packaging.

The core tenet of product stewardship is that producers take responsibility, either through government regulation or voluntarily, for reducing impacts all along a product's life cycle. It creates a thread of accountability for those engaged in mining through manufacturing and sale all the way to the ultimate fate of materials downstream—reusing and recycling ("cradle-to-cradle") or landfilling or incineration ("cradle-to-grave"). Since product stewardship encompasses both voluntary and regulatory initiatives (including EPR), it is the broadest term used to describe actions for which producers have a central role in the financing and/or management of their products and packaging when no longer wanted by consumers. Included in this broad term are voluntary initiatives that companies fund and manage, such as long-standing US rechargeable battery and mercury thermostat recycling programs or the take-back and recycling of water filters, toner cartridges, and other products. Product stewardship can also be undertaken by government regulation, such as a ban on the sale of new mercury thermostats, plastic bag bans and paper bag fees, and through EPR laws (see figure 3.2).

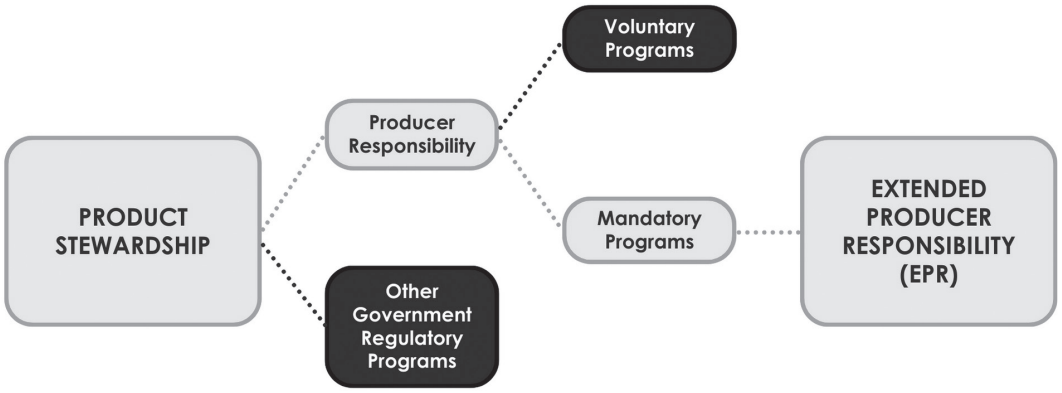

Figure 3.2 Product Stewardship vs. Extended Producer Responsibility (EPR)

CORE PRINCIPLES OF EPR

There are five core principles of all EPR legislation: (1) producer responsibility, (2) level playing field, (3) results-based, (4) transparency and accountability, and (5) roles for key stakeholders. Together, they achieve maximum results and thus are considered a best practice to include in all EPR legislation. Although these principles have been applied differently by US jurisdictions, adhering to these principles provides the best opportunity to harmonize legislation nationally, through a unified set of state laws or with a federal law. Since these principles are informed by global norms, established through experience gained in European and Canadian EPR programs, they provide the opportunity to develop globally consistent EPR policies and programs. Based on these five principles, PSI developed a set of best practices that all EPR laws should contain (see chapter 6).

Principle 1: Producer Responsibility

The bedrock EPR principle is that producers have the greatest responsibility to reduce the financial, environmental, and social impacts caused by their products and packaging. Since they know what materials are used to manufacture their goods, they are in the best position to reduce those impacts and create post-consumer value to return used materials to the circular economy. This principle further clarifies that a producer's responsibility is to finance and provide end-of-life management of their products and packaging as a condition of sale. If a producer funds and manages take-back programs voluntarily, we refer to it as product stewardship. If performed as the result of a law, it is called EPR.

EPR laws hold producers responsible for funding and largely managing the steps needed for a material to go from consumer waste to new product or package. Producers pay into a fund, which they usually manage, and use the funds to hire companies to collect materials at locations that are convenient for consumers to access. They also hire recyclers or waste management companies to make sure the collected material is managed in accordance with the jurisdiction's waste management hierarchy for that material.[4] Producers also develop consumer educational materials, or do so in conjunction with local and state governments, as well as with collectors and recyclers. These

4. The standard waste management hierarchy includes source reduction, reuse, recycling, waste to energy, and landfill. Most government agencies also place recycling material back into the same product or into a similar value product that can be recycled multiple times (closed-loop recycling) higher in the hierarchy than downcycling material into a product that is recycled only once or twice and then tossed.

materials are intended to guide consumers on proper product reuse, recycling, or disposal.

