



# About the Research

This report summarizes results based on a survey of the GreenBiz Intelligence Panel, consisting of executives and thought leaders in the area of corporate environmental strategy and performance. Panel members participate in brief monthly surveys to provide their expertise and perspective on corporate initiatives, laws and regulations and scientific advances that are shaping the corporate sustainability agenda.

The 2016 UPS & GreenBiz Circular Economy Research Study presents the findings of an online survey conducted by GreenBiz Group in December 2015 among a sample of respondents within the GreenBiz Intelligence Panel.

An email link was sent to the panel's 5,370 members inviting them to participate anonymously in the survey. For the purposes of this report, we analyzed the results from 423 respondents who represented 14 sectors. Approximately 85 percent of these respondents are based in the United States.

It is important to note that the quantitative data in the report may skew higher than if the panel was representative of a broader demographic — that is, executives and managers not necessarily focused on their company's environmental and social corporate sustainability efforts. However, the responding companies represent a broad span of diverse corporate sustainability experience, including those just beginning to engage in corporate sustainability as well as those that have been engaged for years.



# Executive Summary

There is a growing business movement toward what is described as a circular economy, an alternative to a traditional linear economy where the current widespread operating model can best be described as make, use and dispose.

In the evolving circular model, we strive to keep resources in use for as long as possible, extract the maximum value from them while in use, then recover and regenerate products and materials at the end of each service life. To be successful, this model will require a fundamental rethinking of products, materials and systems of commerce.

GreenBiz Group, in collaboration with UPS, conducted research to gain a greater understanding of key aspects and concepts associated with the circular economy to identify trends that will help define success for this developing system of commerce. This document shares the results and insights garnered from one of the nation's first quantitative surveys focused on better understanding the state of the circular economy.

## Key Insights

- The importance of the circular economy to business is expected to continue to gain traction in the coming years, doubling in importance from just two years ago.
- Half of companies surveyed are implementing circular economy principles, yet only a select few brands are standing out as leaders in the marketplace.
- The need for a defensible business case is both the biggest barrier and biggest opportunity facing the success of the circular economy.
- Cost and convenience are the top incentives for both customers and consumers.
- Sustainable logistics no longer focus solely on the "last mile." The "first mile" logistics are critical to an effective circular economy as packaging and shipping convenience of recoverable waste outweighs many other factors for broad marketplace acceptance.



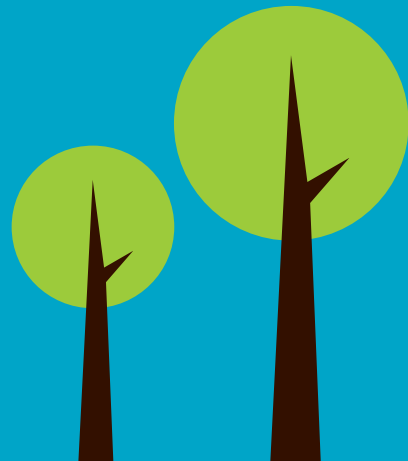
# The Growth of the Circular Economy

The circular economy is becoming more widely understood and commonplace in business. Almost unanimously, survey respondents felt they clearly understood the concept, while more than half could provide examples of the circular economy in play.

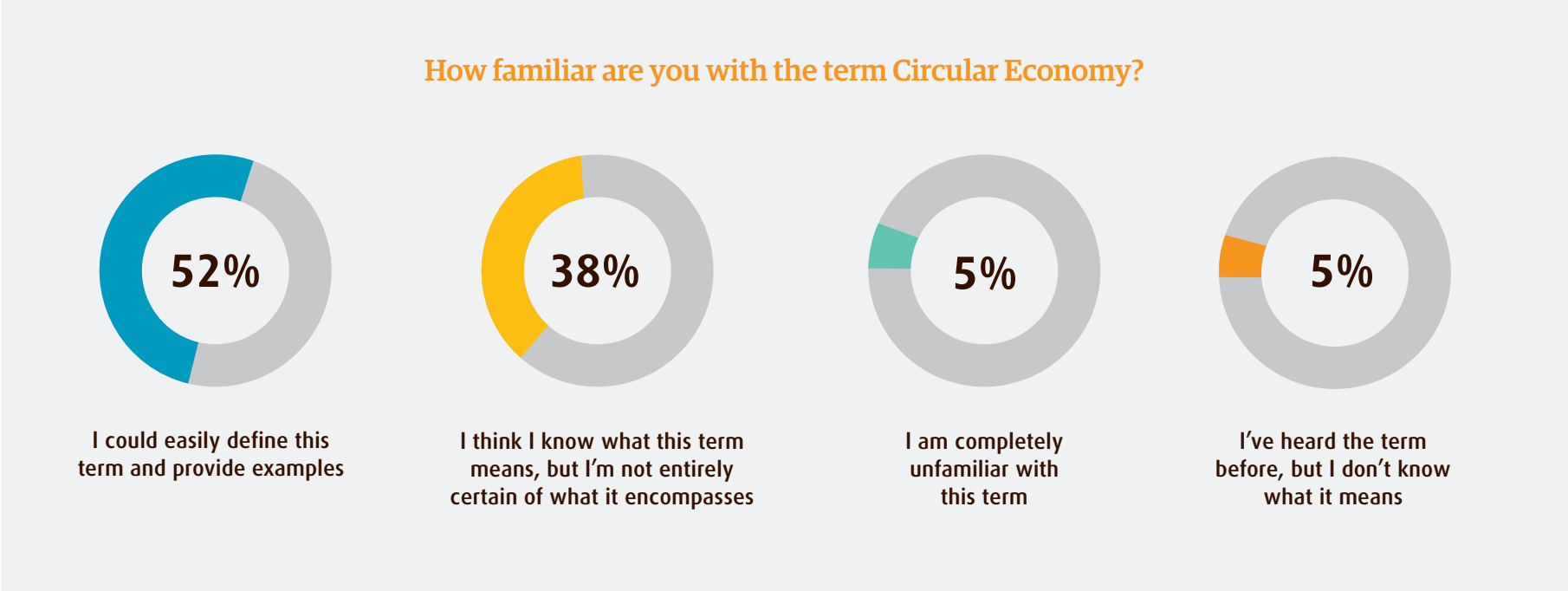
The term circular economy has become popularized only recently, though much of what underlies the concept — including the “three Rs” activities of reduce, reuse and recycle — has been promoted for decades and provides a foundation for this evolution in the design, production and reclamation of products.

