

Unfinished Business:

The Case for Extended Producer Responsibility for Post-Consumer Packaging

Conrad MacKerron, As You Sow

About the Author

Conrad MacKerron, Senior Director, As You Sow, has nearly two decades of experience leading shareholder advocacy engagement on social and environmental policies at publicly traded companies. Since founding As You Sow's shareholder advocacy program in 1997, he has led initiatives on behalf of investors at scores of major companies. Conrad has focused on engaging companies to develop producer responsibility policies to deal with post-consumer packaging and end-of-life electronics.

He was formerly Senior Social Investment Analyst, Piper Jaffray Philanthropic & Social Investment Consulting and Senior Analyst, Energy and Environment, Investor Responsibility Research Center. Conrad is a past board member of the Social Investment Forum and As You Sow. A former journalist, he served as Washington Bureau Chief for *Chemical Week* and writer for *BNA Environment Reporter*. He is the author of *Unlocking the Power of the Proxy* (Rockefeller Philanthropy Advisors, 2004) and *Business in the Rainforests: Corporations, Deforestation and Sustainability* (IRRC, 1993). He holds a Masters in Journalism and Public Affairs from American University. In 2007, he received the Socially Responsible Investment Service Award from the U.S. Social Investment Forum for outstanding contributions to the SRI community.

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About As You Sow

As You Sow is a nonprofit organization dedicated to increasing environmental and social corporate responsibility. Founded in 1992, As You Sow envisions a safe, just, and sustainable world in which environmental health and human rights are central to corporate decision making. Its Energy, Environmental Health, Waste, and Human Rights programs create positive, industry-wide change through corporate dialogue, shareholder advocacy, coalition building, and innovative legal strategies. www.asyousow.org

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Introduction

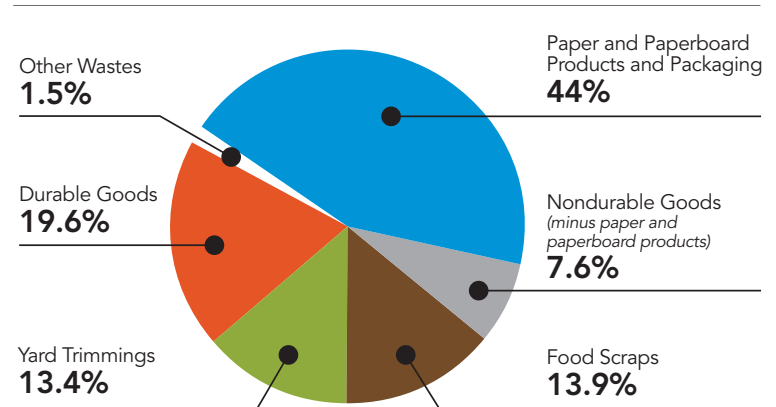
We have become a Throwaway Society. Americans throw away more materials than any other country, more than four pounds per person per day, or a total of 250 million tons of municipal solid waste per year. Paper and paperboard products and packaging together form the largest category of municipal solid waste – about 44%. Barely half of these materials are recovered for recycling.¹

This used to be a sign of economic progress, of our mastery of nature in service to consumer demand. But in an age of declining natural resources, such waste is now an indicator of inefficient use of valuable raw materials and market failure. The packaging we toss into landfills has significant market value. As You Sow estimates that in 2010, the value of discarded packaging in the U.S. was \$11.4 billion². Responsibility for post-consumer packaging, an issue long ignored by both business and stakeholder groups (except for container deposit laws) has emerged as an important public policy issue due to the value of discarded post-consumer packaging waste, the increasing costs to taxpayers to manage such waste, its contribution to greenhouse gas emissions, and its potential to reduce reliance on non-renewable natural resources.

Humanity is overshooting Earth’s ecological limits, consuming resources and generating waste at an unsustainable rate. Under a “business as usual” scenario, by 2030 the resource capacity of two Earths will be required to keep up with our one Earth’s natural resource consumption, according to World Wildlife Fund and Global Footprint Network.³ In this context, we simply cannot afford to bury valuable packaging materials. Many of our current production and consumption patterns have not begun to shift toward systems of long-term sustainability.

Since paper and paperboard products and packaging comprise the largest category of municipal solid waste and are often collected together, they deserve priority attention as we seek ways to greatly improve our waste recycling. U.S. packaging recycling rates

Total U.S. Municipal Solid Waste Generation by Category

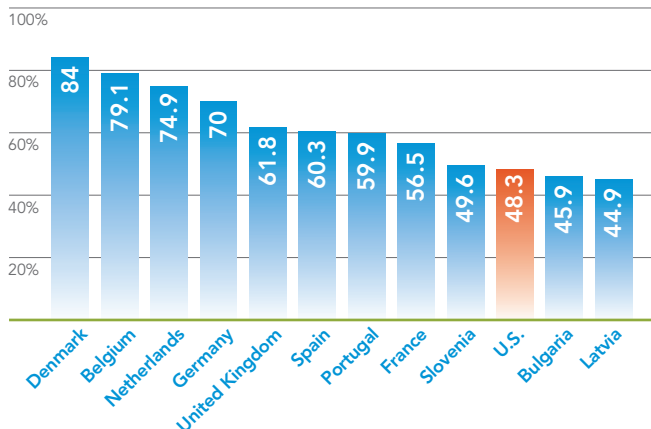


Source: United States Environmental Protection Agency, *Municipal Solid Waste Generation, Recycling, and Disposal in the United States: Facts and Figures for 2010*. Adjusted to combine containers with packaging and paper and paperboard.

significantly lag behind other developed countries. Less than 1/3 of plastic PET⁴ beverage bottles are recycled in the U.S.; 72% are recycled in Japan. Slumping and stagnant packaging recycling rates represent urgent unfinished business for public policy action in the U.S. Many companies have started down a positive path, working on product light weighting, materials use reduction, and eliminating manufacturing waste, but have failed to close the sustainability systems loop by addressing their post-consumer packaging.

There is also a need to exert greater focus on plastics, which have come to dominate the packaging sector and pose special challenges for collection and recycling. There is a growing link between ineffective waste management and plastic debris which is piling up in the Earth’s oceans where it kills and injures marine life, can transport invasive species and potentially pose a threat to human health.

U.S. vs. European Packaging Recycling Rates



Sources: Eurostat, U.S. Environmental Protection Agency

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Discarded post-consumer packaging is an environmental externality whose funding has been carried long enough by U.S. taxpayers who fund recycling programs. As You Sow believes the time has come to shift financial responsibility for collecting and recycling used packaging from taxpayers to producers through public policy and regulation known as extended producer responsibility (EPR). Shifting responsibility to producers for packaging can lead to internalization of end-of-life costs and creates an economic incentive for producers to reduce packaging and switch to easier to recycle materials. This is not a new or radical idea. At least 47 countries have legislation in force requiring producers to bear some or all of the cost of end-of-life packaging management.⁵

EPR has already been successfully adopted in the U.S. for several product categories such as batteries, carpet, electronics, fluorescent lighting, and paint. Container deposit laws in 10 states are a form of EPR that have been very successful in increasing container recovery rates in those states. The most notable success has been for end-of-life electronics. Explosive growth in information technology driven by faster, cheaper microchip technology has resulted in rapidly growing piles of electronics discarded after only a few years of use. An estimated 65 million computers and 130 million mobile phones are discarded in the U.S. annually. In response, 23 states have adopted EPR laws and technology giants like Apple, Dell, and HP are assuming financial responsibility for selected waste electronics.⁶ Most U.S. companies who generate enormous amounts of packaging, however, have shown scant leadership on post-consumer packaging. Until they do, their efforts to portray themselves as environmental leaders will be lacking a key component – a comprehensive waste policy.

We believe U.S. producers must stop hiding from accountability and follow scores of other developed economies to accept responsibility for packaging. Here are some of the most compelling reasons for why companies should take responsibility for their packaging waste:

- It is not good business to throw away billions of dollars of reusable resources.
- Business needs to prepare now to function sustainably in a world of dwindling natural resources and increasing commodity costs.
- Increasing recycling of packaging can help reduce a company's carbon footprint.
- A few major companies are beginning to confront their responsibility for post-consumer packaging and will set the standard for other companies to follow.
- Higher recycling rates will build new secondary materials markets that generate thousands of additional “green” jobs.
- Other countries have pioneered producer responsibility models that the U.S. can learn from as it develops an EPR packaging policy for the 21st century.
- Cash-strapped state and local governments are beginning to look toward producers to help develop and fund effective recycling programs.

The failure of federal leadership on solid waste policy and goals has slowed progress on developing advanced materials recovery, strategies, and policies. Voluntary corporate responsibility efforts are laudable but have also failed to significantly increase U.S. recycling rates. Indeed, they create a perception of progress through incremental and often symbolic feel-good actions that basically preserve the *status quo*. New mandates are needed to drive systemic change.

“Most U.S. companies who generate enormous amounts of packaging have shown scant leadership on post-consumer packaging. Until they do, their efforts to portray themselves as environmental leaders will be lacking a key component – a comprehensive waste policy.”

Executive Summary

Americans generate more waste than any other country in the world but recycle far less than other developed countries like Denmark, Belgium, or Germany. Post-consumer paper and paperboard and packaging, which together form the largest category of municipal solid waste, merit priority attention in efforts to improve extremely poor recycling rates for many post-consumer materials. Shifting financial responsibility for collecting and recycling used packaging in the U.S. from taxpayers to producers through a policy known as “extended producer responsibility” (EPR) will incentivize producers to reduce the amount of packaging they create, substantially increase recycling rates, provide much needed revenue to improve efficiency of recycling systems, reduce carbon footprint and energy use, and reclaim billions of dollars of embedded value now buried in landfills.

Post-consumer paper and paperboard and packaging consist of valuable commodities such as aluminum, glass, paper, plastic, and steel. A new estimate completed by As You Sow concludes that the market value of these materials that are not recycled in the U.S. was \$11.4 billion in 2010.⁷ It is not good business practice to throw away valuable resources.

We live in a world of finite, dwindling resources. Businesses that do not develop sustainable sourcing of products through resource-efficient circular, or closed loop, systems in the very near term, will not be able to compete to serve a world population estimated at nine billion by 2050.

U.S. packaging recycling rates lag behind other developed countries by significant amounts. Denmark has an 84% packaging recycling rate, Belgium is at 78%, the Netherlands at 72%, Germany at 73%. The U.S. recovery rate is estimated at 48.3% for packaging and 52.7% for paper and paperboard products. There are some bright spots; the U.S. does well in paper recycling, but aside from paper, just 22% of remaining packaging is recycled. Only 12.1% of plastic packaging, the dominant packaging of the future, is recycled. There are other troubling trends: beverage container recycling rates have dropped 20% over the last two decades. One quarter of the U.S. population still doesn't have access to curbside recycling. More than 40 billion aluminum cans, the most valuable beverage container material, are still dumped annually into landfills in the U.S. According to Alcoa, this wasted material could provide enough aluminum to build 25,000 jetliners!

Our locally controlled and taxpayer-funded recycling collection systems are often ill-equipped to deal with increasing volume and an expanding array of packaging wastes. Saddled with projected deficits topping \$100 billion, local governments cannot afford to invest in improving recycling systems. Over 47 countries require producers to bear some or all of the cost of end-of-life packaging management that in the U.S. has always been paid for by taxpayers. As You Sow believes it is time to shift financial responsibility for managing packaging to producers through effective and tested EPR policies.

EPR laws and policies are already firmly established in the U.S. for several product categories. More than 70 producer responsibility laws are in effect in 32 states, covering batteries, mobile phones, paint, pesticide containers, carpet, electronics, thermostats, and fluorescent lamps – but not packaging. Twenty-three states have passed EPR laws requiring technology makers to take responsibility for end-of-life management of electronics.

Container deposit laws, structured as EPR programs in eight of the 10 states that have them, are a major success story. The U.S. recycling rate for beverage containers is only 35%, but in the 10 states with deposit laws, recycling rates range from 66% to 96%. However, these laws have not expanded to apply to other kinds of consumer packaging.

Shifting financial responsibility to producers for packaging can lead to internalization of end-of-life costs, resulting in economic incentives to reduce packaging and a transition to easier to recycle materials. Efficiently designed and administered EPR systems can lead to profits in processing used materials, reductions in carbon emissions and energy used to produce packaging, and thousands of new “green” jobs in collection and processing.

There is also a need for greater focus on plastics, which have come to dominate the packaging sector and pose special challenges. There is a growing link between ineffective waste management and plastic debris, which is piling up in the Earth's ocean gyres where it injures and kills marine life, can transport invasive species, and potentially poses a threat to human health. A recent assessment of marine debris concluded that a substantial cause of this debris entering the sea is inadequate waste management infrastructure and inappropriate disposal. Concern about ocean plastic has resulted in more than 60 cities in California and 100 cities in the U.S. banning or restricting use of polystyrene foam food packaging and another 28 California municipalities banning plastic take-out bags.

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EPR laws would resolve many of the concerns identified with packaging recycling by:

- Substantially increasing recovery rates for all post-consumer packaging
- Incentivizing producers to re-design packaging to reduce materials and improve recyclability
- Creating the potential for profitable secondary materials markets for the more than \$11 billion worth of packaging that was landfilled in 2010 alone
- Providing stable revenue sources through producer fees to improve the curbside recycling infrastructure and build new systems to collect waste from consumers when away from home
- Reducing greenhouse gases
 - Nestlé Waters North America says 55% of its carbon footprint comes from production of its bottles and that recycling a bottle reduces its greenhouse gas impact by 25%
- Meeting pent up demand for recyclables
 - There is enormous demand for recycled PET plastic used for soda and water bottles, yet recyclers have been unable to increase supplies with existing recycling programs; PET recycling rates languish at a paltry 29%
 - U.S. recycled PET makers urgently need more materials so major brands can meet commitments made to use high levels of recycled package content

The European Union enacted a packaging waste directive in 1994, requiring member states to develop systems to meet recycling goals. Most chose EPR-based systems. European, a packaging industry trade group, calls the directive “clearly one of the most successful pieces of E.U. environmental legislation,” responsible for a “remarkable” reduction in waste sent to disposal and for “lower costs for the public purse.” The amount of packaging going to final disposal in 15 EU countries fell by 43% over the past 11 years, largely due to higher recycling levels.

In the last two years, momentum has been building for introduction of EPR for packaging in the U.S. This has been driven by the factors cited above. Working with a group of aligned shareholders, As You Sow has led engagement of major consumer goods and grocery companies to adopt EPR policies. These companies include Colgate-Palmolive, General Mills, Kraft Foods, Safeway, Supervalu, Target, Kroger, Procter & Gamble, Unilever, Walmart, Ahold USA, and Whole Foods. Surprisingly, prominent companies are among those calling for producers to take responsibility for packaging – most notably Coca-Cola and Nestlé Waters. For the emerging EPR effort to build sufficient traction, other large companies must step up and take responsibility. A new non-governmental organization, Recycling Reinvented, is serving as a policy strategy center for educating stakeholders and to move EPR for packaging legislation in U.S. states. Among its board members is renowned environmental leader Robert F. Kennedy Jr.