Principle 2: Level Playing Field

EPR laws level the playing field for all producers within a particular product category by requiring that companies compete under the same requirements. If a company does not fulfill its legal responsibility to fund and manage EPR programs, the government oversight agency has the authority, and responsibility, to prohibit the company from selling products covered under the law in that jurisdiction. The agency can also enforce penalties against a noncompliant retailer for knowingly selling products covered under the law. Creating a level playing field through enforcement is a critical role and responsibility of oversight agencies. If they fail to uphold this responsibility, they provide an unfair advantage to noncompliant companies at the expense of those who play by the rules.

Under voluntary take-back programs, producers that take responsibility for their products and packaging pay for those who don't take responsibility and will always be at a competitive disadvantage. Voluntary take-back systems must contend with "free riders," companies whose waste products get collected and managed in the system into which the free rider does not financially contribute. That is, they benefit from the efforts of others and not due to their own efforts. For this reason, voluntary stewardship programs cannot achieve fairness among producers. EPR laws are fairer because they require all companies to finance and manage the system.

Principle 3: Results Based

EPR systems are established to prevent negative consequences. They are no different from laws that require citizens to stop at red lights to prevent an accident. Wasting resources results in the need to mine more minerals to manufacture more products and packaging, and the emission of more greenhouse gases (GHG). It means more waste going to landfills and combustion facilities (i.e., incinerators), more truck traffic, and more truck exhaust and stench in neighborhoods. It means fewer recycled materials are available for recycled product manufacturers to create new products and packaging and complete the circular economy, which creates new jobs and economic value.

EPR laws reflect our society's evolution of thought and understanding about how to reduce impacts that result from resource consumption. These laws also reflect an understanding that producers, not governments, should be responsible for meeting measurable performance targets that serve as a surrogate for broader environmental, social, and economic goals. Many

US federal, state, and local environmental laws already require companies to meet results-based targets. For example, governments issue permits that allow companies to emit specific levels of pollutants into the air and water and onto land from sources such as smokestacks and pipes. Companies that own and operate combustion facilities (also known as waste-to-energy facilities) and landfills must also meet air and water emission standards. What is different under an EPR system is that producers are held responsible for meeting reduction, reuse, and recycling targets for the product and packaging waste created by the materials (i.e., products) they put into the marketplace.

Meeting these targets used to be the domain of state and local governments. Some state agencies have tried to impose mandatory recycling requirements on local governments only to be met with a backlash from local officials who argue that imposing requirements without funding is an "unfunded mandate."[5] Some local governments have attempted to fine residents for not recycling, but these acts have been politically perilous, particularly because recycling can be confusing to residents. Infractions often have more to do with unclear instructions, difficulty in distinguishing between recyclable and non-recyclable materials, or changes in materials collected from one town to another. Long ago, the federal government realized the difficulty of regulating millions of households under federal waste management law, even exempting the disposal of hazardous household products by residents. It's very challenging to monitor what households slip into garbage bags and barrels and enforce solid waste management compliance.

In some states, environmental agencies have banned specific materials from disposal, such as yard waste, lead-based cathode ray tubes,[6] mattresses, and recyclable packaging, then held companies responsible for collecting and recycling them. Instead of requiring households to recycle, governments often enact bans that hold collectors accountable. Noncompliant loads are then rejected by state officials at transfer stations, landfills, and waste-to-energy plants. While these bans send the clear signal that recycling and composting are state priorities, waste collectors find it unpopular to police their customers unless items are large, like television sets, which can be left on the curb. These challenges are exacerbated by the unreliability of government funding for compliance officers to inspect waste disposed at numerous facilities throughout the state.