Today, a range of factors — population growth, resource scarcity, climate change impacts and an array of regulations addressing issues from toxic substances to zero-waste initiatives — are placing pressure on companies to move away from an industrialized make-use-dispose economic model to a more circular strategy.

In the past five years, companies have placed a greater emphasis on taking a life-cycle approach to understanding the total impact of their products and operations across their entire value chain. This has started to change the way of thinking within a number of different corporate functions, from design to procurement and even logistics. Although the term “circular economy” is not yet widespread among all executives in those areas, awareness and understanding of the circular economy is high among sustainability professionals — and the old industrialized way of thinking is beginning to change.



Ninety percent of respondents who participated in our survey felt they had a clear definition of the circular economy. Fifty-two percent could easily define the term and provide examples, and another 38 percent said they know what the term means, but are not entirely certain what it encompasses.



We sought to gain greater insight into how respondents were defining the circular economy and provided a selection of 10 phrases from which respondents were asked to select the top three that best describe or define the circular economy. Two phrases rose to the top, as 83 percent of respondents checked the box for “value-chain models that keep resources and materials in play endlessly” and 68 percent selected “producing products in a way that allows materials to be captured and reused.”

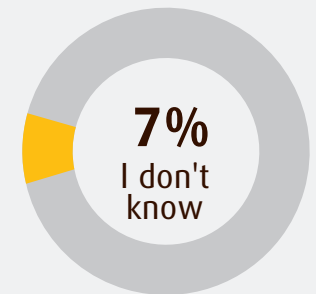
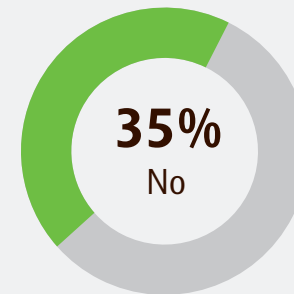
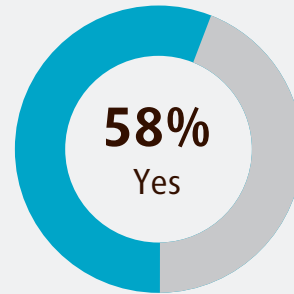
# Frontier Days for the Circular Economy

Companies are beginning to test circular economy principles in their business models. While many companies surveyed are implementing principles into product or service offerings, very few companies are standing out as leaders in the market.

The current use of the phrase circular economy is reminiscent of the early days of sustainability, in which employee volunteerism, lighting retrofits and the first public reporting of greenhouse gas emissions could be bundled into a report identifying an organization as a good corporate citizen. Much has changed over the past 10 years a number of recognized leaders have shifted their focus toward holistic sustainability efforts that are strategic and intentional, not just a collection of discrete deeds.

The circular economy is in a similar nascent stage, where a majority of companies are contributing in some way to a reduce-reuse-recycle strategy. We provided survey respondents a definition of the circular economy as “an alternative to a traditional linear economy (make-use-dispose) in which we keep resources in use for as long as possible, extract the maximum value from them while in use, then recover and regenerate products and materials at the end of each service life.” We then asked if their organization is implementing circular economy principles in any of its product lines or service offerings. More than half of respondents’ companies have implemented these principles.

A circular economy is an alternative to a traditional linear economy (make, use, dispose) in which we keep resources in use for as long as possible, extract the maximum value from them whilst in use, then recover and regenerate products and materials at the end of each service life. With this in mind, is your company implementing circular economy principles in any of its product lines or service offerings?



In response to a follow-up question, 62 percent of respondents said their organization provides a product or service that supports the circular economy, such as materials recycling, remanufacturing, take-back programs or other logistics solutions like repair or refurbishment. The percentage was even higher for companies with revenues greater than \$1 billion, as three-quarters of those firms said they were providing at least one of those products or services.

Yet given the prevalence of circular economy principles, products and services, few companies stand out as leaders. We asked respondents to identify companies that come to mind when thinking about the

circular economy and left it open for them to write in their answers. Two companies topped the list: Interface (21 percent) and Patagonia (16 percent).

Both leading companies have been vocal about their efforts and have leveraged their commitment to the circular economy as a competitive advantage to both consumers and customers. Interface's late CEO Ray Anderson was outspoken early on about his company's sustainability strategy and Patagonia's policies of recycling used garments and equipment and providing repair guides have made national news along with its "Don't Buy This Jacket" campaign.

