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3 Circular Economy Interventions That Will Mitigate Supply Chain Disruption

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3 Circular Economy Interventions That Will Mitigate Supply Chain Disruption

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Initiatives: [CSCO Strategic Leadership](#)

Executive leaders can gain a competitive edge when responding to disruption by applying circular economy principles to improve security of supply of raw materials and products, enabling them to continue to meet customer demand. Use this research as a catalyst for a circular economy strategy.

Overview

Key Findings

- Supply chain disruptions are constant, with nearly 70% of supply chain professionals stating that they are in a constant response to disruption since 2019. Disruption resulting in material shortages is a factor in increasing inflation, which ultimately can lead to recession.
- Disruption resulting in supply shortages is a threat to an enterprise's ability to meet customer demands, risking market share where competitors can continue to supply.
- Leveraging the circular economy enables enterprises to continue to meet customer needs, by providing a new raw materials stream through end-of-life products that are refurbished or reprocessed.

Recommendations

Executive leaders looking to help CEOs leverage the circular economy should:

- Provide routes for materials to be returned to the enterprise for refurbishment by defining collection strategies and establishing collaborations for product processing.
- Empower the sales and service teams to position circular products within the market to customers by strategically adjusting the customer value proposition.

- Make sound decisions about circular processing routes by understanding environmental impacts of product processing. Assess environmental trade-offs for circular products by conducting life cycle assessments.

Introduction

Executive leaders are embattled, facing multiple disruptions such as the pandemic, container shortages, extreme weather and wildfires. These issues have culminated in raw material shortages, inflated prices and lack of availability for some industries. Since the beginning of 2019, nearly 70% of supply chain leaders have been constantly responding to disruptions. ¹ This leads to more cost, increased lead times to market and interrupted production. Supply chains constantly responding to disruption will deplete their resilience over time.

One key challenge created by a disruption is gaining access to raw materials and component parts. For example, a global chip shortage is causing disruption in the automotive and electronics industries. It has been estimated that this disruption will cost automakers 3.8 million units in lost production or 5% of estimated annual sales. ² This is impacting the secondary market for electronics with an increasing number of return mechanisms being put in place, facilitating growth in refurbished products.

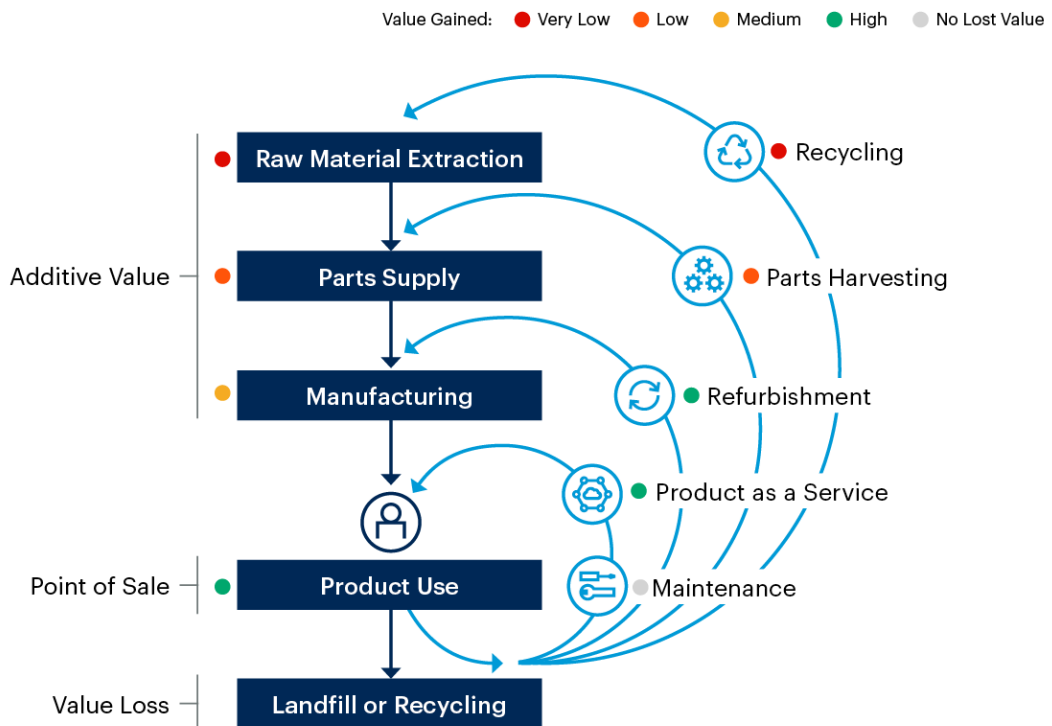
A linear approach to supply chain optimizes for costs, but creates fragility in times of disruption. The circular economy can act as a shock absorber against instability in the supply chain by providing additional raw materials and product streams. What does it mean to be circular? Circular economy principles focus on product design, use and product end-of-life management.