5. Scott Cassel, "Product Stewardship: Shared Responsibility for Managing HHW," in Handbook on Household Hazardous Waste, Second Edition, ed. A. Cabaniss (Lanham, MD: Bernan Press, 2018), 159.

6. Cathode ray tubes, or CRTs, were used in older model televisions and computer monitors to display images on the screen. To block harmful radiation, CRTs contain lead that protects users from radiation.

EPR, by contrast, creates a chain of accountability that starts with the brand owner but must, by necessity, involve all others in the chain of responsibility, including collectors, material recovery facilities, state and local governments, and of course, the consumer. Since the brand owner chooses the materials for their products and packaging, they are on the hook for ensuring that a measurable amount of these materials are reused or recycled. Other stakeholders, though, also have a role to play to make sure that the brand owner is successful.

Performance Goals

Performance goals are needed to ensure that programs are effective and efficient, and that they achieve the policy intent. EPR systems require that all stakeholders be clear about what they are trying to achieve and who is responsible for which element of the system. Under EPR, performance goals can be set in statute, regulation, or through stewardship plans that producers submit for approval to the government oversight agency. In effective EPR laws, if goals are not met, the oversight agency is given authority to require the responsible party to expend more effort—for example, producers might need to provide additional convenient collection sites, more educational materials and outreach, and take other actions to meet program goals. EPR laws also include financial penalties for not meeting goals after repeated attempts.

Typical performance goals require brand owners to collect, reuse, and recycle a minimum volume or weight of a given material within a certain time period (e.g., one year, or by a certain date). For example, under Vermont's single-use battery recycling program, battery manufacturers were required to recycle 20 percent of single-use batteries they put on the market in 2020. The state oversight agency, in this case the Vermont Department of Environmental Conservation (VT DEC), requires the producers to submit a plan detailing how they intend to meet the 20 percent collection rate goal throughout the term of the approved stewardship plan. Goals such as these are, not surprisingly, called "rates and dates." Government does not dictate how producers should meet the goal but seeks compliance assurance from producers through a detailed stewardship plan that outlines collection locations, a public education and outreach program, and other variables. If the battery collection rate performance goal is not reached in Vermont, DEC has authority under the law to require modifications of the plan and can issue penalties for repeated failure to meet the goals.

A key question is, who is responsible for meeting these performance goals? Early US EPR laws required companies or producer responsibility organizations (PROs) to allocate responsibility by company in accordance with the percentage of their own branded products *returned* for collection by

consumers. If, for example, 1,000 pounds of computer equipment covered by an EPR law were collected in a region and 100 of those pounds came from one computer manufacturer, that company would be responsible for paying into the system 10 percent of the total cost.

This type of calculation, known as "return share," assigned each collected item to an individual company. While accurate, it was extremely resource intensive to administer. Over time, the calculation of this goal was replaced by a method based on the amount of equipment the company sold into the market, its "market share," which was determined through industry sales data. If a company sold 10 percent of the pounds of new electronics each year into the jurisdiction, they would be responsible for recovering the same amount of electronics through the program. Agencies also used this same market share percentage to assign responsibility for what I like to call "ownerless products," which are products from companies that are no longer in business (also called "orphan products" in the field). The company with 10 percent market share, for example, would also be responsible for funding and managing the collection and recycling of 10 percent of the ownerless products.

Holding producers responsible for meeting specific goals allows government to step back from micromanaging the process and provides producers with the flexibility to innovate. Even so, the experience in the United States over the past 22 years has shown the reluctance of producers to accept rate-based goals, largely due to the difficulty in developing a methodology that producers will accept. There will always be a degree of uncertainty in establishing goals that are based on a percentage of unwanted material that needs to be managed. For example, although it is possible to calculate the *actual* pounds of mercury thermostats *collected* in an EPR program in a year's time (the numerator in the equation to establish a rate-based goal), it is only possible to *estimate* the pounds of mercury thermostats *available* for collection (the equation's denominator). The denominator is determined by a mathematical calculation that factors in variables such as the average amount of time that mercury thermostats stay on the wall before being replaced with newer technologies, which can vary by geographic area, economic activity that drives home renovations, and other variables (see equation 3.1).