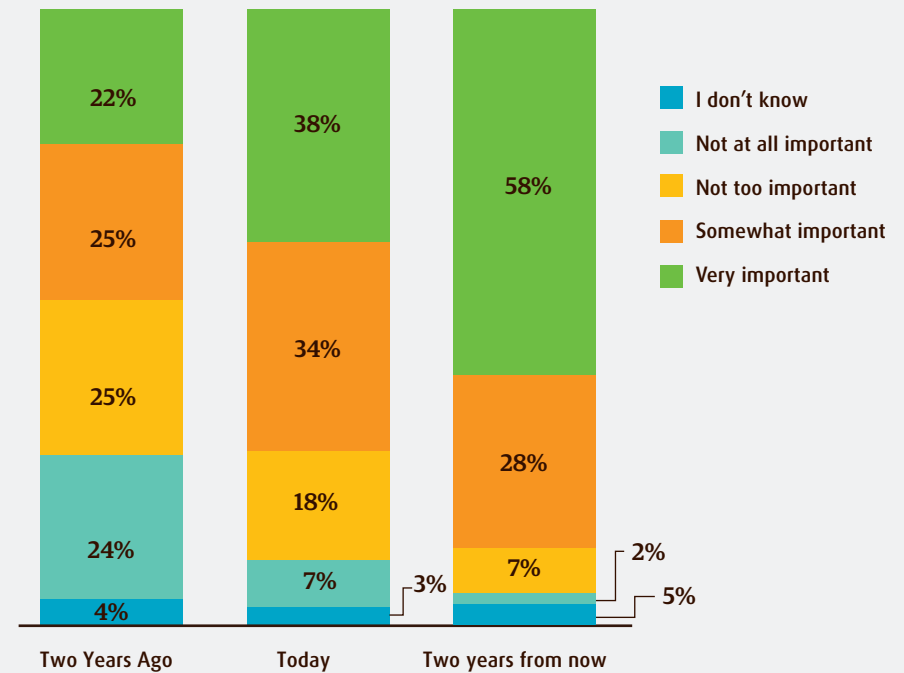
### Rethinking the Waste Stream

TerraCycle develops recycling solutions for difficult-to-recycle packaging and products—waste streams that are traditionally disposed of via landfilling and/or incineration: snack bags, drink pouches, cigarette butts, pens, and many more. Through the sponsorship of major consumer-packaged goods companies, such as Colgate-Palmolive, Procter & Gamble and Tom's of Maine, TerraCycle is able to create free, consumer-facing recycling programs. A partnership with UPS allows consumers to send waste to TerraCycle for recycling, thereby eliminating two common barriers: local access and the logistics of collection. Without these kinds of solutions and partnerships, consumers often resort to landfill disposal—a process that is linear and unsustainable. TerraCycle's programs eliminate the need for this process and capture potentially valuable materials in the waste stream instead of sending them to landfills. This recycling platform enables anyone to participate in the circular economy, creating circular waste solutions where none previously existed.

# Business Sees a Future in Circular Economy

Adoption of circular economy principles will depend partly on the ability to introduce take-back systems or reuse products. Due to these factors, the biggest growth of circular economy is likely to first occur in one industry.

How important are circular economy principles to your organization two years ago, today, and two years from now?



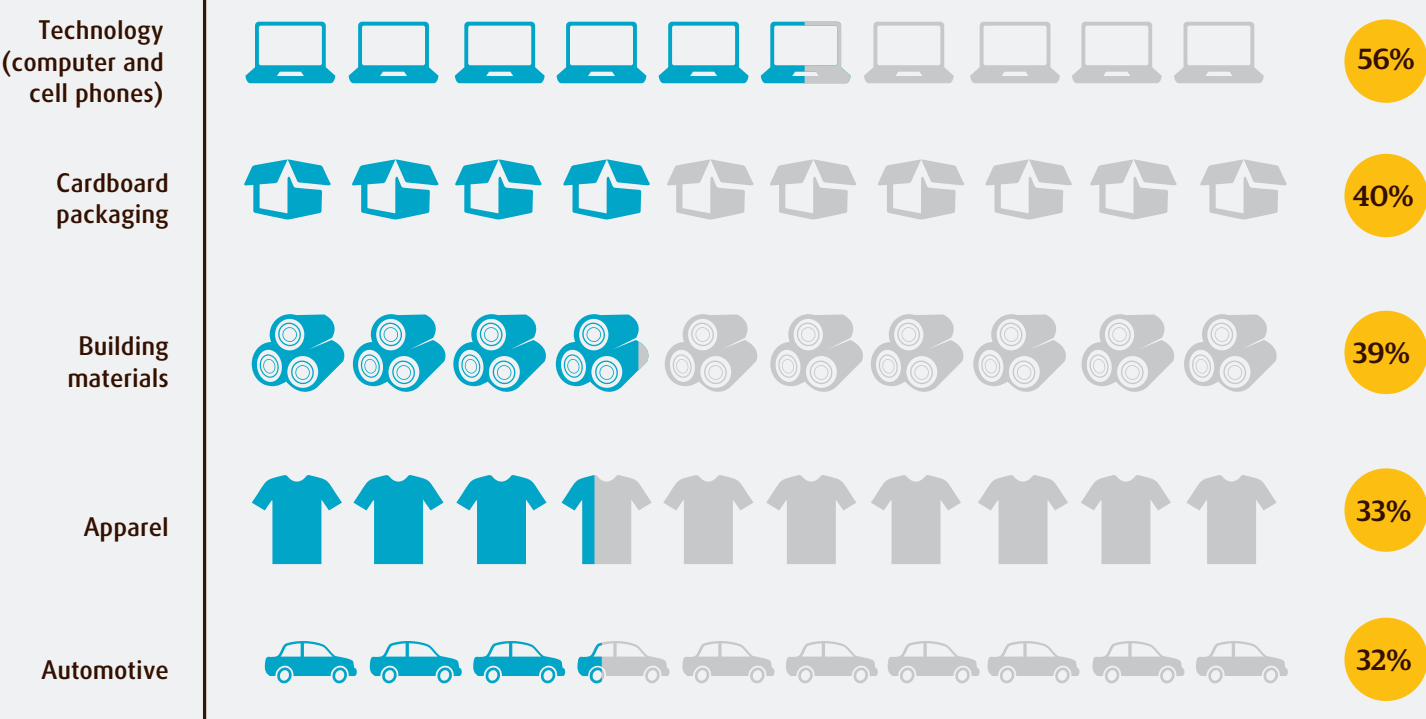
The concept of a circular economy is projected to continue to gain traction in the coming years, nearly doubling in importance from two years ago with 47 percent stating that circular economy principles were important to their organization, versus 86 percent who believe it will be important two years from now.





