

Waste and Opportunity 2015:

Environmental Progress and Challenges in Food, Beverage, and Consumer Goods Packaging

AUTHOR

Conrad B. MacKerron
Senior Vice President
As You Sow

PROJECT EDITOR

Darby Hoover
Senior Resource Specialist
Natural Resources Defense Council



Acknowledgments

As You Sow would like to thank the following partner and sponsor organizations that provided generous technical assistance and/or financial support for this report: Lisa & Douglas Goldman Fund, Merck Family Fund, Novelis Inc., The Overbrook Foundation, The Roddenberry Foundation, and Weeden Foundation. Additional support provided by Arntz Family Fund, Firedoll Foundation, Fred Gellert Family Foundation, Libra Foundation and Singing Field Foundation. Thanks to Maggie Kaplan for funding the Presidio School Fellowship Summer Internship at As You Sow.

The author is indebted to Darby Hoover, Senior Resource Specialist, NRDC, for her insightful waste and recycling issue perspectives and skillful text editing throughout this project; also thanks to Leila Monroe, former Senior Attorney, Oceans Project, NRDC, who was key to initiating this joint effort.

A special thank you to Karen Runde, former Research Manager, As You Sow for her substantial support in issue research, managing dissemination and compilation of report results, and observational research; and to Anastasia Nicole, Presidio School Fellowship Summer Intern, for her research support. Additional assistance was provided by UC Berkeley intern Wendy Li. Thanks to Lily Kelly, Global Green Coalition for Resource Recovery, for her contribution to the section on Pret A Manger; and Andrew Montes, As You Sow Communications Manager, for communications and publication support.

Thanks to the following who reviewed drafts of the text: Danielle Fugere, As You Sow; Andrew Behar, As You Sow; Bill Sheehan, UPSTREAM; Tim Buwalda, Reclay StewardEdge; Allen Hershkowitz, NRDC; Leila Monroe, NRDC; and others who wish to remain anonymous.

The Natural Resources Defense Council would also like to thank the following individuals and groups for their support for this publication: Wendy Neu, Merck Family Fund, The Overbrook Foundation, Elbaz Family Foundation, Karen Garrison, Alice Henly, Mary Heglar, Sue Rossi, Chad Sawyer, and Jenny Powers.

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. For more information, visit www.asyousow.org.

About NRDC

The Natural Resources Defense Council (NRDC) is an international nonprofit environmental organization with more than 1.4 million members and online activists. Since 1970, our lawyers, scientists, and other environmental specialists have worked to protect the world's natural resources, public health, and the environment. NRDC has offices in New York City, Washington, D.C., Los Angeles, San Francisco, Chicago, Bozeman, MT, and Beijing. Visit us at www.nrdc.org and follow us on Twitter @NRDC.

NRDC's policy publications aim to inform and influence solutions to the world's most pressing environmental and public health issues. For additional policy content, visit our online policy portal at www.nrdc.org/policy.

NRDC Director of Communications: Lisa Benenson
NRDC Deputy Director of Communications: Lisa Goffredi
NRDC Policy Publications Director: Alex Kennaugh
Design and Production: www.suerossi.com
Infographic Design: Chad Sawyer

TABLE OF CONTENTS

Executive Summary 4

Introduction 10

Chapter 1—Quick Service Restaurant Sector 14

- A. Materials Use 14
- B. Recyclability/Compostability 17
- C. Recycled Content 22
- D. Materials Recycling/Composting 23
- E. Evaluation of Corporate Performance 28

Chapter 2—Beverage Sector 29

- A. Materials Use 29
- B. Recycled Content 30
- C. Recyclability/Compostability 32
- D. Materials Recycling 33
- E. Evaluation of Corporate Performance 37

Chapter 3—Consumer Packaged Goods/Grocery Sector 39

- A. Materials Use 39
- B. Recycled Content 42
- C. Recyclability/Compostability 43
- D. Materials Recycling 46

Chapter 4—Key Findings, Analyses, and Recommendations 50

Appendix 1 54

- Additional comments provided by companies in survey responses 54

Appendix 2 56

- Summary of QSR Observational Data 56

EXECUTIVE SUMMARY

The environmental implications of consumer packaging are an increasingly important component of corporate sustainability programs. Because of finite and dwindling raw material sources, and because wasting materials with significant economic value is an inefficient use of those limited resources, brands that place packaging into commerce need to take more responsibility for its life cycle impact. This study examined the current packaging practices of three sectors: quick service restaurants (QSRs, or “fast food”), beverages, and consumer goods/grocery. We found that most companies have not sufficiently prioritized packaging source reduction, recyclability, compostability, recycled content, and recycling policies. Increased attention to these key attributes of packaging sustainability would result in more efficient utilization of postconsumer packaging, higher U.S. recycling rates, reduced ocean plastic pollution, new green recycling jobs, and development of a circular materials economy ensuring a stable supply of postconsumer materials for new feedstock.

With an overall recycling rate of 34.5 percent and an estimated packaging recycling rate of 51 percent, the United States lags behind many other developed countries. Less than 14 percent of plastic packaging—the fastest-growing form of packaging—is recycled. Recyclable postconsumer packaging with an estimated market value of \$11.4 billion is wasted annually. Recyclers have been unable to substantially increase recycling of materials in high demand, such as PET plastic, primarily due to lack of funding to expand curbside programs and modernize recovery facilities in many communities, weak materials markets, and lack of a strong recycling policy framework in many states and municipalities.

As You Sow and the Natural Resources Defense Council distributed a survey to learn more about packaging environmental attributes and end-of-life policies at 47 quick service restaurants and beverage, consumer packaged goods, and grocery companies. Our survey and related research were designed to recognize initiatives taken by companies to use environmentally preferable materials in manufacturing packaging, to use high levels of recycled content, to design materials to be recycled or composted, and to encourage proactive policies and practices that would significantly increase recycling or composting of postconsumer packaging.

FINDINGS: QSR SECTOR

Materials Use: Our research indicated that the three most commonly used consumer packaging materials—paper (including coated paper), polypropylene (PP), and polyethylene terephthalate (PET)—are readily recyclable. Rigid polystyrene and expanded foam polystyrene are also widely used in QSR packaging; these materials present a greater health risk to workers in the manufacturing process.

Source Reduction: In 2008 Starbucks demonstrated the most advanced actions in this area by committing to serve 25 percent of all beverages in its stores in reusable mugs or tumblers by 2015, but it subsequently reduced the goal to just 5 percent due to execution and tracking problems. Panera provides reusable diningware for dine-in customers, and KFC serves side dishes in reusable containers. QSRs can achieve significant savings in materials use by adopting stronger distribution-control measures for condiments, napkins, cutlery, and related takeout materials in their restaurants.

Recycled Content: Several QSRs have made good strides in using significant levels of recycled content for packaging materials (mostly paper based). McDonald's uses 33 percent postconsumer recycled content in paperboard sandwich boxes and Starbucks uses 10% in coffee cups. But we found little evidence of recycled-content plastic in QSR materials; we recommend that brands expand efforts to specify recycled content in plastics, as some have done for paper.

Recyclability/Compostability: Most packaging used by QSRs is mechanically recyclable, but there are significant challenges to increasing recycling rates due to concerns about food-soiled and plastic-coated materials, the need to develop or expand markets for materials, and lack of corporate prioritization of package recycling. However, there is increased interest among QSR brands and in the paper industry in finding ways to make these materials more recyclable. QSRs should work with paper recyclers to incorporate more postconsumer packaging into mixed-paper bales for recycling. Similar opportunities exist for leveraging widespread use of PP and PET packaging to increase recycling rates of these materials.

The Food Service Packaging Institute has undertaken preliminary studies indicating that more food service packaging can be accommodated by recyclers than previously thought. Paper mills concerned about plummeting rates of newsprint available for recovery, and other paper manufacturers (especially those using lower-grade fibers), may be able to use food service packaging to replace some of the lost recycled fiber volume. While food-soiled paper can

be composted in commercial composting facilities, plastic coatings may be a concern, and commercial composting infrastructure that can handle these items is not yet in place in many locations.

Most QSRs use black plastic for some portion of their food packaging, but material recovery facilities generally cannot process black plastic for recycling due to limitations of optical sorting equipment. Brands need to change the color of these plastics so they will be recycled, or demand a technological fix from the recycling industry.

Materials Recycling: With the exception of Starbucks, no large QSR brand has committed to front-of-house recycling for its packaging system-wide. The small chain Pret A Manger, with 60 sites in the United States, is the only QSR that offers recycling and composting at all of its U.S. locations. Brands need to step up and commit to on-site front-of-house recycling. Back-of-house recycling of readily recyclable materials like corrugated boxes should be standard procedure at all QSRs immediately as it is relatively easy to implement.

Since the majority of QSR food is taken off-premises, brands also need to work with municipalities so patrons have curbside access to recycling and strategically located recycling bins in public areas.

If brands work together to consolidate volumes of paper and plastic packaging collected on-site, they may be able to aggregate sufficient amounts to attract recycling in areas where it may not currently be economically feasible on an individual brand or location basis.

While some QSRs have made individual corporate commitments to increasing recycling, most QSRs have not actively joined in the national debate on ways to dramatically boost lagging recycling rates, which may include taking partial or substantial responsibility for collection and recycling of postconsumer packaging.

QSR Sector Leaders: As is further explained in the main body of the report, our criteria for rating companies indicate that the overall leader for packaging sustainability in the QSR sector is Starbucks, followed by McDonald's.

FINDINGS: BEVERAGE SECTOR

Materials Use: Growing use of flexible packaging for children's drinks is of concern as it cannot currently be recycled. Kraft Foods should follow the lead of competitor Honest Tea/Honest Kids and shift its Capri Sun packaging from pouches to a more recyclable form of packaging.

Source Reduction: Numerous companies have made good progress on "lightweighting"—reducing the weight of materials used in their packaging. Now they need to turn their attention to more challenging aspects of packaging sustainability such as boosting rates of materials recycling.

Recycled Content: In 2013, aluminum can maker Novelis introduced an aluminum can body sheet containing 90 percent recycled content. Brands should take advantage of this product; it is a simple action that can boost their sustainability profiles. PepsiCo remains the only major beverage company maintaining a consistent amount of recycled PET content in its containers since 2005. Nestlé Waters NA has made significant strides in use of recycled content.

Recyclability/Compostability: The biggest challenge to increasing recyclability of beverage packaging is the growing use of laminated pouches and other flexible plastic packaging for children's beverages that cannot be readily recycled, such as Kraft's Capri Sun brand. Single-stream recycling and use of materials like shrink wrap on bottles contribute to a high level of product yield loss, which exceeds 30 percent for highly sought postconsumer PET, from curbside programs.

Materials Recycling: Major beverage companies like Coca-Cola, Nestlé Waters NA, and PepsiCo are taking positive individual actions to boost bottle and can recycling. Still, most brands support neither a container deposit nor an EPR (extended producer responsibility) scheme to boost recycling—two proven ways to increase container recycling. The industry still lacks agreement on a scalable alternative plan for achieving commitments already made by companies to increase recycling rates in the near term. Most companies seem content recommending a patchwork of individual actions, such as volume-based pricing, landfill bans, and mandatory recycling laws. While these measures can sometimes lead to increased collection, they have not been implemented widely or uniformly enough to impact national recovery rates.

Beverage Sector Leaders: As is further explained in the main body of the report, our criteria for rating companies indicate that overall leaders in this sector are New Belgium Brewing, Nestlé Waters NA, Coca-Cola, and PepsiCo.

FINDINGS: CONSUMER PACKAGED GOODS/ GROCERY SECTOR

Materials Use: Consumer packaged goods (CPG) and grocery companies have made significant commitments to reducing the use of packaging materials and increasing the use of reusable containers for transporting and stocking items at stores.

Source Reduction: Walmart reduced packaging across its global supply chain by 5 percent between 2006 and 2013. Unilever says it will reduce the weight of its packaging by one-third by 2020.

Recycled Content: Walmart made an ambitious commitment to increase use of recycled plastic content in packaging and products by 3 billion pounds by 2020. This could have significant impact in creating new markets for post-consumer plastics, creating green jobs, and reducing greenhouse gas emissions and other pollutants.

Recyclability/Compostability: Use of flexible packaging is growing swiftly, with no apparent strategy by companies that produce it or brands that use it to make it recyclable. As a result, these materials are likely to continue to be landfilled, littered, and sometimes swept into waterways, increasing the growing problem of plastic pollution in our waterways and oceans. A Carton Council program to finance sorting facility upgrades and improve markets to make it easier to collect and recycle aseptic cartons (e.g. juice boxes) has increased the national availability of carton curbside collection, but actual recycling of these materials remains a challenge. Colgate-Palmolive and Procter & Gamble have committed to making nearly all product packaging recyclable by 2020.

Materials Recycling: CPG and grocery companies substantially lag behind their beverage peers in policy development, responsibility for postconsumer packaging, and demonstrable commitments to increase recycling of packaging.

RECOMMENDATIONS FOR QSR, BEVERAGE, AND CPG/GROCERY SECTORS

The QSR, beverage, and CPG sectors need to increase engagement on recycling of postconsumer packaging. They must become actively involved in developing consensus on new, state-level producer responsibility mandates or equivalent steps that will spread a measure of financial responsibility fairly among brands that place materials on the market, thereby significantly increasing container and packaging recycling rates.

More companies should develop sustainability agendas with fully developed packaging policies. Policies on recyclability and recycled content are rare, and policies to increase collection of materials for recycling could not be identified outside of two QSRs, Starbucks and McDonald's; three large companies in the beverage sector: Coca-Cola, PepsiCo, and Nestlé Waters NA; and consumer goods giant Unilever.

Packaging should be manufactured from recycled content and recyclable materials whenever possible and should utilize standardized, large-type labeling symbols to indicate recyclability.

A government agency or multilateral stakeholder group with buy-in from the business and environmental communities needs to develop a blueprint—and a credible cost estimate—for boosting U.S. recycling rates to 75 percent or beyond.

Companies should set high recycling goals (75 percent or more, if possible) and strong recycled content goals for each kind of packaging they produce or distribute, and an aggressive timeline for meeting those goals.

Brands need to find a way to ensure that black plastic can be recycled. There is a lack of attention paid to the impact of design decisions downstream in placing unrecyclable materials into commerce.

Companies should prioritize responsible end-of-life scenarios and reduction of materials in design decisions, including creating more reusable packaging options.

Brands using compostable plastics should help expand the composting infrastructure for their product packaging.

There is little evidence of awareness among brands that discarded packaging is creating huge problems in the world's oceans and waterways. Plastic packaging is a prime component of marine litter, which kills and injures marine life and poses a potential threat to human health. Companies need to reduce these risks through packaging redesign and do more to prevent migration of materials into waterways.

The industry needs to move from a narrow view of sustainable packaging based primarily on limited "life cycle" analyses or measures of carbon footprint to a more transparent, holistic view looking at all inputs and outputs, including recyclability.

Flexible packaging manufacturers should be researching ways to develop simpler packaging that can be recycled and still preserve many of the attributes that make it popular (including the existing environmental advantages).

By supporting producer responsibility laws or equivalent policies that drive more aggressive and effective collection efforts, companies can make commitments to use far higher levels of recycled content in product packaging, which in turn supports a circular materials economy ensuring a stable supply of postconsumer materials to use repeatedly as new feedstock.

WE'RE MAKING MORE AND MORE PACKAGING, AND IT'S HAVING A BIG IMPACT ON OUR PLANET.

As You Sow & NRDC analyzed 47 companies and found that none are doing enough to make their packaging more sustainable.

The United States only recycles half of packaging discards (and only 34.5% of all municipal waste), lagging behind other developed countries.

PLASTIC PACKAGING

is the fastest growing form of packaging, yet only 14% of it is recycled in the U.S.

FOUR PILLARS OF PACKAGING STEWARDSHIP

We surveyed and ranked fast food and beverage companies based on their adoption of these four pillars:

no.1 SOURCE REDUCTION

Switching to reusable packaging, or packaging with less material, is essential!



no.2 RECYCLED CONTENT

Using recycled content to make new products helps create a market for recycled materials and requires far fewer resources (energy, water, raw materials, etc).



no.3 RECYCLABILITY AND MATERIALS USE

Materials that are very difficult to recycle, like flexible laminate pouches (e.g. juice pouches), should be avoided in favor of readily recyclable packaging.



no.4 BOOSTING MATERIALS RECYCLING

Other materials are recycled but only AT LOW RATES because of lack of bins, infrastructure, end markets or public education. Companies have failed to do enough to ensure employees and customers have access to recycling.



- Up to 50% of the U.S. population may lack convenient access to curbside recycling for commonly recycled materials like bottles, cans, and newspapers.

- Companies are required to pay for collection of materials in Europe, Canada, and other markets, but fight accepting that responsibility in the U.S.

- Many companies also fight container deposit legislation – the most successful demonstrated method to increase recycling rates, yet only operating in 10 states.

SURVEY RESULTS: MANY LAGGARDS AND A FEW BRIGHT SPOTS
 Companies need to do more to meet the **Four Pillars of Packaging Stewardship!**

FAST FOOD RESTAURANTS



Offer food and drinks in “dine-in” reusable serviceware
 Good start, Panera and Starbucks!



Ramp up use of recycled content
 Good start, Starbucks and McDonald's.



Don't use problem packaging like polystyrene foam that is easily littered and difficult to recycle
 Stop using foam cups, Chick-fil-A!

Thanks for dropping foam, McDonald's and Dunkin' Brands.



Make sure that packaging is actually recycled

All fast food restaurants should have recycling bins and clear signage for both employees and guests. Compost bins too!

Good work, Pret A Manger – the only fast food restaurant offering recycling at all its locations! The rest of the fast food industry is lagging.



All fast food brands: if you use black plastic, work with local recyclers to be sure they have the technology to recycle it.

BEVERAGE CONTAINERS & CONSUMER PACKAGED GOODS



Develop more reusable and bulk options



Set goals to increase recycled content in packaging

Good start, PepsiCo, Walmart & Nestlé Waters.

You're lagging, Coca-Cola, Dr Pepper Snapple, Anheuser Busch, and Miller Coors.



Design packaging that is easy and safe to recycle: do NOT design packaging that can't be recycled

Good start, Colgate-Palmolive, Clorox, and Procter & Gamble.



Listen up, Kraft/Capri Sun – juice pouches can't be readily recycled!!



Set bottle and can recycling goals

Good work, Coca-Cola, PepsiCo, and Nestlé Waters!

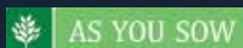


You're lagging, Anheuser Busch, Dr Pepper Snapple, and Miller Coors.



Support programs (like producer responsibility) proven to increase recycling rates in other countries

Good leadership, Nestlé Waters and New Belgium Brewing.



Learn more at
www.nrdc.org/business/consumer-goods-packaging.asp
www.asyousow.org/recycling

INTRODUCTION

This survey and study, jointly produced by As You Sow (AYS) and the Natural Resources Defense Council (NRDC), were designed to identify current corporate practices with regard to packaging sustainability in the quick service restaurant (QSR), beverage, and consumer goods/grocery sectors. Our strongest focus is on the QSR sector because of the substantial waste associated with a business model in which food is most often taken off-premises in single-use containers. Since beverage containers have already been the focus of three previous As You Sow reports, they are less prominently featured in this report. We also include some preliminary observations on packaging in the huge consumer goods and grocery sectors.

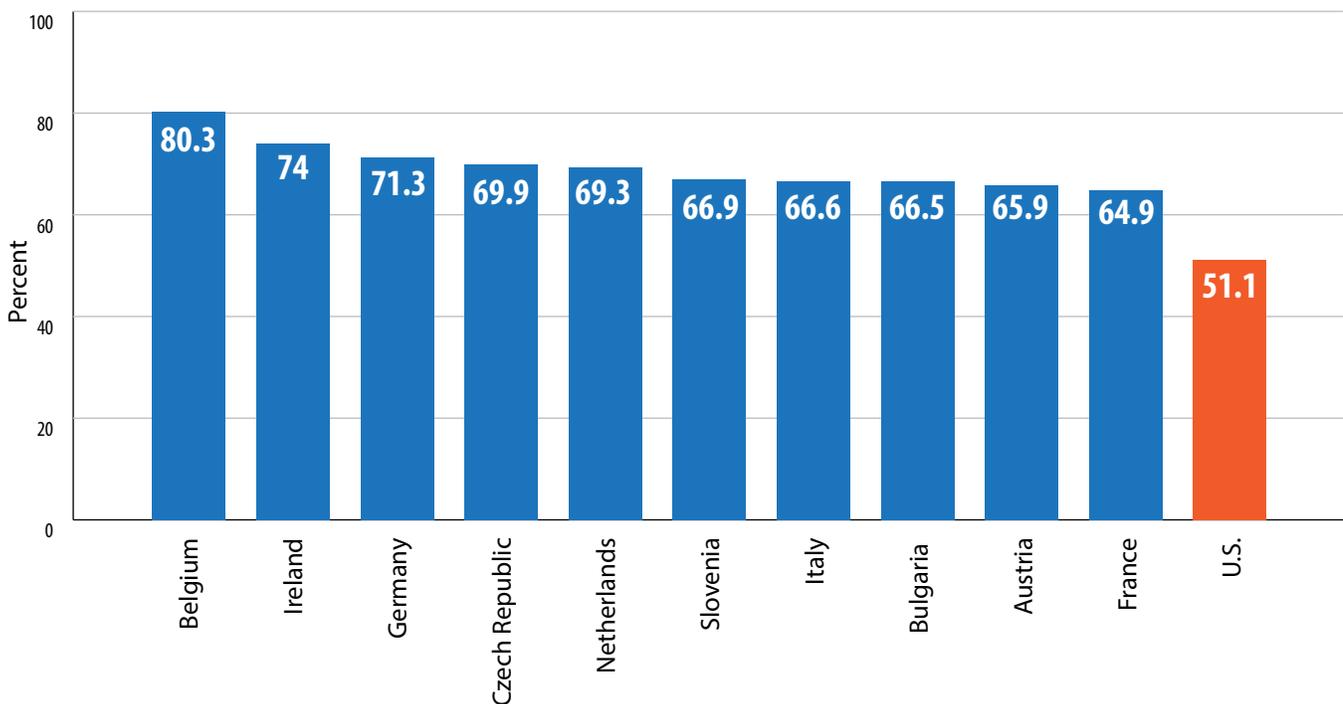
Packaging materials and practices used by leading companies in each of these three sectors were analyzed to assess environmentally preferable characteristics including source reduction, reusability, recycled content, recyclability, and compostability. In addition, companies in these sectors were evaluated on actions taken to increase recycling of their packages, willingness to support producer responsibility, or other measures with the potential to boost national recycling rates. This report offers fresh examples of companies that are leading the way with commitments to actions that can reduce materials use, boost recycled content, and significantly

increase recycling or composting of postconsumer packaging. It also identifies companies that have significant room for improvement.

We realize that a variety of factors, including but not limited to those cited above, must be managed to advance toward the goal of more sustainable packaging. While we include information about and discuss these factors in this report, we suggest that precedence be given to increasing the recycling of postconsumer materials. Recycling produces so many benefits to society that it should be a priority for corporate sustainability programs. Recycling reduces the amount of waste that is sent to landfills and incinerators; conserves natural resources such as timber, water, and minerals; and prevents pollution by reducing the need to extract new raw materials. Recycling has been shown to

We suggest that precedence be given to increasing the recycling of postconsumer materials. Recycling produces so many benefits to society that it should be a priority for corporate sustainability programs.

Fig. 1: U.S. versus Selected European Packaging Recycling Rates, 2012



Source: Eurostat, U.S. Environmental Protection Agency

save energy and water and reduce emissions that contribute to global climate change, compared with manufacturing processes that rely on virgin materials (see, for example, [EPA's WARM calculator](#)).

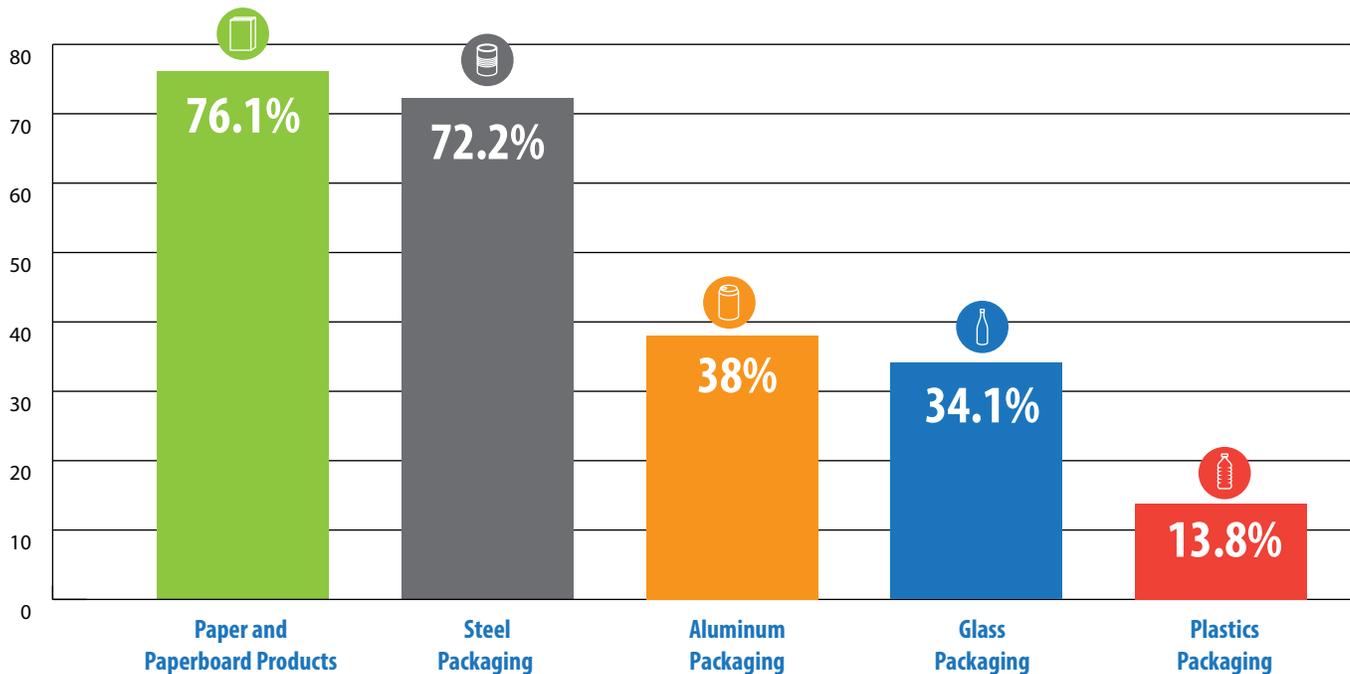
Recycling also helps create new, well-paying jobs in the recycling and manufacturing industries. The firms that process metals, paper, electronics, rubber, plastic, glass, and textiles represent 137,000 direct jobs and \$32 billion in revenue. When suppliers and indirect impact are factored in, the industry supports nearly half a million jobs and generates a total of \$90 billion annually in economic activity.¹ If we increased the U.S. national recycling rate to 75 percent by 2030, we would generate nearly 1.5 million new jobs and reduce annual CO₂ emissions by 276 million metric tons.²

Containers and packaging make up 30 percent of U.S. municipal solid waste.³ An estimated 51 percent of these materials are recovered for recycling.⁴ The overall U.S. recycling rate is only 34.5 percent,⁵ and the U.S. packaging recycling rate of 51 percent significantly lags behind those of other developed countries. Belgium currently has an 80 percent packaging recycling rate, while the Netherlands and Germany recycle about 70 percent of packaging and Ireland recycles 74 percent (see Figure 1).⁶ The U.S. Environmental Protection Agency (EPA) estimates that just 13.8 percent of all plastic packaging, the fastest-growing form of packaging, is recycled in the U.S. In reality, even less plastic packaging

is collected than is estimated by the EPA, as the agency does not track the fast-growing category of multi-laminate plastic packaging (e.g., pouches and sachets), which is replacing more recyclable forms of packaging.⁷ One-quarter to one half of the U.S. population still lacks access to curbside recycling.⁸ Recycling packaging can avoid millions of tons of carbon dioxide emissions and reduce the amount of virgin materials, energy, water, and other resources required for new materials production (see, for example, [EPA's WARM calculator](#)). More than 40 billion cans made from aluminum, one of the most valuable beverage container materials, are still dumped annually into landfills in the U.S., according to aluminum maker Alcoa, and this wasted material could provide enough aluminum to build 25,000 jetliners.⁹ Indeed, packaging tossed into landfills has significant market value. The estimated value of discarded packaging in the U.S. is \$11.4 billion annually.¹⁰

Poor packaging recycling rates have emerged as an important public policy issue in the past five years. (See Figure 2.) While states and municipalities have authority over local solid waste management, many face financial difficulties in funding or expanding recycling programs to include new kinds of packaging due to budget cuts that grew during the recent recession.¹¹ In their responses to our survey for this report, major brands such as Coca-Cola and Nestlé Waters NA reported facing difficulty in securing

Fig. 2: U.S. Packaging Recovery Rates for Selected Materials



Note that while paper and paperboard packaging rates are high, this is primarily due to high recycling rates for corrugated cardboard; only 25 percent of all other types of paper packaging is recycled.