$$\text{goal} = \frac{\text{mercury thermostats collected (lbs)}}{\text{mercury thermostats available for collection (lbs)}} \tag{3.1}$$

Since the variables that influence the denominator can only be estimated, there will always be uncertainty about the amount of mercury available for collection, especially since mercury thermostats were no longer sold

in the United States after about 2006[7] (although they can remain operable for decades). Uncertainty breeds opinions, not facts, which often leads to program delays caused by legal challenges. Since the ramifications for not meeting a target can be significant, producers often vigorously contest methodologies used to determine goals, as well as the data plugged into models and formulas that lead to the calculated measure of program performance to which they are held accountable. For a case in point, in California, the Thermostat Recycling Corporation (TRC) hired its own consultant to develop a methodology for calculating a recycling rate for mercury thermostats for which they were evaluated by CalRecycle, the state oversight agency. TRC later rejected their own consultant's methodology when the results showed they did not meet their statutory performance goal. Many agencies withstand these challenges and rely on best available data. Others defer to goals that are less reliant on specific performance data, such as convenience standards.

Convenience Standards

Over time, some US government officials have grown weary of constant challenges by brand owners to how performance goals are calculated and have shifted their emphasis to evaluating programs based on the convenience that programs provide to consumers. Convenience standards ensure there are adequate opportunities for consumers to reuse, recycle, or safely dispose of their unwanted products and packaging rather than evaluating how much they use these opportunities. Convenience standards are always coupled with EPR statutory requirements for producers to educate consumers about the importance of diverting used products and packaging from disposal, along with specific opportunities for collection.

A typical convenience standard might require pharmaceutical producers to place a permanent collection kiosk in at least one retail pharmacy per county with a population of 10,000 or more, and an extra kiosk in other retail pharmacy locations in that county for every additional 10,000 people. Another standard might be that paint producers ensure that 90 percent of residents have an opportunity to drop off their leftover paint at a permanent collection location within 15 miles of their home. Since rural areas have fewer pharmacies, paint collection locations, and other convenient product collection sites, periodic one-day collection events and mail-back options are written into many stewardship plans. Events require close communication

7. The Vermont and Maine thermostat EPR laws included a ban on the sale of mercury thermostats after July 1, 2006. The California thermostat EPR law prohibited the sale of mercury thermostats after January 1, 2006. Similar provisions were included in many of the other thermostat EPR laws that were passed around this time. These state bans, along with earlier state mercury product bans (see chapter 5), resulted in the cessation of the sale of mercury thermostats nationwide and encouraged thermostat manufacturers to develop alternative non-mercury thermostat technologies.

and coordination among producers, collection contractors, local government agencies, and the state oversight agency. For small items, like leftover medicine and used syringes, prepaid mail-back envelopes and containers that are available online or at convenient locations can also become part of a stewardship plan.

Convenience standards ensure that consumers have opportunities to return their products and packaging to be managed in accordance with the standard waste management hierarchy—reduction, reuse, recycling/composting, waste-to-energy and, finally, landfilling (see figure 3.3). Opportunities may include other beneficial uses authorized by the oversight agency. Since it is easier for an oversight agency to determine the number of collection sites open to the public at convenient times rather than calculating recycling rate goals, convenience standards have become critical to evaluating the success of an EPR law. Although many governments still prefer performance targets based on a recycling percentage, convenience standards have become either a supplement to, or at times a replacement for, the more specific performance targets.