The jury is still out in terms of which industries will lead in adopting circular economy principles. According to those surveyed, the biggest growth is likely to come from the technology sector — especially electronics such as computers and cell phones — as take-back systems and product reuse are most easily integrated in those models.

**Pick three product categories that you feel could most easily be incorporated into a circular economy model.**



One respondent noted, “Traditionally recycled materials already have the opportunity but not the awareness. [We need] to make this work with a bigger vision, perhaps in the automotive or technology sector, so that the world will understand how [circular economy] is different.”

## Closing the Loop on Single-Serve Coffee

*Nespresso* is the worldwide pioneer in premium, single-serve coffee with a focus on delivering the highest quality coffees and ultimate coffee experiences. The *Nespresso* system – from aluminum capsule to machine – is designed to work together to ensure consistent quality in every cup of coffee.

While *Nespresso* capsules are made from aluminum – which is infinitely recyclable – recycling in the U.S. is a complex process due to the inconsistent infrastructure across the country. Building on its existing recycling program, *Nespresso* teamed up with UPS to implement a dedicated recycling program – separate from local curbside collection – to ensure that used capsules are properly recycled.

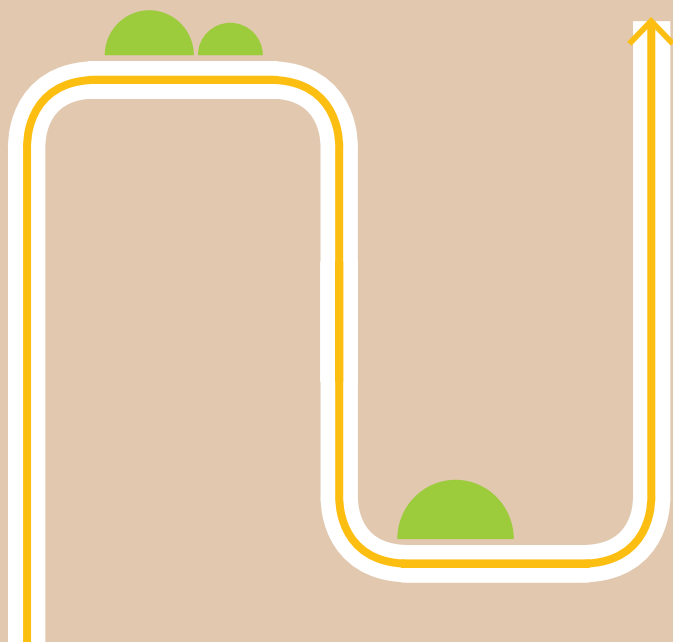
*Nespresso* offers pre-paid recycling bags for consumers to mail back used capsules by dropping them off at one of the 88,000 UPS® drop off locations in 48 states across the country, or by giving them to any UPS driver. In addition, consumers can take used capsules to any *Nespresso* Boutique, or return them at participating retail locations, where 100 percent of returned capsules are recycled.

Capsules are collected at consolidation facilities, where coffee grounds and aluminum capsules are later separated. The aluminum is melted down and used in new products, and coffee grounds are composted into high-quality soil amendments that go to landscapers, garden centers, municipalities and homeowners.



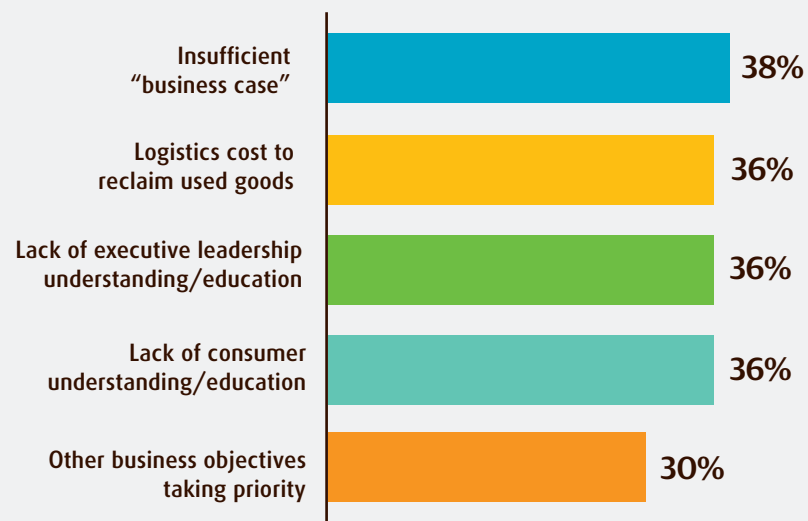
# The Biggest Barrier is the Biggest Opportunity

For the circular economy to be embraced, companies will need to address existing challenges and solidify a better business case. Generating market demand through incentives focused on cost and convenience will help bring the circular economy to market and scale.