Source: US Environmental Protection Agency, Municipal Solid Waste Generation, Recycling, and Disposal in the United States: Facts and Figures for 2012

sufficient amounts of recycled PET to maintain high levels of recycled content in their beverage bottles. Increasing our ability to recycle packaging successfully will lead us closer to developing a circular economy in which raw materials are captured and processed to re-enter commerce many times over, thus increasing resource efficiency and reducing greenhouse gas emissions and our reliance on nonrenewable natural resources.

Improving the recycling and recyclability of consumer packaging can help boost lagging U.S. packaging recycling rates. Mediocre and in some cases declining packaging recycling rates should be a warning signal to society of system dysfunction. Landfilling recyclables results in wasted resources and lost revenue and represents market failure in the inefficient use of valuable raw materials.

This report focuses on three business sectors that put enormous amounts of consumer packaging into the market: quick service restaurants, beverage companies, and consumer goods/grocery companies. For each of these sectors, we looked primarily at consumer packaging and front-of-house or curbside (consumer) recycling, rather than on transport packaging or other back-of-house (employee) packaging and recycling.

The U.S. EPA estimates that just 13.8 percent of all plastic packaging, the fastest-growing form of packaging, is recycled in the U.S.

QSRs: We chose to emphasize QSRs because of the visibility of their waste in everyday commerce, and to respond to a growing concern about the contribution of plastic packaging to plastic pollution in the oceans and other aquatic environments. Plastic litter from takeout orders—including cups, plates, and straws—not only contribute to urban blight but are often swept into waterways and oceans, where they partially degrade and harm marine life. A Clean Water Action study of street litter in four Bay Area cities found that the biggest source of street litter (49 percent) was fast food.¹² Specific statistics on how much food service packaging generated by QSRs is recycled are not available. The EPA's annual municipal solid waste report, the most widely recognized source of data on materials recycling, does not break out QSR packaging use, but in two categories of materials cited in the EPA report and widely used in the QSR industry—paper and plastic plates and cups—recycling appears to be too low to measure. Of the 1 million tons of plastic cups and plates generated annually, the EPA says recovery is “negligible.”¹³

Likewise, the EPA is unable to determine if any significant amounts of the 1.3 million tons of paper plates and cups generated as waste annually are recycled. As this report indicates, very few QSRs are themselves recycling postconsumer materials.

Beverage companies: While consumer focus on waste from QSRs is more recent, beverage companies have been pressured by anti-litter and activist groups for decades to do more to recover their bottles and cans. The first state container deposit law, requiring refundable deposits on beverage containers to increase recycling of those containers, was adopted in Oregon in 1971; 10 states have such laws today.¹⁴ While sales of all disposable beverage containers grew dramatically—by 22 percent—in the decade from 2000 to 2010, the recycling rate for those materials declined in that decade from 41 percent to 37 percent, according to the Container Recycling Institute.¹⁵ As a result of activist pressure, large beverage companies have focused on responsibility for recycling to a greater extent than most companies in the other business sectors studied. However, they appear to be far from achieving a 50 percent container recycling rate today than they were a decade ago. As You Sow conducted three previous surveys of packaging sustainability in the beverage sector, in 2006, 2008, and 2011.^{16,17,18} The reports assess performance on packaging source reduction, recyclability, recycled content, and actions to increase recycling. In general the reports showed that while three major brands—Coca-Cola, PepsiCo, and Nestlé Waters NA—have made specific commitments to increase recycling of bottles and cans and to increase recycled content, the rest of the industry has not demonstrated sufficient leadership.

Consumer goods/grocery: While littered beverage containers are a very visible form of waste, the beverage industry contributes only about 18 percent of total packaging generated in the global waste stream. Far greater amounts of packaging are produced by other industry sectors, such as food, which contributes 51 percent of the total.¹⁹ Consumer goods companies like Procter & Gamble and Unilever as well as grocers like Kroger, Safeway, and Walmart generate huge amounts of packaging that have rarely been studied with regard to environmentally preferred characteristics such as recyclability. As You Sow has begun to engage more than 70 companies on the environmental attributes and impacts of product packaging, but a thorough analysis of the consumer goods and grocery sectors—some producers have thousands of packaged products—is beyond the scope of this study. This report represents a first look at the issue for this important sector, based on company survey responses and recent research from publicly available data.

Methodology: This report is based on a survey circulated to quick service, beverage, grocery, and consumer goods companies. The survey asked for information about policies and practices related to packaging materials use, source reduction, recyclability/compostability, recycled content, and recycling. Information about QSRs that did not respond to the survey was gathered through observational research by NRDC and As You Sow in on-site visits to 64 QSR restaurant locations as well as through public data searches. Information about beverage, grocery, and consumer goods companies that did not respond to the survey was gathered from public data searches.

Company assessments were based on a number of factors, including activities pertaining to the primary categories surveyed: Materials Use, Recycled Content, Recyclability/Compostability, and Materials Recycling.

Due to the lack of comparability in several key areas because of the variability of data received, especially publicly available data, we did not assign numerical rankings. Instead we grouped companies into four broad categories: Best Practices, Better Practices, Needs Improvement, and Poor. See the “Evaluation of Corporate Performance” sections at the ends of chapters 1 and 2 for additional information on how specific companies were ranked.

Increasing our ability to recycle packaging successfully will lead us closer to developing a circular economy in which raw materials are captured and processed to re-enter commerce many times over, thus increasing resource efficiency and reducing greenhouse gas emissions and our reliance on nonrenewable natural resources.

CHAPTER 1: QUICK SERVICE RESTAURANT SECTOR

We sent surveys to the top 10 QSR brands by revenue and to several other prominent brands. These brands were Arby's, Burger King, Chick-fil-A, Chipotle Mexican Grill Inc., Dairy Queen, Domino's Pizza, Dunkin' Brands (Dunkin' Donuts, Baskin Robbins), Jack in the Box, McDonald's Corp., Panera Bread, Papa John's Pizza, Quiznos, Starbucks Coffee Co., Subway, Wendy's, and Yum! Brands Inc. (Taco Bell, KFC, Pizza Hut). Of these companies, Dunkin' Brands, McDonald's, and Starbucks responded to the survey.

In addition, we collected on-site observational data of packaging use, dispensing of condiments, and recycling or composting of packaging for Burger King, Chick-fil-A, Chipotle, Dunkin' Brands, Jack in the Box, KFC, McDonald's, Panera, Pizza Hut, Starbucks, Subway, Taco Bell, and Wendy's at a total of 64 locations in the San Francisco Bay Area; Santa Monica, California; Chicago; Washington, D.C.; and New York City. For this category, note that "packaging" refers to all types of food and beverage serviceware distributed by QSRs, including plates, bowls, cups, utensils, bags, boxes, and other containers or wrappers.

MATERIALS USE

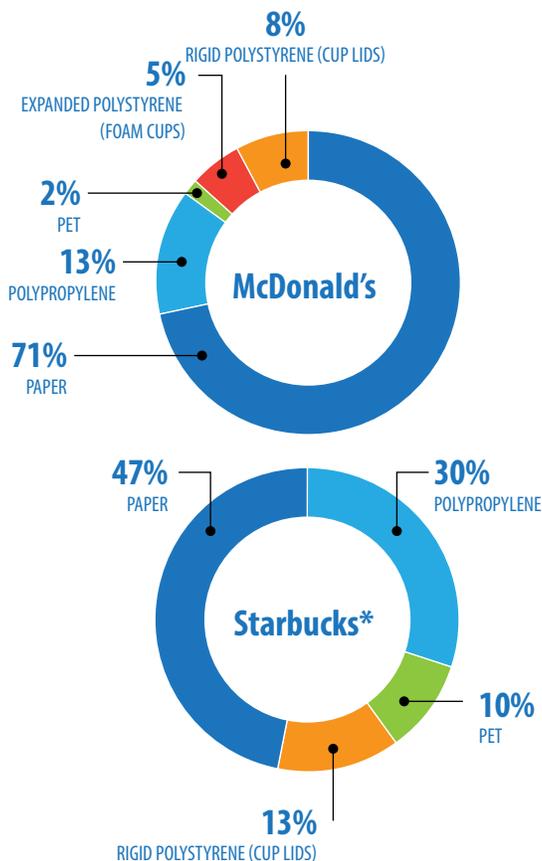
Survey responses and observational research indicate that paper, polypropylene (PP, resin code #5), polyethylene terephthalate (PET, #1), rigid polystyrene (PS, #6), and expanded foam polystyrene (EPS, #6) are the most commonly used packaging materials at QSRs. McDonald's and Starbucks provided percentage breakdowns of packaging materials by weight (see Figure 3). McDonald's uses 71 percent paper for its packaging, followed by 13 percent PP (commonly used for cold smoothie-type drink cups), 8 percent rigid polystyrene, 5 percent expanded polystyrene foam (currently used for hot beverage cups but being phased out), and less than 2 percent PET. Starbucks reports using 47 percent paper, 30 percent PP, 13 percent rigid PS, and 10 percent PET. In its 2012 Corporate Social Responsibility report, Dunkin' Brands reported its packaging composition as 33 percent plastic resins, 24 percent miscellaneous paper, 19 percent paperboard, 14 percent foam cups, and 10 percent recycled paper.²⁰

The substantial presence of paper and PET in QSR packaging bodes well for the prospects of increased recycling, as both materials have recycling infrastructure in place and collection opportunities are poised to grow. There are potential concerns with recycling both food-contaminated paper and plastic-coated paper, which will be discussed later. PP recycling is not as well established, but with increasing use of this material, its recycling is also likely to increase. However, the use of PS presents numerous environmental concerns, discussed in further detail below as we examine the environmental implications of the major kinds of QSR packaging.

Paper: Paper is one of the mostly widely recyclable and recycled materials in the United States. While many sectors of paper manufacturing are declining due to the transition from hard copies of documents, newspapers, and magazines to online viewing and storage, the packaging sector is growing.²¹ Paper food service packaging represents a potential untapped source of postconsumer fiber, although there are technical challenges to be solved to fully access the fiber. Overall, paper has an EPA-estimated recycling rate of 64 percent.²² However, this statistic may be misleading, as it incorporates very high levels of recycling of corrugated boxes and newspapers, both of which are generated in large quantities compared with other types of paper in the waste stream, like paper food serviceware and packaging.

Recycling for the entire nondurable goods category of paper products, including office paper, junk mail, books, magazines, paper plates, and paper cups, is estimated in a separate material stream by the EPA at 43 percent.²³ Most paper food service packaging has traditionally not been recycled, partly due to concerns that material soiled with food residue could impede the recycling process. Also,

Fig. 3: Packaging Material Use by Two Large QSR Brands (by Weight)



Source: survey responses

* Starbucks data is for beverage containers and lids only

most paper food service packaging has a thin coating of polyethylene or other resin to provide a moisture seal. This has also been a traditional barrier to recycling. However, current paper recycling processes may be able to handle more food residue than in the past, and some paper mills can now process PE-lined cups.

Paper bags are rarely food-soiled and should be readily recyclable. The recyclability section of this chapter deals with these developments in detail.

Polypropylene (PP): PP is widely used for cold beverage cups and food containers. Our observational research indicates that PP is used in food bowls at Starbucks, KFC, and Taco Bell and in cold beverage cups at McDonald's, KFC, Dunkin' Donuts and Subway. In 2008, Starbucks switched its plastic cold beverage cups from PET to PP, primarily because it concluded that the production of PP cups produces 45 percent fewer greenhouse gas emissions than the production of PET cups.²⁴ PP makes up nearly a third of Starbucks's total packaging by weight. The significant use of PP cups reported by McDonald's and Starbucks provides increased opportunities for recycling discussed in the materials recycling section, though current infrastructure for recycling PP is not yet as widespread as that for PET. Some 94 percent of the U.S. population currently has access to PET recycling; 72 percent has access to PP recycling.²⁵

Polyethylene terephthalate (PET): As noted above, PET already enjoys widespread acceptance in recycling programs, and it is in demand by recyclers as a high-value material. Our observational research indicates use of PET packaging at McDonald's, Wendy's, Subway, Starbucks, Burger King and Jack in the Box. There is enormous demand for recycled PET plastic in several industrial sectors such as carpeting, apparel, and beverage containers. Recycled PET (rPET) is used in the QSR sector in cold cups and thermoform containers used to package salads and entrées. Starbucks uses 50 percent rPET in cold cups distributed in Europe, the Middle East and Africa.

Polystyrene (PS): The continued use of polystyrene in any form poses considerable health concerns. The production of styrene, a component of polystyrene, carries occupational safety risks. The International Agency for Research on Cancer determined that styrene is a possible human carcinogen.²⁶ In 2009 the California Office of Environmental Health Hazard Assessment proposed that styrene be listed as a known human carcinogen. Several epidemiological studies suggest an association between occupational styrene exposure and an increased risk of leukemia and lymphoma.²⁷

Polystyrene can be in a rigid or foamed form. Our research indicates pervasive use of rigid polystyrene for hot beverage container lids by nearly all QSR brands (cold cup lids were more varied, made of PS, PP, or PET). In addition, McDonald's, KFC, and Pizza Hut use PS serving containers. Cups made of expanded polystyrene foam (EPS or PS foam,

commonly referred to by the brand name Styrofoam) are still used at several major chains. Foam has been singled out by environmental groups and governments for special concern because its ability to readily crumble into small pieces makes it more likely to be transported through storm drains to waterways and marine environments, where it represents a threat to wildlife. PS foam has been cited as among the most common types of debris found on beaches (see, for example, the Ocean Conservancy's [2014 Trash Index](#)). It breaks down into small, indigestible pellets that animals perceive as food; when ingested, it blocks the digestive system and often results in death.²⁸ More than 90 U.S. cities have banned PS foam food packaging, with several others restricting its use in public facilities.²⁹ An estimated 31 percent of the U.S. population has access to curbside recycling of PS foam, and 56 percent of the population can recycle rigid PS.³⁰ But the EPA says the recycling rate for PS packaging is just 3.8 percent,³¹ suggesting that many consumers are unaware that it is recyclable.

After engagement with As You Sow, McDonald's and Dunkin' Brands pledged publicly in 2013 to phase out the use of foam hot beverage cups. McDonald's has started to replace foam with paper cups; Dunkin' is still determining what material it will use as a replacement and will not start its transition for another one to two years. Chick-fil-A uses foam cups system-wide except where prohibited by law. Also, our observational research found foam hot beverage cups in use at Burger King restaurants in New York City and Chicago and at a KFC in New York City.

High-density polyethylene (HDPE): This resin is typically used for bulk liquid containers like gallon milk jugs. It is widely recyclable; 94 percent of the population has access to curbside recycling of HDPE. However, most recycling of HDPE is limited to rigid packaging. QSR use of this resin appears to be limited to plastic takeout bags. We observed HDPE plastic film used for takeout bags at McDonald's, Subway, KFC, and Taco Bell. HDPE bags can be recycled with other film-type bags at most grocery stores.

Recycling of plastic film (HDPE or low density polyethylene, LDPE) is not available in most U.S. curbside recycling programs, as plastic bags and film pose transportation challenges (due to being readily airborne) and processing problems (plastic bags and film often jam recycling machinery, requiring recycling workers to shut down machinery to clear the jams).

Aluminum: Very little aluminum use was reported or observed at QSRs. The most significant use observed was as a covering for meals at Chipotle. While Chipotle touts the fact that its aluminum meal lids are made of 95 percent recycled material, it appears that the company does not have a policy encouraging the recycling of aluminum. Our observational research suggested that aluminum lids left on-site are landfilled, as the brand had no observable on-site postconsumer recycling.

Glass: No significant use of glass was reported by QSRs or seen in our observational research. Although several QSRs sell beverages prepackaged in cans or bottles, the focus of our QSR research was on food and fountain drinks placed into packages (e.g., cups) on-site to fill a customer order.

Brands vary as to their ability or willingness to specify or demand particular types of packaging across licensees. While brands control the individual stores they own and operate, the QSR industry is built on a franchising model, and franchisees often have wide latitude on packaging decisions. While this structure can present a challenge for stakeholders seeking to have brand management bar or prioritize certain types of packaging, it can also mean franchisees located in areas where there is considerable public sentiment concerning the use of controversial materials can replace those materials on their own.

Source reduction: “Lightweighting,” or reducing the material used in a package by weight, is a well-established method of material use reduction. Several companies reported taking impressive actions in this regard to reduce material use. McDonald’s cited more than 10 reductions in the weight of packaging in 2012, including a 48 percent reduction in its chicken sandwich paperboard carton, a 39 percent reduction in its Angus sandwich carton, and reductions of 18 percent to 28 percent in various sizes of its PP cold cups. In 2013 the company achieved a 19 percent reduction for its PP parfait cold cup and a 14 percent reduction for the lid. When Starbucks switched from PET to PP, it reduced the weight of its Ethos water bottle by 20 percent and cold beverage cup by 15 percent. Dunkin’ Brands reduced the weight of its foam hot cup by 3 percent and cardboard doughnut box by 11 percent in 2009.

To reduce contributions to environmental problems such as ocean plastic pollution, companies need to find alternatives to plastic cutlery and straws, which are routine parts of takeout orders and are usually among the most prevalent items found in beach cleanups. Plastic straws, which can be especially harmful to ocean animals, could be switched to paper material. Plastic utensils could be switched to primarily fiber-based materials that are recyclable or compatible with commercial composting systems.

Utensils could also be provided with recyclable or compostable packaging, or no packaging at all. Our team of observers found examples of utensil packaging—such as forks, straws, and stirrers—that came pre-wrapped in sealed plastic slips at Burger King, McDonald’s, KFC, Starbucks, Subway, and Taco Bell. The flimsy nature of the plastic wrapper makes it particularly susceptible to becoming airborne and making its way into waterways. If the motivation for such packaging is sanitation, it could be replaced with paper covers.

To reduce contributions to environmental problems such as ocean plastic pollution, companies need to find alternatives to plastic cutlery and straws, which are routine parts of takeout orders and are usually among the most prevalent items found in beach cleanups.

Reusability: One key attribute of environmentally preferable food packaging material is reusability, which can contribute to reducing the overall volume of packaging materials used. This appears to be a difficult attribute to adopt in an industry structured on providing meals that are consumed mostly on the go and packaged in single-use, disposable materials. Very little progress on reuse is evident among the major brands. The only consistently reusable items observed at QSRs were plastic trays provided to dine-in customers (with the exception of “fast casual” QSRs; see “Fast Casual Restaurants,” below).

Starbucks demonstrated one of the most advanced actions in this area by committing in 2008 to serve 25 percent of the beverages sold in its stores in reusable mugs or tumblers by 2015, and by selling a variety of reusable beverage containers, such as thermal coffee mugs and plastic cups, in its stores. It is also alone among the QSRs studied in offering a 10-cent discount to patrons who bring in reusable containers for beverages. It provides ceramic mugs and glass tumblers upon request to patrons who consume drinks on-site.

However, Starbucks drastically weakened its initial goal of serving 25 percent of beverages in reusables, slashing it to just 5 percent in 2011, citing challenges in implementing and tracking “for here” serviceware use in stores.³² The company acknowledged several years ago to As You Sow that while it kept a record of customers who brought in their own reusable beverage containers, it was not counting how many customers asked for reusables and drank from company-provided glasses and mugs in its stores. With its 2011 goal reduction, it appeared to abandon the idea of keeping such a count, saying that going forward it would focus on beverages served in customers’ “personal tumblers.” At the same time, it said in its 2011 corporate social responsibility (CSR) report that it would continue to provide reusable serviceware options in all stores with seating and “find creative ways to raise awareness for this important, everyday waste-reduction opportunity. We challenge ourselves, our partners, to use reusable cups and remain committed to exploring new ways to reduce our cup waste.”

Our observational research for this survey in several Starbucks stores in the San Francisco Bay Area; Chicago; New York City; Santa Monica, California; and Washington, D.C., along with As You Sow's ongoing dialogue with the company (which began more than five years ago), suggests that despite its laudable and industry-leading goals, Starbucks management and staff currently do not aggressively promote the availability of ceramic mugs and tumblers for drinks. Starbucks associates do not routinely ask customers whether they are dining in and, if so, whether they would like service in a reusable mug or tumbler. Our observational research turned up no evidence of major signage promoting the policy where drinks are ordered. In its 2013 CSR report, the company said it served 46 million drinks, or 1.9 percent of the total, in "personal tumblers," suggesting it is still not counting beverages served on site in company-provided mugs and tumblers.³³ While it can be challenging to shift customers to reusable containers, Starbucks could advance this goal by motivating its associates to actively promote the service.

KFC has taken a positive initial step toward increasing reusability by selling its menu side dishes in a reusable polypropylene Tupperware-style container with snap-on lid that can be cleaned in home dishwashers and used to store leftover foods. But, unlike Starbucks beverage mugs, the containers cannot be brought back to KFC locations for reuse. Panera, a "fast casual" form of QSR restaurant whose business model veers closer to that of a traditional dine-in restaurant, provides reusable ceramic plates, bowls, and utensils to the 40 percent of customers dining on-site (see "Fast Casual Restaurants," following).

Other QSRs, especially McDonald's, which tries to compete with Starbucks on coffee sales³⁴, could offer a discount (e.g. 10 cents) to customers bringing in reusable beverage containers. KFC's use of reusable side containers is encouraging, but in order for the practice to reduce the amount of packaging the company purchases, KFC needs to be willing to allow customers to bring back clean containers for reuse, or clean them on site.

RECYCLABILITY/COMPOSTABILITY

The vast majority of packaging used by QSRs is at least theoretically recyclable, but there are significant challenges to actually increasing recycling rates. These are related primarily to the perception (and, to some degree, reality) that food residue is a contaminant in the recycling process, the need to expand infrastructure and markets for processing materials, and lack of corporate prioritization of recycling for packaging.

Paper: There are well-established recycling streams for most of the main materials used in QSR packaging, which consist primarily of paper and plastic (the ability to recycle plastic depends on location and resin type). Most paper-based food packaging has traditionally not been collected for recycling, partly due to concerns about food residues contaminating the paper recycling process, and because much paper-based food packaging is coated with plastic materials like polyethylene. However, QSRs and paper recyclers have begun to explore ways that paper packaging with food residues and plastic coatings can be collected using existing recycling streams. The Foodservice Packaging Institute (FPI) has undertaken studies that provide preliminary assessments suggesting that more food service packaging can be accommodated by some material recovery facilities (MRFs) than previously thought, although finding markets for these materials is also essential for MRFs to have an incentive to collect them. Starbucks has demonstrated that its polyethylene-lined cups can be compatible with existing paper recycling by working with several paper mills that can process fiber from those poly-lined cups.

Some paper packaging can also be composted, but commercial composting is not yet available in many areas. A recent assessment of composting facilities by *BioCycle* magazine and the Institute for Local Self-Reliance found 4,914 composting operations, but 71 percent of these take only yard trimmings and not food waste or food packaging.

Fast Casual Restaurants

A fast casual restaurant is a type of quick service restaurant that does not offer full table service but provides a higher quality of food and atmosphere than a typical fast-food restaurant. Fast casual dining is a relatively new and growing concept in the U.S. and is positioned between traditional fast food and restaurants with full table service dining. Patrons are encouraged to eat in and provided with reusable tableware. Panera Bread, Chipotle, and Pret A Manger are examples of fast casual restaurants. Among 40 top QSRs listed in a 2011 survey by QSR Magazine, per store, Panera was second only to McDonald's in sales, generating \$2.2 million in revenue per location.³⁵ This level of revenue generation suggests it is possible to incorporate reusables into a quick-serve-oriented dine-in experience, absorb costs for providing and cleaning reusable tableware, and still generate significant revenue.

Only 347 take food waste; another 87 take mixed organics (combinations of various organic waste streams), and 11 more take mixed waste (unsorted solid waste).³⁶ Coated paper can complicate the composting process; some facilities can process coated paper, while others require that coated paper meet ASTM D6868 specifications for compostability. Some plastic utensils can be composted but are not readily distinguishable from those that cannot be composted. As a result, to avoid contamination, some composters are separating and landfilling all utensils until there are better ways to identify the compostable ones. Even some utensils certified as compliant with ASTM D6400 standards for compostability can be problematic for composters, as ASTM D6400 specifies that the product must break down in 180 days, but composters often prefer³⁷ a shorter (e.g. 60 to 90 days) cycle.

The *BioCycle* study says 180 communities provide municipal curbside composting service; by comparison, there are 9,800 municipal curbside recycling programs in the United States.³⁸ Coated-paper packaging is being composted in San Francisco and Seattle, the two U.S. cities that require recycling and composting of all municipal discards, including QSR discards (discussed later in the Materials Recycling/Composting section).

In 2011, due to pressure from Starbucks as well as from groups like As You Sow, the Foodservice Packaging Institute, an industry trade association with many QSR members, formed a Paper Recovery Alliance and a Plastics Recovery Group to explore supporting or developing scaled solutions for recycling and processing of food service packaging. As You Sow urged the groups to focus on solutions for both on-site and takeout recycling. Since most QSR packaging is taken away from the restaurant, the FPI is focusing first on improving the recycling of takeout food packaging by researching the feasibility of getting more packaging accepted by curbside recycling programs and processed by material recovery facilities.

Only 180 U.S. communities provide curbside composting service, while 9,800 have curbside recycling.

In 2013 the FPI produced two studies relevant to this report. The first involved working with a MRF in Boston to learn whether food service packaging set out for recycling was more contaminated than food-soiled packaging that is already accepted for recycling at many MRFs.³⁹ The study sampled one ton of randomly selected curbside recyclables collected in four areas of Boston. For all recycling samples, corrugated cardboard, mixed paper, plastic tubs and lids, aluminum cans, and aluminum foils/pans were sorted and

two types of material were isolated for study: food service packaging from QSRs, and other food-contact packaging that was already accepted in recycling bins. A team then used a visual ranking system to rate and record the level of food residue on items in the selected categories. With the exception of corrugated containers, the study found no appreciable difference in contamination rates between food service and other food-contact packaging.

However, these results were limited to the practices of a single MRF, so a second study sought to determine the replicability of these conclusions in other recycling programs and locales. This benchmarking survey focused on current levels of acceptance of 19 specific types of food service packaging by MRFs in the United States and Canada. A total of 62 MRFs were included in the study, including nearly 50 of the largest MRFs in the United States and Canada as well as several more chosen for a variety of factors such as size, type, and geographic location.⁴⁰

On average, the MRFs accepted 7 out of the 19 types of packaging studied, and most accepted at least 9 of the 19 types.⁴¹ Nearly two-thirds of the MRFs accepted 10 or more of the 19 types of packaging. Cup sleeves, pizza boxes, and paper carryout bags were the most widely accepted food service packaging items, with acceptance rates exceeding 70 percent. It is important to note that cup sleeves and paper carryout bags typically are less food-contaminated than other food service items such as sandwich wrappers or containers. Rigid plastic items such as cups and takeout containers made from polystyrene (rigid, not foam), polypropylene, and PET had the second-highest acceptance ratings, at 50 percent to 70 percent. Cups, beverage carriers, containers, and egg cartons made from coated paper, molded pulp, and/or polystyrene foam had the lowest acceptance rates, at fewer than 50 percent of the MRFs included in the study.