Recommendations

- Businesses that place substantial amounts of packaging on the U.S. market should take responsibility for collecting and recycling post-consumer packaging.
- Companies should prioritize engagement with peers and other stakeholders to reach agreement on binding state producer responsibility legislation setting high packaging recycling goals for all individual kinds of packaging (75%+) and an aggressive timeline for meeting them.
- A successful mandated EPR for packaging program in the U.S. should address all packaging types, be financed and managed by producers, drive source reduction, require participation by all businesses that produce packaging waste, and phase out use of non-recyclable packaging.
- By supporting EPR laws and policies that drive more aggressive and effective collection efforts, companies can then make commitments to use far higher levels of recycled content in product packaging, which, in turn, supports a circular system ensuring a stable supply of post-consumer materials to use as new feedstock.

State-of-the-art mining of our post-consumer packaging “trash” is a crucial step to propel us towards sustainable production and consumption policies that will ease the stress on our planet’s limited natural resources and help feed, clothe, and shelter a world population of nine billion people by 2050.

I. The Global Challenge: Sustainable Production and Consumption

The United States consumes 33% of the world's resources but represents only 4.6% of its population.⁸ With consumption of materials so far out-pacing the rest of the world, new solutions are needed in the U.S. to slow the drain of natural resources. Some supplies of petrochemicals, for example, a primary source for plastic packaging, are expected to peak between now and 2020 with prices continuing to increase.⁹

Resource scarcity can lead to price volatility. For metals, food, and non-food agricultural items, volatility levels in the first decade of this century were higher than in any decade in the 20th century.¹⁰

Non-governmental groups focusing on Earth's dwindling resources including World Wildlife Fund and Global Footprint Network are calling for "one-planet living" through boosting energy efficiency, cutting waste generation, developing low-carbon forms of transport, improving product sustainability, and using water more efficiently. Even business-oriented groups are calling for aggressive actions to preserve dwindling natural resources. *Vision 2050*, a report by the World Business Council for Sustainable Development, calls for up to a 10-fold improvement in the use of resources and materials to ensure businesses have sufficient raw materials to continue operating and serve a world of nine billion people in 2050. The report calls for the development of closed loop recycling systems that will make waste obsolete.¹¹

Incremental change is not enough, warns a similar study from the World Economic Forum. "Achieving sustainability implies very substantial improvements in resource use and waste management as well as changes in product types and different models of consumption [...] For business models and consumption models to shift fundamentally, all consumption has to become sustainable."¹²

A key element of any 21st century corporate sustainability policy must be a comprehensive approach to reducing and eliminating waste where possible during the production process and recycling it in the post-consumer phase. However, few forward-thinking companies have dealt with post-consumer waste as a core element of their corporate social responsibility commitments. Many companies have developed plans to reduce toxics and greenhouse gas emissions but few have demonstrated recognition of the value of discarded products once consumers are finished with them or how recycling can reduce total environmental footprint. New packaging commonly enters the marketplace without sufficient consideration of and design for its recyclability. Companies that market globally need to factor the lack of recycling infrastructure into marketing plans for both developed and less developed countries. Stronger action in these areas will prepare companies for the challenges ahead in providing uninterrupted supplies of products and packaging in the coming era of resources limitations.

II. The Packaging Challenge

It is helpful to discuss post-consumer packaging in the context of the widely accepted waste management hierarchy known as the 3Rs – reduce, re-use, recycle – with progress on source reduction and waste prevention as the highest goals in end-of-life management, followed by re-use and recycling.

Reduce

A strong federal policy would be a good place to start to encourage or require reduced resource consumption. Unfortunately, the Resource Conservation and Recovery Act, the federal law governing solid waste policy in the U.S., sets no goals or mandates for reducing solid waste generation or natural resource consumption. It merely encourages waste prevention and diversion of recyclable materials from landfills. Without such mandates, states generally have not prioritized source reduction, instead focusing on reducing waste sent to landfills, setting ambitious solid waste diversion goals with mixed results. The nation's most populous state, California,

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reached a solid waste diversion rate of 65% in 2010 and recycles 82% of its beverage bottles and cans.¹³ Other states have struggled. Connecticut failed to meet a statutory 1993 goal of recycling 40% of solid waste by 2000 and recycles only 30%.¹⁴ New York set a goal of 50% recycling by 1997 and met the goal for a short time, but has since slid back to 20%.¹⁵

In recent years, several major consumer goods producers and retailers have begun to address packaging source reduction. Concern over the volume of packaging generated has become important enough for industry leaders to set reduction goals. Walmart set a goal of reducing packaging 5% by 2013 from a 2008 baseline. To encourage progress, it developed an innovative supplier packaging scorecard allowing it to score categories like greenhouse gas emissions generated per ton of packaging, raw material use, packaging size, recycled content, and the recovery value of materials used. The effectiveness of the scorecard in reducing environmental impact is not yet clear. The company calls it a work in progress and has cited a few anecdotal instances of source reduction. While a promising start, it remains to be seen if Walmart will use the scorecard to require systemic change in how packaging is designed and used.

The Grocery Manufacturers Association (GMA) said in 2011 its members had reduced packaging weight by 1.5 billion pounds between 2005 and 2010 and expected to reduce another 2.5 billion pounds between 2011 and 2020.¹⁶ If the reductions actually occur going forward, they would represent a 19% reduction in total weight. However, it is not a formal commitment and there is no plan by GMA to assure third party verification of data, or to ensure that reductions made are net reductions after factoring continued sales growth. Further, its timing can be viewed as a tactic to forestall requests being advanced by Coca-Cola and Nestlé Waters for other member companies to take responsibility for post-consumer packaging.

The Walmart and GMA examples demonstrate the difficulty of evaluating these laudable goals. In the absence of established government mandated goals for source reduction, companies often set reduction goals based on actions that are easiest and cheapest to achieve. For example, as long as goals are based on weight reduction as opposed to product-to-package ratio or volume reduction, there will be a bias to switch from metal and glass to plastic packaging to reduce overall weight without reducing the amount or size of containers used and discarded.

Many companies have put increasing emphasis in recent years on reducing waste from manufacturing and operations. (Manufacturing waste dwarfs municipal solid waste. Manufacturing wastes were last estimated at 7.6 billion tons in 1989 vs. municipal solid waste today of 250 million tons.) Some major companies have made bold “zero waste” commitments including General Motors, Procter & Gamble, Staples, Toyota, and Walmart. These are typically long-term goals to reduce waste materials to zero in their operations. However, zero waste is often interpreted in an *ad hoc* way. For example, General Motors burns about 3% of the waste it can’t landfill. Kraft Foods also cites use of waste-to-energy facilities for materials that can’t be recycled under its zero waste commitments. The use of incineration would not be viewed as legitimate under the charter principles of the Zero Waste International Alliance, a group seeking to develop uniform standards. The commitments also often lack a specific timeline and do not include taking responsibility for products or packaging once consumers are done with them, another requirement of the Alliance. There is no doubt much important work being done to reduce production waste but without a federal mandate or an accurate record of baseline generation data, these well intended actions risk veering into greenwash and self-promotion. No data are currently reported to the federal government on industrial waste generation, recovery, or disposal practices in the U.S. making overall progress difficult to measure. Importantly, business interests have opposed attempts to regulate or even require reporting on manufacturing waste.¹⁷

“Companies have yet to demonstrate how they will achieve net source reduction as light weighting efforts are offset by continued sales growth.”

By contrast, one of the goals of the European Union’s (EU’s) packaging directive is prevention of generation of packaging waste, with requirements that packaging weight and volume be minimized. While enforcement is still minimal and varies by country, it does explicitly establish reduction of waste as an important goal. Similarly, Canada’s Council of Ministers of the Environment issued a strategy for sustainable packaging recommending that each province set limits on the amount of packaging materials put on the market.

Many companies have made good progress light weighting their packaging in recent years. Walmart has pressed suppliers like Procter & Gamble to reduce packaging; a good example is P&G’s concentration of laundry detergent so it can be sold in smaller packages. PepsiCo says its Aquafina brand plastic water bottle weighs 50% less than it did in 2002, resulting in a savings of 75 million pounds of PET plastic per year. While these actions are often undertaken because they result in costs savings rather than as part of a concerted resource efficiency strategy, they are welcome and may temporarily slow the rate of increase of materials used. However, companies have yet to demonstrate how they will achieve net source reduction as light weighting efforts are offset by continued sales growth. The importance of making real progress on source reduction is demonstrated by California’s push on diversion. Despite an impressive

65% diversion rate of solid waste from landfills in California, continued growth in solid waste generation means the state is disposing of roughly the same amount of waste in landfills today as it did in 1989¹⁸. The voluntary focus by companies on source reduction is encouraging and should continue. However, for source reduction to have strategic impact at the national or global level, it should be led by a federal policy prioritizing natural resource conservation, based on scientific analysis of future availability of various resources. If federal policy changes remain politically unlikely, states should build source reduction into their solid waste management programs.

Re-use

Refillable bottles have long been a symbol of cost efficient re-use of materials in packaging. Prior to the 1960s, most beverages were delivered in thick refillable bottles that were returned and used 20 times or more. Technological advances which made it more profitable to introduce single-use bottles and moves to consolidate operations led major beverage makers to gradually abandon refillables in the U.S. Switching to single-use bottles allowed companies to centralize operations and bypass smaller producers who distributed and collected bottles regionally.¹⁹ Companies maintained that in switching to single-use they were providing the convenience consumers demanded; but conveniently avoided was discussion that the public would be picking up the cost to manage or recycle bottles for which companies had previously been willing to take responsibility for collection and recycling.

While beverage companies have abandoned use of refillables in most developed markets, they do continue to be offered in some developed markets and are thriving in developing markets. Refillable beer bottles in Canada, which represent about 1/5 of total beverage container sales, are recovered at a rate of 98%.²⁰ Refillables still have a foothold, if dropping, in Denmark, the Netherlands, Germany, and Finland due to government regulations to protect and promote refillables as well as breweries using the bottles. At least one bottle maker believes refillables have a future. The UK container company Petainer launched a refillable plastic bottle made of 25% PET plastic in 2012 claiming that companies could save four to five times as much on packaging by using refillables instead of one-way bottles.²¹ If materials shortages arise as expected in the coming decades, refillable bottles may once again be viewed as the most cost effective method of packaging beverages. Oil spikes combined with high costs of raw materials could make local refilling the most economical way to deliver products by reducing shipping distances and saving raw materials through repeated usage.

Some brands that don't yet take responsibility for their packaging are financially supporting companies like Terracycle that direct unrecyclable products into a re-use stream. A prominent example is Kraft Foods' Capri Sun drink pouches made from an aluminum plastic laminate that, 30 years after being placed on the market, still cannot be recycled anywhere in the world. Kraft and Terracycle announced a partnership in 2008 to collect drink pouches and make them into backpacks and tote bags. This is more beneficial than landfilling, but is generally very limited in terms of the volume of materials gathered and re-used and achieves only a temporary reprieve since the laminate is disposed of after its second useful life has ended. Such re-use schemes are stop-gap methods that may make consumers feel good that the products have been diverted from landfills. Companies who put such packaging into commerce are not confronting the question of why they are marketing beverages in non-recyclable containers when there are abundant alternatives like glass, aluminum cans, and PET plastic that are readily recyclable. A more meaningful sustainability commitment than paying for a private party to process its pouches would be for Kraft to commit to use packaging that is widely collected in curbside recycling systems and readily processed in closed loop systems to make the most efficient use, long term, of these natural resources.

Recycle

Recycling rocks! Or so you would think. The practice of consumer recycling is well established in the United States. It is believed that more people recycle than vote and that it is the most widely practiced environmental activity in the U.S.²² Compared with 20 years ago, twice as many Americans, 58%, say they sort solid waste from recyclables (although there is a lot of room for improvement – 87% of French and 94% of German consumers say they sort packaging for recycling).²³ Yet for an activity so popular and increasingly routine, there are an unsettling number of lingering problems associated with recycling. Beverage container recycling rates are one of the most closely watched indicators

Enough aluminum
is discarded annually
to produce
25,000
Airbus A320 planes.

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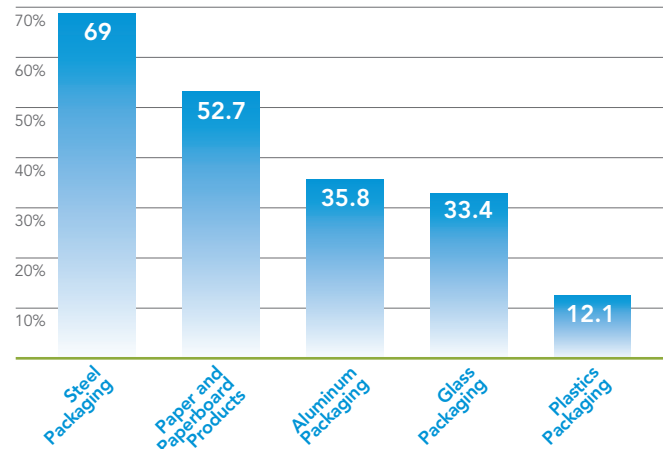
because of the volume of bottles and cans produced and the frequency with which highly branded packages show up as litter in the environment. The recycling rates for beverage bottles and cans have dropped over the last 20 years from 53% to about 35% today.²⁴ One quarter of the U.S. population still does not have access to curbside recycling. More than 40 billion aluminum cans, the most valuable beverage container material, are still dumped annually into landfills in the U.S. That is enough material to make 25,000 jetliners, according to aluminum maker Alcoa.²⁵ Our waste processing infrastructure lags behind other countries in its ability to process a wide array of mixed plastics, the dominant and fastest growing form of packaging.

While there is near universal endorsement of recycling as an ideal, companies have generally been willing only to agree to voluntary rather than binding or mandatory goals. The lack of recycling mandates allows companies to devise their own often modest goals with no penalty for failing to meet them, while being held to a higher and mandatory standard in other countries and jurisdictions. A classic example is a commitment made by Coca-Cola in 1992 to use 25% recycled PET plastic in its bottles. The commitment was quietly abandoned a few years after it was made due to technology constraints. Lack of follow through on even voluntary commitments was the reason As You Sow engaged Coca-Cola, PepsiCo, and Nestlé Waters to develop bottle and can recycling goals. As You Sow and its investor allies secured a commitment from Coca-Cola and PepsiCo to use 10% recycled PET content in all plastic bottles in the U.S. market by 2005. Both companies initially achieved the goal but Coca-Cola soon faltered again after continued problems with technology and materials supply. PepsiCo has been able to maintain 10% recycled PET content continuously since 2005. Separately, Coca-Cola, Nestlé Waters, and PepsiCo made commitments to As You Sow to recycle a majority of their bottles and cans over the next four to six years.²⁶ These commitments set the stage for a push by Coca-Cola and Nestlé Waters to support EPR laws to meet these goals.