The aim of the circular economy is to decouple raw material consumption from growth.

In the case of disruption, end-of-life materials or products that have been perceived to have no value, in a constrained market, may become precious commodities. For example, companies gain more independence from resource extraction by using circular materials. Another approach is to offer refurbished products to meet customer expectations while achieving a second sale for the enterprise. Figure 1 contrasts a linear versus circular economy, illustrating opportunities for value creation.

Figure 1: Linear Versus a Circular Economy

Linear Versus Circular Economy

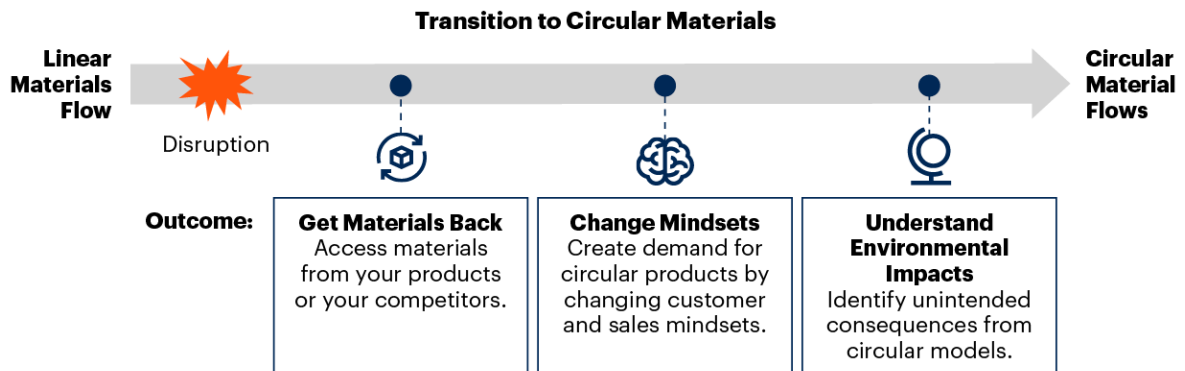


Source: Gartner
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How can the circular economy be applied where there are material shortages? During disruption, demand may rapidly increase or fall. In this research, we consider how applying circular economy principles can address a short supply of materials and products by applying three principles. Figure 2 demonstrates how enterprises can leverage the circular economy to continue to meet demand during short raw materials supply.

Figure 2: Three Circular Economy Interventions for Short Materials Supply

Three Circular Economy Interventions for Short Material Supply



Source: Gartner
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Analysis

Get Materials Back – Yours or Your Competitor’s

Regaining access to materials at the end of product life represents an opportunity to secure another raw materials stream, but also enhance value by offering refurbished products. However, a strategic approach needs to be taken to pulling products back from the market. Not all products will be suitable candidates, due to their complexity and low residual value, making it an unprofitable proposition. Furthermore, the actual take back process requires a complex interaction from collection at the end-of-use location back to the manufacturer and enterprise.