The study demonstrated that some food service packaging can be—and is—accepted by MRFs for recycling. However, economics and the development of broad regional markets for these materials will likely be the deciding factor as to whether MRFs find it worth the extra effort needed to collect and sort these materials.

Starbucks has been working on making its paper cups more recyclable to meet its commitment to recycle all paper and plastic cups disposed in its stores by 2015. The plastic coatings on the cups still pose a challenge for recycling them. But Jim Hanna, Starbucks's director of environmental impact, said the company has "a good critical mass of paper mills throughout the U.S. that can easily process poly-coated paper."⁴² In a more recent conversation, Hanna added, "We know that towel and tissue mills, de-inked pulp mills, and some cardboard mills are able to accept single-sided coated paper cups. They have no problem pulping them and recovering the fiber."⁴³

Paper products company Georgia Pacific (GP) has worked with Starbucks to process recovered materials used by Starbucks. GP has processed cups from recycling centers into Starbucks napkins in a mill in Green Bay, Wisconsin, said John Mulcahy, GP vice president for sustainability and compliance.⁴⁴

Starbucks also worked with Global Green USA's Coalition for Resource Recovery to determine if its coated cups could be processed at mills that accept corrugated containers. Postconsumer cups from seven Starbucks locations in New York City were tested at Western Michigan University's pilot mill, and it was determined that they were re-pulpable and recyclable with no microbial problems.⁴⁵ Global Green also worked with Pret A Manger locations in New York City that set up front-of-house recycling to see if a variety of their paper service items could be accepted by mills.

Cups and other fiber from fast-food restaurants may become more valuable to recover.

But Mulcahy cautions that more cups need to be recycled for the process to be profitable. Starbucks cups represent less than 1 percent of the 500 billion paper cups produced per year. Mulcahy told the *Boston Globe* that if GP recycled all of the 3 billion paper cups Starbucks customers use in a year, it would create the equivalent of less than a week's worth of paper from a mill.⁴⁶ (A truckload of mixed paper weighs approximately 20 tons, and GP's three recovered-fiber tissue mills can each process well over 1,000 tons per day.)

Still, GP sees potential in cup recycling because less recovered paper is now in the market. Total paper consumption in North America declined 24 percent between 2006 and 2009 due to the recession.⁴⁷ "The supply of paper that is available for recycling is going down and the demand for recycling paper is going up, which means the value of recycled paper is going up," Mulcahy said.

GP is interested in finding new sources of recovered paper as feedstock for its recycled fiber mills and is investing significant resources both in its facilities and in improving its supply chain, including working with the Foodservice Packaging Institute on recovering more QSR packaging.⁴⁸ Traditionally, the company has not allowed food service packaging in the recovered paper bales it purchases, but this is changing, partly because MRFs are doing a better job getting rid of contaminants, according to Mulcahy.

The current percentage of food service packaging is relatively small in mixed-paper bales and does not appear to pose a big problem, Mulcahy continued. GP will be testing mixed-paper bales with food service packaging this year to determine if they meet quality control specifications.⁴⁹ Cups and other fiber from fast-food restaurants may become more

valuable to recover. If so, MRFs would likely move in larger numbers to collect and sort food service packaging. However, it could still be a challenge to aggregate volumes high enough to make it profitable for companies like GP to buy in bulk. Single-side polyethylene-coated cups—the classic fiber-based coffee cup—are "not a problem" for GP's mills if food contamination is low. Double-side coated cups, such as those used for fountain drinks in many QSRs, would likely end up as rejects in the near term, although GP says it is working on a technology to recover this fiber profitably. Again, though, the presence of food contamination on paper-based materials in particular may continue to pose a concern for paper recyclers.

Polyethylene terephthalate: PET is a high-value material and currently the most recycled plastic material, yet only 30 percent of PET bottles are recycled, and just 24 percent of all PET containers are recycled.⁵⁰ But since 94 percent of the U.S. population has access to PET collection, there is much more PET that could be recovered. High demand and limited supply for recycled PET (rPET) demonstrates the economic potential of increasing recycling rates if materials can be recovered without significant contamination.

Use of recycled PET in primary end markets increased dramatically in 2012 over 2011, up by 26 percent. It rose another 15 percent in 2013 over 2012, according to data reported by the National Association for PET Container Resources (NAPCOR), which tracks and promotes PET recycling.⁵¹ Demand for rPET is increasing as new domestic recycling plants compete for the limited amount of clean material collected, yet the vast majority of PET is still landfilled. Packaging providers must compete for available supplies with carpet makers and, increasingly, textile manufacturers, who turned to PET as a feedstock for clothing manufacture after cotton prices spiked in 2011. As You Sow's 2012 assessment of the value of landfilled recyclable packaging found that PET had the highest potential market value of all materials studied, at \$2.8 billion.⁵²

Demand for recycled PET continues to grow, with domestic use in bottles, polyester fiber, and other applications increasing each year, said Tom Busard, NAPCOR chairman, in announcing 2013 recycling and use data in October 2014. "Limited recycled PET supply is still a barrier to growth, but PET reclaimers really boosted their operations in 2013, easily absorbing the increase in bottles collected, and pulling back material that had been exported in previous years."⁵³

Recyclers have been unable to substantially increase rPET supplies with existing recycling programs, due primarily to lack of funding to expand curbside programs in many communities and lack of a strong recycling policy framework in many states, according to Resa Dimino, director of public policy for NAPCOR.⁵⁴ Complicating efforts to increase recycling of PET is what Dimino characterized as a "crisis

level” contamination problem that is lowering bale yield, due primarily to expansion of single-stream curbside recycling. Some MRFs can generate high-quality yields with single-stream recycling, but many others yield bales of poor quality, she said. A second source of contamination is the significant modification of containers with shrink wraps, labels, inks, and adhesives that make them hard to recover. U.S. reclaimers reported average yield losses of 31 percent for PET bales from curbside programs and 25 percent for bales from deposit programs. This contributes to a poor PET bottle utilization rate of just 22 percent, according to NAPCOR.

Complicating efforts to increase recycling of PET is what NAPCOR characterized as a “crisis level” contamination problem that is lowering bale yield... U.S. reclaimers reported average yield losses of 31 percent for PET bales from curbside programs and 25 percent for bales from deposit programs.

Manufacturers using recycled PET urgently need more of it so major brands can meet commitments to use high levels of recycled package content. The substantial use of PET by QSRs in packaging that often is not recycled is an opportunity for QSR companies to capture some of the market value of PET. A recent promising example of a major brand using its influence to promote PET use and recycling 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.⁵⁵ If similar efforts were undertaken by U.S. QSRs to recycle clamshell and other PET plastic-lidded packaging on-site, and to specify recycled content when ordering packaging, it could help boost the PET recycling rate.

Polypropylene: The recycling market for PP is still in very early stages compared with the market for PET. While 72 percent of the U.S. population is said to have access to curbside PP recycling, actual recovery appears to be strikingly low.⁵⁶ The EPA’s solid waste report for 2012 estimated that just 7.1 percent of PP-based containers and packaging was recycled that year. The wide gap between burgeoning QSR use of PP and the very low recycling rate suggests both a challenge and a responsibility for QSRs that are putting increasing amounts of this material on the market.

“The main challenge for PP recycling is lack of supply; not enough PP is recycled to generate sufficient volume for MRFs to make the effort to separate it and find markets for it,” said Ron Gonen, former deputy sanitation commissioner for New York City.⁵⁷ Gonen now heads the Closed Loop Fund, a project sponsored by Walmart to develop a \$100 million loan fund to finance projects that will boost recycling. If MRFs could get it in sufficient volume, there is a market for PP, added Gonen. Major brands that put significant amounts on the market “need to help build demand by educating and encouraging consumers to put PP in the recycling bin” in locations where it is already accepted by municipalities. Where recycling infrastructure for PP does not exist, “brands should work with municipalities to support the development of infrastructure,” Gonen said.

Since recyclers need large volumes of material to make collection and sorting of materials like PP cups cost-effective, QSRs like Starbucks, McDonald’s and Burger King that use PP for their cold blended drinks could stimulate recycling by placing bins in large numbers of their retail locations and working together to aggregate the volume in geographic areas where they all have multiple locations to the point that the quantity of material collected becomes commercially attractive for recyclers. Again, incorporating recycled content into product specifications also helps build markets for recovered materials such as PP.

Polystyrene: PS foam is technically recyclable but still relatively rarely collected in curbside municipal recycling programs. Because of its lightness—foam is about 95 percent air by weight—vast amounts need to be collected and compressed, or “densified,” before being shipped to a recycler.⁵⁸ The EPA estimates PS recycling of containers and packaging at just 3.8 percent. Dart Container Co., a major manufacturer of PS foam food packaging, helps finance PS foam recycling programs for several companies that use its products. About 65 cities in California, including Los Angeles, have access to PS foam recycling, representing about 20 percent of the state’s population.

Rigid PS, widely used for hot beverage lids, is recyclable if collected, but access to recycling is limited; just 56 percent of the U.S. population has access to recycling for the category of PS non-bottle rigid plastics. The EPA estimates a recycling rate of just 6.7 percent for rigid PS packaging, which includes lids and other packaging materials.

The black plastic dilemma

Most QSRs use black plastic containers for salads and sometimes for food entrées. In our observational research, we found black plastic containers for salads or other foods at McDonald's, Burger King, and many other brands (see Figure 4). While these are often marked with resin codes of #1 (PET) or #5 (PP), indicating resins that are generally recyclable, it is apparently not widely known that black plastic items may not be recycled due to limitations of optical sorting equipment at MRFs. According to the American Plastics Council, while sorting technologies have advanced, "there remains one fraction of plastic stream that spectroscopy cannot properly identify, and that is black plastic. Black carbon, which is the most common pigment additive for black plastic, absorbs the infrared signal, or light, rather than reflecting it back so the plastic can be identified. New technologies are being commercialized that can better identify black plastic."⁵⁹ Recycling and garbage landfilling giant Waste Management confirmed that their equipment generally cannot process black plastic.⁶⁰ Consequently, black plastic food containers from QSRs (as well as packaging from other items like frozen dinners) deposited by consumers in curbside bins may not be recycled. This raises a serious question about whether packaging designers for QSR or grocery companies pay attention to the limitations of recycling technology when choosing "recyclable" materials.

Fig. 4: Brands That Use Black Plastic*

	BOWLS	UTENSILS	COFFEE LIDS	OTHER (CAKE PLATES, ETC)
MCDONALD'S				
BURGER KING				
WENDY'S				
JACK IN THE BOX				
STARBUCKS				
SUBWAY				
KFC				
TACO BELL				
CHIPOTLE				
CHICK-FIL-A				

*Note: While companies may use other materials for some types of bowls, utensils, etc., this chart reflects observational research that identified at least one black plastic item in each of these categories.

Compostable and bio-based plastics: McDonald's reports that it uses a significant amount of bio-based polylactic acid (PLA) plastic in some regions for beverage cups and lids, salad clamshells, straws, cutlery, and yogurt cups and lids. PLA and other bio-based plastics (designated by resin code #7, which comprises not only bioplastics but many "other" types of plastic not covered by the primary resin codes #1–6) are plastics made from renewable sources such as cornstarch or sugarcane instead of petroleum. While PLA and other plant-based materials represent a potentially environmentally beneficial alternative to plastics traditionally derived from nonrenewable fossil fuels, we need to consider the environmental impacts not only in the production stages but also in disposal, and in particular the ability of current recycling and/or composting systems to handle these materials. Although some bio-based products may be recyclable with fossil fuel-derived plastics if they are manufactured in a form identical to products made with fossil fuel-derived polymers, most are not identical and therefore are not recyclable in most municipal recycling

streams, though some may be compostable (in commercial composting systems). However, since bio-based plastics like PLA typically look very similar to PET and other fossil fuel-derived plastic, consumers often place them into plastic recycling bins. High levels of nonrecyclable bio-based materials like PLA can contaminate PET and other recycling streams.

Brands using bio-based plastics are sometimes responding to requests to use fewer materials from nonrenewable petroleum sources. But because of their ability to contaminate traditional recycling streams, PLA and other bio-based plastics that are not molecularly identical to petroleum-derived plastic need to be separated from other plastics, creating more work for processors and recyclers. While many bio-based plastic products are certified as compostable in industrial-grade composters, most communities do not yet have such facilities or cannot process particular products, in which case bio-based plastics are likely to be landfilled. Bio-based compostable plastics are increasingly accepted in commercial composting facilities, but composting infrastructure needs to expand

Brands using compostable plastics need to expand the composting infrastructure for these products and take steps to clearly mark these products as compostable (once verified as compatible with ASTM D6400 or D6868 standards for compostability).

(and particular compostable plastics need to be verified as compostable in specific compost facilities). In addition, since it is often difficult to visually distinguish compostable plastics from other plastics, containers that are actually compostable are often removed from the composting stream during processing, including by manual sorters who cannot examine each package at length to determine whether it is compliant.⁶¹

Brands using compostable plastics need to expand the composting infrastructure for these products and take steps to clearly mark these products as compostable (once verified as compatible with ASTM D6400 or D6868 standards for compostability). For brands operating in areas without access to composting for these products, it may be a better option environmentally to prioritize materials that incorporate high levels of recycled content and that can be routinely recycled in local curbside systems.

RECYCLED CONTENT

Several QSRs are using significant levels of recycled content in serviceware and packaging materials, mostly in paper. The use of higher levels of recycled content supports paper and plastics recyclers, who in turn provide financial incentives for materials processors to continue to collect and separate higher amounts of materials from mixed waste recycling streams. Use of recycled content supports the ideal of a circular economy that reprocesses and reuses raw materials with the potential to reduce reliance on virgin fibers and resins. Using recovered materials in manufacture, instead of virgin materials, saves energy, water, and resources such as trees; reduces reliance on landfills and incinerators; and produces less air and water pollution, including less global warming pollution (see, for example, [EPA's WARM calculator](#)).

“Postconsumer recycled content” (PCC) is an important measure that establishes that materials came from postconsumer collection, typically financed by taxpayers. “Total recycled content” may refer to pre-consumer recycled materials (trim and scrap created during the original manufacturing process). While total or pre-consumer recycled content is a key attribute for environmentally friendly paper products, postconsumer content is preferred.

McDonald's uses 33 percent PCC in lidded hinged paper containers for premium sandwiches, 25 percent to 40 percent PCC in paper to-go bags, and 50 percent PCC in paper tray liners. Starbucks napkins have 100 percent recycled content (40 percent PCC), and Starbucks paper to-go bags are 100 percent PCC. Chipotle offers 100 percent PCC in its paper bag for to-go orders, and 90 percent PCC napkins.

Some brands did not specify PCC when identifying recycled content, meaning their materials are likely not postconsumer but still incorporate pre-consumer recycled content. Subway says its sandwich wrappers contain at least 30 percent recycled content, and napkins 100 percent recycled content; Panera to-go bags say “up to 100 percent recycled content.”

Starbucks was the only QSR using an identifiable amount (10 percent) of postconsumer fiber content in its beverage containers. The company has been using PCC in cups consistently since 2006. We were not able to identify any other QSRs that use significant amounts of recycled fiber in beverage cups, which suggests that there is a lot of room for improvement in this area.

Recycled-content material in paper or plastic intended for food contact needs to be in compliance with Food and Drug Administration (FDA) policies for recycled content.⁶² The FDA allows recycled pulp in fiber if certain conditions are met ensuring it does not contain poisonous or toxic substances. Periodic mill sampling is required to confirm that contaminants of high concern remain within acceptable limits.⁶³ The FDA provided guidance on use of recycled plastics in a 2006 document that discusses issues manufacturers should address to ensure contaminants from prior use are removed in the recycling process.⁶⁴ Companies are not required to obtain advance clearance from the FDA before using recycled materials. However, since companies can be prosecuted if they put contaminated materials into commerce, many ask the FDA to review the procedures they use to ensure recycled materials are not contaminated and request a letter of no objection from the agency.⁶⁵

There are few suppliers of FDA-compliant grades of postconsumer pulp, and costs are higher, but some of the additional cost is due to limited demand from QSRs. If more QSRs pursue food-grade PCC fiber in high volume, costs would likely recede as sourcing markets expand.

McDonald's recently stated that by 2020, all its fiber-based packaging will either come from recycled sources or be certified as having been grown subject to a certification system committed to responsible forestry practices.⁶⁶ While stating environmentally conscious procurement goals is helpful to signal purchasing intent to the market, we recommend that QSRs set separate goals for recycled content and certified fiber, in order to support continued progress in both areas, rather than purchasing whichever option is the least expensive. The Environmental Paper Network is a group of NGOs working for transformational change in the pulp

and paper industry. Its Global Paper Vision and Paper Steps guide recommend that when purchasing paper, companies should first prioritize postconsumer recycled content, then pre-consumer recycled content and/or agricultural residues, and finally virgin fiber content that is certified by the Forest Stewardship Council (FSC).⁶⁷

Some brands tout the fact that their recycled-content materials have been certified by forest practices certification systems such as the FSC or the Sustainable Forestry Initiative (SFI). KFC's white paper food plate is labeled "SFI-certified sourcing," and its to-go bags are FSC-certified. Starbucks cups are FSC-certified; Panera paper food containers are SFI-certified. Environmental groups generally consider FSC to be the most credible forest certification system and do not consider SFI to provide sufficient assurance of environmentally responsible forest management.

Our observers found little evidence of recycled-content plastic in QSR materials, and survey responses did not indicate that recycled content is used in plastic items, with some minor exceptions. Starbucks said it uses 15 percent rPET in salad bowl containers in North American markets and 50 percent rPET in cold cups in European, Middle Eastern, and African markets. Our observers found a Subway salad lid labeled as having 95 percent postconsumer recycled content. Brands may be using high levels of recycled content in PET and other plastic containers, but if so, they are generally not communicating it to stakeholders. With increasing use of PP cups, QSRs have an opportunity to incorporate recycled content into their PP products. To achieve this, PP recovery must increase to the point where it is economical for MRFs to separate PP from other plastics, and recycled PP use must be adopted by brands to the point where processors are willing to invest in new technical solutions to facilitate PP reprocessing. Brands have indicated an interest in buying recycled PP to blend into new packaging. If brands sufficiently value the reduced environmental impacts associated with PP recycling (e.g., lower greenhouse gas emissions in production and reduced reliance on virgin polymers), they need to commit to long-term use of high levels of recycled PP content (as beverage companies have done for the rPET market in recent years). These actions could provide the incentive for processors to invest in new technical solutions that will facilitate PP cup-to-cup recycling.

MATERIALS RECYCLING/COMPOSTING

None of the top QSR brands examined in this report are systematically collecting postconsumer packaging in recycling and/or composting bins on-site, with the exception of the outlets in the two cities, discussed below, where recycling and composting is required. Starbucks leads the QSR sector in this area with its 2008 commitment to recycle all plastic and paper cups left in its stores by 2015.⁶⁸ The



© Karen Rundle

company is behind schedule in meeting the goal but has established in-store recycling in scores of communities.

None of the other top 10 QSR brands reviewed has a system-wide commitment to front-of-house (consumer) recycling of packaging. Chick-fil-A recycles foam cups at 25 percent of its locations and says it is committed to 100 percent by the end of 2015. Dunkin' Brands also has committed to starting foam cup recycling, but only at the 23 locations it owns. The one brand we found that does offer front-of-house recycling and composting at all U.S. locations is the small Pret A Manger chain, which is discussed below.

Expanding recycling for QSR packaging is complicated by the QSR business model, in which 60 percent to 80 percent of meals purchased are taken out and eaten at home, in cars, or on the go. Consequently, QSRs face the dual challenge of recycling on-site and working with municipalities to get their takeout packaging recycled locally.

The highest volume of QSR on-site recycling is likely being driven not by specific brands but by ordinances in two major cities, San Francisco and Seattle, requiring recycling and composting bins at all businesses (including QSRs — see photo above for example of bins in a San Francisco QSR). San Francisco's ordinance was enacted in 2009. Jack Macy, zero waste coordinator for San Francisco's Department of the Environment, said his agency's audits show that all QSR chains are basically compliant with providing composting and recycling bins, but that quality in terms of bin identification/labeling and sorting is variable, and sometimes signs or bins disappear.⁶⁹ Visits by As You Sow and NRDC found most locations in San Francisco had recycling and composting bins on-site, with the exception of two Jack in the Box locales and small Domino's and Pizza Hut locations servicing to-go orders only.

San Francisco has taken steps to ensure that participating in recycling and composting is not more expensive than traditional trash collection. Under the city's waste collection

We recommend that QSRs set separate goals for recycled content and certified fiber, in order to support continued progress in both areas, rather than purchasing whichever option is the least expensive.

rate structure, if a business decreases its trash service and increases its composting and recycling service, it will save money on its refuse bill, said Macy.⁷⁰ The city provides containers, signage, and training as requested, so there is usually little to no additional operational cost for companies to comply with the recycling and composting ordinance. The ordinance is an integral part of the city's plan to reduce greenhouse gas emissions and achieve zero waste status by 2020.

For materials like paper cups and related food service packaging, which could be either recycled or composted, availability of nearby infrastructure for recycling or composting is often the deciding factor. While Starbucks would prefer that its cups be recycled, in San Francisco they are composted, because the city exports nearly all of its paper collected through recycling to overseas markets such as China, which generally consider food-soiled paper as unacceptable due to contamination.

Under Seattle's QSR ordinance, which went into effect in 2010, paper cups are recycled because of the city's proximity to nearly pulp markets that can accept the cups. However, Seattle generally discourages the recycling of paper-based food service packaging and instead promotes composting of these items, due to concerns about food contamination and because its composter can handle these materials.

According to Dick Lilly of the city's Public Utilities Solid Waste Division, food service packaging is not recyclable in Seattle if contaminated with food, and food vendors are asked to use compostable packaging for any food-contact materials.⁷¹ This type of policy may shift if QSRs help to establish strong recycling markets for paper-based food service packaging, and if food contamination becomes less of an issue for paper recyclers.

In our observational research, we found scattered anecdotal instances of recycling and composting availability in QSR restaurants. QSR recycling can be back-of-house (in kitchen areas) or front-of-house (in on-site dining areas). While our research focused primarily on front-of-house recycling, back-of-house recycling of easily recyclable materials like corrugated boxes should be standard procedure at QSRs. McDonald's reported that a 2013 survey of 34,000 of its restaurants globally found that 77 percent were recycling back-of-house cardboard.

Fig. 5: Pret A Manger Recycling Bin



© CoRR, Global Green USA

Pret A Manger's leadership on front-of-house recycling:

Pret A Manger, an international chain of quick service food and coffee shops with a modest but growing presence in the United States, has placed front-of-house recycling and composting bins in all 60 of its U.S. locations. The bins are intended to help Pret reach a company-wide goal of 75 percent waste diversion.

To help support an industry-wide approach to waste recycling, Pret worked with Global Green USA's Coalition for Resource Recovery (CoRR).⁷² To establish whether Pret's paper packaging, which had some polyethylene coatings and other content, could be readily recycled, CoRR worked with its packaging maker and distributor to test pre-consumer packaging items for compatibility with common paper mill types. These tests were conducted by Western Michigan University, which has established protocols for re-pulpability and recyclability for coated packaging. Through this process, the majority of Pret's packaging by weight was identified as readily recyclable, and bins were designed that depicted which paper items could be included in the recycling stream. As determined by the tests, Pret's recyclable items include its sandwich boxes, coffee cups, salad boxes, and other items that have both paper and plastic film components. Pret uses a four-stream waste station for front-of-house waste disposal, a single unit with four openings: one for food to be composted,

Back-of-house recycling of easily recyclable materials like corrugated boxes should be standard procedure at QSRs.

two for recycling (one for paper boxes and cups, the other for plastic bottles and cans), and a fourth for non-recoverable trash (see Figure 5).

After these bins had been deployed for a year, Global Green undertook a waste sorting process to determine whether waste materials were being placed appropriately in the designated bins. The group assessed the rate at which the correct items were being placed in the bins, as well as the contamination by unwanted items. Global Green determined that the locations were achieving a 55 percent waste diversion rate and that recovered streams had purity rates ranging between 50 percent and 73 percent. Global Green also sent 150 pounds of postconsumer material from Pret to be tested for recyclability and re-pulpability at Western Michigan University, and the material passed the test.

Global Green shared these results with Pret's New York City waste hauler, who considered these rates of contamination acceptable and was pleased with the results of the recyclability test, according to Lily Kelly, CoRR senior program associate. The hauler, Action Carting, announced shortly thereafter that it would accept all paper food service packaging from its New York City customers for inclusion in its mixed waste paper recycling.⁷³

From these results, CoRR concluded that consumers will sort materials if given sufficient and clear prompting, such as signs and bin openings coordinated by name and color. The group also found that a significant amount of food service packaging can be recycled by pulp mills, and waste haulers will accept it if there is demand by mills. Based on the positive results from CoRR's pilot programs with Starbucks and Pret A Manger, mills are interested in postconsumer coated paper packaging as a consistent source of longer fibers and want to test it on a large scale in controlled trials, said Kelly. CoRR is currently coordinating these trials to highlight specific domestic mills that are willing to accept food service packaging material, and full results are expected in 2015.

Another positive result of CoRR's pilot programs is that Starbucks's and Pret A Manger's haulers now accept postconsumer food service packaging in New York. "Many haulers have found that there are markets for this material and that the collection and processing is, overall, cost-effective," said Kelly. "The Pret A Manger story really shows the benefit of bringing the entire supply chain together to understand each step and in the end have a really good outcome. Everybody wins."

McDonald's front-of-house recycling in California: In July 2012, an ordinance in Alameda County, California, took effect, requiring businesses generating four or more cubic yards of garbage per week to provide adequate recycling collection service for the amount of recyclable material they produce.⁷⁴ While most businesses focused on developing back-of-house recycling to comply, nine McDonald's outlets, located in Alameda, Oakland, Hayward, Dublin, and Livermore, also instituted front-of-house recycling.

McDonald's Pacific Sierra Region developed a waste diversion manual for recycling and composting in its restaurants. The manual describes how to start front-of-house recycling, composting, or both; discusses staff and customer engagement; and addresses the development of educational materials. The manual was piloted in 11 McDonald's restaurants using multiple waste haulers. Following the successful pilot and communication with restaurant franchisees in the region, 99 percent of the region's McDonald's restaurants now recycle back-of-house cardboard, 33 percent recycle pre-consumer waste, and 11 percent recycle postconsumer waste.⁷⁵

Ten of the restaurants that participated in the McDonald's pilot are owned by the Fagundo family. In addition to recycling back-of-house cardboard and other packaging materials behind the counter, the Fagundos have offered front-of-house recycling for the past three years in 11 San Jose-area locations. The materials are collected by Republic Services, which holds the contract for recycling and trash services in the area. Plastics from these locations are recycled, and paper products are composted. The franchise owners told us that employees are excited about being able to make a difference for the environment. Customers are still adjusting to the system; they often place materials in the wrong bins, meaning extra work for employees who must sort misplaced discards, but the owners plan to continue to offer the service and hope that with more time customers will improve their performance.

StopWaste, Alameda County's waste management authority and source reduction and recycling board, recognized McDonald's with an award in 2013 for waste reduction excellence and estimates that participating restaurants in the county are diverting 70 cubic yards of waste from landfill each week.⁷⁶

In May 2014, McDonald's took a positive incremental step, pledging to develop a 50 percent waste recycling rate at stores located in its top nine global markets by 2020. This goal encompasses a number of materials besides serviceware and packaging; for example, it includes food waste and spent cooking oil. The company is expected to focus initially on improving back-of-house recycling in the U.S. before experimenting with front-of-house recycling, based partially on evaluating the success of the mandatory recycling

program in San Francisco. The company says it has front-of-house pilots under way in several cities.⁷⁷ Yum! Brands has indicated it will set packaging recycling goals in 2015.