U.S. Paper and Packaging Recycling Rates²⁷

The U.S. recovery rate for packaging is estimated at 48.3%; the rate for paper and paperboard non-durables is 52.7%.²⁸ This is a mediocre performance compared to other developed countries and in light of what could be achieved if more technological prowess was applied to fix infrastructure problems. Individual packaging material recycling rates are led by an impressive 85% for corrugated boxes with a well-established commercial system for corrugated box recycling; 72% for newspapers and 69% for steel cans. However, paper use has declined by 18% in the last two years as newspapers and magazines migrate to the web. If these trends continue, paper recyclers will have to find an increasing amount of paper from sources that are not yet widely recovered like coffee cups, juice boxes, and gable top milk and juice cartons. Some may view an approximate 50% packaging recovery rate as good, but consider that when paper and paperboard are removed from the equation, the U.S. packaging recycling rate drops to just 22%.²⁹ Other kinds of packaging recycling that lag behind include 35.8% for aluminum, 33.4% for glass, and just 12.1% for plastics. The figure for aluminum is of special concern given the energy intensity needed to produce aluminum and a huge 95% energy and greenhouse gas savings from making new cans out of used ones rather than virgin materials. The figure for plastic recycling is disconcertingly low given the rapid rate at which many kinds of plastic have come to dominate the packaging sector. In the next four years, plastic is expected to displace paper as the dominant form of packaging. In flexible packaging (bags), plastics already dominate with a 70% market share.³⁰

U.S. Packaging Recovery Rates for Selected Materials

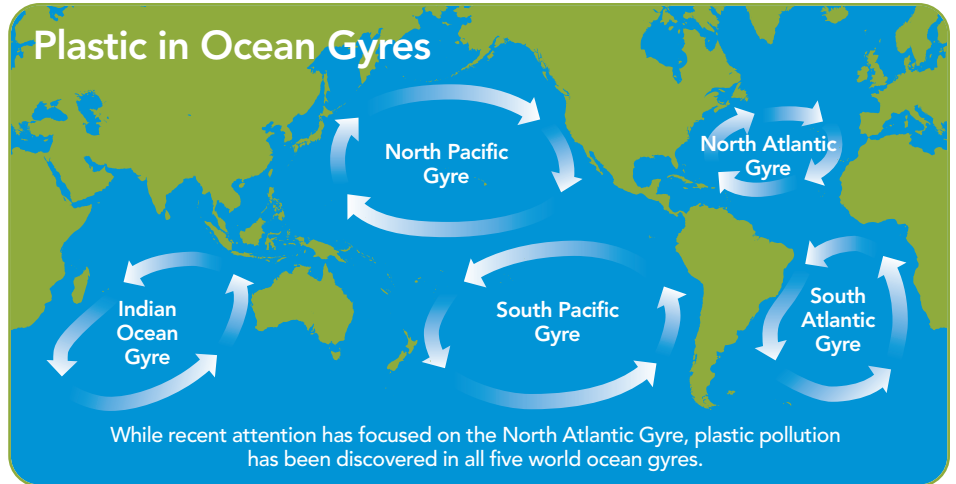


Source: United States Environmental Protection Agency, *Municipal Solid Waste Generation, Recycling, and Disposal in the United States: Facts and Figures for 2010.*

Up to a third of beverages are purchased, consumed, and discarded on the go rather than at home and so are not captured in traditional curbside systems.³¹ The U.S. lacks a well-developed system of collection for recycling packaging left in public places, emphasizing the importance of siting recycling bins in urban areas and near parks, convenience stores, gas stations, and other areas where people are likely to discard packaging. The Canadian province of Manitoba recently initiated a public space recycling program managed by beverage producers as part of its new EPR program and similar municipal public space requirements are being built into British Columbia's planned packaging and printed paper EPR program.

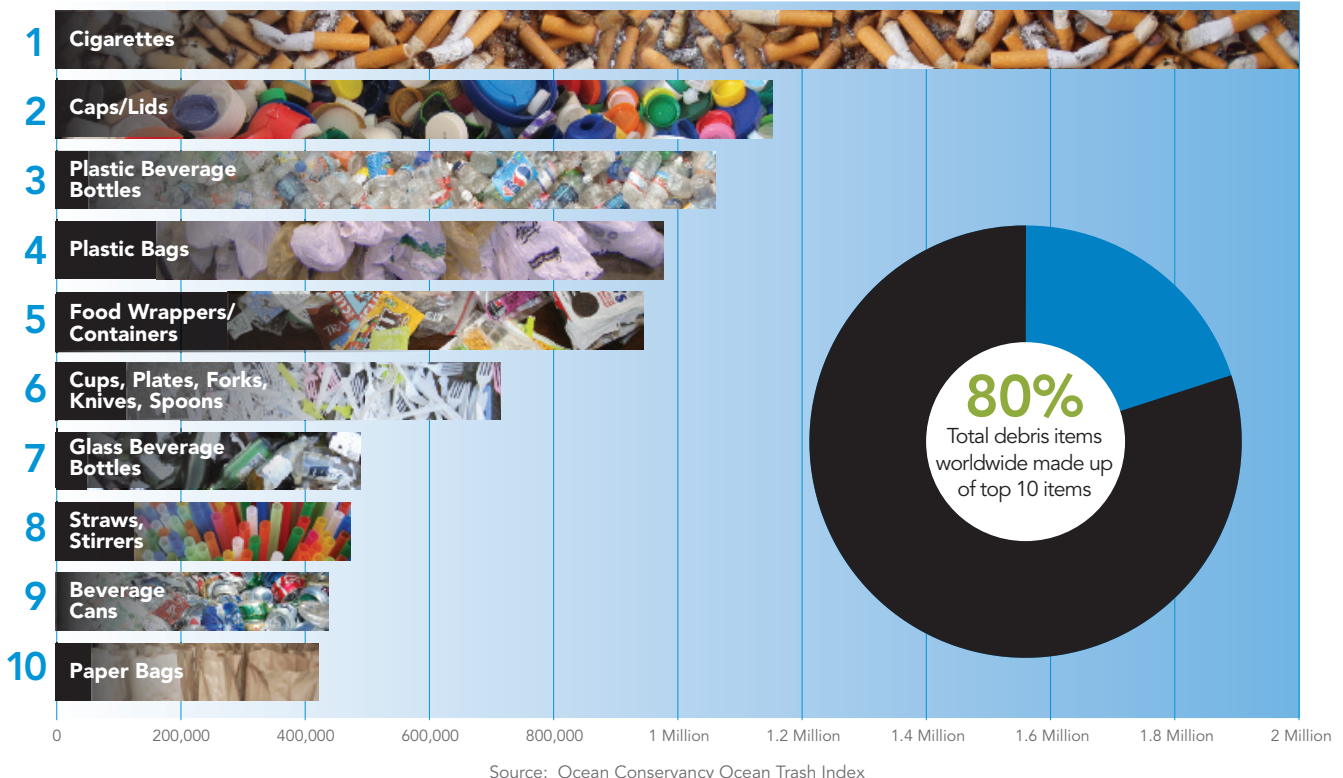
Plastic Ocean Pollution

Plastic pollution of the world's oceans has become a growing problem, clogging waterways, damaging marine ecosystems, and entering the marine food web. Plastic packaging discarded on land moves from sidewalks into storm drains and rivers, and then into oceans. Annual surveys done by the Ocean Conservancy show that plastic packaging such as bags and foam cups are among the most common material found on beaches. Careless disposal by consumers and the lack of adequate public space recycling systems contribute to the huge quantities of plastic entering the world's oceans.



Plastics are persistent in the environment. In the ocean, plastics break down into confetti-sized particles and are mistaken for food and consumed by birds and ocean animals. Plastic pieces become lodged in the digestive systems of marine animals, often leading to impairment and death. Greenpeace estimates that of the 280 million tons of plastics produced annually, about 10% enters the ocean. Huge gyres of swirling plastic particles have been identified in the Atlantic and Pacific oceans. Researchers estimate that 73 million pounds of plastics circulate in the gyres, spread across about 16 million square kilometers of ocean surface.³² Research is now under way to determine if toxic chemicals used in the production of plastics are transferred to marine animal tissue.

Top 10 Ocean Debris Items



A recent assessment of marine debris by the scientific and technical advisory panel of the Global Environment Facility concludes that a substantial underlying cause of this debris entering the sea is unsustainable production and consumption patterns. “This includes the design and marketing of products internationally without appropriate regard to their environmental fate or ability to be recycled in the locations where sold, inadequate waste management infrastructure and inappropriate disposal.”³³ The link between poor recycling practices and ocean plastic has resulted in more than 60 cities in California and 100 cities in the U.S. banning or restricting use of expanded polystyrene food packaging, and another 28 California municipalities have banned plastic take-out bags.³⁴

Deposit Laws

The major success story of packaging recycling in recent decades has been, ironically, another example of extended producer responsibility — container deposit laws. Ten U.S. states have laws that require a five or 10 cent consumer deposit on soda, beer, and sometimes water bottles, which is refunded when the containers are returned, providing a financial incentive for consumers to recycle. Eight of the 10 state deposit systems are structured as industry managed EPR systems, the other two are managed by government. Despite repeated attempts by major beverage companies to repeal or weaken the laws, container deposit legislation is the most effective proven method for bottle and can recycling. While the overall U.S. recycling rate for beverage containers is only about 35%, in the 10 states with deposit laws, recycling rates range from 66-96%.³⁵

When the consumer claims a deposit by returning materials to a retailer or recycling center, the retailer generally bills a beverage distributor for the deposit as well as a handling fee of one to three cents to cover the cost of processing containers. While beverage companies are required to fund the system, their costs can often be offset by the sale of used containers to plastics, metals, and glass recyclers. In addition, companies often make windfall profits on containers when consumers fail to claim their deposit and put containers in curbside recycling instead. In some states like California, unclaimed deposits flow to the state, which has steered hundreds of millions of dollars into improving curbside and other forms of container recycling. However, such systems can also be subject to revenue grabs by states that borrow or raid the funds to plug general revenue deficits.³⁶

Deposit laws have only gained traction with bottles and cans, leaving the majority of consumer packaging waste to be landfilled or recycled at the expense of taxpayers. The growth of deposit laws has been stymied by the persistent opposition of the beverage industry. Beverage companies view deposits as an unfair tax, especially viewed in the context of other industry sectors. Conveniently located drop-off locations can carry high fixed operating costs. More fundamentally, beverage companies object to paying for collection and recycling of bottles and cans while producers of food and consumer goods packaging, many packaged in the same materials, do not. Even within the beverage sector, deposit laws have been limited in coverage by companies who used their political clout at the state level to prevent deposits on milk, juice, distilled spirits, and wine containers, even though these products are also consumed in high volume and packaged in the same materials as beer, water, and soft drinks. Indeed, no other companies that generate significant amounts of paper or packaging — whether it's billions of boxes used in Amazon's mail order business; Procter & Gamble's signature brands Crest, Pampers, and Tide; or Kraft's Nabisco and Maxwell House — have to pay a penny for collection and recycling of non-beverage packaging in the U.S. Beverage companies may be justifiably faulted by environmental groups for resisting deposit legislation; environmental advocates may be justifiably faulted for failing to prioritize recycling of the vast majority of consumer packaging.

III. The Case for Extended Producer Responsibility³⁷

The U.S. is becoming isolated among developed nations in giving a free ride to corporations by having local governments continue to pay to collect and recycle post-consumer packaging for diversion, whether recycling, export, or incineration. At least 47 other countries have some form of used packaging legislation that requires companies to take shared or full responsibility. In addition to the 27 EU member states, Canada, Israel, Japan, South Korea, and Taiwan are among countries with EPR packaging mandates³⁸.

Extended producer responsibility laws in the U.S. would resolve many of these recycling concerns by substantially increasing recovery rates for all post-consumer packaging; providing much needed additional funds through producer fees to improve the nation's recycling infrastructure; developing new markets for collected materials; and driving better product packaging design choices.

Unfinished Business: The Case for Extended Producer Responsibility for Post-Consumer Packaging

The Organization for Economic and Community Development (OECD) defines EPR as an environmental policy approach in which a producer's responsibility for a product is extended to the post-consumer stage of a product's lifecycle. The OECD maintains EPR policy is characterized by "shifting responsibility (physical and/or economic; full or partial) upstream toward the producer and away from municipalities; and providing incentives to producers to take into account environmental considerations when designing their products."³⁹ Further, while the OECD says that all entities involved in the packaging chain have some responsibility to reduce the lifecycle impacts of a product and its packaging, EPR holds that primary responsibility lies with the producers or brand owners, because they make design and marketing decisions which most directly affect the recyclability of packaging.

U.S. EPR proponents recently unveiled a more robust EPR definition. The Product Stewardship Institute, Product Policy Institute, and California Product Stewardship Council solicited input from stakeholders from business, government, and non-governmental organizations (NGOs) in an effort to reflect progress made in the past decade since the product stewardship movement emerged in the U.S. Their new definition, released in April 2012, states that 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. There are two related features of EPR policy: (1) shifting financial and management responsibility, with government oversight, upstream to the producer and away from the public sector; and (2) providing incentives to producers to incorporate environmental considerations into the design of their products and packaging.⁴⁰

By mandating producer responsibility, taxpayer subsidization of end-of-life costs are reduced or eliminated in favor of the more equitable approach of industry accepting full cost accounting for this externality. If producers know they are liable for end-of-life costs, they will be less likely to design and place hard to recycle packaging on the market because it would result in higher recycling or disposal costs to them.