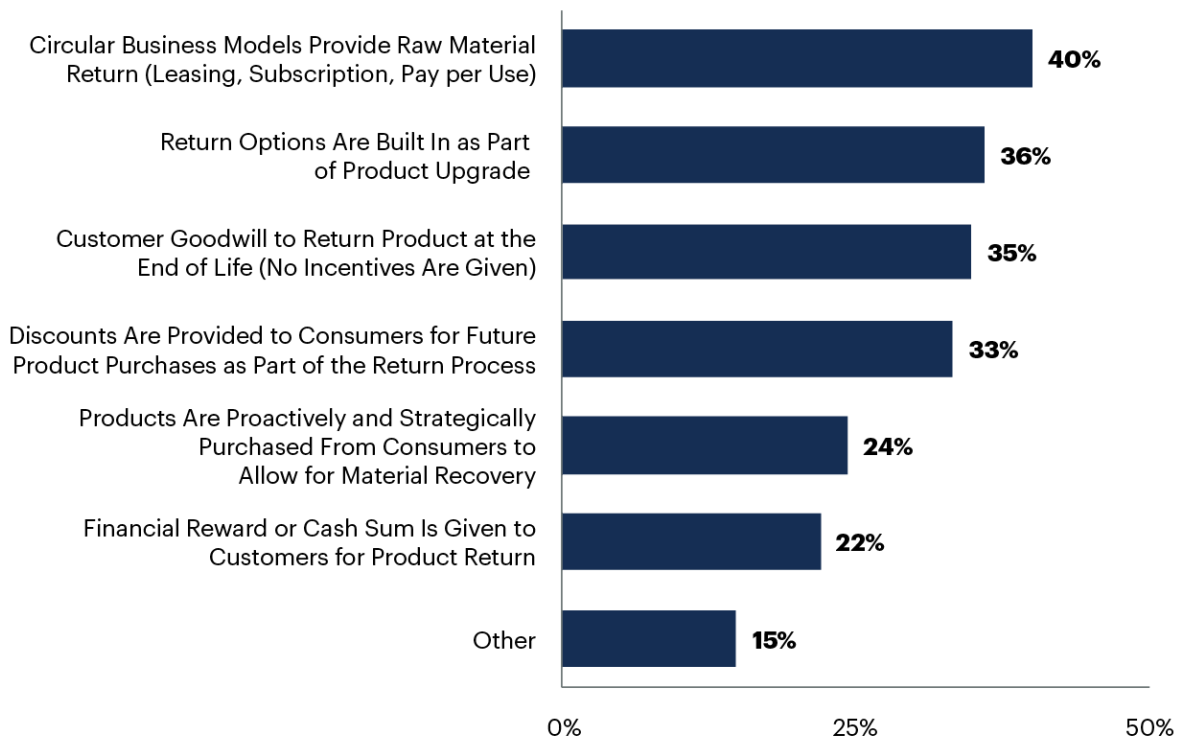
Executive leaders must address the following three decision points when seeking to get product or materials back from the market.

How will the enterprise get existing materials and products back?

Gartner’s 2020 Opportunity After Crisis Survey (see Figure 3) shows that supply chain organizations rely on circular business models, product upgrade and customer goodwill to incentivize return of products at end of life. Executive leaders must decide on the mechanisms and the ecosystem engagement needed to proactively pull back products from customers. For items of low residual value (for example, single-use plastic), leaders typically rely on customer goodwill – putting the right materials in the correct bin. However, plastic remains a challenging material, as there has been growth in use during the pandemic, which has intensified the competition between new and recycled plastics.³ For higher-value items, enterprises engage directly with customers to solicit product return through upgrades or offering discounts off future purchases. For example, Apple offers trade-in services for devices, giving store credit to be used for future purchases.⁴ Another example is Honeywell’s GoDirect Trade which is a marketplace to sell aircraft parts and purchase spare and remanufactured parts.⁵

Figure 3: Strategies to Address Ownership of End-of-Life Materials

Strategies to Address Ownership of End-of-Life Materials



n = 418

How does supply chain gain access to end-of-life resources from customers? Please select all that apply.

Source: 2020 Gartner Opportunity After Crisis June Survey

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In addition to making an intervention with the customer, executive leaders must also consider if they can make interventions where raw materials leak into waste streams. In Gartner's [Supply Chain Executive Report: Close the Loop to Create Future-Fit Raw Material Strategies](#), waste collection and recycling agencies were highlighted as one of the most important collaborative relationships to enable raw material recovery. ¹ These vendors can play a "gatekeeper" role, diverting waste away from landfill, but only if there is a market pull to do so. Government regulations, such as the European Union's Circular Economy Action Plan, will act as a further stimulus to pull products back from the market to refurbish or reuse materials. ⁶

Who will principally process the materials or refurbish the products?