Starbucks's ambitious goals for front-of-house recycling:

Starbucks has led the way in developing systematic front-of-house recycling policies among QSRs, with pioneering efforts to recycle paper and plastic cups on-site. The company, which uses 4 billion cups per year, pledged in 2008 to recycle all paper cups disposed of in company-owned stores by 2012, later moving the deadline to 2015.⁷⁸ The company defined "recycling" not merely as the act of putting bins in stores, but as ensuring that materials found their way into a verifiable recycling stream and that takeout customers had increasing access to curbside recycling of cups. This turned out to be a huge challenge, as most municipalities do not accept cups for recycling. The company commissioned a report from Earth 911, completed in August 2013, that indicated 26.7 percent of the U.S. population has access to curbside recycling for its single-coated poly cups.

Starbucks led three "cup summits" with scientists, academics, and competitors to study the challenges surrounding this commitment, and it completed successful tests demonstrating that some mills can recycle its cups. But the difficulties in finding markets for its cups is reflected in the company's most recent CSR report, which stated that only 39 percent of company stores (out of the 100 percent goal) have front-of-store recycling, with only one year to go before the goal deadline (recycling bins for cups are not installed unless the cups can be recycled locally).⁷⁹ Starbucks reported that the company is behind schedule in meeting its recycling goal due to lack of demand for used cups by the recycling industry, as well as lack of infrastructure to handle collection, hauling, and processing. Also, it noted that stores operating in leased spaces are dependent upon landlords who control waste collection and decide whether to provide recycling.

Despite these challenges, Starbucks's initiative has already been successful in motivating QSR peers to pay more attention to recycling and leading the Foodservice Packaging Institute trade group to work on potential solutions as described in the recyclability section above.

Brands could do far more to work with municipalities to fund recycling bins around their restaurant locations so that takeout food consumed in the vicinity is more likely to get recycled. New York City announced that it will place 4,000 new recycling bins on its streets by the end of 2014, partly to capture some of this QSR takeout packaging.⁸⁰ The city is seeking sponsorship of the bins by local merchants.

QSRs could help improve off-site recycling of packaging by sponsoring nearby bins in which patrons could deposit packaging after finishing their food.⁸¹

There are few examples of well-developed corporate policies focusing on scalable national actions to increase packaging recycling rates; in fact, a key finding of this

Brands could do far more to work with municipalities to fund recycling bins around their restaurant locations so that takeout food consumed in the vicinity is more likely to get recycled... QSRs could help improve off-site recycling of packaging by sponsoring nearby bins in which patrons could deposit packaging after finishing their food.

research is that, except for Starbucks, no QSRs provided evidence that packaging recycling is a high priority on their sustainability agenda. Our survey asked whether brands would approve of extended producer responsibility or deposit schemes, which have successfully increased recycling rates elsewhere. Dunkin' and Starbucks said they are neutral on such systems. Starbucks commented: "We want to increase recycling of packaging by choosing the best market-based solutions, which may differ from locality to locality." McDonald's commented that it supports "fact-based, resource-efficient means to increase packaging recovery." Survey respondents did not respond to questions seeking information about what alternative scalable systems they would support, which suggests a lack of priority focus on scalable solutions by brand management. (For further discussion of this issue, including responses to survey questions on producer responsibility, see the producer responsibility section in chapter 2.)

Of QSRs visited and surveyed by AYS and NRDC (exclusive of San Francisco, where recycling/composting bins are required), only four—Starbucks in Oakland and Chicago, McDonald's in Washington, D.C., and Chick-fil-A in Walnut Creek, California—had visible front-of-house recycling bins, and none had visible compost collection systems.

Material recycling should be prominent on the agendas of QSR corporate sustainability programs for improving the environmental attributes of packaging. Brand packaging designers can prioritize designing items to be recyclable, but the design process does not necessarily take into consideration the current limitations of recycling markets or technologies. Brands prioritizing recyclability of packaging need to do more to follow through and ensure that their packages actually get recycled.

Questions and caveats around data indicating high access to curbside recycling:

Access to curbside or similar recycling systems, such as drop-off programs in rural areas, is one key indicator of the health of a recycling system. However, data on access to recycling widely cited by consumer brands as evidence of recycling progress may be misleading and incomplete. The EPA apparently does not generate official data on access to curbside recycling in the United States. In its 2011 report on management of municipal solid waste,

Material recycling should be prominent on the agendas of QSR corporate sustainability programs for improving the environmental attributes of packaging. Brand packaging designers can prioritize designing items to be recyclable, but the design process does not necessarily take into consideration the current limitations of recycling markets or technologies. Brands prioritizing recyclability of packaging need to do more to follow through and ensure that their packages actually get recycled.

the agency instead refers to a report generated periodically by *BioCycle* magazine and the Earth Engineering Center of Columbia University, titled “The State of Garbage in America.” The most recent version of that report, published in 2010, calculated that 73 percent of the population has access to curbside recycling.

Some recycling experts believe that number is too high. “Based on over a decade of experience, we have found *effective and convenient* residential curbside numbers to be somewhat lower than those popularly reported,” said Keefe Harrison, executive director of the Curbside Value Partnership (CVP), a national nonprofit group that has engaged with scores of communities to improve curbside recycling. “Based on my professional experience, I would place that number just under 60 percent.”⁸²

“Communities may report providing curbside recycling access. However, residents may find these systems cumbersome and difficult to use, dramatically decreasing participation,” added CVP project director Karen Bandhauer. “For instance, a city may be counted as offering curbside residential service, even when it requires its citizens to purchase and pick up bins. While communities like this will count toward access numbers, the reality for citizens and the tonnage diverted per household tell a different story.”⁸³

Curbside recycling often does not extend to multifamily residences, and in many metropolitan areas, these households account for more than 30 percent of all households, notes Scott Mouw, state recycling program director for the North Carolina Division of Environmental Assistance and Outreach.⁸⁴ Other reasons why recycling access figures may be growing but collections remain low or flat, according to Mouw, are that drop-off systems in rural areas provide access but are much more inconvenient for public use, and local programs can struggle to accurately communicate to the public what plastics are recyclable, or even to ensure that each household has a recycling bin and knows what to do with it.

In 2013, the American Chemistry Council (ACC) released a study conducted by Moore Recycling Associates on access to plastic container recycling in the United States. Some of the data from that study are referenced in this report. In a press release, ACC stated that “contributing to the recent surge in rigid plastics recycling has been a substantial increase in the number of communities that are now collecting many types of rigid plastics in addition to bottles.”⁸⁵ Mouw provided technical review of the study.

While praising the report as a significant and necessary study, he also cautioned in a letter to *Resource Recycling* magazine in April 2013 that it was “being used to draw unwarranted conclusions about access and the recyclability of plastic containers.” Mouw noted that “inconsistent and uninformed public outreach by communities may overstate true recyclability for many kinds of plastic.” Also, he said, many households in the United States fall outside the reach of local government recycling programs and are served by subscription haulers who may or may not offer recycling and who may or may not collect a broad set of plastics.

Harrison said CVP is undertaking an effort to better understand curbside recycling performance via a national technical council and hopes to have additional data by the end of 2015.



EVALUATION OF CORPORATE PERFORMANCE

We evaluated corporate performance in the areas of materials source reduction, reusable packaging, use of recycled content, use of recyclable packaging, and actions taken to promote materials recycling. On the basis of information provided by companies and publicly available data, we established four levels of performance: Best Practices, Better Practices, Needs Improvement, and Poor (see Figure 6). No brands earned the highest level of Best Practices. Starbucks and McDonald's merited placement in the Better Practices category.

Starbucks ranked highest of 10 leading QSR brands studied. Major factors influencing this result included the company's commitment to reusable packaging, use of recycled content in beverage cups, public commitment to recycling of beverage cups, and leadership in working with peers and municipalities to develop solutions to recycling challenges. McDonald's also ranked high due to its significant

use of recycled content in packaging, its record of substantial lightweighting of products, and its decision to replace foam beverage cups with paper cups. Companies that achieved a Needs Improvement status have work to do but made notable progress in at least one aspect of packaging sustainability: Dunkin' Brands is phasing out foam beverage cups; Subway uses a significant amount of recycled content in its packaging (sandwich wrappers 30 percent, napkins 100 percent, plastic salad lids 95 percent); Chick-fil-A continues to use foam cups but is committed to recycling all cups left in its stores; and Chipotle also uses significant recycled content (100 percent PCC bags, 90 percent PCC napkins). Panera exhibits leadership on reusability, but did not complete our survey, so received a lower ranking on that basis. Yum! Brands stated its intent to develop recycling goals. Companies listed as Poor provided no information, and our research was not able to locate publicly available data indicating significant leadership actions on packaging sustainability. See Figure 7 for more information on company strengths and weaknesses.

Figure 7: Quick Service Restaurant Brand Strengths and Weaknesses

	Strength	Weakness
Starbucks	Cup recycling goal Reusables goal Cup recycled content Industry leadership	Reduced its reusables goal
McDonald's	Packaging reduction Phase out of foam cup Packaging recycled content Waste recycling goals	No reusables
Dunkin' Brands	Phase out of foam cup	Minimal foam cup recycling
Subway	Recycled content	Heavy plastic bag use
Chick-fil-A	Recycling foam cups	No other package recycling
Chipotle	Recycled content	Wasting aluminum covers
Yum! Brands	Sustainable packaging commitment Reusable container	No metrics, timeline
Panera Bread	Dine-in serviceware	Minimal disclosure
Burger King		Minimal disclosure
Wendy's		Minimal disclosure
Jack in the Box		Minimal disclosure
Arby's		Minimal disclosure
Quizno's		Minimal disclosure
Dairy Queen		Minimal disclosure
Domino's Pizza		Minimal disclosure
Papa John's Pizza		Minimal disclosure

CHAPTER 2: BEVERAGE SECTOR

Surveys were sent to 11 leading beverage companies. They were Anheuser Busch Co., Boston Beer Co., Coca-Cola Co., Diageo PLC, Dr Pepper Snapple Group, Heineken Co., MillerCoors Co., Nestlé Waters NA, New Belgium Brewing Co., PepsiCo, and Red Bull GmbH. (PepsiCo is both a beverage and food company, but this report focuses primarily on its beverage component.) Companies completing the survey were Boston Beer, Coca-Cola, Dr Pepper Snapple, Nestlé Waters NA, New Belgium, and PepsiCo. Companies that did not respond were analyzed through publicly available information.

This discussion is a continuation of three previous beverage container recycling surveys evaluating beverage packaging sustainability published by As You Sow in 2006, 2008, and 2011. The 2011 report contains an extensive discussion about emerging efforts at that time by Nestlé Waters NA and Coca-Cola to promote extended producer responsibility or equivalent programs that could increase container recycling rates.

MATERIALS USE

Glass, plastic, and aluminum are the primary materials used for beverage containers. Coca-Cola reports that of the packaging materials it uses for its products in North America, PET plastic makes up 37 percent, aluminum 25 percent, paper and cardboard 24 percent, and glass only 4 percent. (The remaining 10 percent includes flexible plastic, aseptic containers, HDPE, LDPE, PP, and composite cans.) PepsiCo reports using 42 percent paper and cardboard, 17 percent PET, 15 percent flexible plastic (generally multi-material laminates or film bags), 9 percent aseptic containers, 5 percent aluminum, and 6 percent glass. (The remaining 6 percent comprises LDPE, PP, and fountain service paper cups.) PepsiCo's figures represent both its beverage and its food divisions. A major concern is the increasing use of flexible laminate packaging. The fusing of laminates makes mechanical separation very difficult. None of these

materials are currently collected curbside for recycling in the United States. In the beverage sector, its use appears mostly limited to juice drinks marketed to children, such as Capri Sun, Kool-Aid Jammers, and Honest Kids, all packaged in a laminate and aluminum pouch (see discussion in the recyclability section following).

© Capri Sun



One major advance with regard to materials use for beverage containers has been development of a PET plastic bottle from biological rather than petroleum-based sources. Coca-Cola has led the way in producing a biologically sourced form of PET from sugarcane bagasse, a fibrous by-product generated after juice is extracted from the cane. Its plastic PlantBottle™ is about 30 percent sourced from plants and not petrochemicals. The company says the bottle is chemically and physically the same as PET.⁸⁶ It further says its studies have concluded that there is “no technical adverse impact” on the PET recycling stream.⁸⁷ More than 15 percent of its purchased resin for beverage containers is sourced in this manner, and the company has set a goal to reach 30 percent by 2020.⁸⁸ In July 2013, the World Wildlife Fund announced it would work with Coca-Cola to assess the environmental and social performance of various plant-based materials for potential use in its PlantBottle packaging. As a result of this process, the company has approved Brazilian sugarcane and cane processing waste, Indian cane processing waste, and European sugar beets as potential feedstock sources for its PlantBottle, said Scott Vitters, general manager of the company's Global PlantBottle Innovation Platform.⁸⁹ The company has produced more than 25 billion bottles made with plant-based material in more than 37 countries, he added. Some environmental groups believe that agricultural waste rather than crops themselves should be used for such production, as using crops could promote excessive land conversion and other agricultural impacts, such as increased water and fertilizer use, and could potentially raise the price of food crops.⁹⁰

One major advance with regard to materials use for beverage containers has been development of a PET plastic bottle from biological rather than petroleum-based sources.

PET plastic is made up of two components: MEG (monoethylene glycol), which accounts for 30 percent of PET by weight, and PTA (purified terephthalic acid), which accounts for the rest. Coca-Cola is producing the MEG portion from plants, while the PTA portion is still derived from petroleum-based sources. Apparently no major company has developed the technology to derive the PTA portion from biological sources. In 2011, PepsiCo announced a major commitment to developing bottles from biological

sources and said it would use agricultural waste products such as corn husks, pine bark, or orange peels from its Tropicana orange juice division. At the time, PepsiCo said it believed it had found a way to make PTA from biological sources, but it has since suspended work on developing biologically-sourced PTA. The company's pilot was successful but ran into challenges related to securing sufficient raw materials needed to operate at a commercial scale, according to Robert ter Kuile, PepsiCo's senior director for sustainability. The company decided to withdraw from pursuing a bio-based bottle but may resume when the challenges are resolved.⁹¹ It remains confident that it has unlocked the technology to create a 100 percent bio-based PET bottle that is 100 percent recyclable.

Coca-Cola has formed a Plant PET Technology Collaborative with other major brands including Ford Motor Co., H. J. Heinz Co., Nike, and Procter & Gamble, aimed at finding an alternative to PTA. According to Vitters, the group has produced 100 percent bio-bottles that meet its quality requirements and is now advancing work to begin moving the technologies to a commercial scale. It expects to have the technology ready for commercial-scale production in 2018 but will start to introduce small quantities of bottles to the market soon.⁹²

Source reduction: Reducing packaging materials can have a significant effect on energy use and the carbon footprint of beverage companies. For example, Heineken states that packaging production is the largest source of carbon dioxide emissions in its operations, with 35 percent of emissions coming from aluminum manufacture and 35 percent from glass.⁹³ Source reduction has both economic and environmental benefits, as using less material both costs less and requires less energy in the production process.

Here are some examples of significant material reductions reported in survey responses:

- Since the introduction of its eight-ounce glass bottle, Coca-Cola says it has reduced the materials used to make it by 50 percent. It has reduced its aluminum can materials by 30 percent and its PET bottle materials by 25 percent. The company says it will continue to reduce packaging but will measure it using a system-wide carbon reduction goal rather than a separate packaging reduction goal. The overall goal is to reduce the company's carbon footprint 25 percent by 2020 from a 2010 baseline.
- PepsiCo said it reduced its packaging by 109 million pounds in 2013, with 59 percent of the savings coming in corrugated secondary packaging and 23 percent in PET bottles, closures, and labels.
- Nestlé Waters NA said it has reduced the amount of materials used to make PET bottles by 60 percent over the past 22 years.

Companies have made good progress in the area of source reduction; they now need to focus on making more significant strides in the areas of recycled content, recyclability, and materials recycling.

Our data research uncovered additional examples of beverage container material reduction:

- Anheuser Busch reported a 40 percent reduction in the weight of its 16-ounce Bud Light aluminum "bottle" (a can shaped like a bottle with a twist-off cap) following a \$100 million investment in a new bottle manufacturing process. The innovative reclosable container resulted in a packaging reduction of 2,400 tons. The brewer expects the process will result in a reduction of 80,500 metric tons of carbon dioxide emissions. In 2013 it also cut the thickness of some bottles, reducing weight by a total of 13,800 tons—equivalent to the weight of 77 million bottles—while maintaining product safety and structural integrity.⁹⁴
- MillerCoors set a goal to reduce the overall annual weight of its packaging in the supply chain by 2 percent by 2015 relative to a 2008 baseline. It reported that it has surpassed its goal and reduced packaging weight by 8.7 percent.⁹⁵

While source reduction continues to be an important indicator of packaging sustainability, it has been a routine part of operations at many companies for a decade or longer, largely due to its ability to reduce packaging costs. It should be viewed as a mature component of packaging sustainability rather than cutting-edge. Companies have made good progress here; they now need to focus on making more significant strides in the areas of recycled content, recyclability, and materials recycling.

RECYCLED CONTENT

The energy savings from using recycled materials in beverage containers is significant. According to the Aluminum Association, making cans from recycled aluminum instead of virgin ore requires "95 percent less energy and 95 percent less greenhouse gas emissions than creating a can from new metal," and a recycled can could be back on the shelf of a store in 60 days.⁹⁶ Plastic bottles made from recycled PET use 30 percent less energy and save 11 barrels of oil per ton of plastic.⁹⁷ And manufacturing products from recycled glass uses 35 percent less energy than does making glass from raw materials.⁹⁸

Aluminum continues to have the highest recycling rate and recycled content of all beverage containers. The Aluminum Association says the average recycled content of aluminum used for beverage cans is 68 percent, which aligns with the recycled content rates reported by Coca-Cola, PepsiCo, and Dr Pepper Snapple.⁹⁹ However, in 2013 aluminum can maker Novelis upped the ante by producing an aluminum can body sheet certified to contain 90 percent recycled content. The company describes its Evercan as “the first independently certified, high-recycled-content aluminum designed specifically for the beverage can market.” Two-thirds of the recycled aluminum is postconsumer, and the remainder is pre-consumer industrial scrap; the content has been verified by SCS Global Services, which provides independent assessment. The company has long-term plans to achieve 100 percent recycled content.¹⁰⁰

Beverage companies, especially those that make their own cans, should be more readily able to increase recycled content. For example, Anheuser Busch gets more than 45 percent of its U.S. beer cans from the Metal Container Corp., a subsidiary, so the company has the flexibility to directly use higher levels of recycled-content aluminum sheet such as Evercan.

A report by the Glass Packaging Institute identified single-stream recycling, with its associated increased breakage and contamination rates, and the lack of new state deposit programs as barriers to reaching its recycled content goal.

In December 2008, members of the Glass Packaging Institute (GPI) set a goal to use 50 percent recycled content in glass bottles by 2013.¹⁰¹ This goal has not yet been met; a September 2014 report by the institute estimates that the recycling content incorporation rate as of December 2013 was 33.6 percent.

The institute’s report identifies single-stream recycling, with its associated increased breakage and contamination rates, and the lack of new state deposit programs as barriers to reaching the goal. In advocating for additional state deposit programs, the report states, “In addition to dramatically increasing the level of recycling, consumer deposit systems are also associated with substantial benefits for local economies as they play an important role in yielding jobs, creating new economic activity, and reducing costs for businesses.”

Recycled content in glass bottles for PepsiCo has grown from 29 percent to 37 percent since As You Sow’s last survey in 2011. Dr Pepper Snapple increased recycled content in its glass bottles from 7 percent to 20 percent over the same period.

PepsiCo is the only major beverage company that has maintained a consistent, if modest (10 percent), amount of recycled PET content since 2005. Coca-Cola, like PepsiCo, initially met a 10 percent goal at the end of 2005, but Coca-Cola has not maintained that percentage of recycled content. No other major brand has used the levels of rPET that PepsiCo has used consistently across its entire brand family. The company also uses 100 percent rPET in its smaller Naked Juice brand. Nestlé Waters NA, however, has made significant strides in the use of recycled content since the 2011 As You Sow report and says it now uses 50 percent rPET in its Resource brand bottles; in all Arrowhead brand half-liter bottles, sold primarily in the western United States; and in its Deer Park half-liter bottle in the Washington, D.C., area. Company-wide, however, its overall use of rPET is still just 8 percent, but the company projects an increase to 15 percent in 2015.

A growing amount of rPET is being purchased domestically. U.S. reclaimers increased purchases of recovered PET by 219 million pounds, raising rPET purchased for domestic recycling from 45 percent of U.S. recycled PET collection in 2009 to 66 percent in 2011. One reason is the growth of new bottle-to-bottle processing plants that have recently opened, such as CarbonLITE Industries, which opened a large facility in Riverside, California, in 2011. The plant processes 2 billion used bottles, or 100 million pounds of PET, annually into food-grade material for recycled bottles. Nestlé Waters NA and PepsiCo are major customers of CarbonLITE. The company has announced plans to open a second plant in Abilene, Texas, in 2015.¹⁰²

Coca-Cola continues to be vague about its use of recycled content. Rather than provide specific levels of rPET use in response to our survey, the company said it uses a range of zero to 15 percent rPET in its half-liter bottle, and zero to 25 percent in its 20-ounce bottle. A previous commitment to achieve a minimum of 25 percent recycled PET in all brands by 2015 was replaced in 2011 with a dubious new “combined” goal of 25 percent recycled or renewable content by 2015. “Renewable content” in this case refers to biologically derived PET resin. While use of bio-plastics is laudable, combining its rPET and bio-plastics usage goals allows the company to avoid disclosure of the specific amount of rPET it is using.

This represents a significant step backward in transparency for a company that is otherwise often doing cutting-edge work on packaging sustainability, such as creating company-specific container recycling goals and allocating sufficient resources to attain them.

Anheuser Busch did not provide information on recycled content in its U.S. operations but said in a report that in 2012, its Brazil operations developed a 100 percent recycled PET bottle for its Guaraná Antarctica soft drink.¹⁰³

RECYCLABILITY/COMPOSTABILITY

For the last three decades, the leading materials used for beverage containers have been technically recyclable, and glass, aluminum, and PET plastic containers can all be widely recycled through curbside pickup available to a large majority of the U.S. population. The biggest threat to increasing recyclability we observed in our research on the beverage sector is the growing use of flexible plastic packaging such as laminated pouches. Flexible packaging is made by fusing together several different materials; pouches are typically a multi-laminate combination of aluminum and different types of plastic.

PepsiCo reports that flexible plastic packaging is 15 percent of its total packaging mix by weight, trailing only paper and PET. Most of this use appears to be food packaging in its Frito-Lay division (food in flexible packaging will be discussed in the recyclability section of chapter 3).

It appears that no major beverage brands use pouches for adult drinks, but pouches have been used for decades for children's drinks, most notably Kraft Foods' Capri Sun and Kool Aid Jammers juice drinks, which together earn the company more than \$500 million in sales annually.¹⁰⁴ The Capri Sun juice concentrate is owned by the German company Wild Flavors GmbH (purchased by Archer-Daniels-Midland in July 2014) and licensed to major brands in different areas. In North America, Kraft holds the license; in the Netherlands, France, and the United Kingdom, Coca-Cola holds the license. Through its ownership of Honest Tea, Coca-Cola also markets Honest Kids, an organic juice drink sold in pouches for children, often stocked in grocery stores next to Capri Sun. These brands are all marketed in multi-laminate aluminum and plastic pouches that generally cannot be recycled anywhere in the world. As a result, thousands of tons of valuable aluminum contained in the pouches have been landfilled rather than recycled.

If all Capri Sun pouches discarded annually in the United States were laid end to end, they would circle the earth nearly five times; they would also entirely cover the land area of California and Texas.¹⁰⁵ Many of Capri Sun's competitors, such as Minute Maid, Juicy Juice, and Tropicana, package their beverages in recyclable PET plastic bottles. These materials are routinely accepted in most curbside recycling systems. Juicy Juice is also packaged in aseptic cartons and Minute Maid in gable top cartons, both of which are beginning to be more widely recycled. Using nonrecyclable packaging when recyclable alternatives are available wastes enormous amounts of resources, in contrast to aluminum and PET, which can be recycled many times over.

The biggest threat to increasing recyclability in the beverage sector is the growing use of flexible packaging....Using nonrecyclable packaging when recyclable alternatives are available wastes enormous amounts of resources, in contrast to aluminum and PET, which can be recycled many times over.

TerraCycle, a private company that collects many materials not recyclable at curbside through a mail-in process, has a program to collect Capri Sun and other juice pouches. TerraCycle says it has "recycled" over 200 million pouches in the past five years, using a system by which pouches are broken down through an extrusion process and converted into plastic garbage bins and park benches.¹⁰⁶ However, the valuable aluminum portion of the pouches is not extracted but remains in the material. This 200 million figure includes other brands besides Kraft's Capri Sun. Even assuming that all 200 million pouches were Capri Sun pouches, we calculate that this total represents only about 2 percent of total U.S. sales of Capri Sun, which is not a meaningful recovery rate. TerraCycle deserves credit for finding ways to keep hard-to-recycle materials out of landfills, as do companies which substitute disposed materials for virgin materials in products such as plastic lumber. However, with this disposition model, virgin materials must continually be sourced for the production of the original package (in this case, multi-laminate pouches). Ideally, such pouches and other packages can eventually incorporate recycled content as well as become completely recyclable.

As You Sow has engaged with Kraft Foods to look at alternatives to its Capri Sun and Kool Aid pouch packaging. Separately, a grassroots "Make It, Take It" campaign arose in 2014, pressing the company to abandon use of the pouch. The group is supported by several national environmental organizations including the Natural Resources Defense Council and Clean Water Action. Twenty of these groups wrote a letter to Kraft Foods CEO Anthony Vernon in July 2014, asking the company to promote leadership in sustainable packaging by:

- Designing packaging from safe, sustainable materials using recycled content, while minimizing unnecessary packaging.
- Designing packaging to be reusable, recyclable or compostable.
- Supporting policies to ensure 90 percent of its packaging gets reused, recycled or composted.
- Helping to reduce the amount of packaging that winds up in the environment, especially plastic packaging.

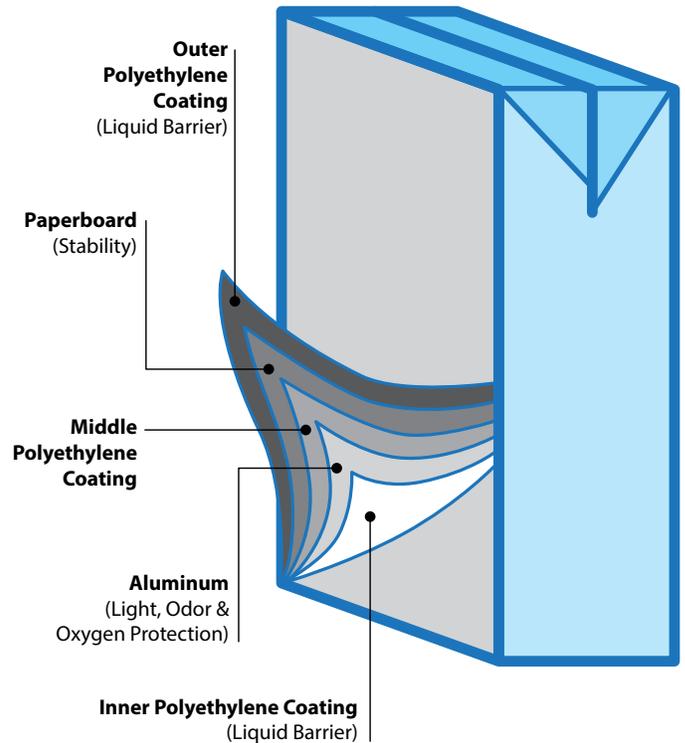
Labels and coatings can be contaminants that affect the recyclability of different packaging materials and pose varying degrees of threat to the postconsumer material's potential for reuse. In survey responses, Coca-Cola and PepsiCo both reported that they are working with industry and trade associations on solutions to contaminants related to pressure-sensitive labels and shrink-sleeve labels on PET packaging.