There is great promise in the fundamental principles of a circular economy and keeping resources and materials in play endlessly. But principles alone won't bring this concept to market, let alone to scale. We asked respondents to identify the top three barriers from a list of 13. One of the top five barriers, cited by 38 percent of respondents, was an insufficient business case. This was even greater in companies with revenues of more than \$1 billion: 45 percent of those cited the need for a better business case.

**What do you believe are the biggest barriers to implementing an effective, global circular economy?**  
Please select the top three barriers.



Financial considerations loom as other highly ranked barriers, logistics costs (36 percent) and other business objectives taking priority (30 percent). Rounding out the top five was the need for increased education efforts for both consumers and the C-suite (both at 36 percent).

We also asked our respondents to identify the most important factors that will determine whether circular economy principles and practices will be widely adopted. Market demand was viewed as a critical factor to making a better business case for adoption of circular economy principles.

Twenty-six percent of respondents identified the most important factor as customers and consumers demanding that products be recoverable, recyclable or refurbishable. The second most important factor is also related to demand, as 18 percent of respondents cited the need for a ready market for used products or recaptured materials and resources.

In order to create greater demand, respondents weighed in on strategies that could help increase participation from businesses and consumers in the circular economy. The top three incentives to ensure the return and reuse of consumer products are: a rebate in the form of cash back (56 percent), convenience of returning product at a brick-and-mortar location (47 percent) and an ability to return products using pre-paid shipping (42 percent).

### What are the three best incentives to ensure the return and thereafter the reuse of CONSUMER products or their components and materials at the end of its period of primary use?

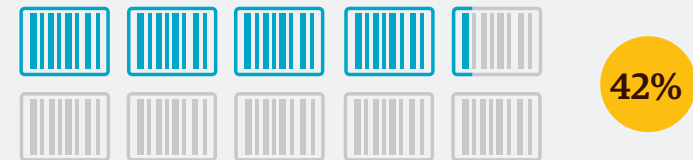
Rebate in the form of a cash back



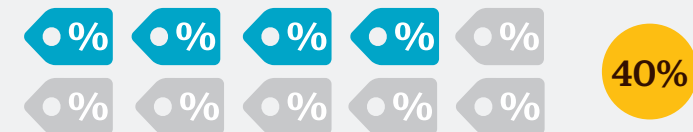
Convenience returning product at brick-and-mortar location