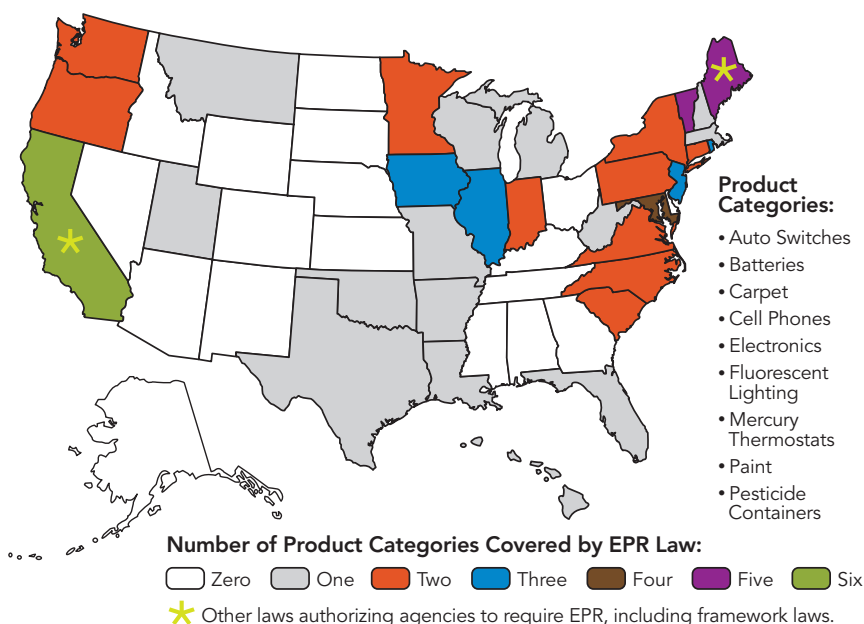
As noted, EPR laws and policies are already firmly established in the U.S. for several product categories. More than 70 producer responsibility laws are in effect in 32 states covering 10 categories of products including batteries, mobile phones, paint, pesticide containers, carpet, electronics, thermostats, and fluorescent lamps – but not packaging. Electronics EPR laws have been particularly successful in stemming the tide of electronic waste, or e-waste, generated by rapid turnover of electronic devices by consumers. In the last decade, 23 states have passed e-waste producer responsibility EPR laws. The most effective of those laws have either minimum take-back goals or convenience requirements.⁴¹ Other factors that have a positive impact on recycling rates include promoting a variety

of collector types (recyclers, retailers, government) and landfill bans.⁴² Programs have also benefited from including a broad scope of products to be recycled (computers, televisions, cell phones, monitors, etc.).⁴³

States Are Tapped Out

While states and municipalities have authority for local solid waste management, they are facing greater financial difficulties in funding those programs. State budget deficits grew to staggering levels during the recent recession. In fiscal year 2012, cumulative state budget deficits are projected to be \$140 billion.⁴⁵ A recent assessment from the Northwest Product Stewardship Council concluded, "[l]ocal governments and their ratepayers are no longer able to invest the necessary financial resources

More than 70 EPR Laws in 32 States⁴⁴



Source: Product Stewardship Institute, 2011.

to increase the diversion of materials from disposal to recycling.⁴⁶ Scott Mouw, a top North Carolina environmental official commented, “[I]ndustry seems satisfied with the government-taxpayer approach to system financing that is failing to deliver the goods – literally.⁴⁷”

One reason states cannot keep pace on recycling is the growth of new forms of packaging in recent years. A few decades ago, packaging products were made out of single materials, generally paper, glass, plastic, or metal. Now there are many kinds of plastic packages, some of which are combinations of biologically-based and petroleum-based. There are many kinds of composites which generally can't be recycled. Recycling technologies at the local level would have to become increasingly complex and sophisticated everywhere to keep pace, which is not a realistic expectation in this time of deficits. Shifting the responsibility to producers will require them to design products that can be recycled using existing technology, or else develop, manage, and fund recycling technologies for new materials.

Mouw further notes that part of the appeal of EPR is that it:

could harness the business acumen of corporate capitalism to improve the commodity supply situation, shifting decision-making from conflicted government agencies to more economically rational actors. It would also inject capital that in turn would improve the overall performance of the system – i.e., collect more materials.⁴⁸

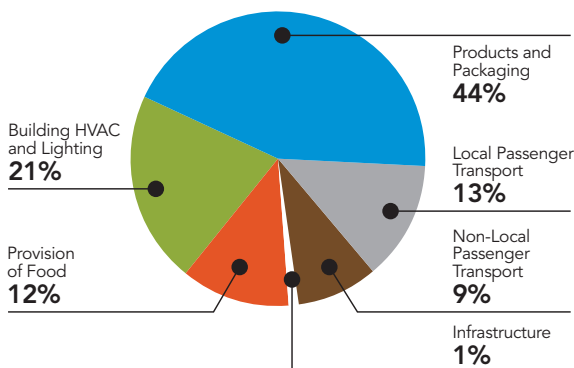
Given these concerns, many state and local governments have moved to support EPR legislation. The National Conference of Mayors, National League of Cities, and National Association of Counties, and municipal leagues in Minnesota and California have adopted policy statements in support of EPR legislation or a framework structure allowing EPR to be developed for many product streams.⁴⁹ “State policies currently hold local governments responsible for achieving waste diversion goals and enforcing product disposal bans, both of which are unfunded mandates,” notes the mayors’ resolution, adding that “costs to manage problematic products are currently borne by taxpayers and rate payers and these costs are increasing substantially and will continue to do so unless policy changes are made.” California, the Pacific Northwest, New York, Texas, and Vermont have started statewide product stewardship councils which have adopted principles for EPR framework legislation.⁵⁰

“We cannot address climate change or prepare for the post-peak oil period without changing the way we manage products and packaging throughout their life cycle.”

– Bill Sheehan,
Executive Director,
Product Policy Institute

Packaging Link to Carbon Pollution

44% of the U.S. greenhouse gas emissions come from products and packaging in a systems-based analysis.



Source: Joshua Stolaroff, “Products, Packaging, and U.S. Greenhouse Gas Emissions,” Product Policy Institute, 2009.

Packaging and Climate Change

Most attention on greenhouse gas (GHG) reduction centers on large industrial sources such as electric utilities. Electric power is the largest source of GHG emissions when measured using a traditional industrial sector approach (34%). However, a recent systems-based analysis of embedded emissions in the U.S. supply chain concluded that products and packaging are responsible for an even bigger slice of GHG emissions (44%).⁵¹ That’s more than emissions from energy used in buildings, agriculture, or transportation, which often get the most attention from activists, government, and business. “We cannot address climate change or prepare for the post-peak oil period without changing the way we manage products and packaging throughout their life cycle,” says Bill Sheehan, Executive Director of the Product Policy Institute, which analyzed data from the U.S. Environmental Protection Agency (EPA) to develop a more complete picture of systems’ contribution to GHG emissions.

Companies are finding that their packaging contributes a significant amount of their total carbon footprint. Nestlé Waters found that 55% of its carbon footprint comes from production of its bottles and that recycling a bottle reduces its greenhouse gas impact by 25%.

Coca-Cola says packaging is the largest contributor to the carbon footprint of several of its products. States are beginning to understand the impact recycling can have on reduction of GHG emissions. Paper and paperboard, for example, comprise 46% of materials deposited in landfills, according to the EPA.⁵² Decomposing paper forms methane gas in landfills, which is a far more potent greenhouse gas than carbon dioxide. California has announced its intent to use recycling to help it meet GHG emissions reduction goals required by its pioneering emission reduction law known as AB 32. California plans to require reductions of five million metric tons of CO₂ from enhanced commercial recycling.

Economic Benefits

Increasing recycling rates through mandated EPR programs carries the potential for creating and expanding profitable new recycling and secondary materials markets. In lieu of existing official estimates on the value of paper and paperboard and packaging landfilled

in the U.S., As You Sow calculated that in 2010, the value of these materials was \$11.4 billion. The estimate was compiled by applying current commodity and process materials prices to the portion of materials estimated by U.S. EPA to be land filled in 2010. PET plastic had the highest commodity value, estimated at \$2.9 billion, followed by HDPE at \$2.8 billion, aluminum at \$1.4 billion, and paper at \$1.3 billion.⁵³

High demand and limited supply for recycled PET (rPET) demonstrates the economic potential of increasing recycling rates. The rPET market was described as “red hot” in industry trade publications in April 2012. Demand for limited materials is increasing as new domestic recycling plants compete for the 29% of PET plastic bottles collected, while the vast majority of the bottles are landfilled. Packaging providers must compete for available supplies with carpet makers and, increasingly, textile manufacturers who turned to PET to make clothing after cotton prices spiked in 2011.

One industry analyst said a new recycling plant in Fayetteville, N.C. can handle up to 280 million pounds per year, making it the largest PET recycler in North America, but there are concerns about where the material will come from to supply this plant. “Everyone is going after that same chunk of pie, and nobody is doing much to increase

collection.”⁵⁴ U.S. PET reclaimers currently operate at less than 60% of capacity. Lack of sufficient rPET supply is one of the reasons cited by Coca-Cola for not meeting a goal to use 10% rPET in its plastic bottles by 2011.

The states of Oregon, New York, and Connecticut all amended their beverage container laws in the last two years to cover plastic water bottles, which helped to boost deposit program collections by 50 million pounds in 2010. “If we hadn’t had the expansions in those three bottle deposit states, reclaimers would have had a rough time,” said Mike Schedler, Technical Director for NAPCOR, the PET industry’s recycling association.⁵⁵ So, ironically, the ability of beverage companies to meet their promises to use rPET hinges partly on the deposit laws they have vigorously opposed.

The U.S. already has a healthy recycling industry for some materials. The firms that process metals, paper, electronics, rubber, plastic, glass, and textiles generate 137,000 direct jobs and \$32 billion in revenue. When suppliers and indirect impact are factored in, the industry supports nearly half a million jobs and generates a total of \$90 billion annually in economic activity.⁵⁶ A recent Container Recycling Institute study concluded that beverage container recycling creates more jobs than disposal and that jobs gained in recycling far outweigh jobs lost in extraction of virgin materials, landfilling, or domestic manufacturing.⁵⁷ A 75% national recycling rate could add nearly 1.5 million new jobs in this industry by 2030, according to a recent report prepared for the Blue Green Alliance and a coalition of labor and environmental groups. The report said this level of recycling

“The U.S. recycling industry indirectly supports nearly half a million jobs and generates a total of \$90 billion annually in economic activity.”



would also reduce CO₂ emissions by 276 million metric tons by 2030 (equivalent to eliminating emissions from 72 coal-fired power plants), reduce conventional and toxic emissions that impact human and ecosystem health, and generate a stronger economy by creating a broader employment base.⁵⁸

How an EPR System Would Work

State-level legislation will be needed to build a platform for EPR packaging practices in the U.S. Legislation is needed to set high, enforceable recycling targets and to provide a level playing field for brands by ensuring that all contribute to the system based on the amount of materials they put on the market. Strict enforcement would avoid a free rider problem which plagues some existing systems.

Currently, consumers pay for recycling services through their real estate taxes or utility bills. Under EPR, producers would develop a nonprofit producer responsibility organization (PRO) to determine how to set fees for each covered packaging material according to market share, recyclability of materials used, and other factors. Brand owners would ideally internalize these costs, but may pass a portion of costs on to consumers. The PRO would contract with waste haulers, recycling facilities, and municipalities to cover their cost for collection at negotiated rates. The producers operating the PRO would be incentivized to identify opportunities for efficiency to keep their costs down.

In developing efficient systems, the PROs should study the recommendations of the EPA multi-stakeholder dialogue group consisting of brands, NGOs, and state and local officials which recently reviewed strategies for optimizing the current collection system. One key issue is improving the potential for high-quality collectibles, which depends in part on the collection method employed. Where recyclables are source-separated by consumers and collected separately, higher quality commodities are produced. But most systems are converting to co-mingled or single-stream systems, which lowers collection costs, but also results in lower quality materials, as the mixing of materials results in significant contamination of recyclables. Some material loss can be mitigated if material recovery facilities have high technology optical sorting capabilities to mechanically separate recyclables. Research and pilot projects on consumer incentives and education are needed so residents will know how to recycle materials properly and be encouraged to do so. The EPA dialogue group's report said that better information also needs to be developed on efficiency and cost control, improved performance reporting, and scalability of systems to accommodate a full array of consumers, including e.g., single family homes, multi-family dwellings, and commercial and away from home sources.⁵⁹

IV. New Momentum for EPR for Packaging in the U.S.

In the last two years, momentum has been building for the introduction of EPR for packaging in the U.S. This has been driven by the factors cited above – deteriorating financial positions of states and municipalities, the economic value of wasted materials, growing awareness of the policy inequity of companies taking responsibility in other world markets but not in their U.S. operations, growing demand for post-consumer materials, and links to climate footprint and ocean pollution. The fact that state officials, environmental groups, and materials recyclers favor EPR is not particularly surprising; what is surprising is the new leadership by some forward-thinking brands. Over the last five years, three major beverage brands, Coca-Cola, Nestlé Waters, and PepsiCo made commitments to As You Sow to recycle at least 50% of post-consumer bottles and cans over the next four to six years. In pursuit of that commitment, Coca-Cola and Nestlé Waters decided that the most practical way to achieve those goals, given domestic political realities and the complexity of increasing materials recovery, was to press for an EPR mandate in the U.S. requiring that all parties placing packaging on the market contribute based on the level of materials they generate.

In a survey of beverage container recycling practices released last year by As You Sow, Nestlé Waters, New Belgium Brewing Company, and Coca-Cola said they would support a mandated fee-based EPR system. PepsiCo remained neutral but said it was open to exploring options depending on more detailed specific proposals. Assuming PepsiCo would sign on to one of these, this would represent approval of EPR by a significant percentage of the U.S. beverage market.⁶⁰

State officials petitioned the EPA in 2009 to develop the previously noted multi-stakeholder dialogue on ways to improve financing of municipal solid waste recycling, specifically praising mandated or legislated EPR programs in Canada and Europe. Officials from New York, North Carolina, and Iowa noted that:

[m]any European and Asian countries and the Canadian provinces of Ontario, Quebec and soon Manitoba have implemented innovative policy approaches to finance municipal recycling programs outside of the local tax structure. Such policies have led to increased recycling rates and improved efficiency in local programs, while also helping to meet the needs of the commodity industries and the increasing commitment of consumer product companies to more environmentally sustainable packaging.⁶¹

The group of stakeholders, including major consumer packaged goods (CPG) and grocery brands, met through 2010 and 2011 and issued a report making recommendations for ways to improve municipal recycling rates and financing.⁶² However, as a result of resistance from consumer packaged goods companies, no consensus was reached on how to proceed, demonstrating the need for more focused discussion between companies, regulators, and stakeholders on a specific approach.

A sign of concern by companies that EPR for packaging policies are gaining steam was the formation in 2011 of a new packaging trade organization, Ameripen, to develop public policies on packaging and the environment. The group is studying EPR and alternatives to EPR and plans to have a formal position by the end of 2012.⁶³

Industry Pushback

Initial outreach by Coca-Cola and Nestlé Waters to the big CPG sector companies on an EPR approach in 2010 and 2011 met resistance as might be expected from companies used to generations of not having to take responsibility for their packaging. While acknowledging they pay fees to recycle their packaging in scores of other countries, no major companies have immediately stepped forward to take similar responsibility in the U.S. or to support Coca-Cola and Nestlé Waters' call to action. Most let their trade group, the Grocery Manufacturers Association (GMA), speak for them.