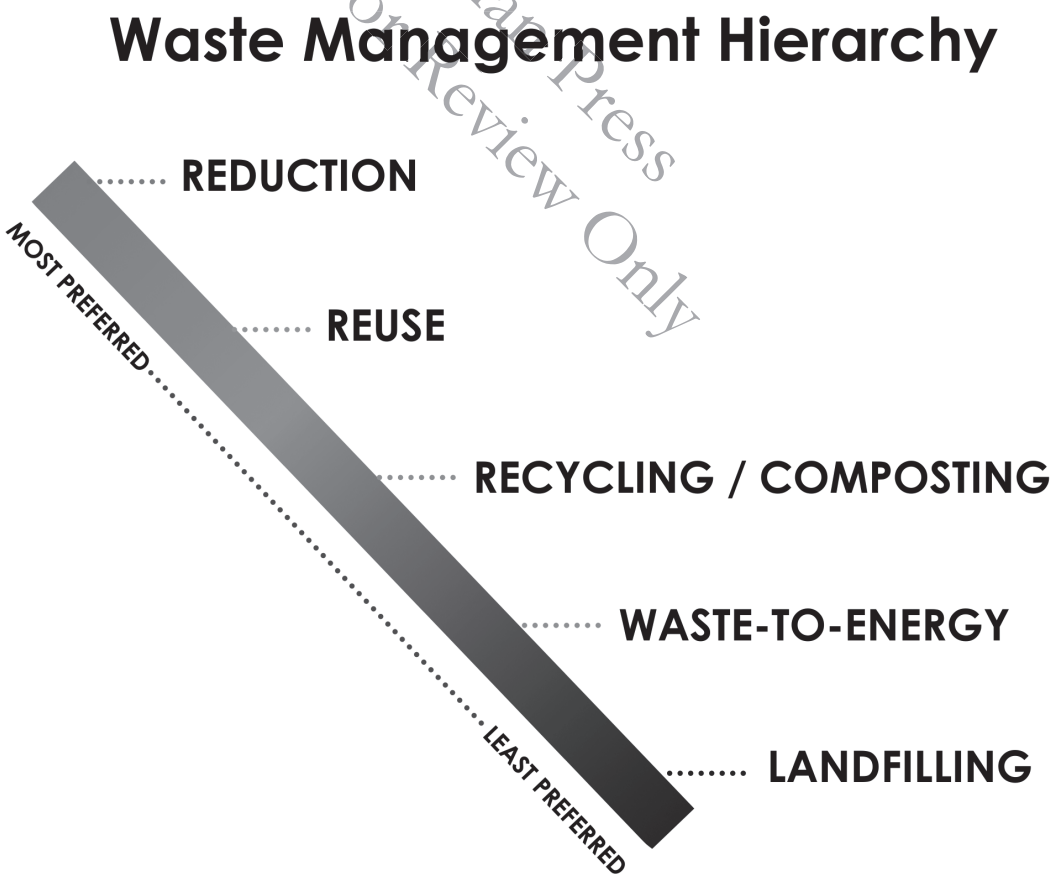

Figure 3.3 Standard Waste Management Hierarchy

The emphasis placed on meeting performance targets and convenience standards highlights the need for accepted methods by which government oversight agencies can hold responsible entities legally accountable for the performance of EPR systems.

Principle 4: Transparency and Accountability

Government is responsible for ensuring that producer programs are transparent and accountable to the public, including providing opportunities for stakeholder input. The public has interests in many aspects of waste management, including where and how recycled materials are processed; the amount of collected material that is actually recycled versus the amount that is unusable due to contamination or a lack of markets; compliance with the law; and program costs. They also want to know where and how waste is disposed of when it is not recycled, the compliance record for those facilities, and associated health impacts.

The importance of transparency is tied to an oversight agency's need for data to evaluate its waste management programs. All stakeholders can agree that programs, policies, and laws should produce intended results. Otherwise, they should be changed so that they do. And the definition of success shifts over time, too, as stakeholders around the world gain EPR program experience and newly developed best practices are incorporated into existing EPR programs. Program improvements, however, are only possible if data is collected and available to those overseeing the program and those legally responsible for meeting the goals.

Over the past 22 years of the US EPR movement, the questions I am most often asked have shifted significantly from the simple (e.g., "What is EPR?") to the more complex (e.g., "Where do collected materials go for recycling and what products are they made into?"). As more people become aware of the concept of EPR and the brand owner's role in achieving a circular economy, questions will undoubtedly address how materials are sourced to make the product and packaging put on the market; the environmental, social, and economic impacts of mining and manufacture; the environmental and social impacts of recycling operations domestically and abroad; financial costs at each stage of the recycling and waste disposal process; amounts collected; and other variables and questions.