Honest Tea recyclability progress

Honest Tea has told As You Sow that due to concerns about the recyclability of its pouch packaging, it would begin to shift Honest Kids juice packaging toward aseptic containers by the fall of 2014. "The pouch offers some advantages in terms of its flexibility and its premium positioning," says Honest Tea cofounder and TeaEO Seth Goldman, "but there are disadvantages when it comes to recyclability. We have been exploring more sustainable alternatives as we grow our volume and look forward to testing the brick pack to see how Honest Kids drinkers respond." Honest Kids began testing the Tetra Brik® package in select channels in fall 2014 to gauge acceptance by consumers. Knowledge gained from the pilot will inform a more long-term strategy for both aseptic and pouch packaging in 2015 and beyond. The pilot will involve more than one-quarter of the overall Honest Kids business, and Goldman says he expects the shift to be permanent.¹⁰⁷

Aseptic cartons (see Figure 8; typically a composite of fiber, plastic, and aluminum, used for shelf-stable packages such as juice boxes) are not recycled nearly as widely as PET, but the ability to recycle them is growing. The industry's trade group, the Carton Council, says that 52 percent of the U.S. population has access to curbside recycling of aseptic packaging. The council provides grants for MRF infrastructure and works with mills across the country to help stimulate the carton recycling market, including development of a new commodity grade for baled aseptic and gable top cartons (typically fiber and plastic, used for refrigerated products such as milk). The Carton Council estimates that about 11 percent to 14 percent of such cartons are recycled, while a 2013 study by the Container Recycling Institute estimated recycling of aseptics and gable tops at closer to 6.5 percent.^{108,109} Carton recycling is discussed further in the recyclability section of chapter 3.

Fig. 8: Example of shelf-stable aseptic carton (74% paperboard, 22% polyethylene, 4% aluminum)



Source: The Carton Council

MATERIALS RECYCLING

As noted in As You Sow's 2011 beverage container recycling report and scorecard, container deposit legislation is the most effective proven method for bottle and can recovery in the United States. In the 10 states with container deposit legislation, the average recycling rate ranges from 66 percent to 96 percent, whereas for the 39 states without such legislation the overall rate is 30 percent, according to the Container Recycling Institute.¹¹⁰

In the absence of nationwide recovery and recycling mandates in this country, NGOs and investors have pressed beverage companies for many years to take the lead to increase recovery rates. In response to this pressure and dialogues between NGOs and corporations, companies such as Nestlé Waters North America, Coca-Cola, and PepsiCo made public commitments to As You Sow to recover higher levels of bottles and cans.

- In 2007 Coca-Cola agreed to recycle 50 percent of its own PET, glass bottles, and aluminum cans by 2015. Last year it added a 70 percent recovery and recycling goal by 2020 in “developed markets.”
- In 2009 Nestlé Waters North America announced an intention to push the beverage industry to achieve an industry recycling goal of 60 percent of PET bottles by 2018.
- In 2010 PepsiCo announced an intention to push the beverage industry to achieve an industry recycling goal of 50 percent for PET, glass bottles, and aluminum cans by 2018.¹¹¹

These are significant commitments. Coca-Cola, PepsiCo and Nestlé Waters NA made convincing arguments in their responses to our survey that they are doing far more than other companies to increase recycling of their packaging. Yet it is unlikely that these actions by themselves will be sufficient to meet their goals.

Coca-Cola says it will collaborate with industry groups to look for opportunities to grow recycling in public spaces, through bin grants, or by supporting policies such as landfill bans or “pay as you throw” and mandatory recycling laws. It also intends to play a leadership role and invest in partnerships to grow access to recycling, such as the Recycling Partnership and the Closed Loop Fund, and to invest directly in cities such as Chicago and Atlanta to help expand recovery of materials. (The Closed Loop Fund will provide loans to cities and businesses aimed at improving infrastructure for recycling. The Recycling Partnership is a project to significantly increase curbside recycling in southeastern U.S. communities. Both are discussed in the materials recycling section of chapter 3).

PepsiCo says it has placed more than 5,000 recycling bins or systems across North America and created recycling programs in more than 42 states through placement of traditional recycling bins or “intelligent” kiosks and development of school programs and event recycling. The kiosks are computerized devices that allow consumers to earn points for every bottle or can they recycle. The points can be redeemed for local discounts on entertainment, dining, and travel. PepsiCo has also announced a partnership with the Nature Conservancy that includes expanding a pilot program in Tulsa, in collaboration with Kum & Go convenience stores and gas stations, to increase the number of recycling bins in the area.

However, the numbers comparing recycling rates with disposal rates remain daunting. For example, PepsiCo claims to have diverted 196 million beverage containers to recycling using its own resources since it made its initial commitment in 2010. Yet this represents only about one-third of one day’s sales of beverages in the United States. The Container Recycling Institute estimates that a total of 243 billion beverage packages (from all brands) are sold annually, which

PepsiCo claims to have diverted 196 million beverage containers to recycling using its own resources since it made its initial commitment in 2010, yet this represents only about one-third of one day’s sales of beverages in the United States.

amounts to 665 million per day.¹¹² With the current beverage container recycling rate at 39 percent, it’s not clear how Nestlé Waters NA and PepsiCo will meet their recycling goals by 2018 or Coca-Cola its 70 percent goal by 2020. Clearly, additional resources and industry coordination are needed to expand beverage container recycling.

Anheuser Busch’s recycling subsidiary has recycled more than 360 billion cans since 1978, buying postconsumer cans from more than 700 suppliers. It also sponsors a Recycle Challenge program, whereby schools earn money from recycled cans to purchase supplies, and container collection at large venues and events, including in recent years the Daytona 500, Sturgis Bike Week, and LPGA/PGA Tour tournaments. In addition, the company operates a recycling center in Hayward, California, which processes both aluminum cans and plastic bottles.

Producer responsibility: Three to four years ago, a variety of factors led two beverage giants to break away from the industry’s traditional opposition to container deposit laws and its support of small, voluntary recycling efforts. The deteriorating financial positions of states and municipalities, the economic value of wasted materials, growing awareness of the policy inequity of companies taking responsibility for recycling in other world markets but not in their U.S. operations, growing demand for postconsumer materials, and concerns about carbon emissions and ocean pollution led Nestlé Waters NA and Coca-Cola to endorse the concept of mandatory extended producer responsibility (EPR) laws in the United States.¹¹³ More than 40 countries worldwide, including most European Union nations, have adopted some form of EPR mandate that shifts some or all financial responsibility for packaging recycling from taxpayers to producer brands.

In a survey of beverage container recycling practices released in 2011 by As You Sow, Nestlé Waters NA, New Belgium Brewing, and Coca-Cola said they would support a mandated fee-based EPR system.¹¹⁴ PepsiCo remained neutral but said it was open to exploring specific proposals. Coca-Cola’s attempts to get its peers in the consumer packaged goods and grocery sectors to consider EPR and take on a share of responsibility for their own packaging were met with huge resistance.

Consumer packaged goods brands like General Mills and Procter & Gamble made few public statements about EPR, instead relying on their trade group, the Grocery Manufacturers Association (GMA), to seek to discredit EPR. GMA appeared at several packaging industry conferences in 2011 and 2012 to criticize the prospect of EPR. It generated estimates that a national EPR system for packaging would cost the consumer goods sector \$7 billion to \$21 billion. The veracity of this estimate could not be confirmed, as the GMA declined to explain how it had been calculated. The GMA's questionable credibility on this issue was demonstrated in a study it published in 2012 concluding that "mandatory EPR programs aimed at food, beverage, and consumer product packaging would not deliver against their promise of creating more cost-effective residential recycling programs and driving packaging redesign." However, rather than seeking to assess a cross-section of the 9,800 curbside systems in the United States, the study looked at only one—in Ramsey County, Minnesota.¹¹⁵ If the GMA had been serious about assessing the strengths and challenges of EPR, it would have evaluated an array of community recycling systems.

In January 2012, Recycling Reinvented started operation to serve as a new NGO strategy center for educating stakeholders and advancing EPR for packaging legislation at the state level. The group received start-up funding from Nestlé Waters NA. Convening board members include environmentalist Robert F. Kennedy Jr. and Kim Jeffery, then the CEO of Nestlé Waters NA.¹¹⁶ Model EPR legislation was discussed with lawmakers from several states, and bills developed by Recycling Reinvented staff were introduced in Rhode Island and North Carolina in 2013, but no substantive legislative action has yet occurred. In 2014 the group published a cost-benefit assessment that concluded that an EPR program in Minnesota could increase recovery of paper and packaging by 34 percent while keeping program costs about the same as current curbside recycling costs.¹¹⁷ Unlike GMA's effort, the study looked at multiple programs across an entire state and invited a wide variety of stakeholders, including opponents of EPR programs, to review drafts of the report. However, the study examined EPR for both packaging and printed paper. The inclusion of printed paper (such as magazines and newspapers) in legislation aimed at EPR for packaging is controversial among some advocates, who fear that such legislation would cause the beleaguered publishing industry to join the opposition of the plastics sector.

In the 2015–2016 legislative term, it is likely that Recycling Reinvented will introduce bills in three states and develop at least one other state cost-benefit study modeled on the Minnesota analysis, according to the group's executive director, Paul Gardner. Recycling Reinvented has also proposed that consumer brands organize policy initiatives that do not include EPR, such as volume-based pricing for garbage. The organization's rationale for doing so is based on the legislative experience of its staff, who caution against

a strategy based solely on advancing EPR policy; and the desire of many companies to support policies that improve recycling but do not place financial responsibility on producers.¹¹⁸

Momentum for EPR has been difficult to build. EPR (particularly for packaging) has turned out to be a contentious, hot-button issue. Many companies, while acknowledging the troubled state of recycling, view EPR as a cumbersome, pricey alternative they are so far unwilling to pay for unless forced to by mandate. While companies have been willing to privately discuss their views on EPR for packaging, no major companies other than Nestlé Waters NA and New Belgium Brewing have publicly endorsed EPR, and Coca-Cola has retreated from its previous endorsement of EPR legislation to a neutral position. "As governmental entities around the U.S. consider various EPR proposals, we intend to be active participants in the process," Coca-Cola wrote in its response to our survey. "However, until the emergence of more commonly accepted standards for EPR in the U.S., our focus will remain on a broad range of recycling initiatives."

"We have a broken system of recycling in America. Nobody is winning right now on this thing. We're not moving the needle," says former Nestlé Waters NA CEO Kim Jeffery.

Figure 9 summarizes survey responses from companies on their views on six potential producer responsibility for packaging systems with the potential to dramatically increase recycling in the U.S. A selection of additional company comments is in Appendix 1.

Nestlé Waters NA continues to promote EPR as a workable solution for lagging packaging recycling rates. The company's CEO until recently, Kim Jeffery, was uncharacteristically open and blunt about the challenges of recycling its packages. While companies in other sectors, such as electronics, have endorsed EPR solutions for recycling waste, Jeffery is the only CEO of a major U.S. company to date to publicly promote EPR for packaging. He spent several years promoting EPR as an option before retiring in 2013. "We need to come together and figure out systemic ways to improve recycling in the United States," Jeffery told GreenBiz in an interview upon stepping down. "We have a broken system of recycling in America. Nobody is winning right now on this thing. We're not moving the needle." On the subject of EPR, he added, "I don't have any friends at all. I think some of the beverage companies would rather see that than a bottle bill, but they haven't put their arm around me and said, 'Kim, let's go do this together.' It's interesting to me because we live under

extended producer responsibility laws in Europe, and all of the companies that sell their products in America also sell in Europe.”¹¹⁹

Most brands that responded to our survey still oppose or offered no opinion on systemic solutions to increasing recycling rates, like new container deposit laws or EPR laws. What is more concerning is that none offered scalable alternatives to EPR that could significantly increase packaging recycling rates, suggesting it is still not a high priority on their sustainability agenda. However, the fact that beverage and CPG companies are contributing loan capital to the new Closed Loop Fund indicates an incremental advance: Companies in both sectors are acknowledging that they bear some responsibility for improving packaging recycling.

At the same time, the conversation about how to increase recycling rates has shifted in recent years from a focus on

Most brands that responded to our survey still oppose or offered no opinion on systemic solutions to increasing recycling rates, like new container deposit laws or EPR laws. What is more concerning is that none offered scalable alternatives to EPR that could significantly increase packaging recycling rates, suggesting it is still not a high priority on their sustainability agenda.

Fig. 9: Brand Positions on Extended Producer Responsibility Systems to Boost Postconsumer Packaging Recycling

SYSTEM	SUPPORT	OPPOSE	NEUTRAL
Consumer deposit system managed by government	Nestlé Waters NA ^a New Belgium	Coca-Cola Dr Pepper Snapple PepsiCo General Mills	Starbucks Dunkin’ Brands Kellogg Co.
Consumer deposit system managed by producer companies	Nestlé Waters NA ^b	Coca-Cola General Mills Kellogg Co.	Starbucks Dunkin’ Brands Dr Pepper Snapple New Belgium PepsiCo
Consumer deposit system managed by consortium of stakeholders (NGOs, government, producers)	New Belgium	Coca-Cola Dr Pepper Snapple Nestlé Waters NA ^c PepsiCo General Mills Kellogg Co.	Starbucks Dunkin’ Brands
Extended producer responsibility (EPR) fees managed by government	Nestlé Waters NA ^d New Belgium	Dr Pepper Snapple General Mills Kellogg Co.	Starbucks Dunkin’ Brands Coca-Cola PepsiCo
EPR fees administered by producer companies	Nestlé Waters NA	General Mills Kellogg Co.	Starbucks Dunkin’ Brands Coca-Cola Dr Pepper Snapple New Belgium PepsiCo
EPR fees managed by consortium of stakeholders (NGOs, government, business)	Nestlé Waters NA New Belgium	Dr Pepper Snapple General Mills Kellogg Co.	Starbucks Dunkin’ Brands Coca-Cola PepsiCo

a Company commented that it supports this option “where playing field is level” but opposes it “where recovery is not the goal.”

b Company comment: “Funds should go to recycling only.”

c Company comment: “Global experience shows this increases costs with no marked system benefits.”

d Company added it would support this option in places “where, like Massachusetts, it is the only EPR-like option. In general, we prefer fees administered by producer responsibility organization (PRO).”

beverage containers to a broader discussion with consumer packaged goods and grocery companies, which place far more packaging into commerce than beverage companies (this is discussed further in the materials recycling section of chapter 3).

The American Institute for Packaging and the Environment (Ameripen) is an industry packaging trade organization created to develop policies on environmental packaging programs, legislation, and regulation. It undertook a study of curbside recycling in 100 major cities and found what many recycling advocates already know: There is inconsistent adoption of best practices that can help increase recycling rates. These practices include “pay as you throw” policies, landfill bans on packaging, and mandated residential curbside recycling.¹²⁰ Initially Ameripen indicated it would raise funds for pilot projects in some of the cities identified in its study, but it subsequently abandoned the idea of directly funding recycling programs and now states that it will endorse legislation that will have a similar impact. This is at best an indirect benefit to recycling rates and far from leadership activity on this issue.¹²¹

While EPR or some equivalent system to increase recycling rates nationally remains a long-term goal for Nestlé Waters NA and activist groups like the Make It, Take It campaign, it appears that more progress in the short term will be made by pressing for best practices to increase curbside recycling regionally or in selected communities.

EVALUATION OF CORPORATE PERFORMANCE

We evaluated corporate performance in the areas of materials source reduction, reusable packaging, use of recycled content, use of recyclable packaging, and actions taken to promote materials recycling. Based on information provided by companies and publicly available data, we established four levels of performance: Best Practices, Better Practices, Needs Improvement, and Poor. (See Figure 10.)

No brands earned the highest level of Best Practices. New Belgium, Coca-Cola, and Nestlé Waters NA all ranked clearly higher than other companies surveyed and merited placement in the Better Practices category; PepsiCo ranked somewhat lower but is also included in this category. New Belgium and Nestlé Waters NA both endorsed some form of EPR for packaging policies to increase recycling rates. New Belgium also endorsed consumer deposit laws administered by government or a consortium of stakeholders; Nestlé Waters NA supports deposit systems managed by producers or in some cases by government. Coca-Cola moved from favoring EPR to a neutral position, but its responses indicate that the company is keeping an open mind regarding producer responsibility legislation, and it separately invests in numerous programs to recycle its containers globally.

PepsiCo uses consistent levels of recycled plastic in bottles and sponsors several recycling efforts, but its Frito-Lay snack division puts increasing amounts of nonrecyclable flexible packaging on the market.

Companies listed in the Needs Improvement category have work to do but generally have made some notable progress in at least one aspect of packaging sustainability. Dr Pepper Snapple is neutral on deposit programs and EPR programs managed by producers but has yet to set its own container recycling goals. Diageo has made significant progress on source reduction of glass bottles and has good future source reduction and recycled content goals, but it did not weigh in on questions of broad systems solutions like deposits or EPR. Anheuser Busch’s recycling subsidiary has recycled more than 360 billion cans since 1978. Companies listed as Poor provided little or no information, and our research was unable to find publicly available data indicating multiple leadership actions on packaging sustainability. See Figure 11 for more information on company strengths and weaknesses.



Fig. 11: Beverage Brand Strengths and Weaknesses

	Strength	Weakness
New Belgium	Strong commitment to EPR legislation Supports container deposit legislation Some refillable containers (growler) Recycled content Recycling goals	
Nestlé Waters NA	Strong commitment to EPR legislation Refillable 5 gallon bottles Packaging reduction Recycled content Recycling goals	
Coca-Cola	Recycling goals Packaging reduction Source reduction goal Bio-sourced plastics Willing to consider EPR	Failed recycled content goal No refillables
PepsiCo	Significant recycled content Recycling goals Willing to consider EPR Packaging reduction	No refillables Stopped bio-sourcing project Significant non-recyclable packaging
Dr Pepper Snapple	Packaging reduction Neutral on some EPR/deposit plans	No recycling goals No recycled content goals No refillables
Diageo	Packaging reduction Recycled content goal	No recycling goals
Anheuser Busch	Packaging reduction Owns can recycling operation	No recycling goals No recycled content goals Minimal disclosure
Heineken	Packaging reduction	No recycling goals No recycled content goals Minimal disclosure
MillerCoors	Packaging reduction	No recycling goals No recycled content goals Minimal disclosure
Boston Beer	Packaging reduction	No recycling goals No recycled content goals Minimal disclosure
Red Bull	Packaging reduction	No recycling goals No recycled content goals Minimal disclosure

CHAPTER 3: CONSUMER PACKAGED GOODS/GROCERY SECTOR

While much attention on packaging recovery has been historically focused on beverages, bottled or canned drinks make up only about 19 percent of all packaging in the United States.¹²² Far more is generated by the grocery and consumer goods industries. Grocery stores increased sales of private-label goods, also known as store brands, to \$59 billion in 2012, or 19 percent of their total sales.¹²³ The proliferation of private brands, as well as in-store packaging for meats, produce, deli, and other fresh foods, put grocery chains like Walmart and Safeway (as well as the companies that supply them, like Unilever and General Mills) on the front lines of consumer packaging sustainability.

Many recyclable forms of packaging, like paper and glass, are swiftly losing market share to plastic packaging, especially flexible plastic packaging in the form of pouches, now used to package everything from drinks to dog food to detergent.

While plastics provide many demonstrable benefits in food packaging, including environmental benefits such as reduced breakage and lighter weight, they also exact a cost on the environment that is just now beginning to be calculated. A recent report from the U.N. Environment Programme and the Plastics Disclosure Project, an NGO, gave a preliminary estimate of the natural capital cost of plastic use in the consumer goods industry—essentially the estimated dollar cost of damage done to the environment as a result of plastic use.¹²⁴ The report put the figure at \$75 billion per year and cited a range of environmental impacts—from harm done by plastic litter to ocean wildlife to the loss of valuable resources when plastic waste is sent to landfills rather than recycled. Plastic use in the food sector had the largest impact in absolute terms, responsible for almost a quarter of the total natural capital cost (\$18 billion), with soft drinks second at 14 percent (\$9 billion). Nearly a third of the cost was due to greenhouse gas emissions from raw material extraction and processing, and marine pollution was the largest downstream cost at \$13 billion. The goal of the study was to help companies understand the risks and opportunities of plastic use and to build a business case for improved management. The plastics use valuation study confirms the perspective of the authors of this report that significant environmental risks are associated with the use of plastic, including resource inefficiency, inadequate solid waste management, and ocean plastic pollution, and that company efforts to move toward taking responsibility for reducing these risks and enhancing overall packaging sustainability are inadequate.

Surveys were sent to 20 large consumer goods and grocery companies. They were Campbell Soup Co., Clorox Co., Colgate-Palmolive Co., ConAgra, Dean Foods, General Mills, Johnson & Johnson, Kellogg Co., Kraft Foods Group Inc., Kroger Co., Mondelez International, Nestlé USA, Procter

& Gamble Co. (P&G), Safeway Inc., Smithfield Foods Inc., SuperValu Inc., Target Corp., Unilever PLC, Walmart Stores Inc., and Whole Foods Market. (Note that Johnson & Johnson includes both a consumer division and a pharmaceutical division; in this report, “Johnson & Johnson” refers to the consumer division, known as the Johnson & Johnson Family of Consumer Companies, and not the pharmaceutical division.) Companies that completed surveys were Campbell Soup, Clorox, General Mills, Johnson & Johnson, Kellogg, Smithfield, and Unilever. Companies that did not respond were analyzed through publicly available information.

Since many companies are not ready to substantively discuss packaging sustainability, the following discussion represents only an initial look at best practices and ongoing challenges in the consumer packaged goods (CPG) sector. Because of the size and complexity of the consumer goods and grocery sectors, we are only scratching the surface of these issues. Consequently, we have not evaluated company performance overall, as we have for the QSR and beverage sectors. This section is focused more on highlighting better practices and challenging laggards.

While plastics provide many demonstrable benefits in food packaging, including environmental benefits such as reduced breakage and lighter weight, they also exact a cost on the environment that is just now beginning to be calculated.

MATERIALS USE

Materials use in the CPG sector varies greatly, of course, by company and products marketed. Companies like General Mills and Kellogg Co. that sell a lot of cereal use mostly paper packaging (including plastic-coated paper). More than 90 percent of Kellogg’s packaging is paper-based, as is 76 percent of General Mills’. More diversified firms like Unilever, a giant food, personal care, and household products company, have a broader mix of materials used. Unilever also uses a lot of paper packaging (34 percent), but flexible laminates are second at 17 percent, glass at 16 percent, PP at 13 percent, and PE at 11 percent.¹²⁵

Some companies are using packaging derived from biologically renewable sources like corn and sugarcane. Whether these changes are environmentally preferable depends on the full life cycle of the product, including recycling/composting/disposal options for the new materials (discussed earlier, in the materials use section of chapter 2).

There may be opportunities for increasing materials sourced from agricultural residues such as wheat straw, which generally is ecologically preferable to on-purpose crop use.

Companies prioritizing biologically-derived packaging include:

- Procter & Gamble's 2020 sustainability goals include replacing 25 percent of petroleum-based materials from a 2010 baseline with sustainably sourced renewable materials, including bioplastic in some shampoo bottles.¹²⁶
- General Mills said in its survey response that it uses about 57 percent bioPE in its Cascadian Farms cereal box liners.
- Johnson & Johnson said in its survey response that it uses a bio-based HDPE resin in its Sundown sun care products in Brazil. This comes to about 213 tons of recyclable bio-based resin per year.

Source reduction: The Grocery Manufacturers Association (GMA) said in 2011 that its members had reduced packaging weight by 1.5 billion pounds between 2005 and 2010 and expected to cut another billion pounds between 2011 and 2020.¹²⁷ If the reductions actually occur, they would represent a 19 percent decline in total weight. However, this is not a formal commitment, and there is no plan by the GMA to assure third-party verification of data or to ensure that reductions made are net reductions after factoring in continued sales growth. The timing of the announcement was viewed by some advocates as a tactic to forestall requests being advanced by Coca-Cola and Nestlé Waters NA for other member companies to take responsibility for postconsumer packaging.

Several manufacturing companies reviewed have set goals to reduce packaging by lightweighting, concentrating products, and eliminating unnecessary packaging in the supply chain. For example, Unilever aims to reduce the weight of packaging by one-third (33 percent) by 2020. Other companies' source-reduction goals and accomplishments included these highlights:

- Walmart Stores achieved its commitment to reduce packaging across its global supply chain by 5 percent and cut plastic bag waste by 33 percent globally by 2013 (more details below).¹²⁸
- P&G's 2020 sustainability goals call for a 20 percent reduction in packaging per consumer use. As of 2013, it had reduced packaging by 4.5 percent per consumer use through product compaction, lightweighting, and more efficient transport methods.¹²⁹
- Clorox said in its survey response that it intends to reduce primary packaging by 10 percent by 2020 (using a 2011 baseline).

- Unilever said in its survey response it achieved an 11 percent global reduction in weight per consumer use in 2013 (relative to 2010) through a combination of lightweighting, material design optimization, and compression.
- Kraft and Mondelez, before they split into two companies, eliminated around 100,000 tons of packaging material from their supply chain between 2005 and 2010.¹³⁰
- Mondelez aims to eliminate an additional 22,500 tons of material from packaging by 2015.¹³¹
- Publix Markets, working with suppliers on deli wrap, plastic produce bags, and two-liter water bottles, was able to reduce its plastic use by 482 tons annually.¹³²

Johnson & Johnson's Earthwards® program seeks to reduce the environmental impacts of its products and packaging. It has a 2015 goal to improve the sustainability profile of at least 50 Earthwards-recognized products in its consumer sector. In its survey response, the company noted that the majority of packaging improvements thus far have been made by reducing packaging size or using more sustainable materials like postconsumer recycled content or certified sustainable paperboard. No specifics or further metrics were provided.

Walmart says its packaging reductions led to a nearly 10% drop in greenhouse gas impact of packaging at its U.S. stores.

It is difficult to do a meaningful evaluation or comparison of companies in terms of these goals because there is no standardization in their reporting, and because the types of packaging used vary greatly across companies and product lines. In some cases, as in several of the examples cited above, baseline packaging quantities are not available, so it is not possible to assess the actual level of reduction. 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, which reduces overall weight without reducing the number of containers used and discarded.

Walmart's 5 percent packaging reduction goal

Walmart's reaching its 5 percent packaging reduction goal in 2013 was based on a request to thousands of its suppliers to improve their packaging. Both Walmart's private-label brands and the national brands it sells were asked to participate. To standardize and measure supplier performance, the company developed a packaging scorecard in 2006 that evaluated improvements using the following weightings for gains in specific categories: 15 percent of a supplier's total score was based on reductions in greenhouse gas and CO₂ emissions per ton of production; 15 percent on material value; 15 percent on product/package ratio; 15 percent on cube utilization; 10 percent on transportation; 10 percent on recycled content; 10 percent on recovery value; 5 percent on renewable energy used in production; and 5 percent on innovation.¹³³ The scorecard prompted improvements that led to a 40 percent reduction in plastic resin use for salad packaging, a 26 percent reduction in the use of corrugated paperboard in a line of processed meats, and improvements in packaging for prescription medications, toys, and CDs and DVDs. The improvements led to reductions in the GHG impact of packaging by an average of 9.8 percent at U.S. Walmart stores, 9.1 percent at Sam's Club stores, and 16 percent at Walmart Canada stores.

The company will continue to encourage packaging reductions by folding the packaging scorecard into its Sustainability Index, which uses supplier questionnaires based on key performance indicators to build what it describes as a science-based sustainability measurement and reporting system for the consumer goods industry. The resulting scorecards help both buyers and suppliers understand actionable steps for improvements. For example, at a product sustainability expo in April 2014, one supplier outlined how redesign of a handle on a juice jug would cut the use of resins by 1.4 million pounds. Walmart challenged Procter & Gamble to further concentrate its line of already concentrated detergents and remove 25 percent of the water they contain by 2020, which will presumably allow P&G to use less packaging.¹³⁴ Walmart's size and influence can result in commitment to significant reductions by other brand retailers, as Walmart is often their largest customer.

Concentrated products: Another way of reducing packaging waste is rethinking delivery of the products themselves.