Rather than engage in an open and balanced dialogue about the merits and challenges posed by a mandated EPR system, GMA hired a consultant to estimate the potential costs of a national EPR system and appeared at several industry conferences in 2011 criticizing the prospect of EPR. The opaque "data" prepared by the consultant purported to show that reaching a 52% recycling rate with a national EPR system would cost \$7 billion to the CPG

sector. The veracity of this figure cannot be confirmed as GMA declined to explain how it was calculated. The approach favored by EPR proponents is enactment of state EPR laws which would happen incrementally over many years. The GMA estimate seemed to be based on the assumption that a national program would be imposed all at once, which is highly unlikely given the current political polarization and massive deficits at the federal level. GMA's data likely failed to account for cost savings that can be expected as lessons learned by early adopting states are passed on to later adopters. But GMA was not done with its sleight of hand. It also projected a whopping total of \$21 billion that the CPG sector might be liable for if forced to pay for all municipal solid waste it generated, not just packaging waste. There is no current effort to press companies to pay for all their solid waste so it was disingenuous for GMA to publicize the \$21 billion figure as a possible policy scenario. When challenged by As You Sow on these points, GMA agreed in December 2011 to stop using this data. Another player on EPR is the Product Management Alliance, a new group expected to lobby against EPR legislation.

For the emerging EPR effort to build sufficient traction, other large companies must step up and take responsibility. One such major company, Unilever, the giant European-based food and consumer goods company, stands apart from GMA members like Kraft Foods and Procter & Gamble who oppose or remain neutral on EPR. Unilever made a public commitment to increase recycling rates for packaging it uses on average in 14 major countries (including the U.S.) where it does business 5% by 2015 and 20% by 2020. This is an important step forward, but the company has yet to describe how it will achieve that goal or to endorse EPR.

The image features the Unilever logo, which is a blue stylized 'U' composed of intricate floral and geometric patterns. Below the logo, the word "Unilever" is written in a blue, cursive-style font. Underneath that, the text "Unilever's Commitment" is displayed in a bold, green, sans-serif font. A horizontal line separates this header from the commitment details. The details are presented in a mix of blue and green fonts: "Increase recycling and recovery rates for post-consumer packaging by 5% by 2015, and 15% by 2020 on average in 14 top market countries". The "15%" is significantly larger and bolder than the other numbers. The entire graphic is enclosed in a thin green rounded rectangular border.

EPR Proponents Organize

Throughout 2010 and 2011, Nestlé Waters and Future 500, a stakeholder engagement and consulting group, convened major consumer brands, recycling processors, trade groups, product stewardship groups, and others. Their goal is to educate stakeholders on EPR systems already in operation and work toward agreement on taking responsibility for packaging waste and to develop an effective and acceptable legislative model (As You Sow is a member of this group). In January 2012, a new NGO, Recycling Reinvented, started operation to serve as a strategy center for educating stakeholders and to move EPR for packaging legislation in U.S. states.



The group received startup funding from Nestlé Waters. Convening board members include renowned environmentalist Robert F. Kennedy Jr. and Nestlé Waters CEO Kim Jeffery.⁶⁴ Working with a group of aligned shareholders, As You Sow has led engagement of major consumer goods and grocery companies to adopt EPR policies. The companies engaged in dialogue include Ahold USA, Colgate-Palmolive, General Mills, Kraft Foods, Safeway, Supervalu, Target, Kroger, Procter & Gamble, Unilever, Walmart, and Whole Foods.

Aside from Coca-Cola and Nestlé Waters, the beverage industry has not rushed to publicly endorse EPR but has noticeably shifted towards at least a shared model of responsibility. “Shifting the cost from municipalities to users and producers of products I think is an inevitable and necessary thing that the U.S. has got to come to grips with,” Kevin Dietly, an American Beverage Association consultant told a product stewardship webinar last year.⁶⁵ Keep America Beautiful, a conservative industry-funded group that has traditionally focused on voluntary recycling efforts now states: “Producers should be responsible for contributing to a stewardship program that encourages the source reduction and responsible end-of-life management of covered products and addresses the lifecycle impacts of these products.”⁶⁶

Some environmental groups are understandably cautious about the push toward EPR being led by Nestlé Waters given the historic opposition to container deposit laws by beverage companies. An EPR bill filed in the Vermont legislature in 2010 which contained a repeal of the state’s existing deposit law raised concerns that an underlying agenda is to repeal existing deposit laws. Nestlé Waters has said it would not support legislation that repeals existing deposit laws and does not plan to introduce legislation in deposit law states. The bottle bill repeal was later removed from the Vermont legislation.

EPR needs to be tried because bottle bill-style recycling is not readily expandable to other packaging, according to Nestlé Waters CEO Kim Jeffery. “People do think we need to do something different,” Jeffery told trade publication *Plastics News* in May 2012. He continued:

The challenge is getting people to embrace one idea, and too many consumer-product companies see EPR as a tax. Not enough people have connected the dots that it could change the volumes of materials dramatically. They need to get past the idea of EPR as a tax and see it as an opportunity to use recycled content in their products and packaging.

However, he maintains that he’s not totally wed to EPR. “I’m agnostic and solutions-oriented. If someone can come up with a solution better than EPR, I’m willing to listen.”⁶⁷

V. European Leadership on EPR

In considering EPR for the U.S., the European experience is instructive. As U.S. companies become aware of building pressure for EPR, they will likely move in the coming months to propose even more voluntary approaches to increasing package recycling. It is important to understand that European EPR laws were the result of failed attempts to develop voluntary programs. As an example, a group known as the European Recovery and Recycling Association planned to do packaging take-back pilot programs in eight EU countries in the 1980s but the program was not successful because of the lack of a level playing field, says Derek Stephenson, President of Steward Edge, a Canada-based consulting firm. Stephenson, whose group has been assisting in developing product stewardship programs for more than 30 years in both Canada and Europe, said leading companies first tried “everything but EPR” in terms of voluntary programs but couldn’t meet their goals. As a result, public policies were developed in those countries requiring them to take responsibility for their packaging.⁶⁸

Unfinished Business: The Case for Extended Producer Responsibility for Post-Consumer Packaging

Germany was the first country to require EPR for packaging with a 1991 ordinance making industry responsible for the costs of collecting, sorting, and recycling post-consumer packaging. Germany acted following concerns about dwindling landfill space in the densely populated country. A key goal was to reduce resource use by creating a policy that would drive down consumption of packaging.

Soon after in 1994, the EU enacted the Packaging and Packaging Waste Directive (94/62/EC), requiring member states to develop regulations on prevention, re-use, and recycling of packaging waste. Influenced by the German ordinance, each country could decide how to implement the directive but would be required to meet stipulated recycling and recovery targets.⁶⁹ The directive specified a hierarchy of end-of-life waste management options making waste prevention the highest goal, followed by re-use, recycling, other forms of recovery (including incineration with energy recovery), and finally disposal via landfill or incineration without energy recovery.

The directive required members to form national programs to encourage packaging re-use, to prevent generation of packaging waste, and to reduce heavy metals content in packaging. It did not mandate EPR but most countries enacted policies requiring companies to pay some or all of the costs of collection and recycling. Fifteen EU countries now mandate 100% producer financing for these programs, 10 have shared costs, two have tradable credits, and two others utilize a packaging tax.⁷⁰

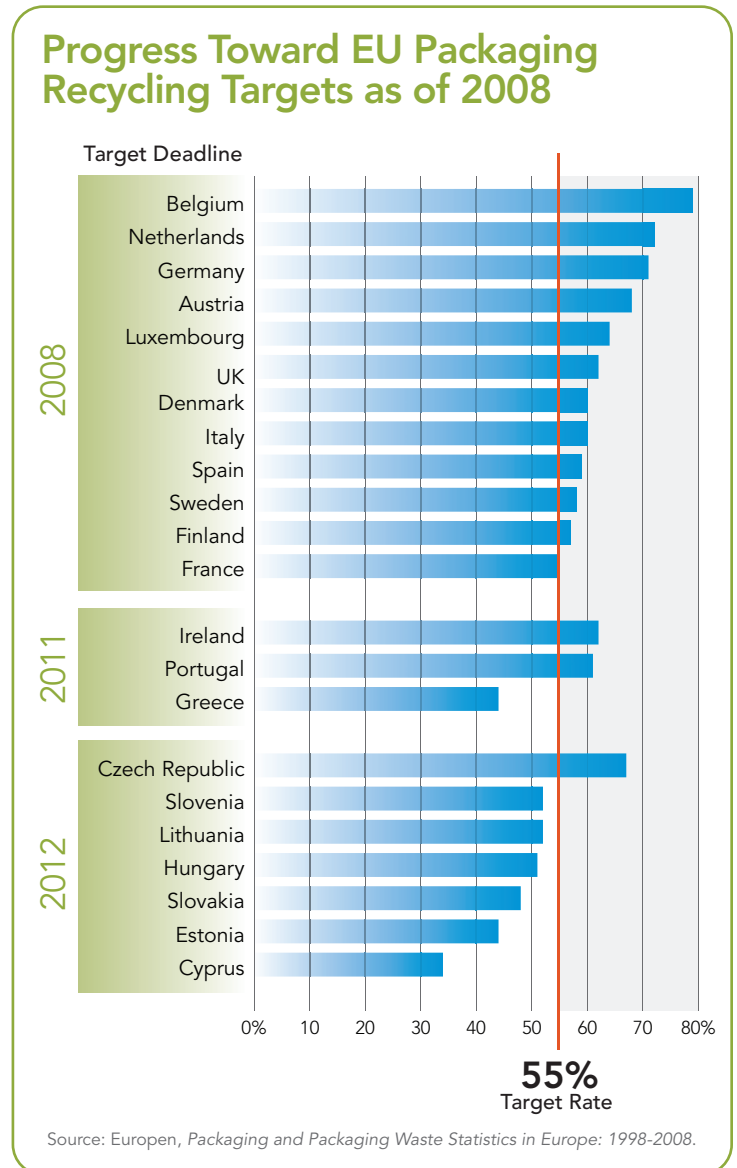
The directive originally set recovery targets of 50% to 65% for packaging waste, including a recycling rate of 25% to 45%, to be achieved by June 2001.⁷¹ This goal has been revised twice. The most recent revision increased recycling goals to a 55% overall target including 60% for glass, paper, and board packaging, 50% for metals and 22.5% for plastics by 2008. Of the original 12 nations that signed on to the directive, all met or exceeded the 2008 packaging materials 55% target. Some of the highest performing programs in recent years are Denmark with an 84% packaging recycling rate; Belgium at 78.9%; the Netherlands at 72.4%; Germany 70.5%; and Austria 69.9%. Countries that joined the EU more recently have additional time to meet the targets but the average packaging recycling rate across the EU-27 has already reached 61%.⁷²

Each country's program is slightly different so making detailed comparisons is difficult and beyond the scope of this paper, but two general types of systems evolved: a dual system and a shared system. Dual systems, more prominent in Northern European countries like Austria and Germany, provide collection systems for recycling completely separate from those for collecting solid waste. Shared systems, more common in southern Europe, split or share responsibility for collection between established municipal solid waste collection systems and private providers.

In order to develop effective and efficient programs in the U.S., it is instructive to consider in more depth various programs that have been put in place in other countries.

The German Packaging Ordinance⁷³

Germany's system is praised for its pioneering efforts making producers responsible for take-back and for high recovery rates but also criticized for its complexity and high costs. Germany's 1991 packaging ordinance gave retailers the responsibility to take back product packaging from consumers, but exempted retailers from the take-back requirement if their suppliers established a privately financed



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system to collect packaging. Retailers pressured their suppliers to take on this responsibility and as a result German manufacturers that produce or import packaging and suppliers or distributors that put packaging into circulation developed a PRO to manage packaging drop-off bins and contracts with packaging recyclers. There are now 33 similar PROs managing producer responsibility in EU member states.

The PRO, called Duales System Deutschland (DSD), initially managed the packaging take-back system in Germany. It was developed as a “dual” system separate from solid waste collection. DSD charged manufacturers and distributors a license fee to use a “Green Dot” or “Greuner Punkt” logo on packages, indicating that the package is accepted in that system. A comprehensive collection network was set up with three venues where Green Dot waste was collected. The most prevalent component is a curbside system where consumers deposit Green Dot packaging made from plastics, composites, aluminum, and steel (but not glass, paper, or cardboard) in yellow bags or bins provided to their households. Paper and cardboard are collected in a separate blue bin from homes or at container stations nearby. Glass requires special handling; residents are required to bring glass to special bins set up in neighborhoods, often separated by color. Collection stations are also provided for Green Dot waste at retail stores that sell products in Green Dot packaging. Once collected, materials are sorted by waste management companies under contract with the DSD and sent to recycling facilities.

Initially, the new EPR regulations performed well in both increasing recycling and reducing consumption. Packaging consumption dropped 9% between 1991 and 1996⁷⁴ due to light weighting of packaging and an increase in refillable and concentrated packaging, and use of less composite plastics and more easily recycled materials.⁷⁵ The packaging recycling rate shot up to 81% in 1997. Costs charged for each material were based on the costs of recycling. This provided an incentive to manufacturers/fillers to reduce their fees by using more recyclable materials which have lower fees, or to reduce the amount of packaging.⁷⁶

Some of the specific early system successes included producers changing to more recyclable materials. There was a 50% drop in composite and plastic packaging, and plastics use in packaging fell from 40% (by volume) to 27%. This reflected avoidance and minimization of composites and plastic packaging in favor of paper cartons and steel. Early shifts away from plastic packaging were noted specifically with respect to polyvinyl chloride, polyethylene, and polypropylene.⁷⁷ This shift made sense as a result of higher fees for plastics and composites paid by manufacturers. However, from 1997 to 2007, packaging generation increased, returning to slightly higher than 1991 levels. Some of the factors that may have been responsible for the reversal include strong growth in GDP at the time in Europe and substantial increases in population and the size of households in Germany.

Germany achieved a 73.5% recycling rate by 2010 including 91% of paper and cardboard packaging and 91% for aluminum and steel. Here are some of the factors in its success. Ninety-five percent of the German population has access to curbside collection and other convenient recycling facilities, such as the “bring” sites for glass.⁷⁸ These bring sites are also located in commercial districts, making it easy for consumers to recycle packaging away from home, and there is consistency in color coding for separating materials, making it easy to understand and participate. Germans are highly engaged and motivated, and recycling is convenient and easy.