Ability to return product using pre-paid shipping

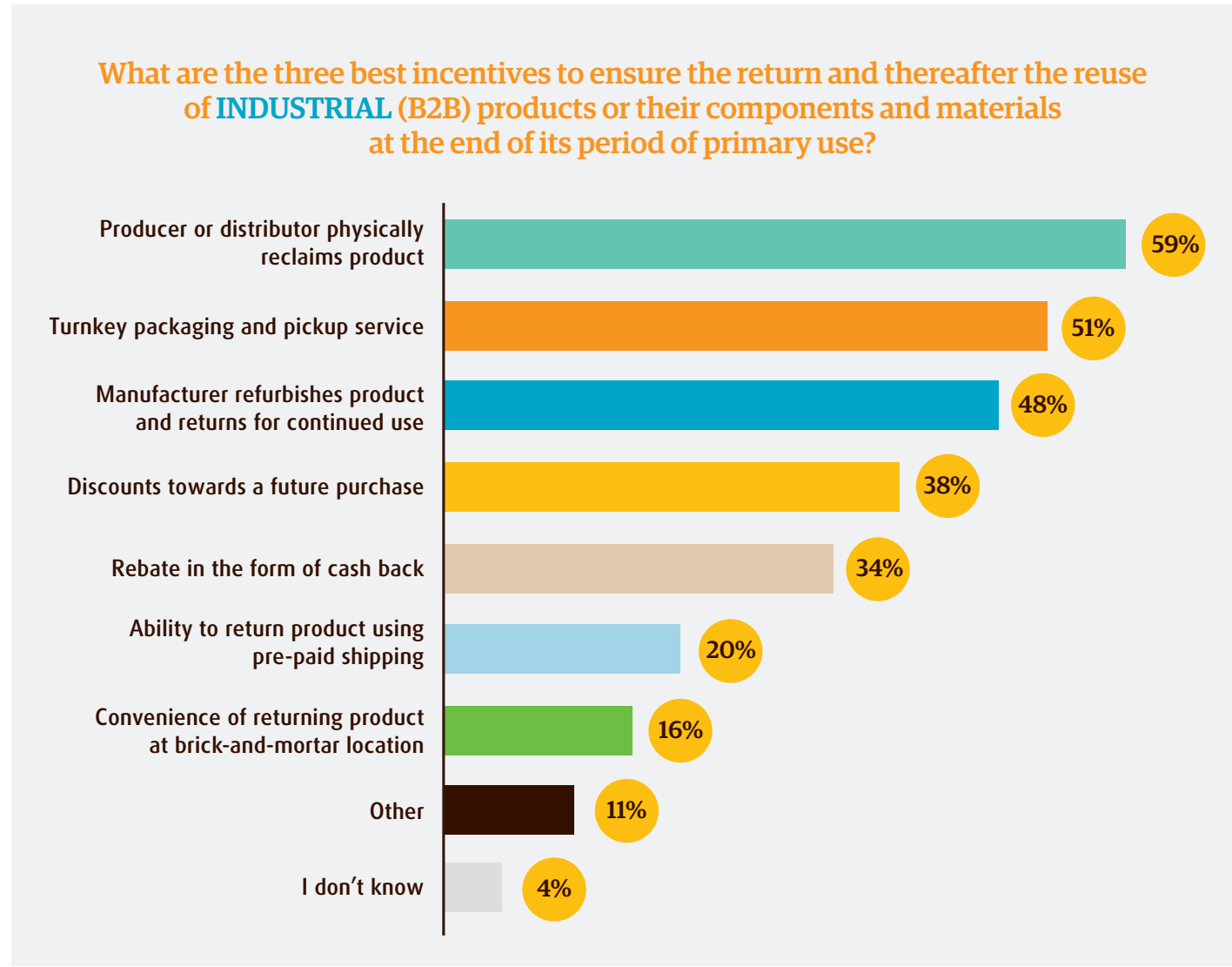


Discounts towards a future purchase



The top three incentives to ensure the return and reuse of industrial (B2B) products are that the producer or distributor physically reclaims products (59 percent), the offering of a turnkey packaging and pickup service (51 percent) and a commitment by the manufacturer to refurbish products and return them for continued use (48 percent). Both business customers and consumers are motivated by the same factors: cost savings and convenience.

Consumer and customer demand for products may be the most important trigger for growth. According to our findings, market demand must be sufficient in order to motivate business to build with waste and design for reuse. Circular economy principles would then be integrated into the whole supply chain, including robust and efficient take-back models. Finally, customers and consumers necessitate incentives in the form of cost or convenience in order to increase market demand.



# A New Operating Model for the Circular Economy

Reassessing product design and discovering innovative methods to reuse waste during the manufacturing process is critical to the long-term success of the circular economy. The majority of companies surveyed have already begun to recognize the value of using waste as a supply chain input and design products for recyclability.

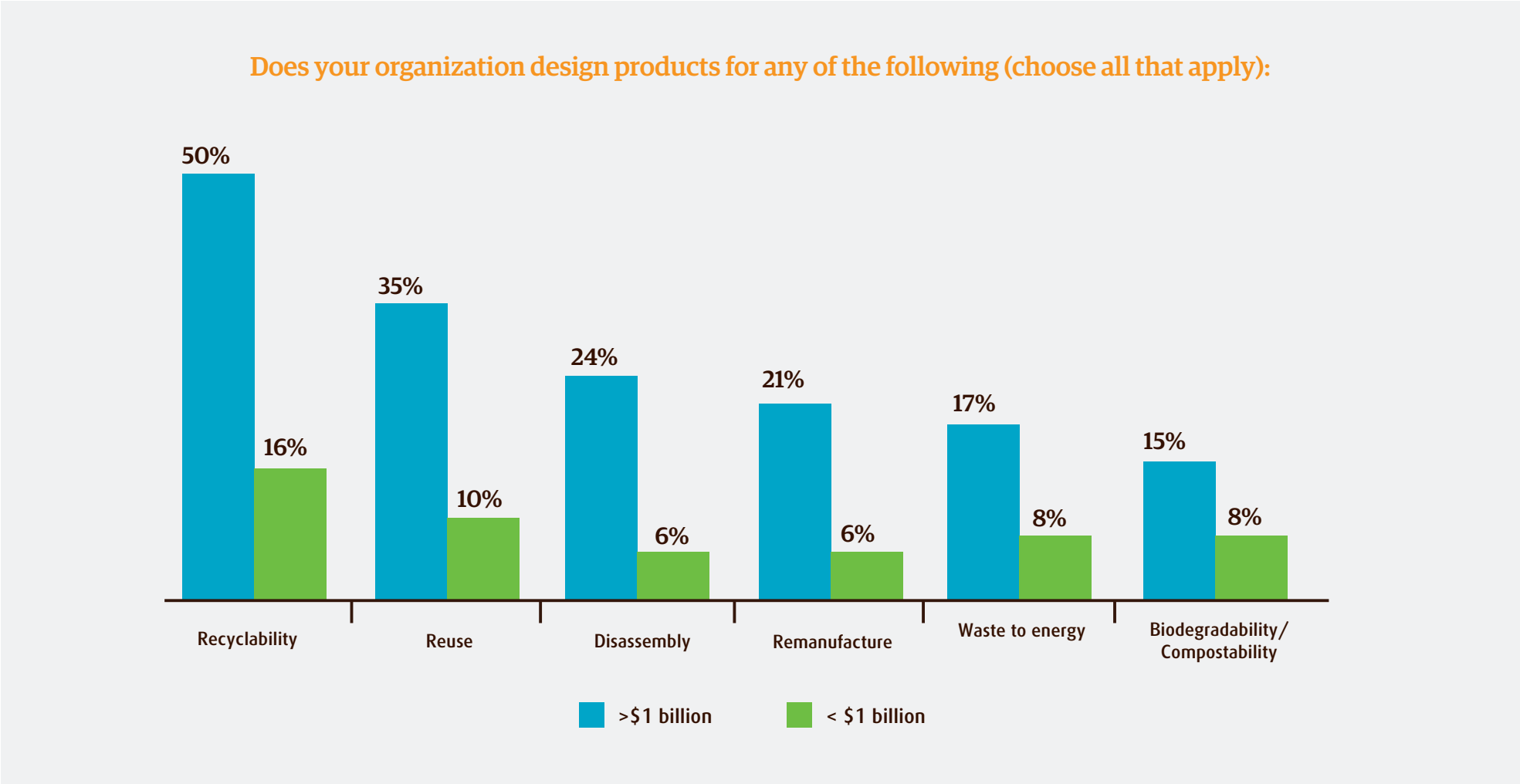


Organizations seeking to provide products and services in the circular economy may need to rethink their business models. This will require organizations to take a holistic view of the life and future lives of their products with a strategic focus on materials, design and logistics.