The public is also asking why so much waste is produced and what producers and governments are doing to reduce it through source reduction, reuse, and recycling. They are demanding reductions in greenhouse gas emissions that tie directly into product manufacture, waste, recycling, and the circular economy. They want to know what is downcycled to another use that only lasts one more product cycle (e.g., scrap carpet to decking board) and what is

truly returned to the circular economy through multiple material cycles (e.g., scrap carpet into new carpet).

Businesses are already hyper-focused on cost efficiency and meeting their own publicly stated sustainability commitments, such as incorporation of recycled content into new products, which creates a demand for the material collected in EPR systems. Collectors want data to ensure efficiency and to identify system problems quickly and accurately. They want to be able to forecast how much material will come from each hauling route so they can develop more efficient trucking operations. Recyclers need to know the amount of material collected from multiple trucks and arrival times at their facilities. They track fluctuating commodity prices as well as the level of contamination of materials from each location, along with the cost of recycling each material. Governments need the full array of data to orchestrate an efficient and effective system that serves all citizens equitably—urban, suburban, and rural—as well as whether there are disproportionate impacts on specific communities, including air and noise pollution, litter, and related metrics.

Programs generate considerable amounts of data, and data management systems will continue to evolve to provide the data transparency and protection expected by, and of, each key stakeholder. These systems will also take into account a company's need to maintain business confidentiality. There will need to be a process to clearly determine what is considered confidential and whether the agency, the producer responsibility organization, or another entity is assigned the role of protecting confidential information from becoming public. The public's right to know how a program is managed must be balanced among multiple competing interests. Data management systems will be increasingly important tools to provide the information and insights needed for all stakeholders to make decisions that will ensure the attainment of program goals. These systems will provide the visibility into program performance that stakeholders need to track their own responsibilities, as well as the data transparency others need to ensure an EPR system is effective, efficient, sustainable, and publicly credible.

Principle 5: Roles for Producers, Government, Collectors, Recyclers, Retailers, and Consumers

Although EPR contains the bedrock principle of producer responsibility, this fifth fundamental principle acknowledges that EPR systems cannot be successful unless other stakeholders are held accountable for program aspects over which they have the most control. Reducing waste and hazardous

ingredients (e.g., toxics), returning materials to the circular economy, and safely disposing of products that cannot be reused or recycled, will require the collective action of producers, governments, retailers, collectors, recyclers, and consumers. Without a system like EPR that holds each of these entities accountable for assuming specific roles in the context of a comprehensive system, we will not achieve shared sustainability goals.

The term *producer responsibility* took hold because we need those making products and packaging to take a leadership role and partner with state and local governments to set up a system that has the best chance of reducing waste. Another term that has been used to describe the multiplicity of relationships needed to reach these laudable goals is *shared responsibility* since, under EPR systems, multiple stakeholders share responsibility for managing post-consumer products and packaging. Each stakeholder—state government, local government, retailers, collectors, recyclers, and consumers—has a role to play in reducing waste, increasing material reuse and recycling, and returning materials to the circular economy, or in some cases safely disposing of them. These entities can only work in harmony through a comprehensive system that provides incentives for specific actions to be taken by each of these stakeholder groups so that measurable goals can be achieved. In essence, while both terms—*producer responsibility* and *shared responsibility*—are accurate, it is best to view EPR programs as producers taking *primary* responsibility while other stakeholders also assume essential roles.

Shared responsibility does *not* mean that governments, retailers, or others *must* accept shared financial responsibility in managing waste materials, although some may choose to do so. For example, producers might offer to pay half the costs of collection and recycling if local governments pay the other half. Or producers might offer to recycle materials if municipalities will collect them. That is *not* the intent of the EPR movement. Instead, the EPR movement seeks to provide a financial incentive to reduce impacts to those making and selling products and packaging, thus removing a financial and management burden from governments. In the case of packaging waste, however, some municipal and state governments have sought greater control over the EPR system because they do not have adequate assurance that producers will effectively assume the management of a well-established recycling system that has been run by municipalities and the state for the past 50 years. In these cases, a transition period might be warranted to build trust among producers, governments, and waste management companies, eventually allowing the shared responsibility system to transition to one more fully producer funded and managed.