Another benefit of the system is that by collecting all packaging materials and plastics, Germany has become a leader in the development of new sorting and recycling technologies, particularly for hard to recycle materials like plastics. Collection and mandates for recycling of all different types of packaging materials, as required by the directive, has spurred the development of the new technologies, especially for mixed plastics.

Program Challenges

DSD came under criticism as a legally sanctioned monopoly and, following legal action, was required to allow competitors to share use of the DSD infrastructure for collection and recycling services. Since 2008, nine companies compete to offer services to manufacturers and producers to collect, sort, recycle, and dispose of packaging but using the same infrastructure. It may have spurred economic competition but these service providers lack transparency such that pricing has become confidential and there is no longer publicly available data on costs or return rates for refillables and single-use beverage containers. Some maintain service has suffered as well. “Introduction of competition into the compliance system led to systems only offering the legally required minimum of service,” according to Joachim Quoden, Managing Director, PRO EUROPE, the umbrella organization for European packaging PROs that contract with waste haulers, recycling facilities, and municipalities. He said additional waste prevention initiatives and consumer communication campaigns run by the former monopoly system have stopped and recycling seems more aimed at just meeting minimum targets and there is reduced recycling of mixed plastics.⁷⁹

In 2003, the German government introduced a mandatory deposit on single-use beverage containers to help shore up use of refillable bottles. Some German environmentalists believe it may have succeeded in increasing the recycling rate for beverage containers to as

high as 95% but this is unverified because rates are not reported by the new private service operators who collect the materials. For the non-beverage container portion of the waste stream, industry must still meet the same recycling and recovery rates, while managing materials that are harder to sort and more expensive and difficult to recycle. The separate bottle deposit programs for single-use and refillable bottles have been criticized for removing volume and valuable materials from the rest of the EPR system.⁸⁰ One consultant's assessment argues that the beverage deposit system has resulted in significantly higher costs, maintaining that total system costs jumped from 250 million Euros per year to 711 million Euros per year (or 2.2 Euros per container to 5.3 Euros per container).⁸¹ Most notably, the retroactive imposition of a deposit system has not been successful in its goal to sustain use of refillable bottles; refillables have dropped from 32% to 15% of the beverage market since 2003.

Other challenges have been posed by "free riders," producers who do not join a PRO and pay a licensing fee but whose materials get collected by the system, and licensees who sometimes put the logo on packaging for which they have not paid fees.⁸²

Belgium

Belgium has been repeatedly cited as a major success story for EPR for packaging because of its uniform system and high return rates but it also substantially limits materials actually recycled compared to other EU countries. Overall, Belgium has a packaging recycling rate of 78%. Unlike Germany with its separate system of collecting packaging waste, household waste collection is a municipal responsibility. The three Belgian regions signed an agreement to have identical legislation. There are 589 municipalities for waste management, resulting in approximately 50 inter-municipal waste authorities.

Belgium has a landfill directive that requires that no waste can be landfilled prior to treatment. All waste not sent for recycling or composting is sent for energy recovery (incineration), except in the Flanders region, which has barred incineration.

The Belgian implementation of the EU packaging directive creates an obligation for each packaging responsible party (producer, private label retailer, importer) to meet the annual recycling and recovery targets, either through its own take-back system or an accredited organization. In Belgium, the accredited PRO for household packaging is Fost Plus. Fost Plus has 5,900 member companies representing 93% of the market, but handles all household packaging, meaning that about 7% of packaging producers have not paid fees and are free riders.

In 2010, the recycling rates for household packaging were reported at 91.5% and the recovery rate (when incineration is factored in) was 94.9%.⁸³ According to Fost Plus, the cost of the system to the packaging industry (producers, retailer, importers) is 75 million Euros per year. The per capita cost of operation is fairly stable. In 2008, it was reported as 8.98 Euros per year (or 6.40 Euros per year after sale of recovered materials); in 2009 it was 9.35 Euros per year (or 5.20 Euros per year after sale of recovered materials).⁸⁴

Fost Plus believes that an active and extensive public awareness and engagement campaign helped lead to the high rate of participation in the recovery program. Proponents say recycling rates are high because Fost Plus focuses on getting quality materials through the uniformity of the system and ongoing communication and cooperation with municipalities. Systems that separate paper and glass from other household waste reduces contamination of waste streams and ensures high quality materials are recovered for recycling. It also reduces sorting and equipment repair costs.⁸⁵

However, the high recycling numbers need to be viewed with caution as the system only takes bottle plastics for recycling, leaving huge amounts of other kinds of plastic packaging to be incinerated. Only 39% of PET plastic is recycled; 46% is incinerated.⁸⁶ Belgium made a choice to only collect plastics it could get market value for rather than invest in new technologies that would create markets for the plastic, as Germany did. There seems to be some debate over whether this is the best approach in Belgium, as some municipalities have found markets for some non-bottle plastics and are beginning to collect them in parallel to Fost Plus collection.

Assessing the EU Directive's Impact

A report issued in 2011 by Europen, a packaging industry trade group that monitors the packaging directive's implementation praised the directive as a big success. Managing Director Julian Carroll said the directive is "clearly one of the most successful pieces of EU environmental legislation," and "this success of the packaging value chain can be seen as an example of best practice for other industry sectors in their efforts to do more with less." Europen's report said the amount of packaging going to final disposal in 15 EU countries

“The amount of packaging going to final disposal in 15 EU countries fell by 43% over the past 11 years, largely due to higher recycling levels and other forms of recovery.”

fell by 43% over the past 11 years, largely due to higher recycling levels and other forms of recovery. Despite an aging population and a trend toward smaller households (leading to more packaged goods), the amount of packaging placed on the market grew by only

10%, a rate indicating decoupling of packaging from growth in gross domestic product. Europe's hearty praise of the EPR-driven European Directive is ironic given that its members include prominent U.S. companies such as Colgate-Palmolive, Kraft Foods, and Procter & Gamble that do not yet support EPR in the U.S.⁸⁷

A 2012 report from the European Commission, the executive body of the European Union, on the use of economic instruments for waste management, says producer responsibility is "one of the most effective tools in shifting waste streams to more sustainable paths," along with taxes and bans on landfilling and incineration, and pay-as-you-throw schemes. However, it notes that cost efficiency varies greatly – some inexpensive programs have high levels of recycling and expensive schemes have low levels of recycling. It stressed that programs need careful planning and monitoring.⁸⁸

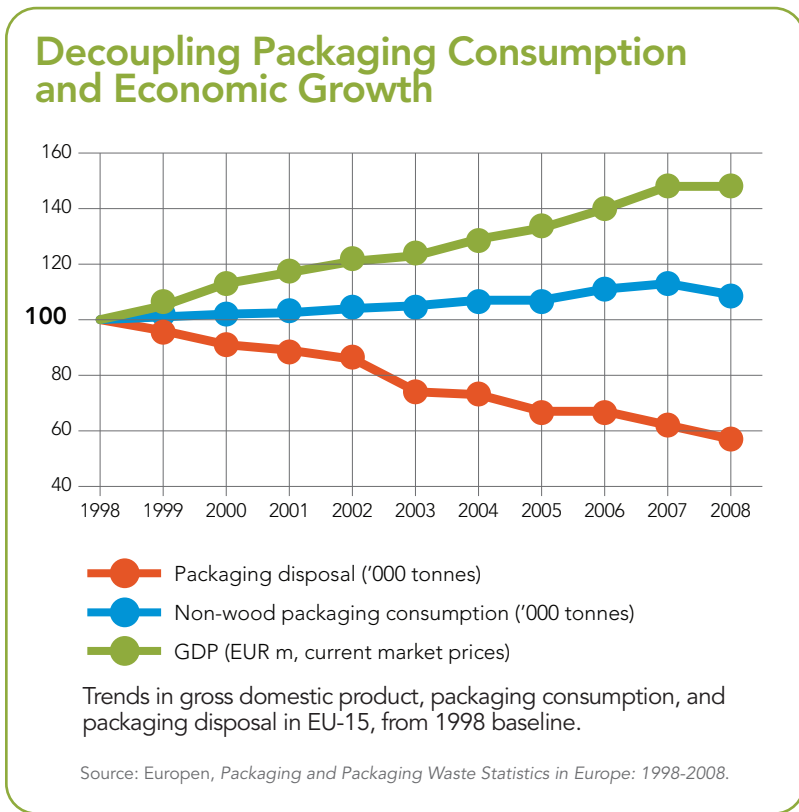
PRO EUROPE, the organization of European PROs who negotiate with waste processors to implement the directive, says acceptance of producer responsibility and establishment of Green Dot affiliated organizations have brought about significant changes in Europe's packaging and waste markets,

as well as in consumer behavior. Internalization of waste disposal costs in product prices and the introduction of public waste separation systems for packaging waste have promoted new awareness of waste issues, says PRO EUROPE, adding that the directive has been responsible for development of new secondary markets for raw materials.⁸⁹

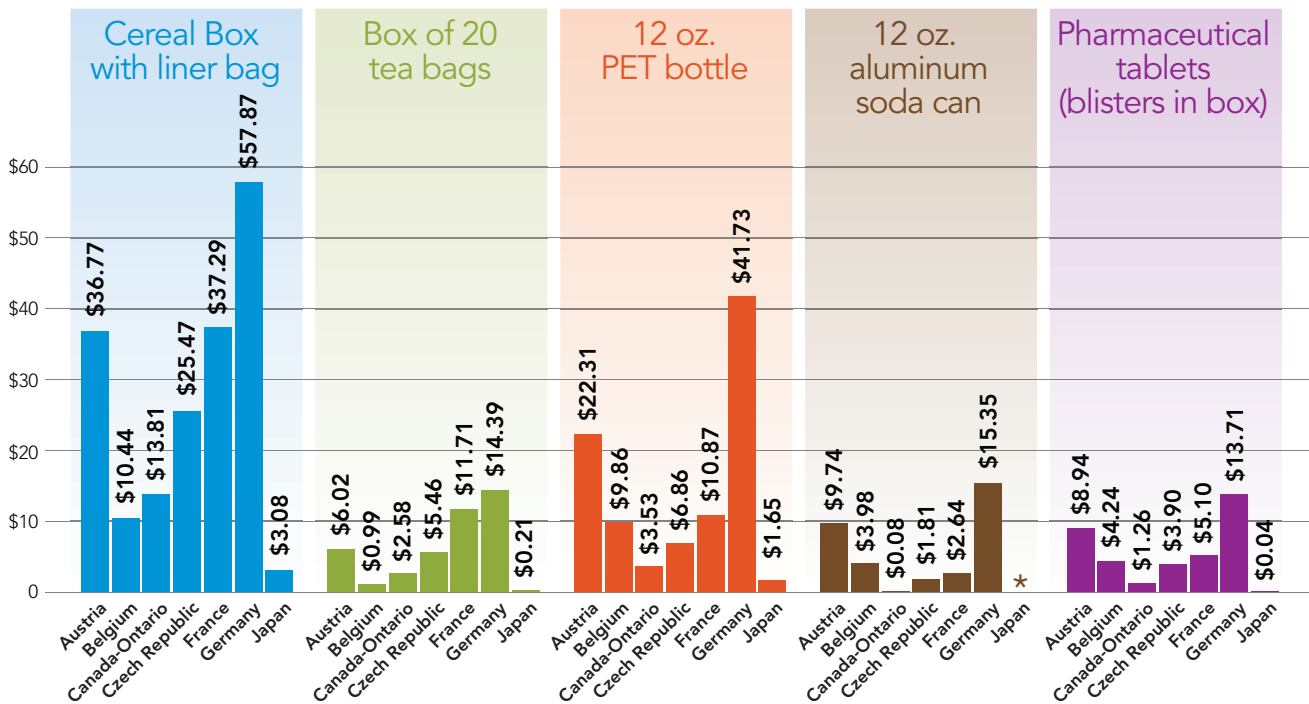
Recycling contributes raw materials for production in Europe, making member states less dependent on virgin resources. Scrap metal now contributes between 40% and 56% of materials in EU bulk metals production according to a recent report. Furthermore, waste management and recycling industries contribute significant value to the economy. In 2009, these industries in the EU generated 95 billion Euros, and accounted for between 1.2 million and 1.5 million jobs. The report acknowledges how important recycling is an age of increasingly constrained resources and predicts that "as the demand for raw materials in the EU continues to grow, and given the EU's dependence on the importation of many raw materials, the role of recycling will become increasingly important."⁹⁰

Cost efficiency of EPR systems is an important consideration for businesses being asked to pay fees to fund recycling programs. A detailed analysis of various system costs is beyond the scope of this paper. System costs in countries and the unique political and economic considerations inherent in them are not necessarily transferable to the U.S. The previously noted report on the use of economic instruments concluded that it is difficult to show any clear relationship between costs charged under packaging producer responsibility programs and recycling performance. The chart on the following page shows some comparative materials recycling costs. The report commented the Belgian Fost Plus program "could perhaps be judged the best in terms of 'value for money'."⁹¹

“Waste management and recycling industries contribute significant value to the economy. In 2009, these industries in the EU generated 95 billion Euros, and accounted for between 1.2 million and 1.5 million jobs.”



International Packaging Fee Comparison (per 1000 retail units)



Fees are per 1000 retail units in U.S. dollars. Calculations are based on fee rates in effect 2011 and reflect sales packaging only.

*Japan does not assess fees for aluminum.

Source: Environmental Packaging International

Another aspect of cost analysis, in terms of packaging recycling, is measurement of cost benefits related to environmental impacts reduction, such as reducing CO₂ through reduction in oil use and sulfur dioxide emissions. The European Commission has concluded that “it appears safe to say that the costs for packaging recycling are in the same order of magnitude as the most cost-efficient alternatives to reduce CO₂ emissions and other environmental impacts.”⁹²

VI. Canada’s Move to EPR

EPR requirements for packaging also exist in Canada. Currently, all of the Canadian provinces and two territories have some form of EPR framework legislation for products and packaging in place. Three of the 10 provinces have packaging programs in place – Ontario, Quebec, and Manitoba, with a fourth, British Columbia, to start operating in 2014. Ontario and Quebec require industry to pay 50% of costs, Manitoba 80%, and British Columbia will be 100% producer-financed. As in Europe, Canada’s packaging policies evolved out of unsuccessful attempts at voluntary solutions. Ontario’s Blue Box curbside system was originally proposed by the beverage industry as an alternative to a provincial requirement the industry did not like mandating use of a minimum number of refillable bottles. The government agreed to cut the refillable quota on the condition that the soft drink industry help finance expansion of curbside recovery across Ontario. This led to the current system of shared industry and municipal funding.

Canada has broadly developed the product stewardship model for many materials, with about 50 product stewardship programs operated largely at the provincial level.⁹³ Also, all provinces have deposit systems in place for beer containers and eight provinces have programs in place for soft drinks beverage container recycling, providing an important opportunity to monitor how a dual curbside packaging recovery system and deposit system can work in tandem in North America.