For example, some newer detergent pods come with fully dissolvable casings, requiring no additional packaging which must be disposed. Campbell Soup Co. has traditionally sold its soups as concentrates, which reduce packaging, shipping weight, and shelf space. Toilet paper can be sold in "double rolls," with more product placed on each roll, reducing packaging. In 2011, P&G announced it would compact its entire line of powdered detergents, resulting in significant reductions in energy consumption and packaging.¹³⁵ Clorox stated in its survey response that one of its most successful packaging reductions occurred when it concentrated its Liquid Bleach. This helped reduce the amount of primary packaging (carton and plastic) by approximately a third. Colgate has also achieved successful packaging reductions by concentrating products such as dishwashing liquid and fabric softener, resulting in additional savings on water and transportation.

The EPA estimates 3.8 million tons of plastic bags and wraps are generated annually in the United States and that only 11.5 percent are collected for recycling.

Reuse: The most common reusable item cited by companies surveyed was the reusable grocery bag, which in many cases has replaced disposable plastic bags. The EPA estimates 3.8 million tons of plastic bags and wraps are generated annually in the United States and that only 11.5 percent are collected for recycling.¹³⁶ The portion of this total most familiar to consumers is plastic grocery bags made of HDPE or LDPE. The EPA estimates that 700,000 tons of HDPE bags are produced annually in the United States (equivalent to 107.7 billion individual bags), with an estimated recycling rate of 7.1 percent. 2.3 million tons of LDPE bags are produced in the United States each year, with an estimated recycling rate of 17%. The wasted plastic bags can clog drains, crowd landfills, and harm wildlife if washed into oceans or waterways. Some cities (and, in 2014, the state of California) have implemented bans or fees on single-use plastic bags to reduce litter and plastic migration into local waterways.

Grocery stores can have a significant impact on consumer behavior by promoting and selling reusable grocery bags to replace single-use plastic bags. For instance, they can:

- promote sales of reusable bags through product placement, variety, and reduced cost;
- place reminders on shopping carts and entry doors to "remember your reusable bag," to reinforce consumer behavior;

- offer incentives such as Whole Foods' 5-cent credit for bringing a reusable bag.

Publix has sold more than 13 million reusable shopping bags since 2007, helping reduce consumption of single-use paper and plastic grocery bags by more than 1 million per day. Publix's initiatives to reduce the use of paper and plastic grocery bags at checkout include training for service clerks, bag reduction goals for every store, progress monitoring, communication campaigns to encourage use of reusable bags, and distribution of free reusable bags through various partnerships. Its efforts have resulted in an estimated savings of more than 3 billion bags since 2007.¹³⁷

Walmart reduced plastic bag waste by more than 38 percent by the end of 2013, compared with a 2007 baseline, representing a reduction of 10 billion bags annually. Its international program included customer rebates, cashier training, and the sale of foldable grocery trolleys and reusable bags.¹³⁸

Other corporate efforts toward reducing single-use plastic bags include:

- Safeway's target of eliminating 1 billion paper and plastic bags in stores by 2015. As of July 2014, it has already eliminated more than 300 million plastic and paper bags.¹³⁹
- Kroger's sale or provision of more than 8 million reusable bags in 2013—an average of 22,000 bags per day. It provides signage on cart corrals in parking lots reminding customers to bring their bags.

Reusable plastic containers (RPCs): Another best practice in packaging reuse is the shipping of produce in RPCs, which replace corrugated and waxed-cardboard boxes. "Waxed cardboard" can refer to both cardboard coated with paraffin

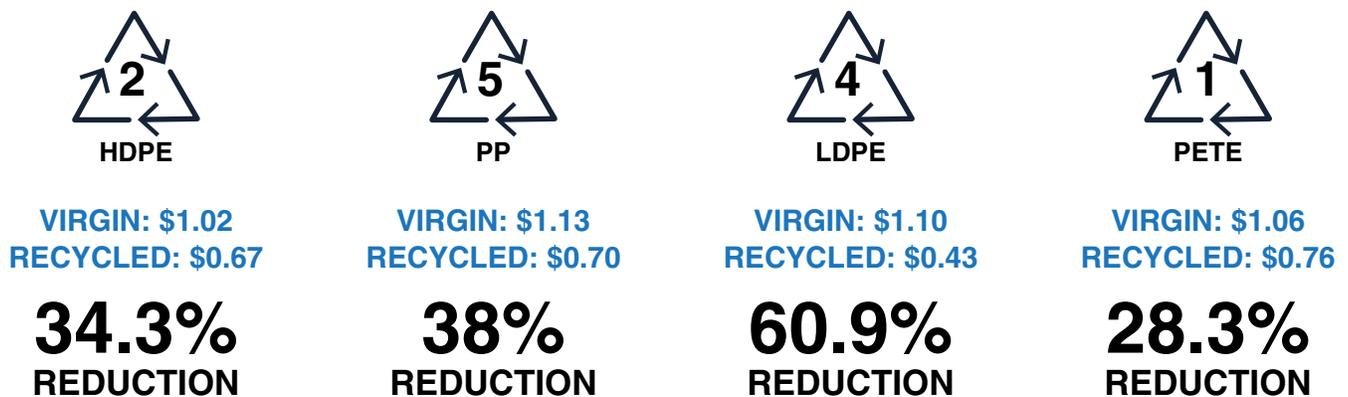
Walmart estimates that its push to increase the use of postconsumer recycled plastic in packaging and products by 3 billion pounds by 2020, along with increase in recyclability, will reduce GHG emissions by nearly 3 million metric tons and create 15,000 related jobs.

wax and cardboard lined with polyethylene, both of which have limited end-of-life options (typically composting or recycling into artificial fireplace logs). In 2013 Kroger shipped fresh produce in 57 million RPCs, eliminating the use of more than 47,000 tons of waxed and corrugated boxes. Publix extended the use of RPCs to frozen seafood, significantly reducing the use of polystyrene foam and waxed cardboard, which would otherwise go to landfill.

RECYCLED CONTENT

The most significant commitment to increasing use of recycled content in packaging was an audacious goal unveiled by Walmart in early 2014 to boost the use of postconsumer recycled plastic in packaging and products by 3 billion pounds (1.5 million tons) by 2020. The company estimates that its push for a big increase in recycled content and recyclability for plastic packaging will reduce GHG emissions by nearly 3 million metric tons and create 15,000 related jobs.¹⁴⁰ Using its influence as the largest U.S. retailer and grocer, the company will be expecting its private-brand suppliers as well as national brands to contribute to this goal, which could increase the amount of recycled content in

Fig. 12: Walmart says prices of recycled content plastic resins are on average 30% lower than virgin resin



Source: Walmart Sustainability Expo, streamed video, April 29, 2014

plastic packaging used in the U.S. by an estimated 30 percent. Because of Walmart's size, by simply stating a preference for higher recycled content, the company can essentially create demand for it.

One reason the company is optimistic it can meet its goal is that postconsumer resin, which used to cost more than virgin resin, is now on average 30 percent less, according to the company (see Figure 12). Rob Kaplan, Walmart's director of product sustainability, estimates that about 1 billion pounds in increased use of recycled plastic resin can come directly from supplier actions, with the rest coming from increased collection of postconsumer plastics through improvements in curbside recycling, to be partly funded by Walmart's new Closed Loop Fund (discussed below in the recycling section), which in turn should increase the volume of materials needed to expand recycled content operations.¹⁴¹ "This is a way to improve the sustainability of all of the products," said Kaplan, adding that cost and volatility of packaging materials is also a driver for the company to seek more recycled content.¹⁴²

Other companies have set recycled-content goals as well:

- Colgate-Palmolive committed to As You Sow in April 2014 to increase the average recycled content of its packaging from 40 percent to 50 percent by 2020.¹⁴³
- Clorox's 2020 goal is to use only recycled or third-party certified virgin fiber in packaging, according to its survey response.

- P&G's 2020 sustainability goal is to have 100 percent of its paper packaging contain either recycled or third-party-certified virgin content.¹⁴⁴

- Unilever's 2020 sustainability goal is to increase the recycled material content in its packaging to maximum possible levels, according to its survey response.

And companies have reported these recycled-content achievements:

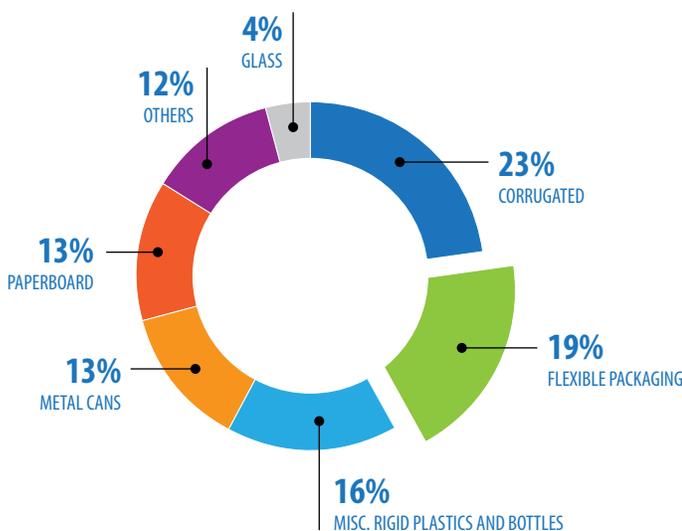
- Unilever incorporated 3,500 tons of postconsumer recycled materials into its rigid plastic packaging in 2013 at a global level, according to its survey response.
- In Chile, Walmart created a new bag made of 75 percent recycled plastic that has the potential to divert 1,500 tons of plastic from landfills annually.¹⁴⁵
- Clorox said in its survey response that its paper packaging contains an average of 77 percent postconsumer content.
- Colgate uses between 60 percent and 100 percent postconsumer recycled PET in its cleaning and personal-care bottles and expects to expand use as the supply of postconsumer recycled PET increases from community recycling programs.¹⁴⁶

RECYCLABILITY/COMPOSTABILITY

Flexible package recycling challenges: A major concern to groups promoting packaging recycling and a circular materials economy is the growing use of flexible composite plastic packaging such as multi-laminate pouches, used for grocery goods including many types of food, laundry detergent, and children's beverages; and of flexible films used to package snack foods like potato chips, cookies, and candy bars. The flexible packaging industry is one of the fastest-growing packaging sectors; it is now the second largest packaging segment in the United States after corrugated cardboard, garnering 18 percent of the \$145 billion U.S. packaging market (see Figure 13).¹⁴⁷ As noted earlier, flexible packaging ranks second in material use by volume at Unilever (17 percent) and third at PepsiCo (15 percent).

Virtually none of these flexible packaging materials are collected for curbside recycling anywhere in the world. Many companies use life cycle assessment (LCA) to guide them on packaging sustainability but have focused their actions mostly on product lightweighting, material-use reduction, and elimination of manufacturing waste. In many cases, these goals have been easy to justify because using lighter and fewer materials saves money for the company. But LCAs do not necessarily adequately assess the social, environmental, and economic impacts of a growing form of packaging that is currently destined for the landfill. For example, "LCAs don't include good data on the persistence or accumulation of plastics in the environment or the end point of related impact categories," said Anne Johnson,

Fig. 13: Relative market share of packaging materials in U.S. (2012)



Source: <http://www.statista.com/statistics/258971/market-share-of-the-us-packaging-industry-by-segment>

The flexible packaging industry is one of the fastest-growing packaging sectors; it is now the second largest packaging segment in the United States after corrugated cardboard.... Virtually none of these flexible packaging materials are collected for curbside recycling anywhere in the world.

vice president of recycling consultant Resource Recycling Systems. “Thus LCAs cannot presently deal with the key social issues of litter and waste management adequately, and designers using LCA are blind on these issues. This is a major shortcoming. Data sets supplemented with additional research need to be integrated into LCA and other packaging tools to help address this.”¹⁴⁸

Materials that are “designed for the dump” reinforce a message to consumers that it’s okay to continue to throw away materials that could have been made to be recycled.

The increasing number of products using flexible packaging raises serious questions about the influence and effectiveness of corporate design-for-environment programs that appear to ignore end-of-life considerations. The rapid growth of nonrecyclable packaging suggests that marketing considerations and consumer convenience outweigh more comprehensive sustainability considerations. (As noted earlier, although there are some environmentally positive attributes associated with this type of packaging, recyclability and other factors—such as use of recycled content or renewable materials—are typically not incorporated.) Products made from nonrecyclable materials represent substantial lost revenue to potential recyclers.

Designing packaging for sustainability should provide for materials to be recycled whenever possible. William McDonough, a leading sustainability architect and green design adviser, calls pouch packaging a “monstrous hybrid” designed to end up in either a landfill or an incinerator. “It’s so immensely curious how stupid modern packaging is, and it’s getting worse,” he told GreenBiz in late 2013. “I see packaging awards being given to these pouches as more efficient containers of, say, a cereal.... [I]t’s wrapped in seven plastics with undefined inks and metallized polymers. It doesn’t have a recycling symbol on it because you could never recycle it.... And yet it’s being put forward as a more efficient package.”¹⁴⁹

The nation’s largest waste hauler, Waste Management Inc., is concerned that the increasing quantity of low-value materials like flexible packaging in the waste stream will make it harder to improve or even maintain overall recycling rates, particularly as packages become more complex.

Reliance on LCA “often leads to decisions made at the expense of recyclability. Great designs that are sustainable on many fronts are beginning to push low value and the materials are hard to capture into the recycling marketplace,” said Tom Carpenter, director of sustainability services. “On the back end, you are left with bales of unwanted materials or mixed residues destined for landfill. As the value of materials continues to degrade and hybrid products [e.g., pouches] increase, it is becoming harder to justify new technologies to effectively capture the ever-evolving packages.”¹⁵⁰

Even packaging manufacturers are conceding they have focused too much on reducing carbon emissions and have failed to take a sufficiently broad view including end-of-life fate and impact. John Baumann, CEO of Ampac, a major supplier of flexible packaging, suggested at a 2014 packaging conference that the industry needs to move from a narrow view of sustainable packaging based primarily on carbon emissions to a more holistic view looking at all inputs and outputs, including recyclability.¹⁵¹

Since recycling is not currently feasible for flexible packaging, the Flexible Packaging Association (FPA) says it has conducted several studies of possible ways to recover the energy contained in flexible packaging through “resource recovery” technologies like gasification, engineered fuels, and pyrolysis. It is currently conducting a pilot project in Citrus Heights, California, collecting flexible packaging in specially marked purple bags provided to residents. Pouches and films are collected curbside and sent to a pyrolysis plant in Oregon. However, even before considering sustainability concerns with this approach, volume is a challenge for making this a cost-effective option. One of the central benefits touted by industry, flexible packaging’s smaller size, means it is harder to collect sufficient volume to justify commercial-scale pyrolysis in many communities. The association estimates it would take a city of 6 million people and a sustained 20 percent collection rate to cost-efficiently use a pyrolysis unit exclusively processing laminates.¹⁵²

In addition, pyrolysis and other waste-conversion technologies raise concerns among many environmental groups, which identify similar downsides with these processes as with incineration. While the FPA asserts that pyrolysis involves no burning of materials but rather a melting process, some environmental groups and the European Union consider pyrolysis and gasification to be types of incineration, according to the advocacy group Global Alliance for Incinerator Alternatives (GAIA). The group says tests at a trial pyrolysis facility for municipal solid waste in Southern California found more dioxin, volatile organic chemicals, and particulate emissions than at existing mass-burn incinerators in the region.¹⁵³ Moreover, whether or not it is technically incineration (or, as is true for many conversion technologies, it creates products that are subsequently incinerated), pyrolysis and other technologies that convert

materials to energy represent a one-time use of that material. Ideally, for most materials recycling is preferable because it displaces virgin materials in the production process, typically resulting in many resource reductions each time recovered material is used, including even more energy saved than can be produced by converting materials to energy (see, for example, [EPA's WARM calculator](#)).

Unilever acknowledges a problem with pyrolysis. The company briefly used pyrolysis for collected pouches and sachets of product packaging in India but according to Louis Lindenberg, global packaging sustainability director, it now realizes this was not an ideal solution. Unilever is involved in research on a new technology to recycle flexible packaging but believes such a solution is still a few years away.¹⁵⁴ The company gave no further details. Procter & Gamble has also indicated it will devote resources to making its flexible packaging recyclable.¹⁵⁵

If flexible packaging could be made from a single type of plastic, it could be more easily recycled. That may be possible, but it has proven challenging because the main attraction to brands and consumers of current flexible packaging is the moisture barrier and shelf-life extension that is derived from a combination of several layers of materials. Ampac introduced a recyclable stand-up pouch in 2011 made from HDPE and said it could be recycled with film bags at bins provided in grocery stores.¹⁵⁶

Materials that are “designed for the dump” reinforce a message to consumers that it’s okay to continue to throw away materials that could have been made to be recycled.

Improving carton recycling: The Carton Council, the industry association for gable-top carton and aseptic packaging manufacturers, is underwriting efforts to help develop a market for its previously unrecyclable packaging, and this initiative could serve as a model for the flexible packaging sector. Aseptic packaging is typically made from high-quality packaging paperboard coated with polyethylene on the outside and lined with aluminum on the inside (there may be additional layers of polyethylene). While the fiber and aluminum have market value, many recyclers have traditionally considered the packages too problematic to be recycled.

Since 2008 the Carton Council has financed a program to spur carton recycling. It has provided grants for sorting-facility upgrades to make collecting aseptic and gable top cartons easier, provided technical assistance to MRFs, and initially helped develop assured markets for aseptic fiber in a few regions if MRFs would collect cartons curbside. The council spent nearly \$2 million in California alone to increase collection and recycling of cartons in the state and worked

with North American paper mills to accept its postconsumer fiber. The council says 140 mills worldwide and now 8 mills in North America accept cartons.¹⁵⁷ Since the effort started, the percentage of the population with access to carton recycling has risen dramatically, from 18 percent to 52 percent. However, as noted previously, collection and processing are still a challenge, and actual recycling estimates range from industry figures of 11 percent to 14 percent to independent group estimates of just 6 percent.

While carton fiber is generally of high quality and can more readily attract markets, the aluminum foil lining and the plastic may or may not be recovered, depending upon the processor. A recent survey of MRF operators by Californians Against Waste (CAW) concluded that despite substantial growth in residential collection in California, there is no evidence that actual recycling of beverage cartons in California has moved beyond the “negligible” level reported by the EPA in 2012. One-third of survey respondents told CAW they consider cartons a low-value, low-volume material not yet worth recycling.

Cartons need to be diverted to a specialized mill with a hydropulper to be able to recover fiber. The report suggests adding cartons to the state’s highly successful container deposit program as a way to increase the volume of cartons to the point that they become more attractive to MRFs to recycle.¹⁵⁸

While carton recycling is still a work in progress, the council’s efforts demonstrate that packaging types currently viewed as disruptive and unattractive to recyclers to collect can become more widely recycled if brands placing these materials into commerce are willing to underwrite and promote efforts to improve collection infrastructure and markets for materials.

Progress on recyclability and compostability: Several companies reported specific goals to advance the recyclability of product packaging. For example, Colgate-Palmolive has committed to making 100 percent of its packaging for three of four product categories completely recyclable by 2020. It is also working toward developing a recyclable toothpaste tube or package, in order to include its fourth product category in this commitment. Currently, most toothpaste tubes are made from unrecyclable plastic laminates.¹⁵⁹ Clorox, in its survey response, discussed a commitment to use recyclable materials for the primary packaging of more than 90 percent of all its products, as well as to remove any remaining polyvinyl chloride from its packaging by 2020. In October 2014, Procter & Gamble announced a commitment to make 90 percent of its packaging recyclable by 2020 at the time of voting on a shareholder proposal on the topic filed by As You Sow.

In their survey responses, several other companies also discussed recyclability of packaging. Kellogg reported that more than 90 percent of its packaging is readily recyclable

paperboard. General Mills reported that 85 percent of its packaging is readily recyclable (primarily paper and cardboard and steel cans). Johnson & Johnson reported that 70-80 percent of its packaging is recyclable—a mix containing paperboard, corrugated cardboard, PET, and HDPE.

It is rare for a major company to try to shift packaging to a compostable form, but this was attempted by PepsiCo in 2006. Its Frito-Lay division famously designed a bag for its Sun Chips snack brand that it said was compostable in commercial composting facilities. Unfortunately, the bag crackled loudly when handled, which generated a major consumer backlash, and eventually the company withdrew it from the market. Apparently, consumers can tolerate only a limited amount of disruption in packaging on behalf of the environment.

Packaging types currently viewed as disruptive and unattractive to recyclers to collect can become more widely recycled if brands placing these materials into commerce are willing to underwrite and promote efforts to improve collection infrastructure and markets for materials.

More recently, and more promisingly, several Canadian grocery chains, led by Walmart, moved to require suppliers to shift to PET plastic for clamshell thermoformed packaging in Canada to help simplify the packaging stream. “The idea is to move away from materials that are not easily recycled and into materials that are more easily recycled,” said Guy McGuffin, former vice president for sustainable packaging at Walmart Canada. Plastics News reported 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, former technical director of NAPCOR, the PET container trade association. EPR programs in Canada impose higher fees on less recyclable materials. “The amount of dollars they would have to pay for their unrecycled materials would not be insignificant,” Schedler noted.¹⁶⁰

MATERIALS RECYCLING

As discussed earlier in chapter 2, demand for companies to take responsibility for postconsumer packaging recycling has expanded from a focus primarily on the beverage sector to a broader examination of packaging in the grocery and consumer goods sector, which places far more packaging into commerce than do beverage companies.

Over the past four years, As You Sow has contacted scores of major consumer goods companies to discuss their policies regarding responsibility for the recycling of postconsumer packaging. Most do not currently have such a policy and are reluctant to develop one. Many companies have acknowledged the problem, but few have seemed willing to take an active or leadership role. The results of our survey and research confirm that this is still the case. None of the companies that responded to the survey provided evidence that they are significantly involved in packaging recycling. Few have policies addressing the extent to which they are responsible for helping to promote or finance packaging recycling.

CPG giants like Walmart, Unilever, and P&G operate globally and are obligated to pay fees to cover the costs of recycling in other countries where they operate. Unilever acknowledged that EPR systems in Europe deliver higher recycling rates but is concerned that the EU Packaging and Packaging Waste Directive, which set recycling targets, has resulted in widely varying implementation programs in the 27 member states. Unilever views the main drawback of EPR as lack of standardization among these different implementing programs.¹⁶¹

As noted in chapter 2, attempts by brands like Nestlé Waters NA and Coca-Cola to encourage peers to agree to EPR packaging mandates or an equivalent method to increase recycling rates were largely rebuffed and led to opposition to EPR by the Grocery Manufacturers Association. However, those efforts were also a wake-up call to brands that lagging recycling rates and the wasting of valuable packaging materials in landfills are not acceptable to a range of stakeholders including investors and environmental groups. Companies are not yet ready to embrace producer responsibility, but some have moved to take incremental steps toward improving recycling.

The most significant sign of this shift was the April 2014 announcement by Walmart of the creation of a \$100 million Closed Loop Fund to finance needed improvements in U.S. curbside recycling infrastructure. The fund arose from Walmart’s convening of stakeholders who identified lack of access to capital among cities and recyclers as a root cause of lagging recycling rates. The fund is being led by Ron Gonen, former deputy sanitation commissioner of New York City, who aggressively sought to boost recycling rates in the city by increasing paper collection in schools; launching electronic waste, high-rise, and curbside organic recycling programs; expanding textile collection; and banning polystyrene foam.¹⁶²

Founding investors in the fund are an impressive roster of brands: Coca-Cola, Goldman Sachs, Keurig Green Mountain Coffee, Johnson & Johnson, PepsiCo, Procter & Gamble, Unilever, and Walmart. Gonen enumerated some key problems with curbside recycling that brands have previously

The Closed Loop Fund is a welcome step forward in strengthening U.S. recycling infrastructure, but it needs to be recognized as just the beginning of a multi-strategy solution by brands and other stakeholders that will be necessary to increase recycling rates, including the implementation of producer responsibility legislation.

been reluctant to acknowledge: About 25 percent of the U.S. population still lacks access to curbside recycling, and another 25 percent has access but lacks adequate collection bins. He expects the fund will initially make loans to cities to replace small curbside bins with larger, more efficient rolling carts. The fund will also look at ways cities can reduce trash hauler trips to landfills—thereby cutting GHG emissions—by diverting more materials into a recycling stream. That in turn will promote Walmart’s efforts to increase the supply of postconsumer recycled plastic content in goods by up to 3 billion pounds by 2020, as discussed earlier. Additionally, the fund will help give loans to private recycling processors that convert postconsumer materials into recycled content.

The Closed Loop Fund is a welcome step forward in strengthening U.S. recycling infrastructure, but it needs to be recognized as just the beginning of a multi-strategy solution by brands and other stakeholders that will be necessary to increase recycling rates, including the implementation of producer responsibility legislation. Since ratepayers in municipalities will be the likely source for fund loan repayments, this model continues to place the total financial burden on taxpayers.

Gonen acknowledged the fund is just a start. He estimates it will cost approximately \$250 million to provide recycling carts for every household that doesn’t have them, about \$500 million for MRF infrastructure upgrades, and another \$500 million to build out organics curbside programs and processing infrastructure. “While infrastructure is the foundation that enables recycling to take place, we need to ensure that healthy and robust markets are developed for the material,” he said. “The Closed Loop Fund is one important piece of the solution. While the fund invests in infrastructure, we still need other interested groups to focus on innovations in product design, markets for material, and outreach programs.”¹⁶³ This comment suggests that major brands continue to lack an overall strategy regarding how to take responsibility for improving lagging packaging recycling rates.

“The Closed Loop recycling fund is another example of easy sustainability,” said Matt Prindiville, associate director of Upstream, an NGO promoting producer responsibility for packaging. “The companies involved are not seeking to take responsibility for recycling the packaging waste they create. They are not even really ponying up the money; they’re loaning it.... This is perhaps the unspoken agreement behind this raw deal: that companies bear little to no responsibility for their packaging, and that governments should continue to subsidize the management of packaging waste through municipal waste services and taxpayer dollars.”¹⁶⁴

Gonen’s estimate that it will take \$1.25 billion just to deal with a piece of the challenge of increasing recycling rates demonstrates the lack of a key metric: a well-vetted estimate of the total cost of improving recycling rates across the board nationally. Since solid waste is dealt with at the local level in the United States and the EPA lacks authority over solid waste management, no government agency or multilateral stakeholder group has developed a credible estimate of the total cost to boost U.S. recycling rates to 75 percent or beyond. In the absence of such data, and with the debate often happening at the local level, brands are likely to continue to take the position that the recycling system just needs a few tweaks rather than major investment and structural improvement to build performance.

Another new and notable initiative is the Recycling Partnership, an alliance of corporate interests funding projects in several cities in the southeastern United States to boost recycling rates through infrastructure improvements and better management practices. Overseen by the Curbside Value Partnership, the project pools partner dollars to offer communities technical and financial assistance in four key areas: ensuring that all households with curbside recycling collection have large rolling carts, building support from local and state elected officials, improving regional coordination across the supply chain and ensuring use of best management practices, and improving consumer education and outreach to increase participation and reduce contamination. Funders include the Alcoa Foundation, Amcor, the American Chemistry Council, the American Forest & Paper Association, the Association of Postconsumer Plastic Recyclers, Ball Corporation, the Carton Council, Coca-Cola, SPI: The Plastics Industry Trade Association, and Sonoco.¹⁶⁵

Components of successful residential recycling systems

Resource Recycling Systems (RRS), a consultancy that has worked with many local governments to improve curbside recycling, says there has been substantial research developed on what factors drive comprehensive improvement in municipal recycling. CEO Jim Frey says there are six key components. The first three components focus on the infrastructure of recycling (the value chain for recovering recyclables): 1) community access to effective and convenient collection systems for a common basket of recyclables, 2) a technologically robust recycling facility that is able to sort those recyclables, and 3) strong end markets for those recyclables. The second three components focus on making this infrastructure sustainable for the long term: 4) strong and consistent community education and engagement that supports participation, 5) supporting state and local policies that encourage recycling, and 6) effective public and private coordination that funds and delivers these municipal recycling services.