This is not a simple in-house versus outsourced decision. Many organizations leverage a hybrid approach, using a network of providers to process or refurbish products, depending on the condition of receipt. Outsourcing allows the organization financial flexibility, as these providers can be "turned on and off" as needed. However, it comes at a financial cost. The solutions may also vary by market, and based on how the returns network has been designed.

Processing of low-cost materials also opens the supply chain to increased risks, such as that of modern slavery. Executive leaders must insist that due diligence is done on this value chain through responsible sourcing.

Organizational responses to the end-of-life processing challenge include the Jaguar Land Rover REALITY project for the upcycling of aluminum involving collaborative partnerships with academia and suppliers. ⁷ In addition, H&M has invested in an in-store recycling system, Loop, which processes old garments into new. ⁸

Will the enterprise take back only its own products or its competitor's products too?

Where raw material shortages are acute, it may create a competitive market for refurbished products and end-of-life materials, regardless of the company or brand that produced the product initially. Where products are processed back to raw materials, the original manufacturer does not matter. However, if enterprises are refurbishing products, their own and their competitors, this raises questions about warranty on competitor units.

Change Mindsets – Customer and Sales Teams

The supply-demand gap can lead to a recalibration of customer expectations. In an interview with Judy Glazer, global head of sustainability and product compliance at HP, she stated that the coronavirus had led to a change in customer mindsets. “There has been a real shift in the need from computing, rather than computers.”⁹ This emphasizes that the main driver was getting access to computing, with less emphasis on product type and specification. Although a crisis can act as a stimulus for circular products, this may also raise long-term questions about existing product lines. Executive leaders must be prepared to answer the following questions.

How will we avoid long-term cannibalization of market share?

If refurbished products are offered at a lower price point compared to new products, this may raise concerns that the organization is undermining its own market share. However, this is a marketing and product placement question. Where new and circular products are offered side by side, this may be true. Savvy enterprises use the circular economy to grow in new markets by, for example, offering products at a lower price point.

Here, we offer a thought experiment to understand this challenge. When a consumer is looking to purchase a new car, the role of sales is to understand their appetite and purchasing power, and then match the best option – an approved used vehicle or a new vehicle. The result is to achieve a sale, while driving the maximum value for the enterprise. The same applies to the products – sales needs to assess purchasing power and requirements of the customer before offering a circular or new product.

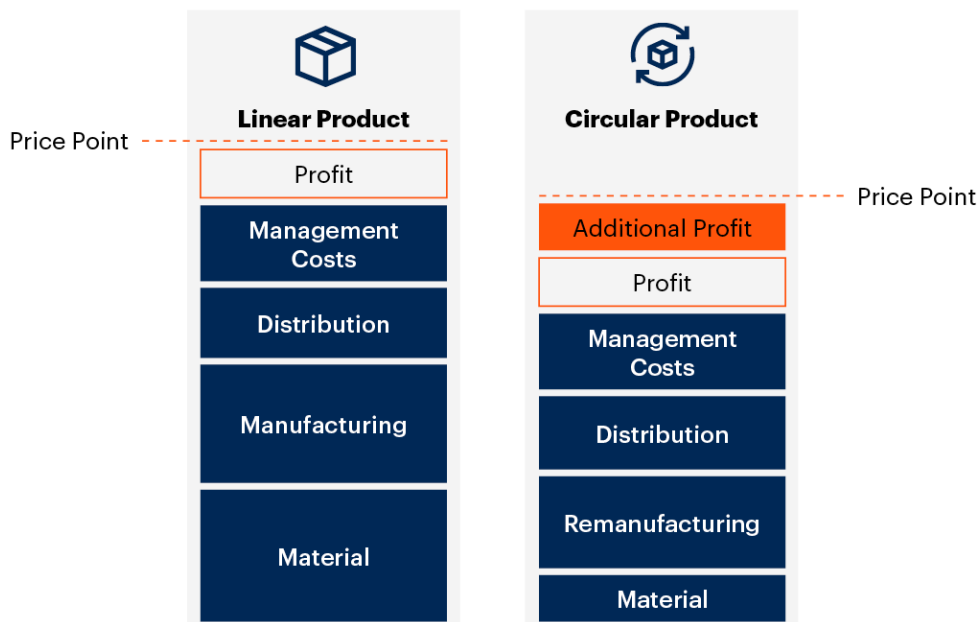
Once potential markets for circular products are identified, executive leaders also need to map the consumer protections that must be given by market. Consult with the legal team to review potential liability issues and how guarantees will be made.