Rethinking material inputs is critical to the success of the circular economy. Recovered waste and recycled materials still represent only a small percentage of manufacturing input. Market mechanisms will be needed to match recycled or waste materials to processes that use these materials as inputs. Fifty-four percent of respondents indicated their companies do not produce any products using any type of waste.

Companies with greater than \$1 billion in annual revenue are more likely to treat waste as an essential component in the supply chain, as more than 75 percent use waste as a manufacturing input. These companies produce at least one or more products using more than 25 percent of the following types of waste: post-consumer waste (23 percent), pre-consumer waste (14 percent) and post-industrial waste (16 percent). Only 36 percent say they do not produce products using any type of waste.

Design will have a major influence on circular economy efforts, both in terms of material inputs and repurposing at end-of-life. Respondents from the larger companies we surveyed are clearly doing more when it comes to design.



These are promising signs. For example, the large organizations surveyed have designed at least one or more products for recyclability (50 percent), reuse (35 percent), disassembly (24 percent) or remanufacturing (21 percent).

## Fueling the Circular Economy

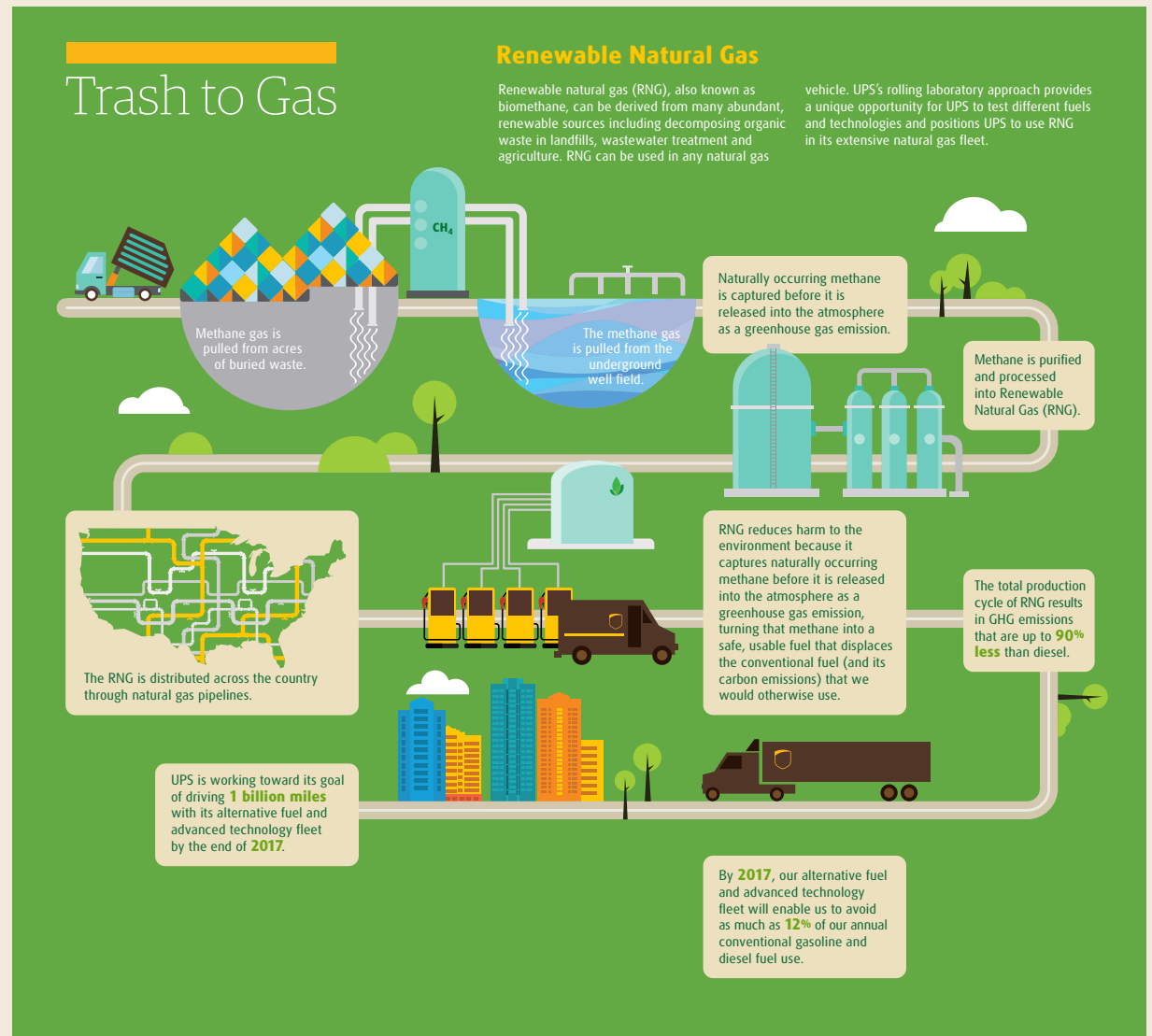
As a transportation and logistics company, UPS facilitates the circular economy by providing more efficient and sustainable solutions to help reclaim and refurbish products at the end of their useful life.