Research conducted by RRS for private clients shows strong correlation between these six components and successful municipal recycling performance, measured in pounds per household diverted, Frey said. All six components must be present and at least three or four of the components need to include “best practice” approaches for success to be realized. These best practice approaches can vary from community to community and from region to region—but all six components must work together as a system to drive effective municipal recycling performance, according to Frey.¹⁶⁶

Incremental actions on recycling: While several companies responding to our survey mentioned their internal waste-reduction efforts, few demonstrated an awareness of the need to develop stronger policies to increase recycling of postconsumer packaging. Unilever stands virtually alone in setting company-wide goals for postconsumer recycling of its product packaging, aiming to increase rates an average of 5 percent by 2015 and 15 percent by 2020 in its top 14 global markets.

In its survey response, Unilever said: “We recognize the need to work with governments, NGOs, retailers, the waste sector, and businesses to help develop infrastructure and increase consumer awareness to stimulate participation in recycling. With formal EPR proposals or voluntary agreements to support the recycling sector, Unilever evaluates individual initiatives and policies on their own merits, including their appropriateness to a country’s context, taking into account the commercial, political, and cultural realities of the market.” Unilever and Johnson & Johnson both cited their participation in the Closed Loop Fund.

Walmart is showing leadership by prioritizing the recycling of materials in its stores. By some estimates, Walmart makes \$250 million annually by efficiently collecting corrugated board packaging and other back-of-house waste like bottles, cans, coat hangers, and plastic bags and selling these materials to recyclers.¹⁶⁷ The revenue more than offsets the costs the company continues to incur for organics composting and solid waste disposal. Corrugated boxes are

so valuable they are subject to increasing theft. Recyclers in New York City estimate they lose \$8 million to \$10 million annually from poached corrugated cardboard. A reporter estimated that thieves poaching cardboard from the loading docks of a Walmart in New Jersey could make \$1,000 per night.¹⁶⁸

Procter & Gamble says its “Worth from Waste” program identifies ways to generate value from manufacturing and consumer waste through recycling, reuse, or conversion to energy. The company has conducted pilot studies in the Philippines and is working on a waste management business model that supports this goal. However, a red flag of concern is the prominent role waste-to-energy will apparently play in this program.

Several companies cited support of the How2Recycle labeling program coordinated by the Sustainable Packaging Coalition, which seeks to reduce consumer confusion around recycling by providing a clear, well-understood label that better informs consumers how to recycle a package after its use. While the labels are an improvement over current labeling, the fact that many materials are still selectively recycled locally means the labels still have to advise consumers to “check locally” to see if a particular material is collected in their area.

Johnson & Johnson reported it is migrating from a variety of on-package recycling messages to one consistent CARE TO RECYCLE® mark on new packaging graphics for PET and HDPE bottles. The company will supplement this with

a consumer awareness campaign and video educating the public about the fact that personal-care products used in the bathroom are generally as recyclable as packaging used in the kitchen.

The lack of significant participation by major CPG and grocery brands like Kroger, Kraft Foods, Mondelez International, Nestlé USA, Safeway, and Target in this survey or in substantive projects designed to increase packaging recycling rates suggests a lack of priority focus on corporate responsibility for packaging sustainability challenges and a lack of willingness to work with peers to develop scalable industry solutions. The nonparticipation of Nestlé USA in our survey is of special concern, considering the aggressive leadership by another U.S. Nestlé business—Nestlé Waters NA—on responsibility for postconsumer packaging documented in the report.

Fig. 14: CPG/Grocery Sector Examples of Leadership on Packaging Sustainability	
Colgate-Palmolive	<ul style="list-style-type: none"> Set high packaging recyclability goals Agreed to 50% average recycled content rate by 2020
Procter & Gamble	<ul style="list-style-type: none"> Set high packaging recyclability goals Agreed to work to make flexible packaging recyclable
Walmart	<ul style="list-style-type: none"> Reduced packaging by 5% across global supply chain 2007-2013 Committed to increase use of recycled resins by 3 billion pounds by 2020 Coordinated development of Closed Loop fund to boost recycling
Whole Foods Markets	<ul style="list-style-type: none"> Offers five cent credit for customers who bring in reusable shopping bags
Unilever	<ul style="list-style-type: none"> Committed to increase postconsumer recycling of packaging by 15% by 2020 Researching technologies to make flexible packaging recyclable

CHAPTER 4: KEY FINDINGS, ANALYSES, AND RECOMMENDATIONS

QUICK SERVICE RESTAURANT SECTOR

Materials Use

Our research indicated that paper (including coated paper), polypropylene (PP), and polyethylene terephthalate (PET) are the three most commonly used QSR product packaging materials. This bodes well for prospects of increased recycling. Many types of paper other than packaging are already widely recycled, including corrugated cardboard and office papers, and PET has a strong recycling infrastructure in place as well. PP needs market development, but this can grow with continued use. At present, food contamination and plastic coatings pose significant challenges to widespread recycling of paper packaging, but there is interest among QSR brands and in the paper industry in finding ways to make these materials more recyclable. Brands should continue to favor readily recyclable packaging materials but need to become more involved in efforts to ensure that recyclable materials actually get recycled.

Rigid polystyrene and expanded foam polystyrene (PS) are also widely used in QSR packaging. Both present concerns due to health risks to workers in the manufacturing process. Foam is also a common contributor to litter, as it is readily airborne and crumbles easily; it is considered a threat to marine life when littered and swept into waterways. Brands like Burger King, Chick-fil-A, and KFC, which continue to use of foam beverage cups, should follow McDonald's and Dunkin' Brands' lead in phasing them out.

Source Reduction

Starbucks demonstrated the most advanced thinking in this area by committing in 2008 to serve 25 percent of beverages in its stores in reusable mugs or tumblers by 2015, but it has since reduced the goal to just 5 percent due to implementation problems. The company needs to find new ways to motivate employees to encourage and record use of not only customer-owned reusable mugs but company-owned serviceware for patrons who consume beverages on-site.

Brands should follow Panera's example and provide reusable dining ware where feasible for dine-in customers; provide access to more reusable beverage containers, as Starbucks has done; and provide reusable food containers, as KFC has done. In general, QSRs should adopt use of reusable serviceware in units where they are trying to attract more dine-in customers.

QSRs can also achieve significant materials saving by adopting stronger distribution control measures for condiments, napkins, cutlery, and related takeout materials in their restaurants.

Recycled Content

Several QSRs have made good strides using significant levels of recycled content in packaging materials. For example, McDonald's uses 33 percent postconsumer recycled content in its sandwich boxes. Our observers found little evidence of recycled-content plastic in QSR materials; we recommend that brands expand their efforts to specify recycled content in plastics, as some have done for paper.

Starbucks is the only QSR using even a modest amount (10 percent) of postconsumer fiber content across its system in beverage containers. The company has been using recycled content in cups since 2006, but no major competitors have followed. Other brands need to specify recycled content in paper cups and food contact packaging. This will spur demand for this type of pulp, and as markets for the pulp expand, the current higher costs for food contact recycled-content packaging should drop.

While stating environmental procurement goals is helpful to signal purchasing intent to the market, we recommend that QSRs set separate goals for recycled content and certified fiber, in order to continue to advance progress in both areas rather than simply adopting whichever option is the least expensive.

Recyclability/Compostability

The vast majority of packaging used by QSRs is theoretically recyclable, but there are significant challenges to increasing recycling rates: historical concerns about food-soiled and plastic-coated materials, the need to develop or expand markets for materials, and the lack of corporate prioritization of package recycling. QSRs should work more extensively with paper recyclers so that a greater variety and amount of postconsumer packaging can be folded into mixed-paper bales for recycling. Similar opportunities exist for leveraging widespread use of PP and PET packaging to increase recycling rates of these materials.

For maximum ecological benefits, paper should be recycled rather than composted when feasible, unless food contamination prevents it from being successfully recycled. In those cases, composting paper and plastic packaging that has been certified as compostable under ASTM standards is a good alternative. Many paper products and a few plastic products are theoretically compostable (although coatings continue to be a concern), but commercial composting is not yet available in many areas. QSRs should ask their recyclers and/or solid waste disposal providers to offer composting services.

The Food Service Packaging Institute has undertaken preliminary studies indicating that more food service packaging can be accommodated by recyclers than previously thought; food contamination may be less problematic than is often assumed.

Paper mills concerned about plummeting rates of newsprint collection see a potential opportunity for recovered food service packaging to replace some of the lost recycled fiber volume.

Most QSRs use some form of black plastic for food plates, bowls, or utensils, but many materials recovery facilities cannot process black plastic for recycling due to the limitations of optical sorting equipment. This likely results in a significant loss of recyclable materials to landfilling. Brands need to either change the color of these plastics so they will be more readily recycled, or demand a technological fix from the recycling industry.

Brands using compostable plastics need to help expand the composting infrastructure for these products, ensure their products are both certified as compliant with ASTM D6400 specifications and accepted by composters, and take steps to clearly mark these products as compostable to avoid contamination of recycling streams.

Materials Recycling

With the exception of Starbucks, no QSR brand has aggressively sought front-of-house recycling for part or all of its packaging, system-wide. The small chain Pret A Manger, with 60 sites, is the only QSR that offers recycling and composting at all of its U.S. locations. Brands need to step up and commit to on-site recycling. Since the majority of QSR food is taken off premises, they also need to work with municipalities so patrons have curbside access to recycling of food service packaging and strategically located recycling bins in public areas.

Back-of-house recycling of readily recyclable materials like corrugated boxes should be standard procedure at all QSRs immediately, since it is relatively easy to implement and corrugated boxes are a high-value recyclable. McDonald's reported that a 2013 survey of 34,000 of its restaurants globally found that 77 percent were recycling back-of-house cardboard.

If brands work together to consolidate volumes of paper and plastic packaging collected on-site, they may be able to aggregate sufficient amounts to attract recycling in areas where it may not currently be economically feasible on an individual brand or location basis.

New York City is seeking businesses to sponsor placement of public recycling bins on sidewalks. A good interim step for QSR brands is to sponsor a network of recycling bins in public places near their locations to help ensure that packaging from meals consumed off-site gets properly recycled.

QSRs have not actively joined in the national debate on ways to dramatically boost lagging recycling rates, which may include taking partial or substantial responsibility for collection and recycling of postconsumer packaging. Survey respondents were neutral or nonresponsive on the subject of extended producer responsibility or deposit mandates and did not propose credible, scalable alternatives.

Materials recycling should be center stage on the agendas of QSR corporate sustainability programs, given the numerous economic and environmental benefits discussed in this report. Packaging designers can prioritize designing items to be recyclable, but the design process does not necessarily take into consideration the limitations of recycling markets or technology. Brands prioritizing recyclability of packaging need to do more to follow through and ensure that their packages actually get recycled.

Companies need to elevate waste (including recyclability, recycled content, and recycling of products and packages) on their sustainability agendas to put it on par with carbon emissions, water use, and toxins, and work on their own or with peers toward aggressive, feasible solutions.

BEVERAGE SECTOR

Materials Use

Growing use of nonrecyclable flexible packaging for children's drinks is of concern. Kraft Foods should follow the lead of its competitor Honest Tea/Honest Kids and shift its Capri Sun packaging from pouches to a more recyclable form of packaging. Capri Sun could easily be sold in recyclable PET plastic bottles, as are Minute Maid, Juicy Juice, Tropicana, and other juice drink brands. These materials are routinely accepted in most curbside recycling systems.

PET plastic, glass, and aluminum continue to be the main materials used for beverage packaging. Research continues on bio-based plastics to replace PET plastic sourced from nonrenewable fossil fuels. For its bottles, Coca-Cola is using an increasing amount of plastic derived partially from sugarcane. This is one example of a growing number of bio-based polymers that are identical to fossil-derived polymers and can be recycled in existing plastics recycling streams.

However, whether this is a net environmental benefit is a complicated issue, as questions remain about the potentially disruptive impact of diverting crops grown for food to packaging purposes. This issue could potentially be addressed by relying on agricultural residues for feedstock for bioplastics, but there is uncertainty about whether adequate supplies of residues exist to meet demand if companies begin to employ these materials en masse and at scale. There is also a concern that bioplastics that are not compatible with traditional recycling could potentially contaminate the recycling stream.

Source Reduction

Several companies, including Coca-Cola, PepsiCo, Anheuser Busch, and MillerCoors, reported significant weight reduction in packaging. Numerous companies have made good progress on lightweighting; they now need to turn their attention to more challenging aspects of packaging sustainability such as boosting rates of materials recycling.

Recycled Content

Beverage companies, especially those that make their own cans, should be more readily able to increase recycled content as materials with higher percentages of recycled content become available. For example, aluminum can maker Novelis introduced an aluminum can body sheet containing 90 percent recycled content. Brands should take advantage of this product; it is a simple action that can boost their sustainability profiles.

An increasing amount of recovered PET (rPET) is being purchased domestically. Recovered PET processed in the United States increased from 45 percent of all U.S. collections in 2009 to 66 percent in 2011. PepsiCo is the only major beverage company maintaining a consistent, if modest, use of recycled PET content (10 percent since 2005). Nestlé Waters NA made significant strides in the use of recycled content since our 2011 As You Sow report and said it was using 50 percent rPET in all Arrowhead brand half-liter bottles. Company-wide, however, its overall use of rPET was still just 8 percent in 2014, but the company projects a major increase to 15 percent in 2015. Companies like Anheuser Busch, Dr Pepper Snapple, and MillerCoors need to disclose what level of rPET they use and set aggressive goals to increase it.

Recyclability/Compostability

The biggest challenge to increasing recyclability of beverage packaging is the growing use of flexible plastic packaging such as laminated pouches for children's beverages, including Kraft's giant Capri Sun brand, which sells in excess of \$500 million annually.

Soft drink beverage companies often provide fountain cups in QSRs. They could work with QSRs to ensure that these cups are recyclable or compostable (or find alternate cups that are more recyclable).

Single-stream recycling and brands' use of nonrecyclable materials like shrink wrap on plastic bottles both contribute to a high level of product yield loss from curbside programs, which exceeds 30 percent for highly sought postconsumer PET.

Materials Recycling

Major beverage companies like Coca-Cola, Nestlé Waters NA, and PepsiCo are taking positive individual actions to boost bottle and can recycling. Coca-Cola, Keurig Green Mountain Coffee, and PepsiCo are contributing to a new, \$100 million Closed Loop Fund created by Walmart and other major CPG brands to increase curbside recycling. Nestlé Waters NA continues to favor EPR mandates, but Coca-Cola has backed off from favoring EPR to a neutral position since As You Sow's last report. PepsiCo remains neutral. Most brands do not favor either a container deposit or an EPR scheme—two proven ways to increase container recycling. Yet the industry still lacks agreement on a scalable alternative plan

The beverage industry still lacks agreement on a scalable alternative plan for achieving commitments made to increase recycling rates to 50 percent or 60 percent by 2016 or 2018.

for achieving commitments made to increase recycling rates to 50 percent or 60 percent by 2016 or 2018. Companies seem content recommending a patchwork of individual actions such as volume-based pricing, landfill bans, and mandatory recycling laws. While these measures can sometimes lead to increased collection, they have not been implemented widely or uniformly enough to impact national recovery rates. With the exception of the small brand New Belgium, which has endorsed EPR, brewers seem absent from this debate.

CONSUMER PACKAGED GOODS/ GROCERY SECTOR

Materials Use

Consumer goods and grocery companies have made some significant commitments to the reduction of packaging materials and the use of reusable containers for transporting items and stocking them on the store shelves.

Source Reduction

Walmart made good on a commitment to reduce packaging across its global supply chain by 5 percent. To reach this goal, the company sought reductions from thousands of its suppliers, and this had a cascading effect on many other CPG brands. Several manufacturing companies surveyed have set goals to reduce packaging by lightweighting, concentrating products, and eliminating unnecessary packaging in the supply chain. Unilever said it would reduce the weight of packaging by one-third by 2020.

Recycled Content

Walmart made an audacious commitment to increase the use of recycled plastic content in its products and packaging by 1.5 million tons by 2020, which could have a significant impact in creating new markets for postconsumer plastics, creating green jobs, and reducing greenhouse gas emissions. Several other large brands have made substantial recycled content commitments as well.

Recyclability/Compostability

Use of flexible packaging is growing swiftly, with no apparent strategy by the companies that manufacture it or the brands that use it to make it recyclable. As a result, these materials are likely, at least in the short term, to continue to be landfilled, littered, and sometimes swept into waterways,

increasing the growing ocean plastic problem. Designing packaging for recyclability should be a top priority for packaging designers, given the numerous economic and environmental benefits of recycling.

The Carton Council's program to finance sorting facility upgrades and improve markets to make it easier to collect and recycle aseptic cartons has resulted in a dramatic increase in the availability of carton curbside collection, while actual recycling of these materials remains a challenge. Still, this provides a potential model for the flexible packaging industry in dealing with the lack of collection and processing of its currently unrecyclable packaging.

Designing packaging for sustainability should prioritize recycling whenever possible. The industry needs to move from a narrow view of sustainable packaging based primarily on limited life cycle analyses or measures of carbon emissions to a more holistic view looking at all inputs and outputs, including recyclability. Packaging companies should be researching ways to develop simpler packaging that can be recycled and still preserve many of the attributes that make flexible packaging popular (including the existing environmental advantages).

Materials Recycling

CPG and grocery companies substantially lag behind their beverage peers on policy development regarding responsibility for postconsumer packaging. They also trail in terms of demonstrable commitments to increasing the recycling of packaging.

Stakeholder pressure on brands has led to incremental progress. Several large consumer brands have agreed to finance a previously noted \$100 million loan fund coordinated by Walmart and other brands to improve U.S. curbside recycling infrastructure. However, loans do not shift any responsibility to brands; taxpayers will still be on the hook to repay these loans. The Recycling Partnership is an ambitious and much needed project that seeks to boost curbside recycling rates in several southeastern cities.

A nationally recognized entity needs to develop a well-vetted estimate of the total cost of improving recycling rates across the board nationally to demonstrate the scope and scale of efforts required in addition to projects like the Closed Loop Fund and Recycling Partnership.

ANALYSES AND JOINT RECOMMENDATIONS FOR QSR, BEVERAGE, AND CPG/GROCERY SECTORS

- Businesses that place substantial amounts of packaging on the U.S. market should take a strong measure of responsibility for collecting and recycling postconsumer packaging. To date, these companies haven't shown a

genuine interest in boosting recycling; instead they have used their public policy departments to fight any notion that they should take financial responsibility for recycling materials in the United States—even though they do so in many other countries.

- The QSR, beverage, and CPG sectors need to increase engagement on the recycling of postconsumer packaging. They must become actively involved in developing a consensus on new, state-level producer responsibility mandates or equivalent policies that will spread a measure of responsibility fairly among brands placing materials on the market; this will result in significant increases in container and packaging recycling rates.
- Few companies have sustainability agendas providing evidence of thoughtful, reasoned packaging policies beyond lightweighting of materials, which by now should be a fully embedded strategy. Evidence of policies on recyclability and recycled content is rare, and policies to increase collection of recycling are even harder to find outside of the beverage sector.
- A government agency or multilateral stakeholder group with buy-in from the business and environmental communities needs to develop a blueprint for—and credible estimate of the total cost of—boosting U.S. recycling rates to 75 percent or beyond.
- Companies should set high recycling goals (75 percent or more, if possible) for all individual kinds of packaging they produce or distribute, and an aggressive timeline for meeting those goals.
- The continued use of black plastic and the growing use of flexible plastic by QSR and CPG brands place essentially unrecyclable materials into commerce; this suggests a lack of attention to the downstream impact of brand design decisions. Companies should prioritize end-of-life disposal and reduction of materials in design decisions, including creating more reusable packaging options.
- Brands using compostable plastics could help expand the composting infrastructure for these products. They could also take steps to clearly mark these products as compostable once verified as compatible with ASTM standards for compostability and with existing commercial composting infrastructure.
- By supporting producer responsibility laws or equivalent policies that drive more aggressive and effective collection efforts, companies can help drive an increase in available recovered materials. This can then enable them to make commitments to use far higher levels of recycled content in product packaging, which in turn supports a circular materials economy, ensuring a stable supply of postconsumer materials to use as feedstock.

APPENDIX 1

ADDITIONAL COMMENTS PROVIDED BY COMPANIES IN SURVEY RESPONSES

Additional comments provided by companies in survey responses regarding their views on container deposit, extended producer responsibility (EPR), and other systems with the potential to dramatically increase packaging recycling in the United States. (See Fig. 9 for specific options presented in survey.)

Campbell Soup: We have not taken formal positions on EPR even though some of our operations are located in areas with programs (Canada). We have met several times with Recycling Reinvented to gather information, provide feedback on their research proposals and outline our views. In general, we see most of the challenge in keeping a level playing field among packaging and players—e.g. penalizing a highly recyclable (and recycled content) package such as steel cans to fund recycled PET for water. We don't see efficiencies in a government controlled model and would rather see infrastructure and incentives at the municipal level.

Clorox: The Clorox Company has not taken a policy stance on any of the above EPR variations. We believe in the principle of shared responsibility, with consumers, manufacturers, government and the NGO community all having roles in reducing landfill waste and increasing recycling rates. We financially support Keep America Beautiful consumer recycling education programs.

Coca-Cola: Policies are considered on a case-by-case basis for North America. Our current focus is to collaborate with other CPGs to invest in recycling and growing access to recycling. We support programs that cover many forms of packaging—like the curbside collection program—which provide a more sustainable solution for solid waste recovery.

Dr Pepper Snapple: Recovery and waste management are driven by multiple market and demographic factors that have very localized impacts. Efforts must focus not on one package type, but on the entire consumer waste stream. It is therefore difficult to express blanket support for some programs, since there is no single best option in all settings.

Dunkin' Brands: While we appreciate the groups involved in this process, we believe an important group is missing in the discussion which is the independent and small business owners who will also be impacted by any EPR efforts.

General Mills: Well-established research shows that the most effective and efficient means to increase recycling in the U.S. is through adoption of proven best practices. These include access to curbside, single-stream carts with consumer education. There are more effective and efficient ways to finance these systems, including tiered pricing, consumer disposal bans, and recycling mandates. We support

increasing recycling through the most effective and efficient means possible. We are observing growing interest amongst the NGO, government, and industry stakeholders in focusing on efficient and proven policies such as tiered pricing.

Kellogg: Company supports viable alternatives to Extended Producer Responsibility (EPR) as solutions to reduce/ recycle waste while not adding costs through fees or taxes for packaging or waste. Kellogg is committed to reducing its footprint. We will continue to drive education and engagement through on-pack guidance for consumers on how to recycle and we are aligned with recommendations provided by Ameripen including: (1) Unit-Based Pricing or Pay as You Throw—Despite the complexities of local solid waste management decisions, implementing PAYT collection systems can have significant impact on driving increased recovery and waste reduction. These programs are self-sustaining in that the costs of programs implementation are borne by the ratepayers. (2) Mandatory Recycling—This strategy has shown proven increases in material recovery, despite the challenges of enforcement. Redeployment of avoided landfill tipping fees and increased income from material recovery streams can provide financing to support infrastructure needs. (3) Disposal Bans—Bans have shown proven waste diversion and material recovery, despite the challenges of enforcement. Redeployment of avoided landfill tipping fees and increased income from material recovery streams can provide financing to support infrastructure needs.

McDonald's: As a member of Ameripen we support fact-based, resource efficient means to increase packaging recovery.

Nestlé Waters NA: NWNA supports systems that are holistic, efficient, high-performing, and achieve recovery of the widest range of recyclable materials. NWNA opposes approaches that include political complexity that distracts from recovery and increases costs.

New Belgium Brewing: We actively support the approaches listed above, and they would benefit the life cycle impact of our product. Each of the approaches, however, negatively affect[s] multiple stakeholders along the value chain—some of them being our customers. Understandably, they launch opposition to these efforts. The broader stakeholder group across the U.S. has tried to innovate on material recovery, but with little success. Perhaps an in-depth study of each material is warranted so we can find the optimal solution(s) for each material without distraction of competing materials or inconvenienced haulers.... Pull that together, and then present the challenge to innovators across the globe to solve within one system. The winner will win a significant cash prize.

PepsiCo: PepsiCo is reluctant to embrace consumer deposit and EPR fee systems because such programs are narrowly focused and can conflict with the more comprehensive recycling and litter-control systems that we support.

Smithfield Foods: Our company does not have a specific position, but would likely be supportive of a collaborative effort.

Starbucks: We want to increase recycling of packaging by choosing the best market-based solutions, which may differ from locality to locality.

Unilever: We recognize the need to work with governments, NGOs, retailers, the waste sector, and businesses to help develop infrastructure and increase consumer awareness to stimulate participation in recycling. With formal EPR proposals or voluntary agreements to support the recycling sector, Unilever evaluates individual initiatives and policies on their own merits, including their appropriateness to a country's context, taking into account the commercial, political and cultural realities of the market. In the U.S., we are participating in two new voluntary agreements, the Closed Loop Fund, an innovative investment vehicle that will help finance projects that increase recycling rates, and the I Want to Be Recycled campaign that is partnering with local governments to help increase awareness and participation in recycling programs.

APPENDIX 2

SUMMARY OF QSR OBSERVATIONAL DATA

Observational visits were conducted at 73 QSR locations in five major metropolitan areas between April and August 2014. The QSRs were in Chicago; New York City; Santa Monica, California; the San Francisco Bay Area (including Danville, Fremont, Millbrae, Oakland, Pleasant Hill, San Bruno, San Francisco, San Jose, South San Francisco, and Walnut Creek); and Washington, D.C.

The visits were performed by 12 As You Sow and NRDC employee volunteers. At 47 of these locations, information sheets were completed noting on-site practices regarding recycling, composting, types of packaging material in use, and condiment vending procedures. At 11 locations, volunteers interviewed managers about packaging policies and practices. (The information sheet queries and the interview questions for managers are given at the end of this Appendix.) In addition, packaging samples were collected at many locations.

The results of the observational visits are referred to throughout the main text of chapter 1, in particular, the Materials Use section. In addition, some highlighted trends from the observational visit data are provided below.

LOCATIONS VISITED BY BRAND

11 Starbucks—Danville, Oakland, Pleasant Hill, Chicago (2), Washington, D.C., Santa Monica, New York (2), San Francisco (2)

9 Burger King—San Francisco (2), Oakland, Chicago, Washington, D.C., Santa Monica (2), New York (2)

9 McDonald's—Oakland, San Francisco (2), Chicago, Washington, D.C., Santa Monica, New York (2), Fremont

9 Subway—Danville, Oakland, Chicago, Washington, D.C., Santa Monica, New York (2), San Francisco (2)

7 Taco Bell—Oakland, Chicago, Santa Monica (2), New York, San Francisco (2)

6 KFC—San Francisco (2), Washington, D.C., Santa Monica, New York (2)

4 Jack in the Box—San Bruno, Oakland, San Francisco (2)

3 Chipotle—San Francisco (2), Oakland

3 Dunkin' Donuts—Washington, D.C., New York (2)

3 Panera Bread—Millbrae, Walnut Creek, San Francisco

3 Pizza Hut—San Francisco (2), Pleasant Hill

3 Wendy's—San Bruno, Oakland, South San Francisco

1 Chick-fil-A—Walnut Creek

1 Domino's—San Francisco

OBSERVATIONAL HIGHLIGHTS

Recycling/composting: Of the 73 locations visited, 19 had composting and/or recycling on-site, but 16 of the 19 locations were in San Francisco or Oakland, both of which are subject to mandatory city recycling and composting ordinances. Neither of the two New York City Starbucks locations visited by our observers had recycling bins, even though the company has publicized that a recycler takes its paper cups at some city locations. One of the two Starbucks locations visited in Chicago had a recycling bin. (See the Materials Recycling/Composting section of chapter 1 for a discussion of ordinances in Seattle, San Francisco, and Alameda County, California.)

Source reduction: Six of the 47 completed on-site surveys reported locations that provided napkins in open stacks, rather than in dispensers (Chipotle in Oakland, McDonald's in Santa Monica and New York, Starbucks in Chicago, Subway in Oakland, and Taco Bell in Santa Monica). Providing napkins in a dispenser better controls the amount chosen by each customer, resulting in fewer wasted resources and subsequently less trash. This practice should be adopted by all franchises.