Ontario

Ontario's Blue Box Program merits discussion as it has been in operation for eight years and presents an alternative to the 100% industry-financed models in Germany and Belgium. The program was established as part of a Waste Diversion Act (2002) under Ontario's Minister of Environment, and implementation began in 2004. Brand owners and first importers of covered products are designated as stewards who can join together to establish "industry funding organizations" (IFO) similar to PROs in Europe. Stewards meet their obligation under the act by paying fees to the IFO to cover a portion of the costs associated with collection and recycling of designated wastes. Waste Diversion Ontario (WDO) oversees the IFOs, reviewing their proposed waste diversion plans and monitors and tracks performance of IFOs. Stewardship Ontario is the IFO for the residential collection program. It charges the stewards fees based on the amount of residential packaging and printed paper they supply into Ontario along with other factors. Stewardship Ontario also uses the fees to invest in market development to expand markets for used packaging, to increase program revenues, and to improve the effectiveness and efficiency of municipal recycling programs.

Unlike the EU packaging directive, Ontario's Blue Box program contains no material-specific recovery rates. Instead, it sets overall diversion targets for printed paper and packaging combined. The most recent target was 60% for 2008. The reported recovery rate for packaging and printed paper was 65% in 2009 and 67% in 2010. The Ontario model involves municipalities retaining operational responsibility for local recycling programs, either directly or indirectly, through contracts with waste haulers and sorting operators.

Some of the funds paid by producers are earmarked for market development to improve the province's capacity to handle difficult to recycle materials. One project invested \$2 million to increase the ability to handle mixed broken glass which contaminates other recyclables. Another \$2 million investment helped develop two new commercial facilities to recycle mixed plastics previously landfilled or exported to Asia. As a result, the system can now recycle problematic items like plastic bags and thermoform plastic containers (polypropylene and polystyrene).

The program has been criticized for having high costs to recover materials like corrugated, boxboard, and food and beverage containers.⁹⁴ Plastics overall are recovered at a fairly low rate of 25% but PET plastic bottles and jars are recovered at a reported rate of 60% (there is a deposit system in the province for beer, liquor, and wine but not soft drinks or water bottles). Some analysts have questioned whether the numbers reported by Stewardship Ontario are realistic, pointing out they are based on the amount of materials collected rather than actually recycled.⁹⁵

The program has been criticized as too cumbersome and prescriptive, and the provincial government has not moved promptly to fix identified problems by revising the enabling legislation. There are more than 50 materials recovery facilities serving a population of 13 million, more than 30 of which manage less than 15,000 metric tons per year, meaning management costs are high.⁹⁶ Consolidating these facilities might streamline operations but could result in job losses and stranded assets. Some have suggested that the industry could achieve higher rates of recovery if it had more operational control over the program. Ontario has proposed moving towards a 100% industry-funded model, raising the possibility that producers will be given more authority over operating the collection program now administered by municipalities. Industry advocates expect that performance will improve and cost per ton will decline, due to the greater efficiencies usually achieved by full EPR programs.⁹⁷

“Some of the funds paid by producers are earmarked for market development to improve the province's capacity to handle difficult to recycle materials.”

British Columbia

The province of British Columbia has mandated a 100% industry-funded EPR packaging system that will likely be operated by producers, in some cases in cooperation with municipalities. Obligated producers are required to submit implementation plans by November 2012 and the system will go into operation in 2014. A key question will be whether the provincial government provides direction on the role of municipalities under the program. B.C. municipalities may want to continue to collect materials as a contracted provider to a producers' organization, or may opt to stop providing collection services. Quebec is in the process of transitioning its original shared 50/50 financial responsibility packaging program to a 100% industry-funded, but will remain a municipally operated system. Advocates of EPR packaging programs in the U.S. will watch the development and evolution of these systems with great interest to see if they resolve operational concerns raised in Ontario.

VII. Impact on Design for Recycling

A corollary goal of EPR systems is to influence producers to make more environmentally responsible packaging design choices. EPR laws have had some initial impact moving companies to change product design to make materials more recyclable. As noted above, Germany reported significant reductions in plastic and composite packaging in favor of paper and steel. France's PRO, Eco-Emballage, promotes eco-packaging design by offering customized services to companies trying to improve recyclability of their products. It also charges an additional "disruptor" fee on materials that are difficult to recycle. PRO EUROPE's report, *Effective Packaging – Effective Prevention*, discusses several examples of product packaging that were altered in response to the packaging directive.⁹⁸



Walmart seeks to standardize thermoform packaging

A more recent promising example of producers pushing for design changes is an effort by several Canadian grocery chains, led by U.S.-based Walmart, to require suppliers to shift to PET plastic for clamshell thermoformed packaging to help simplify the packaging stream and thereby simplify recycling. "The idea is to move away from materials that are not easily recycled and into materials that are more easily recycled," according to Guy McGuffin, Vice President for Sustainable Packaging, Walmart Canada. *Plastics News* reports that Ontario's EPR regulations helped to prod this action. "There are a lot more market drivers in Canada than in the U.S. that are very visible and pushing this forward," said Mike Schedler, Technical Director, National Association of PET Container Resources (NAPCOR). "The amount of dollars they would have to pay for their unrecycled materials would not be insignificant."⁹⁹

The European Retail Forum on Sustainability which includes Asda (owned by Walmart), has adopted positions recommending that packaging be designed, produced, and commercialized in such a way as to permit its re-use and recovery, including recycling. It emphasizes that retailers can promote the market for secondary raw materials by increasing demand for recycled content packaging material and using re-fill systems in stores.

VIII. Incineration

In the hierarchy of end-of-life (EOL) management for solid waste, landfill and incineration or thermal treatment with energy recovery are traditionally on the lower end of the hierarchy. Still, some European EPR programs rely far more substantially than U.S. programs on incineration, largely due to strict landfill bans, lack of space, and high disposal fees. As You Sow believes incineration has not been proven to be safe for public health or the environment and is usually extremely costly to taxpayers. Various studies have raised significant concerns about lifecycle impacts and the large amounts of waste needed to sustain facilities over decades to maintain profitability.¹⁰⁰

¹⁰¹ Lifecycle analysis performed on several new technologies for waste conversion demonstrated that dangerous heavy metals like cadmium, mercury, lead, and dioxins continue to be emitted.¹⁰² Use of incineration should be avoided, utilized only in conjunction with energy recovery as a last resort for a decreasing residue of materials that cannot be recycled or otherwise reprocessed.

IX. Conclusions

EPR Works

As demonstrated by the initial success of systems discussed in this paper, EPR for packaging programs have increased packaging recycling rates, spread collection and recycling costs among producers in a generally equitable fashion, provided incentives for producers to make lighter and more efficiently designed packaging, and reduced the amount of waste going to landfills. Systems in Germany, Belgium, and Canada provide models, lessons, and choices for the U.S. in its public policy debate on EPR for packaging.

Packaging represents the next great opportunity for producer responsibility because raw materials, such as petroleum and fiber used to make much consumer packaging, will become increasingly scarce and extraction of these resources has a high environmental impact. Given its high consumption rates, the U.S. should take action now to improve its waste collection infrastructure to capture a far greater amount of post-consumer materials and develop closed loop systems that will efficiently recycle these increasingly valuable materials.

Enthusiastic praise for these systems has come from a major European packaging trade group whose members include prominent U.S. consumer goods companies Procter & Gamble and Kraft Foods. EPR for packaging laws in Europe have diminished public antagonism to packaging waste, been responsible for a “remarkable” reduction in waste sent to disposal, and local authorities are seeing “lower costs for the public purse,” according to Julian Carroll, Managing Director of Europen.¹⁰³

The systems discussed have not made significant progress on source reduction and are not without operational challenges, but even with the problems noted, the programs have made significant progress in elevating recycling rates and provide a generally solid platform for determining industry responsibility for post-consumer packaging. Such challenges should not be used as an excuse by companies for continued inaction.

“EPR for packaging laws in Europe have diminished public antagonism to packaging waste, been responsible for a ‘remarkable’ reduction in waste sent to disposal, and local authorities are seeing ‘lower costs for the public purse.’”

– Julian Carroll,
Managing Director,
Europen

Focus on Desired Outcome

The question of which system is “best” is not necessarily the right question, as each country’s system is the result of often unique political, cultural, and economic forces that will be different in the U.S. A better question is to ask is, “what is the desired outcome?” If a system that is 100% producer paid is sought, there are many European models to review. If a system of shared responsibility is preferred, then Ontario or the United Kingdom’s shared funding models can be considered. Is there a preference for collecting and actually recycling a broad range of materials? If so, observers can look to Germany, the UK, and Ontario, which focus on recycling a broad range of materials and subsidize investments in new markets for hard to recycle materials like mixed plastics. If the preference is to focus narrowly on recycling only the most profitable materials, look to Austria, Belgium, and Switzerland, which focus more on collecting materials with current market value and burn much of the rest.

Companies Must Step Up

Paper and paperboard products and packaging comprise the largest segment of U.S. municipal solid waste. Consumer goods producers operating in the U.S. lag their global peers in taking responsibility for post-consumer packaging. Despite modest progress on container recycling, companies must acknowledge an ongoing failure of corporate leadership on recycling in the U.S., just as political leaders must acknowledge similar failures in public policy. Voluntary corporate policies can have a temporary positive impact, but have not resulted in significant increases in recycling nationwide. Voluntary systems such as individual packaging take-back commitments by companies like Starbucks and Estee Lauder are laudable and can be substantive. But in the long run they can cause market distortions with proactive companies who invest in recycling systems incurring additional costs not borne by their competitors. A mandated system with fees based on materials put on the market by each producer creates more equity, a level playing field, and badly needed resources to upgrade U.S. recycling infrastructure.

Unfinished Business: The Case for Extended Producer Responsibility for Post-Consumer Packaging

A key element of a 21st century corporate sustainability policy must be a proactive and comprehensive approach to reducing and eliminating product and packaging waste, both in the production and post-consumer phase. Few U.S. companies have such policies in place. Companies need to stop ducking accountability and step up and factor externalities like packaging management into future operating costs including responsibility for fees associated with collecting and recycling materials.

Feel-Good Half Steps

Companies that cling to token steps like paying a third party to encourage consumers to mail back used packaging for re-use suggest that they are not really serious about dealing with packaging waste. A company may be able to create a temporary, feel-good public relations halo with modest subsidy of such efforts, but the amount of packaging that gets recycled in comparison to curbside or deposit systems is minimal. Companies generally have not disclosed what percent of total product packaging actually gets recycled through these cumbersome methods.

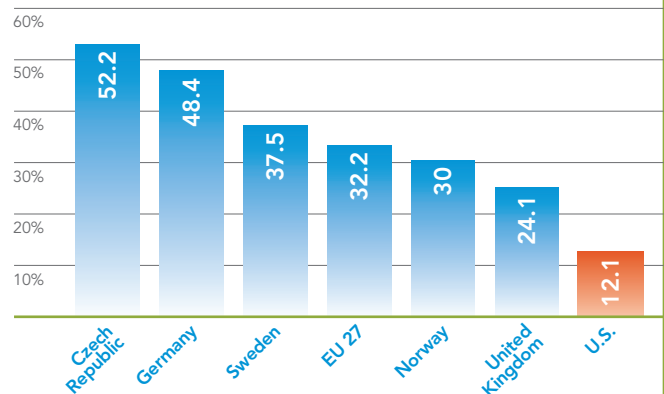
An Era of Limits

It goes against the grain of business as practiced in the U.S., but companies that will thrive in the future need to acknowledge and plan now for how to operate sustainably in the coming era of resource limits. Decisions must be made about which packaging materials perform best over their entire lifecycle. Companies need to ensure that lifecycle assessments give full consideration of a closed loop approach, with preference for packaging materials that can be easily and repeatedly recycled. Companies need to start now to invest in materials that will perform well in closed loop recycling systems and to phase out those that don't.

Plastic Proliferation

The explosive increase of plastic packaging requires special attention. Plastic production grows at about 9% annually; more plastics were produced in the first decade of the present century than in the entire preceding century.¹⁰⁴ A bewildering array of plastics have come to dominate packaging, some of which contain toxics, some of which pose threats to human health in production, and others which pose threats to wildlife and marine animals when discarded. Only 2 million tons out of 30 million tons of plastics waste generated annually are recovered for recycling in the U.S.¹⁰⁵ Society needs to start prioritizing and limiting the kinds of plastics used in packaging. It is unrealistic to expect waste processors to devise separate recycling streams for all the different kinds of plastics that can disrupt recycling and processing facilities. Single-use plastics, especially items such as take-out food containers, utensils, and packaging most likely to end up on beaches and in oceans, should be discouraged and disincentivized wherever possible. Food retailers should develop on-premise collection and recycling of post-consumer packaging and public space recycling outside and adjacent to their outlets. Franchisees should be required to adhere to the same rules as parent owned and operated locations. As Walmart has started to do in Canada, packaging users need to limit packaging types to those that are most recyclable. Then, improvements must be made to increase capability to capture and actually recycle those materials. The current plastic packaging recycling rate in the U.S. is a dreadful 12.1%. Nearly 70% of all post-consumer plastic, packaging or not, lacks any form of strategy – whether curbside collection, store drop-off, user taxes, product bans, or deposits – to incentivize reduction or provide recycling.¹⁰⁶

EU vs. U.S. Plastic Packaging Recycling Rates



Source: Eurostat, U.S. Environmental Protection Agency

X. Recommendations

- Businesses that place substantial amounts of packaging on the U.S. market should take responsibility for collecting and recycling post-consumer packaging.
- Companies should prioritize engagement with peers as well as other stakeholders to reach agreement on binding producer responsibility legislation setting high packaging recovery goals for all individual kinds of packaging (75%+) and an aggressive timeline for meeting them.
- A successful mandated packaging EPR program in the U.S. should address all packaging types and include the following elements:
 - Financed and managed by producers
 - Aggressive recovery targets with enforceable penalties set by government for failure to meet goals
 - Participation by all industries that produce waste streams with each producer contributing an equitable share to the program
 - Transparent cost allocation
 - Transparency in EPR collection and recycling data, including data from commercial service providers
 - Applies to commercial, industrial, and residential packaging
 - Industry-funded away from home collection, as well as curbside programs
 - Sophisticated educational/promotional programs to ensure consumer participation
 - Mechanisms to work synergistically with existing container deposit programs
 - A focus on materials management and market development for all recyclables
 - Provisions to reduce and phase out use of non-recyclable packaging
 - No incineration; burning recyclable materials sends the wrong message to consumers and markets on materials conservation and efficiency
- The U.S. Environmental Protection Agency and states should propose policies that require companies to move toward genuine source reduction so businesses can proactively adapt production practices to operate sustainably before coming resource shortages occur.
- Companies should put resources into designing packaging for recycling in a manner that includes full consideration of the end-of-life aspect of packaging and, where possible, promotes closed loop systems. Companies should limit packaging materials to the most readily recyclable materials to save processing fees and promote robust post-consumer materials markets.
- Companies should make commitments to use far higher levels of recycled content in product packaging, and to publicly support efforts like mandated producer responsibility laws that will drive more aggressive and effective collection efforts, ensuring a more stable, long-term supply of post-consumer materials to use as feedstock.