In addition to enabling its customers' participation in the circular economy, UPS also applies circular thinking within its own operations through the use of renewable natural gas (RNG), also known as biomethane. By using RNG, UPS is taking methane that would otherwise be released into the atmosphere as a greenhouse gas and converting it into a fuel to power its trucks.

Nearly every landfill, agriculture operation, and manufacturing and waste plant generates methane – it is among the most abundant forms of fuel on the planet. To be converted into RNG, methane is captured from the landfill before it is released into the atmosphere, then purified, processed and distributed through the natural gas pipeline system, making it available for use in any vehicle that can run on natural gas.

RNG provides a two-for-one solution to greenhouse gas emissions: it replaces conventional fuel (and its carbon emissions) that UPS would otherwise use, and also prevents methane from being released into the atmosphere, where it is more than 21 times more harmful than carbon dioxide.

Using RNG demonstrates UPS's commitment to develop alternative fuels and advanced technologies. The company already operates 19 biomethane heavy-duty trucks in the U.K. and is expanding its use of RNG in its alternative fuel and advanced technology fleet through investments in Tennessee, California, Mississippi and Texas.



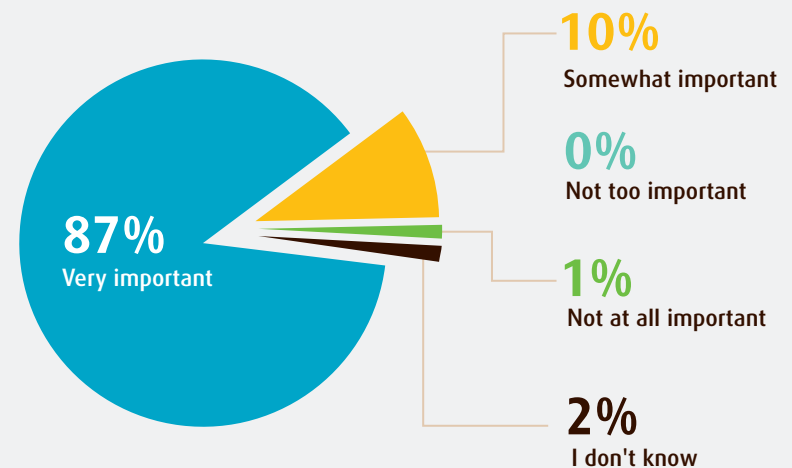


# The Importance of Logistics to the Circular Economy

Engineering smart packaging and take-back processes will help businesses establish reuse and recyclability systems in a cost-effective manner. Optimizing “first mile” logistics will help companies to close the loop and implement a sustainable circular economy model.

Logistics plays a critical role in implementing successful and sustainable circular strategy. Nearly unanimously, 97 percent of respondents claim logistics as either very important (87 percent) or somewhat important (10 percent) to transitioning to a circular economy.

When considering the challenges of transitioning to a circular economy, how important is logistics to its success?



As e-commerce and just-in-time delivery strategies have grown, so has the “last mile” challenge to deliver products to a consumer’s home or the loading dock of a manufacturing plant at a reasonable cost. Logistics can offer customers unique value by helping to incentivize greater participation in the circular economy through a seamless and convenient take-back model. Offering pre-paid shipping labels, smart packaging and convenient take-back mechanisms will fuel market demand.

For the circular economy, this becomes a “first mile” conundrum to reclaim products and materials for future use. In order to solve this issue, each product’s value chain — that complete view from raw material to end-of-life disposition — must be analyzed by its unique characteristics. Circular economy supply-chain models will need to determine whether reclaimed products and materials should be transported back to a central hub facility or dealt with on a local level.

Some products, such as aluminum or others requiring high-cost recovery processes, may need to travel a greater distance than those that can be repaired or remanufactured locally. For other products, co-locating businesses where the waste of one is feedstock for another (such as beer grains used for animal feed) can be efficient, but requires supply-chain modeling to determine the potential costs and benefits involved.

This is where logistics expertise can play a critical role in the circular economy. Logistics companies can offer customers unique value by incentivizing greater participation in the circular economy through a seamless and convenient take-back model. Consumer and customer costs can be reduced through the use of backhauling, as well as load and route optimization. Backhauling involves utilizing delivery vehicles to transport cargo or freight to a recycling or reuse location, along some or the entire original delivery route.

Technology will have a role to play in this as well. The Internet of Things (IoT) is becoming pervasive, as sensors are used across an entire supply chain. Packages and loads can signal their readiness to be retrieved, making reverse logistics more dynamic. Additionally, vehicles can be dynamically routed based upon real-time conditions.

The majority of survey respondents indicated that getting the business model right is critical to the growth of the circular economy. Increased demand will lead to companies taking greater control of the entire product life-cycle, from innovative materials and designs to more efficient manufacturing and take-back models.

Much has been written about how the development of new materials and life-cycle assessments has changed the success criteria for designers. As the scope of the circular economy expands, so will the focus on logistics. Companies will begin to look beyond product design, ensuring logistics will soon be another area where circular economy leaders will direct their attention.



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