How do we incentivize sales teams to push circular economy products?

In our inquiries, we heard concerns about how sales teams position circular productions. Sales teams are likely to have a cognitive bias for new products, believing that these have better performance over refurbished circular alternatives. Alternatively, sales incentives are structured to give preference to new products. The financial incentives for the sales teams may also drive them toward selling new products. Figure 4, compares linear versus circular material product costs. It illustrates that, for circular products, although the selling price may be lower compared to new, there may still be attractive margins. This is because all the investment in initial product manufacture and raw materials has been made, and for some products, the percentage of profit may be similar or higher than for new products. Enterprises need to do product-based costing or look at cost to serve to understand where this advantage lies and incentivize sales teams accordingly.

Figure 4: Illustration of Cost Base Between New and Refurbished Products

Illustration of Cost Base Between New and Refurbished Products



Source: Gartner
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Executive leaders should also look to provide training to sales teams, outlining the warranties and performance of circular products, as well as consumer protection obligations, empowering them to have customer conversations. Without sales onboard, long-term circular economy strategies are likely to fail.

How do we shift customer expectations for new products?

In the initial stages of a disruption, customer expectations typically shift away from product specification to product utility. During this time, brand loyalty may decrease, as customers focus on gaining access to products or services they need. Enterprises that are positioned to meet this demand can grow their market share. However, when the disruption has passed, this raises the question as to how the enterprise can sustain customer interest in circular products. Different types of product may have different appeal to customers. Executive leaders can take a strategic approach to customer engagement by communicating product quality, reduced environmental impacts and leveraging price points.

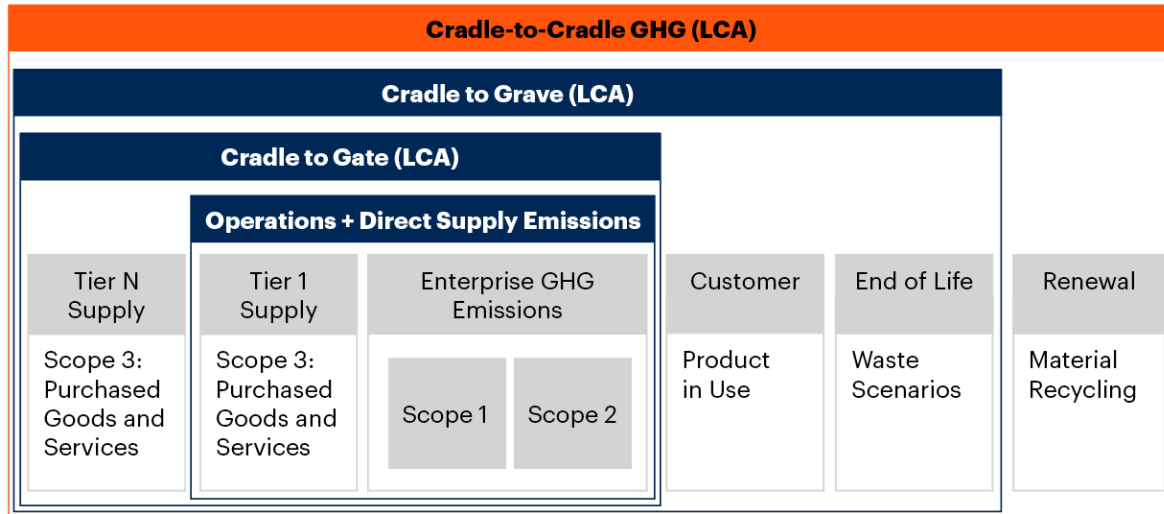
Understand Environmental Impacts – Circular Is Not Always Best