This brief summary of the history of efforts to date of EPR for packaging demonstrates it can provide an efficient and effective packaging recycling policy for the U.S. for the 21st century. It can capture billions of dollars of value embedded in used materials, provide thousands of new jobs, and substantially reduce greenhouse gas emissions and energy use. EPR embodies a crucial societal advance by recognizing that mining our “trash” can propel us towards sustainable production and consumption policies that will ease the stress on our planet’s limited natural resources and help enable us to feed, clothe, and shelter nine billion people by 2050.

Appendix 1

Methodology for Determining the Value of Paper and Paperboard and Packaging Materials in Landfills in 2010

Value of Materials

As You Sow has calculated the value of the packaging that was landfilled in 2010 at \$11,402,020,357. Information on the amount of packaging that was landfilled was obtained from the EPA municipal solid waste data for 2010.¹⁰⁷

The overall value of the packaging was calculated by multiplying the price for post-consumer materials by the amount of the material that was disposed of in landfills. The methodology for each is listed below by material and was reviewed by stakeholders from both NGOs and the recycling, food, and beverage industries.

Paper

The EPA calculated that 4.36 million tons of corrugated cardboard, 4.1 million tons of folding cartons, 780 thousand tons of paper bags, 405 thousand tons of gable top and aseptic cartons, and 67.5 thousand tons of other paperboard packaging were discarded to landfills in 2010. We calculated the total value for the corrugated cardboard; folding cartons; paperboard packaging, paper bags, and sacks; and gable top/aseptic cartons that was landfilled in 2010 to be \$1,294,625,417.

- **Corrugated cardboard:** RISI value on April 17, 2010 of corrugated containers (\$157/ton) and corrugated cuttings (\$150/ton).¹⁰⁸ These are prices at the seller's dock and do not include delivery to the mill. In a personal correspondence on April 18, 2012, RISI indicated that 80% of the corrugated cardboard is corrugated containers and 20% is corrugated cuttings.
- **Folding cartons:** RISI value on April 17, 2012 for boxboard cuttings (\$112/ton). This is the price at the seller's dock and does not include delivery to the mill.
- **Paper bags and sacks:** \$117.8/ton was the spot-price for kraft multiwall bag waste from recycle.net on April 17, 2012. This price is the truck-load price. It has been sorted, prepared, packaged, and ready for shipment in truck-load quantity weights of 40,000 pounds.
- **Gable top/aseptic cartons:** There is not an active market for gable top and aseptic cartons and, as such, the value is not published. The price of \$120/ton that we used is not official. A call was made to a seller of post-consumer gable top and aseptic cartons to obtain this number for our research.
- **Other paperboard packaging:** There are three grades of paper that are included in this valuation: unprinted bleached board (\$326/ton), lightly printed (\$267/ton), and heavily printed (\$163/ton). Prices are per short ton, freight on board, seller's dock from April 17, 2012. Personal correspondence with RISI on April 18, 2012 revealed that these are in the waste stream in the following ratio: unprinted, 20%; lightly printed, 50%; and heavy print, 30%.

Glass

The EPA calculated that in 2010, 3.3 million tons of beer and soft drink bottles, 1.28 million tons of wine and liquor bottles, and 1.63 million tons of other glass bottles and jars were disposed of in landfills. Strategic Materials informed us on April 18, 2012 that the glass in the waste stream is 45% clear, 15% green, and 40% amber. We calculated the total value for this cullet to be \$97,325,060.

- **Glass cullet:** On April 17, 2012 the spot-price listed on recycle.net was \$21.18/ton for clear cullet; \$5.30 for green cullet; and \$13.24 for amber.

The Value of Landfilled Packaging

Paper	\$1,294,625,417
Glass	\$97,325,060
Steel	\$285,000,000
Aluminum	\$1,446,228,571
PET	\$2,917,345,309
HDPE	\$2,854,896,000
PVC	\$136,000,000
LDPE/LLDPE	\$726,000,000
PP	\$1,273,600,000
PS	\$371,000,000
Total:	\$11,402,020,357

Aluminum

The EPA calculated that in 2010, 690 thousand tons of aluminum beer and soft drink cans; 70 thousand tons of other aluminum cans; and 460 thousand tons of foils and closures were disposed of in landfills. We calculated the value of this material to be \$1,446,228,571.

- **Aluminum beer and soft drink cans:** On March 30, 2012, the national average price of clean and dry used beverage cans was \$0.61/pound on the American Metals Market (<http://www.amm.com/>).
- **Foils and closures:** To calculate this value, we used recycle.net's spot-price for scrap aluminum foil on April 17, 2012. The price was \$0.55/pound.

Steel

The EPA calculated that in 2010, 760 thousand tons of steel cans were disposed of in landfills. We calculated the value of these cans to be \$285,000,000.

- **Steel cans:** The American Metals Market average price for clean, used, densified, steel cans was \$375/ton on May 21, 2012.

PET

PET refers to polyethylene terephthalate, a thermoplastic polymer resin commonly used in beverage and food containers. Most plastic juice, soft drink, and water bottles are made from PET. The EPA calculated that in 2010, 2.6 million pounds of PET were discarded in landfills. This indicates that 23% of the PET generated that year was recycled. We calculated the value of the PET that was landfilled in 2010 to be \$2,917,345,309.¹⁰⁹

Post-consumer PET has different values depending on the use to which the PET is put. As such, we used the product categories presented in *2010 Report on Post Consumer PET Container Recycling Activity* for post-consumer PET in 2010. The percentage of each end-use is listed in the chart below.

Post-consumer PET End-use

Fiber38%
Food & Beverage Bottles22%
Sheet & Film19%
Strapping13%
Non-Food Bottles6%
Other2%
Engineered Resin1%

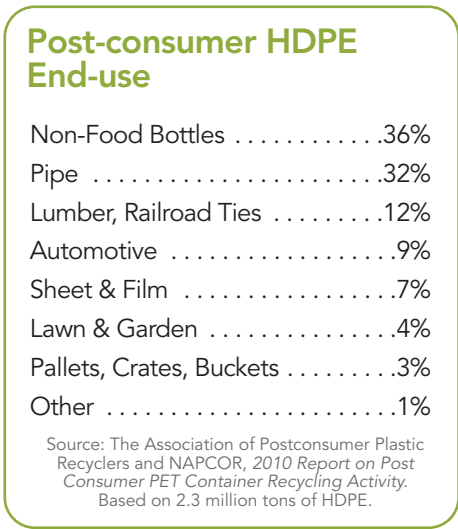
Source: The Association of Postconsumer Plastic Recyclers and NAPCOR, *2010 Report on Post Consumer PET Container Recycling Activity*.

- **Fiber:** Fiber made of post-consumer PET uses predominantly clear flake and some colored flake as a source material. The average price was \$0.50/pound in 2010. The amount of PET that was landfilled in 2010 that would have been purchased by the fiber industry is 38%, or 988 thousand tons of PET. We calculated the value of this material to be worth \$988,622,754 to the fiber industry.¹⁰⁹
- **Food and beverage bottles:** 22% of the post-consumer market for PET is the food and beverage industry. It is necessary to obtain clear pellets and also execute a solid stating process. As such, the price of PET for food and beverage bottles was \$0.68/pound in 2010 and the total value of PET that was discarded was calculated to be worth \$762,251,497 to the food and beverage industry.
- **Sheet and film:** Sheet and film accounted for 19% of the post-consumer rPET market in 2010, or 506 thousand tons of rPET. Clear flake is used to make PET sheets and films, and the average price was \$0.55/pound in 2010. The value of this material was calculated to be \$556,586,826 to the sheet and film industry.
- **Strapping:** 13% of the post-consumer PET market in 2010, or 329 thousand tons, was used for strapping. Strapping uses predominantly green flake and some pellet. The average price for this in 2010 was \$0.53. The value of this material was calculated to be \$339,313,373 to the strapping industry.
- **Non-food bottles:** Non-food or beverage bottles are not as highly processed as those that have contact with food. They require clear pellet, but the price is less due to the reduced amount of processing required. The average price in 2010 was \$0.63 and we calculated the value of the PET landfilled to be \$189,628,742 to the bottle industry.
- **Other:** Other end-users of PET in 2010 were 6% of the post-consumer market and were purchasing clear and colored flake. The average price for this in 2010 was \$0.50/pound and we calculated the total value to be \$41,516,966.
- **Engineered resin:** Only 1%, or 23 thousand tons, of the post-consumer market for PET is held by engineered resin. This market is for green pellet and in 2010 the average price was \$0.68/pound. We calculated the total value of the material for this industry to be \$29,425,150.

HDPE

HDPE refers to high-density polyethylene, a polyethylene-based thermoplastic widely used in consumer packaging for milk jugs and laundry detergent, as well as numerous other applications. The EPA calculated that in 2010, 2.97 million pounds of HDPE was discarded in landfills. The value of the HDPE that was landfilled in 2010 is \$2,854,896,000.¹⁰⁹

Post-consumer HDPE has different values depending on the use to which the HDPE is put. As such, we used the product categories presented in in *2010 Report on Post Consumer PET Container Recycling Activity* for post-consumer HDPE in 2010. The percentage of each end-use is listed in the chart below.



- **Non-food bottles:** Non-food bottles made of HDPE use a natural pellet as their source. The average price per pound is \$0.62. We calculated that the amount of HDPE that was landfilled in 2010 that could have been used for non-food bottles has a value of \$1,031,184,000.
- **Pipe:** Pipe uses regrind flake. The price per pound is \$0.50. At this price, we calculated the value of HDPE in the landfill that would be purchased to make pipe to be \$739,200,000.
- **Lumber and railroad ties:** Lumber and railroad ties were the end use of 12% of the post-consumer HDPE in 2010. Pellets are used to produce these products and the price of mixed-color pellets is \$0.58/pound. We calculated the value of the HDPE in landfills that, on a percentage basis, would be used in lumber and railroad ties to be \$321,552,000.
- **Automotive:** Automotive predominantly uses reprocessed pellet HDPE foam for seats. The price is \$0.45/pound and we calculated the value of HDPE in landfills in 2010 to be worth \$187,110,000 to the automotive industry.
- **Sheet and film:** Film and sheets use clear pellets that cost \$0.67/pound. It is 7% of the post-consumer HDPE market and we calculated its value lost in landfills in 2010 to be \$216,678,000.
- **Lawn and garden:** 4% of post-consumer HDPE was used in lawn and garden applications. They use mixed pellets and the average price is \$0.58/pound. We calculated the value to this industry of HDPE that was lost in landfills in 2010 to be \$107,184,000.
- **Pallets, crates, and buckets:** 3% of the post-consumer HDPE was used for pallets, crates, and buckets in 2010. They use mixed pellets and the average price is \$0.58/pound. We calculated the value to this industry of HDPE that was lost in landfills in 2010 to be \$80,388,000.
- **Bags and sacks:** In addition to the above, there were 660 thousand tons of HDPE bags and sacks discarded to landfills in 2010. The price for baled mixed color HDPE bags is \$0.13/pound. We calculated the value lost to this industry to be \$171,600,000.

PVC

PVC refers to polyvinyl chloride, a plastic widely used for heavier non-food packaging because of its durability and flexibility. The EPA does not provide recovery information for PVC and calculates that all of the 400 thousand tons of PVC packaging generated in 2010 were disposed in landfills. Recycle.net provides a spot-price for baled post-consumer PVC of \$340/ton. The price is for PVC that is ready for shipment in truck-load weights of 40,000 pounds. At this price, we calculated that the 400 thousand tons of PVC packaging that were landfilled have an unrecovered value of \$136,000,000.

LDPE/LLDPE

LDPE refers to low-density polyethylene, a thermoplastic widely used for six-pack container rings and as outer coating of milk and juice cartons and aseptic packaging. LLDPE refers to linear low-density polyethylene, which is commonly used to make plastics bags, sheets, and stretch wrap. The EPA calculates that 1.960 million tons of the LDPE/LLDPE film generated in 2010 and all 1.1 million tons of other LDPE/LLDPE packaging were discarded in landfills. Baled LDPE scrap has a value of \$0.33/pound. We calculated the value of the LDPE that was lost in landfills in 2010 to be \$726,000,000.

PP

PP refers to polypropylene, used in a variety of cups and container packaging. The EPA calculates that 40 thousand of the 2 million tons of PP packaging were recovered in 2010. We calculated that the 1.9 million tons that were disposed of in landfills had a value of \$1,273,600,000, with a price of \$0.32/pound on April 17, 2012.

PS

PS refers to polystyrene, a building block for expanded polystyrene foam products such as beverage cups and clamshell take-out packaging. The EPA calculates that in 2010, 530 thousand tons of PS were discarded in landfills. We calculated the value of this lost material to be \$371,000,000 at \$0.35/pound on April 17, 2012.

Alternate Calculation

Several materials in the waste stream require additional processes before they can be re-used in new packaging. As such, we also calculated the value of the materials before they were differentiated according to their use. These values of discarded materials were calculated for glass, PET, and HDPE based on the value of unsorted bales of these materials. Using these prices, the value of packaging discarded into landfills in 2010 is \$8,206,961,188.

Glass

Calrecycle.ca.gov provides an average price for post-consumer glass of \$4.64/ton on April 17, 2012. This is closer to the value of mixed scrap glass. At this price, we calculated the value of the glass disposed of to landfills in 2010 to be \$28,907,200.

PET

The spot-price of a bale of mixed-color PET was \$0.26/pound on April 17, 2012. At this price, we calculated the value of PET disposed of in landfills in 2010 to be \$1,352,000,000.

HDPE

The spot-price of a bale of mixed-color HDPE was \$0.28/pound on April 17, 2012. At this price, we calculated the value of HDPE disposed of in landfills in 2010 to be \$1,293,600,000.

The Value of Landfilled Packaging *(Alternate Calculation)*

Paper	\$1,294,625,417
Glass	\$28,907,200
Steel	\$285,000,000
Aluminum	\$1,446,228,571
PET	\$1,352,000,000
HDPE	\$1,293,600,000
PVC	\$136,000,000
LDPE/LLDPE	\$726,000,000
PP	\$1,273,600,000
PS	\$371,000,000
Total:	\$8,206,961,188

Endnotes

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