For condiments, only five locations provided ketchup in a pump bottle with small paper cups (Burger King in Santa Monica and New York, McDonald's in San Francisco and Fremont, and Wendy's in San Bruno). The remainder of locations provided condiments in single-serve packets, which customers were able to access themselves with no limits on quantity.

Almost none of the observers ordering "to go" were asked how many napkins or condiment packets they wanted. And although all managers interviewed described existing policies governing the numbers of napkins, condiment packets, and utensils to be provided with each to-go meal, the actual numbers of these items given out varied widely.

A notable exception was Dunkin' Donuts in Washington, D.C., where the attendant asked the customer how he wanted his coffee prepared and then dispensed the requested quantities of cream and sugar to the cup, customizing the coffee order. This practice prevents waste and provides a safer experience, as customers who order coffee to go from their cars won't have to deal with creamers and sugars in traffic.

Starbucks avoids small packets of creamer, sugar, and other condiments. It gives each customer his or her drink item, which can then be supplemented with additional cream, milk, sugar, cocoa, cinnamon, and so on at a single station stocked with refillable containers of each item.

Reusable items: There were some instances of reusable food service items reported by observers, though the majority of items observed were single-use disposables. Ceramic mugs or plates were observed at two Starbucks locations, and ceramic plates and bowls were observed at three Panera locations. Most of the reusable items observed were plastic trays or plastic baskets for customers dining in; 27 locations used trays or baskets, including all 9 McDonald's, 8 Burger King, 3 Wendy's, 3 Jack in the Box, 2 Chipotle, 1 KFC, and 1 Chick-fil-A. But these were not in evidence at some locations, where all food was packaged in paper or plastic bags regardless of whether the patron had said, "For here" or "To go."

Despite Starbucks's stated official policy of offering ceramic mugs to dine-in customers, only one of the 11 locations surveyed offered mugs (the Oakland location). On follow-up visits, some of our observers requested the mugs, and one location (Santa Monica) was able to find and provide them. (See the Reusability subsection of chapter 1 for further discussion of Starbucks's reusables policy.)

Other reusables occasionally turned up. For example, ceramic plates were in use at Starbucks locations in Santa Monica and New York City. The only chain surveyed that consistently provided reusable plates, bowls, and utensils for dining in was Panera, a "fast casual" restaurant that encourages more on-site dining than does a traditional QSR.

To-go bags: Most of the locations surveyed used a combination of bag types—paper bags for smaller orders, and plastic bags (often made from HDPE) for larger ones, especially orders including salads, as many of the salad containers (often large, round plastic containers) do not fit easily into the customary small, rectangular paper bag. Starbucks, Chipotle, and Panera used only paper bags.

Foam cups: Some chains continue to use polystyrene foam cups for most of their beverage service, especially Chick-fil-A, which states on its website: "Through research and tests of a number of 'environmentally friendly' cup options, we have concluded that none serve our customers as well as the foam cup."¹⁶⁹ (See the Materials Use section of chapter 1 for a discussion of concerns about polystyrene foam.) Other chain locations using foam cups include some McDonald's, Burger King, and Dunkin' Donuts, as well as KFC, which served side dishes such as mashed potatoes and gravy in foam containers at some locations.

SAMPLE QUESTIONNAIRE

Questions for observers of on-site practices at QSRs

- 1a. Are there recycling and/or compost bins inside, and how many if so?
- 1b. Are there recycling and/or compost bins outside (e.g., parking lot or immediate exterior), and how many if so?
- 1c. Are there recycling/compost bins next to every trash can? Some of the smaller restaurants where there is limited seating may not have space for a recycling/compost bin inside. If this is the case, please look outside to see if there is a larger recycling bin next to the Dumpster.
 - 1d. If there are bins, is there signage or pictures explaining what materials go in each bin? If so, take a photo of signage, or record which items are specified to be recycled and which composted.
- 2a. Are napkins vended one at a time (preferred) or stacked in a pile?
- 2b. Are to-go condiments, straws, and plastic cutlery vended one at a time (preferred) or stacked in a pile?
- 2c. For to-go orders, are any condiments, straws, cutlery, or napkins provided in the to-go sack? How many if so? Does the server ask if you would like any of these items or include them without asking?
 - 2d. Are condiments like salt, pepper, ketchup, soy sauce, hot sauce available in multi-use containers at each table or only in single serve packets? Or is there a single multi-use station where all the condiments and utensils are available?
- 2e. Are there any reusable items for dining in, or are any of the items given for to-go orders reusable (e.g., silverware, reusable plates, or cups)?
- 3a. Can you observe any differences between dine-in and takeout packaging not captured in your answers to the above questions?
- 3b. Are single-use plastic or paper bags given away for takeout food?
4. Is there any obvious litter from this restaurant's packaging on the ground outside of or near the restaurant? Please take a photo of that litter—ideally with the restaurant in the background—and any other photos you think would be interesting or useful to include in the report.

5. Even if coffee is provided in paper cups, check fountain vending area for evidence of foam cups. Iced tea is sometimes vended in foam cups.
6. If at Starbucks, observe if person taking order asks if drink is to stay or to go. They are supposed to ask first and, if to stay, offer a glass tumbler or ceramic mug. Also check for any signage suggesting a policy that incentivizes customers to bring reusable cups, such as a discount if you bring in your own insulated cup for a refill.

QUESTIONS FOR MANAGERS

(Where an Interview Was Conducted)

- Is there a policy on how to distribute napkins, condiments, other items (e.g., on request only, given automatically for to-go orders). How many given out if so? (In your report to us, please note any inconsistencies you observe between their answers and the packaging you received.)
- Are there any differences in the type or amounts of packaging used for to-go or in-store orders?
- Does the store have any other policies on reducing packaging that aren't covered in the above answers?
- Does the store do its own purchasing of packaging, or are purchases handled at a regional or national level? If the former, can the store select its own packaging based on environmental criteria such as recycled content, or are they subject to corporate-level purchasing specs?
- If you don't see composting or recycling, does the manager know if his commercial hauler offers that service? If so, can he tell you more about why the store is not offering recycling or composting?

ENDNOTES

- 1 John Dunham Associates, "Economic Impact Study, U.S. Based Scrap Recycling Industry," www.isri.org/docs/default-source/recycling-analysis-%28reports-studies%29/economic-impact-study-u-s-based-scrap-recycling-industry-2013.pdf?sfvrsn=8.
- 2 Tellus Institute with Sound Resource Management, "More Jobs, Less Pollution: Growing the Recycling Economy in the U.S.," www.docs.nrdc.org/globalwarming/files/glo_11111401a.pdf.
- 3 United States Environmental Protection Agency (hereinafter U.S. EPA), *Municipal Solid Waste Generation, Recycling, and Disposal in the United States: Facts and Figures for 2012*, 2012.
- 4 The EPA estimates 51.5 percent of containers and packaging and 43 percent of paper nondurables were recycled in 2012.
- 5 U.S. EPA, "Municipal Solid Waste Generation."
- 6 <http://epp.eurostat.ec.europa.eu/tgm/table.do?tab=table&plugin=1&language=en&pcode=ten00063>
- 7 Hope Pillsbury, EPA Office of Resource Conservation and Recovery, personal communication, August 8, 2014.
- 8 U.S. EPA, *Municipal Solid Waste in the United States: 2011 Facts and Figures*, 2011.
- 9 Beth Schmitt, Director of Recycling Programs, Alcoa, personal communication, February 15, 2011.
- 10 Conrad MacKerron, *Unfinished Business: The Case for Extended Producer Responsibility for Post-Consumer Packaging*, As You Sow, 2012.
- 11 Danielle Kurtzleben, "10 States with the Largest Budget Shortfalls," *U.S. News & World Report*, January 14, 2011.
- 12 Clean Water Action, *Taking Out the Trash: Identifying Sources of Trash in the Bay Area*, December 2011.
- 13 U.S. EPA, "Municipal Solid Waste Generation."
- 14 Container Recycling Institute, "Bottle Bill Resource Guide," www.bottlebill.org/legislation/usa/allstates.htm (updated June 2009).
- 15 Jenny Gitlitz, *Bottled Up: Beverage Container Recycling Stagnates (2000–2010)*, Container Recycling Institute (CRI), October 2013. It should be noted that the EPA's estimates of beverage container recycling are higher than CRI's. However, we believe CRI's measurements to be more rigorous and a more accurate reflection of recycling rates.
- 16 Nishita Bakshi, *Waste and Opportunity: U.S. Beverage Container Recycling Scorecard and Report*, As You Sow, October 2006.
- 17 Amy Galland, *Waste and Opportunity: U.S. Beverage Container Recycling Scorecard and Report, 2008*, As You Sow, 2008.
- 18 Amy Galland, *Waste and Opportunity: U.S. Beverage Container Recycling Scorecard and Report, 2011*, As You Sow, 2011.
- 19 EY, *Unwrapping the Packaging Industry: Seven Factors for Success*, 2013.
- 20 Dunkin' Brands, *Focused on Sustainable Solutions: 2012 Corporate Social Responsibility Report*, 2012.
- 21 Brian Taylor, "Pulp Fiction?," *Recycling Today*, May 15, 2012.
- 22 U.S. EPA, "Municipal Solid Waste Generation."
- 23 Ibid.
- 24 Anya Kamenetz, "The Starbucks Cup Dilemma," *Fast Company*, October 20, 2010.
- 25 Scott Mouw and Rick Penner, *Plastic Recycling Collection National Reach Study: 2012 Update*, Moore Recycling Associates, May 2013.
- 26 Agency for Toxic Substances and Disease Registry, *Public Health Statement: Styrene*, June 2012.
- 27 Clean Water Action, *Health Effects and Regulation of Styrene (CASRN 100-42-5)*, 2012.
- 28 U.S. EPA, "Marine Debris Impacts," http://water.epa.gov/type/oceb/marinedebris/md_impacts.cfm.
- 29 Kelsey Ryan, "MAP: Which Cities Have Banned Plastic Foam?," Groundswell, <http://www.groundswell.org/map-which-cities-have-banned-plastic-foam/>.
- 30 Mouw and Penner, *Plastic Recycling Collection National Research Study*.
- 31 U.S. EPA, "Municipal Solid Waste Generation."
- 32 Starbucks, *Starbucks Global Responsibility Report—Goals and Progress 2011*, 2011.
- 33 Starbucks, *Starbucks Global Responsibility Report: Goals and Progress 2013*, 2013.
- 34 Janet Adamy, "McDonald's Takes on a Weakened Starbucks: Food Giant to Install Specialty Coffee Bars, Sees \$1 Billion Business," *The Wall Street Journal*, January 7, 2008. Ted Cooper, "1 Reason McDonald's Coffee Will Never Match Starbucks and Dunkin' Donuts," *The Motley Fool*, March 1, 2014.
- 35 Sam Oches, "Top 50 Sorted by Rank: The Top Quick-Serve and Fast-Casual Brands in the Nation," *QSR Magazine*, August 2011.
- 36 Brenda Platt and Nora Goldstein, "State of Composting in the U.S.," *BioCycle Magazine*, July 2014.
- 37 CBS 5 San Francisco, "Consumer Watch: Green Utensils Ending Up in Landfills," <http://sanfrancisco.cbslocal.com/2011/05/03/consumerwatch-green-utensils-ending-up-in-landfills/#>. The University of Vermont Eco-Reps Program, "'Composting Utensils' Not Composting After All in Burlington," <http://www.uvm.edu/ecoreps/news/composting-utensils-not-composting-after-all-burlington>.
- 38 U.S. EPA, "Municipal Solid Waste Generation."
- 39 Foodservice Packaging Institute, *Food Residue in Foodservice Packaging Recycling: Overview of FPI Food Residue Studies*, October 2014.
- 40 Foodservice Packaging Institute, *2013 Benchmarking Survey: Acceptance of Foodservice Packaging by Material Recovery Facilities in the United States and Canada – An Overview*, 2013.
- 41 Ibid.
- 42 Taryn Luna, "Starbucks Tackles Recycling," *The Boston Globe*, September 17, 2011.
- 43 Jim Hanna, Director of Environmental Impact, Starbucks, personal communication, October 3, 2014.
- 44 John Mulcahy, Vice President for Sustainability and Compliance, Georgia Pacific, personal communication, July 21, 2014.
- 45 Len Prazych, "CoRR Pilot Programs Improve Foodservice Recyclability," *Recycling Markets* 50, 23 (December 10, 2012).
- 46 Luna, "Starbucks Tackles Recycling."
- 47 Environmental Paper Network, *The State of the Paper Industry 2011*, 2011.
- 48 Mulcahy, personal communication.
- 49 Ibid.
- 50 U.S. EPA, "Municipal Solid Waste Generation."
- 51 National Association for PET Container Resources (hereinafter NAPCOR), *Report on Postconsumer PET Container Recycling Activity in 2012*, October 9, 2013. NAPCOR, *Report on Postconsumer PET Container Recycling Activity in 2013*, October 8, 2014.
- 52 MacKerron, *Unfinished Business*.
- 53 NAPCOR, *2013 U.S. PET Container Recycling Rate Hits 31%, Strong End Use Markets Drive Growth in Domestic PET Processing*, October 8, 2014.
- 54 Resa Dimino, Director of Public Policy, NAPCOR, personal communication, October 3, 2014.
- 55 Rhoda Miel, "Canadian Grocery Chains to Require Clamshell Suppliers to Shift to PET," *Plastics News*, June 24, 2011.
- 56 Mouw and Penner, *Plastic Recycling Collection National Research Study*.
- 57 Ron Gonen, CEO, Closed Loop Fund, personal communication, August 4, 2014.

- 58 Mike Bradley, Vice President of Sales, Dart Container Corporation, personal communication, January 8, 2014.
- 59 4R Sustainability, Inc., *Demingling the Mix: An Assessment of Commercially Available Automated Sorting Technology*, American Chemistry Council, January 2011.
- 60 Susan Robinson, Public Affairs Director, Waste Management, personal communication, August 11, 2014.
- 61 Jim Welte, "In Marin, Many Compostable Materials Go Straight to Landfill," Mill Valley Patch, patch.com/california/millvalley/in-marin-many-compostable-materials-go-straight-to-landfill.
- Sustainable Plastics?, "California: San Francisco," www.sustainableplastics.org/early-adopters/san-francisco%E2%80%99s-ordinances.
- 62 U.S. Food and Drug Administration (hereinafter U.S. FDA), "Recycled Plastics in Food Packaging," www.fda.gov/Food/IngredientsPackagingLabeling/PackagingFCS/RecycledPlastics/default.htm.
- 63 U.S. Government Printing Office, "Pulp from Reclaimed Fiber, 21 C.F.R. Section 176.260," www.gpo.gov/fdsys/granule/CFR-2010-title21-vol3/CFR-2010-title21-vol3-sec176-260/content-detail.html.
- 64 U.S. FDA, *Redbook 2000: Guidance for Industry and Other Stakeholders Toxicological Principles for the Safety Assessment of Food Ingredients*, July 2007.
- 65 George C. Misko, "U.S. and EU Requirements for Recycled Food Contact Materials," *FoodSafety Magazine*, October/November, 2013.
- 66 McDonald's says it gives preference to fiber certified by the Forest Stewardship Council when it meets "product performance requirements and competitive market conditions." It will also recognize the Programme for the Endorsement of Forest Certification (PEFC) and any PEFC-endorsed system such as the Sustainable Forestry Initiative.
- 67 Environmental Paper Network, "Global Paper Vision," www.environmentalpaper.org/vision.
- 68 Starbucks, *FY2008: Global Responsibility Report*, 2008.
- 69 Jack Macy, Zero Waste Coordinator, San Francisco Department of the Environment, personal communication, July 9, 2014.
- 70 Ibid.
- 71 Dick Lilly, Business Area Manager for Waste Prevention and Product Stewardship, Seattle Public Utilities Solid Waste Division, personal communication, March 17, 2014.
- 72 Lily Kelly, Senior Program Associate, Global Green USA CoRR, personal communication, September 18, 2014.
- 73 Taylor, "Pulp Fiction?."
- 74 Alameda County Waste Management Authority, "Recycling Rules Alameda County," www.recyclingrulesac.org.
- 75 McDonald's Corporation, "Corporate Social Responsibility and Sustainability," <http://www.aboutmcdonalds.com/mcd/sustainability.html>.
- 76 Stop Waste, www.stopwaste.org.
- 77 Ian Olson, Director of Sustainability, McDonald's Corporation, personal communication, July 29, 2014.
- 78 The commitment covers only company-operated stores in the United States and Canada, or about 8,000 out of 13,000 stores; the remainder are operated under license to Starbucks.
- 79 Starbucks, *Global Responsibility Report Goals & Progress 2013*, 2013.
- 80 Vito A. Turso, "Newly Redesigned Street Recycling Bins Make Their Debut; Baskets are More Modern, More Accessible for New Yorkers," Department of Sanitation New York City, www.nyc.gov/html/dsny/html/pr2013/122313.shtml.
- 81 Ibid.
- 82 Keefe Harrison, Executive Director, Curbside Value Partnership, personal communication, October 8, 2014.
- 83 Karen Bandhauer, Project Director, Curbside Value Partnership, personal communication, October 8, 2014.
- 84 Scott Mouw, "Letter to the Editor," *Resource Recycling*, April 2013, 5-6.
- 85 Allyson Wilson, "Recycling of Rigid Plastics Tops 930 Million Pounds Annually," American Chemistry Council, www.americanchemistry.com/Media/PressReleasesTranscripts/ACC-news-releases/Recycling-of-Rigid-Plastics-Tops-930-Million-Pounds-Annually.html.
- 86 The Coca-Cola Company, "PlantBottle: Frequently Asked Questions," www.coca-colacompany.com/stories/plantbottle-frequently-asked-questions.
- 87 Ibid.
- 88 Ibid.
- 89 Scott Vitters, General Manager, Global PlantBottle Innovation Platform, The Coca-Cola Company, personal communication, October 7, 2014.
- 90 William Neuman, "The Race to Greener Bottles Could Be Long," *The New York Times*, December 15, 2011.
- 91 Robert ter Kuile, Senior Director for Sustainability, PepsiCo, personal communication, September 3, 2014.
- 92 Mouw, "Letter to the Editor."
- 93 HEINEKEN International, "HEINEKEN Sustainability Report 2013: Actions and Results, Packaging," sustainabilityreport.heineken.com/Reducing-CO2-emissions/Actions-and-results/Packaging/index.htm.
- 94 Anheuser-Busch InBev, *Raising the Bar Together: Anheuser-Busch InBev/2013 Global Citizenship Report*, 2013.
- 95 MillerCoors, "Environmental Stewardship," www.millercoors.com/GBGR/Environmental-Stewardship.
- 96 Alcoa a press release, www.alcoa.com/global/en/news/news_detail.asp?pageID=20100326005428en&newsYear=2010.
- 97 Brian Taylor, "An Energized Outlook: a Global Energy Squeeze May Continue to Make Secondary Commodities Valuable Ones," *Recycling Today*, August 2006. Joe Truini, "Bottle Bill Proponent, Opponent Present Case," *Waste News* 14, 2 (May 2008).
- 98 Green Living Tips, "Recycling Glass, Metal, Plastic, Paper—Energy Savings," www.greenlivingtips.com/articles/182/1/Recycling-energy-savings.html. Truini, "Bottle Bill Proponent, Opponent Present Case."
- 99 Marshall Wang, Senior Sustainability Specialist, Aluminum Association, personal communication, July 17, 2014.
- 100 John Gardner, Chief Sustainability Officer, Novelis, personal communication, July 30, 2014.
- 101 Glass Packaging Institute, *Clear Solutions: Moving Towards Improved Glass Recovery*, September 2014.
- 102 CarbonLite, "About," www.carbonliterecycling.com/about.
- 103 Anheuser-Busch InBev, *Conversation. Action. Results. 2012 Global Citizenship Report*, 2012.
- 104 Kraft Foods, "Our Brands: Capri Sun," www.kraftfoodsgroup.com/brands/largest-brands/brands-c/capri-sun.aspx.
- 105 Matt Prindiville, "Public Interest Groups Urge Kraft Foods to Take Responsibility for Packaging Waste," Make It Take It Campaign, <http://makeittakeit.net/press-release-public-interest-groups-urge-kraft-foods-to-take-responsibility-for-packaging-waste-07312014/>. As You Sow, *Shareholder Proposal to Kraft Foods Report on Packaging Recyclability*, 2014.
- 106 <http://www.terracycle.com/en-US/brigades/drink-pouch-brigade-r.html>.
- 107 Seth Goldman, Cofounder and TeaEO, Honest Tea, personal communication, September 18, 2014.
- 108 Elisabeth Comere, Board Member, Carton Council, personal communication, August 11, 2014.
- 109 Gitlitz, *Bottled Up*.
- 110 Ibid.

- 111 As You Sow, "Beverage Container Recycling (Past)," www.asyousow.org/our-work/waste/previous-initiatives/beverage-container-recycling-past/.
- 112 Gitlitz, *Bottled Up*.
- 113 MacKerron, *Unfinished Business*. See for an in-depth discussion of the momentum for change around packaging recycling and consideration of EPR mandates.
- 114 Galland, *Waste and Opportunity*.
- 115 Grocery Manufacturers Association/SAIC, *Evaluation of Extended Producer Responsibility for Consumer Packaging*, September 2012.
- 116 The principal author of this study also serves on this board.
- 117 Reclay StewardEdge, *Extended Producer Responsibility Cost-Benefit Study*, Recycling Reinvented, March 2014.
- 118 Paul Gardner, Executive Director, Recycling Reinvented, personal communication, September 6, 2014.
- 119 Joel Makower, "Exit Interview: Kim Jeffery, Nestle Waters," *GreenBiz*, March 4 2013.
- 120 American Institute for Packaging and the Environment (hereinafter AMERIPEN), *Unlocked Potential: A Roadmap for Improved Packaging Recovery 100 Cities Findings*, August 2014.
- 121 Dempsey, Executive Director, AMERIPEN, personal communication, August 8, 2014.
- 122 Recycling Institute, "Bottle Bill Resource Guide."
- 123 Private Label Manufacturers Association, "Store Brands Facts: Store Brands Growing Across All Channels," plma.com/storeBrands/sbt13.html.
- 124 TRUCOST, "Companies Urged to Disclose Data on Plastic to Cut Pollution and Improve Resource Efficiency," www.trucost.com/news-2014/191/PDP/valuing-plastic.
- 125 Unilever, "Our Waste & Packaging Footprint," www.unilever.com/sustainable-living-2014/reducing-environmental-impact/waste-and-packaging/our-waste-and-packaging-footprint.
- 126 Procter & Gamble, "Measuring Progress Toward Our Sustainability Goals," www.pg.com/en_US/sustainability/performance/index.shtml.
- 127 Grocery Manufacturers Association, *Reducing Our Footprint*, March 2011.
- 128 Ron Sasine, "Walmart: Lessons Learned From a Commitment to Packaging Reduction," *Packaging Digest*, September 17, 2013.
- 129 Procter & Gamble, "Measuring Progress Toward Our Sustainability Goals."
- 130 Mondelez International, "Kraft Foods Starts New Year 150 Million Pounds Lighter," www.mondelezinternational.com/Newsroom/Multimedia-Releases/Kraft-Foods-Starts-New-Year-150-Million-Pounds-Lighter.
- 131 Anne Marie Mohan, "Mondelez Eliminates 48 Million lb of Packaging, Greener Package," www.greenerpackage.com/source_reduction/mondelez_eliminate_48_million_lb_packaging.
- 132 Publix, "Plastic Savings," sustainability.publix.com/what_we_are_doing/recycling_plastic_savings.php.
- 133 WalMart, "Wal-Mart Unveils 'Packaging Scorecard' to Suppliers," news.walmart.com/news- archive/2006/11/01/wal-mart-unveils-packaging-scorecard-to-suppliers.
- 134 WalMart, "Sustainability Product Expo 2014," news.walmart.com/events/sustainability-product-expo-2014.
- 135 PR Newswire, "P&G Announces Full Conversion of its Powder Laundry Detergent Portfolio in U.S. and Canada to New Compacted Formula," www.advfn.com/news_P-G-Announces-Full-Conversion-of-its-Powder-Laundr_44267964.html.
- 136 U.S. EPA, "Municipal Solid Waste Generation."
- 137 Procter & Gamble, "Measuring Progress Toward Our Sustainability Goals."
- 138 Walmart, "Waste," corporate.walmart.com/global-responsibility/environment-sustainability/waste.
- 139 Gina Marie Cheeseman, "Safeway to Eliminate 1 Billion Single-Use Bags By 2015," *Triple Pundit*, July 17, 2014.
- 140 Walmart, "How to Make a Difference - Closing the Loop in Plastics," www.walmartsustainabilityhub.com/app/answers/detail/a_id/191.
- 141 Rob Kaplan, Director of Product sustainability, Walmart, personal communication, September 18, 2014.
- 142 Jim Johnson, "Walmart Wants to Boost Recycled Content Packaging by 3 Billion Pounds," *Plastics News*, March 12, 2014.
- 143 As You Sow, "Colgate-Palmolive," www.asyousow.org/companies/colgate-palmolive.
- 144 Procter & Gamble, "Measuring Progress Toward Our Sustainability Goals."
- 145 Walmart, *Walmart 2014 Global Responsibility Report: So Many Opportunities to Make a Difference*, 2014.
- 146 Colgate, "Our Company: Sustainability," www.colgate.ch/app/Colgate/CH/FR/Corp/LivingOurValues/Sustainability/RespectForOurPlanet/ReducingEnvironmentalImpacts/Packaging.cvsp.
- 147 Flexible Packaging Association, "Flexible Packaging Facts & Figures," www.flexpack.org/INDUST/industry_facts_figures.asp.
- 148 Anne Johnson, Vice President and Senior Consultant, Resource Recycling Systems, personal communication, December 5, 2014.
- 149 Joel Makower, "The McDonough Conversations: On Joy and Cereal Boxes," *GreenBiz*, November 14, 2013.
- 150 Sustainability in Packaging, "How Designing With Intent Drives Greater Value to Your Materials," www.sustainability-in-packaging.com/waste-management-tom-carpenter.aspx.
- 151 John Baumann, CEO, Ampac, Sustainability in Packaging Conference, Orlando, Florida, March 6, 2014.
- 152 Flexible Packaging Association, *Flexible Packaging Resource Recovery: A Work-in-Progress*, 2014.
- 153 Global Alliance for Incinerator Alternatives, "Gasification, Pyrolysis & Plasma Incineration," <http://www.no-burn.org/downloads/Gasification,%20Pyrolysis,%20and%20Plasma%20Incineration.pdf>.
- 154 Louis Lindenberg, Global Packaging Sustainability Director, Unilever, personal communication, July 25, 2014.
- 155 Len Sauers, Vice President of Sustainability, Procter & Gamble, personal communication, November 3, 2014.
- 156 Ampac, "No. 2 Pouch Recyclable Innovation from Ampac," www.ampaconline.com/about/media/news/press/no-2-pouch-recyclable-innovation-ampac.
- 157 Comere, personal communication, 2014.
- 158 Californians Against Waste, *Boxed In: A Better Plan for Carton Recycling in California*, September 2014.
- 159 As You Sow, "Colgate-Palmolive."
- 160 Miel, "Canadian Grocery Chains to Require Clamshell Suppliers to Shift to PET."
- 161 Grocery Manufacturers Association/SAIC, *Evaluation of Extended Producer Responsibility*.
- 162 Gonen, personal communication, June 1, 2014.
- 163 Gonen, personal communication, September 10, 2014.
- 164 Matt Prindville, "Recycling Fund From Walmart, P&G and Others Passes the Buck on Responsibility," *The Guardian*, May 21, 2014.
- 165 Curbside Value Partnership, "The Benefits of Partnership," www.recyclecurbside.org/the-recycling-partnership.

166 Jim Frey, CEO and Co-Founder, Resource Recycling Systems, personal communication, December 5, 2014.

167 Gonen, personal communication, May 1, 2014.

168 Kai Ryssdal, "The Lucrative Crime of Cardboard Theft," American Public Media, August 6, 2012.

169 Chick-fil-A, "Sustainability: It's In Our Heritage," www.chick-fil-a.com/Company/Environmental.