The circular economy does not always make sense when the environmental impacts of circularity exceed initial manufacturing. Executive leaders need to have confidence and proof that the circular strategies are not doing more harm than good – the precautionary principle. The mechanism to do this is through conducting a life cycle analysis. A life cycle analysis (LCA) looks at product environmental impact from across different boundary conditions. Enterprises should use standards such as PAS2050 and the ISO 14040 series to conduct their LCA. Figure 5 illustrates different boundary conditions using the example of greenhouse gas emissions, including:

- **Cradle to Gate:** The environmental impacts from raw material abstraction to end-of-manufacturing process (or alternatively, to where the enterprise control for the product ends)
- **Cradle to Grave:** Same as cradle to gate, with the inclusion of product use phases and with various waste scenarios modelled (e.g., landfill or incineration)
- **Cradle to Cradle:** Same as cradle to gate, with the inclusion of product in use, however scenarios are modelled where raw materials are reclaimed.

Figure 5: Boundary Condition for Life Cycle Analysis

Illustration of Boundary Conditions



Source: Gartner
 GHG = greenhouse gas; LCA = life cycle assessment
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When should the enterprise apply LCA to aid circular economy decision making?

Executive leaders must balance trade-offs between financial benefits and environmental impacts from their circular economy strategies. In some instances, processing products to enable a circular economy can create more environmental impacts than initial production. This does more environmental harm than good. It is imperative for the enterprise to have a clear understanding of environmental impacts before selecting circular processing routes.

Many organizations also choose to use LCA as part of the product design process to improve product performance, select the most appropriate materials and consider end-of-life product implication.

Should enterprises publish this data to obtain a competitive advantage?

It is advised to exercise caution before publishing LCA results externally, because results may vary by method of analysis selected. Typically, organizations will obtain peer review and/or use independent consults for this analysis to build stakeholder confidence in the results given. For example, Audi published an LCA for its vehicles, comparing environmental impact (in this instance, global warming potential) between models. ¹⁰

Should all impacts be considered equally?

The output from an LCA is not a single indicator, such as global warming potential, but also includes multiple other environmental indicators. For example, indicators could include eutrophication, acidification potential and ozone depletion, to name just a few.

Executive leaders are advised to work with environmental and sustainability teams to help interpret the output of the LCA, and to make decisions between indicators. Many enterprises use Global Warming Potential (emissions) to guide their decision-making process.

Evidence

¹ [Gartner's Opportunity After Crisis Survey, 2020](#): In May and June 2020, Gartner Supply Chain Research sent invitations to complete an online survey to Gartner clients, community members and a wider group of practitioners in supply chain, and other functions globally. We received 528 completed responses during the survey period for this Opportunity After Crisis Survey. We had participants across industries – e.g., high tech (15%), industrial (14%), CPG (12%) and food and beverage (10%), and most worked in supply-chain-related functions, e.g., supply chain (36%), purchasing and procurement (10%), logistics/transportation and distribution (9%). Of the respondents, 44% were from EMEA, 37% were from North and South America, 18% were from Asia and Australia, and others were from the rest of the world. More than half (55%) of the participants worked for \$10 billion plus companies. Fifty-four percent of the participants were at VP/director level or above.

² [Global Chip Shortages to Cost Automakers 5% of Production](#), Fitch Ratings.

³ [The Plastic Pandemic: COVID-19 Trashed the Recycling Dream](#), Reuters.

⁴ [Apple Trade In](#), Apple.

⁵ [GoDirect Trade](#), Honeywell.

⁶ [Circular Economy Action Plan](#), European Commission.

⁷ [Jaguar Land Rover Upcycles Aluminium to Cut Carbon Emissions by a Quarter](#), Jaguar Land Rover.

⁸ [From Old to New With Loop](#), H&M.

⁹ [Supply Chain Executive Report: Close the Loop to Create Future-Fit Raw Material Strategies](#)

¹⁰ [Sustainability: Integrated and Well Thought Out, Audi.](#)

Recommended by the Authors

Available only to Gartner clients, and depending on subscription.

[Sustainable and Circular Supply Chain Evolution or Revolution](#)

[Supply Chain Top 25: 3 Strategies to Accelerate Circular Economy Outcomes](#)

[Supply Chain Executive Report: Close the Loop to Create Future-Fit Raw Material Strategies](#)

[Leading Sustainability Ambition, Goals and Technology in the 2020s](#)

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