



# Supply Chain Management in a Resource-Constrained World

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# Executive Summary

As volatile geopolitics disrupt resource flows, changing demographics demand new products and climate change threatens supply, thriving means extracting more value from constrained resources. This report shows CSCOs how to secure their supply chain's economic future and environmental sustainability.

## Key Findings

- Geopolitical, trade, demographic and climate-driven disruptions are constraining supply chains, impacting costs and challenging service levels, threatening organizations' abilities to survive and grow.
- Climate change and its implications for people, governments and resources — including the resource demands of the energy transition — will make these constraints more pronounced in the future.
- Challenged with too many immediate obstacles to mitigate this threat, leading supply chains motivate action by focusing stakeholders on urgent, tangible issues, rather than on long-term constraints.
- While supply chain leaders heavily focus on procurement strategies to mitigate exposure to resource constraints, marginal changes in product and supply chain design more significantly reduce exposure to constrained resources.
- Growth in a resource-constrained world requires innovation, overcoming uncertainty and knowledge gaps that hinder transformative change, and engaging supply chain and ecosystem partners.

# Introduction

A convergence of turbulent geopolitics, climate change and shifting global demographics means that the resources our supply chains rely on — including energy, talent, minerals and fibers — are increasingly constrained.

Supply chains recognize that resource constraints present a threat. An example of this can be seen in the 2023 Gartner Future of Supply Chain Survey, which found that 66% of responding supply chain leaders have invested in mitigating their raw material supply risks in sourcing and procurement.

However, the nature and focus of this investment vary significantly. For most companies, the response is insufficient. While 64% of supply chain leaders who responded to the 2024 Gartner Geopolitical Risks Impacting the Supply Chain Survey expect geopolitical risks to negatively impact total cost to serve in the next three years, for example, only 28% of supply chain leaders responding to our 2023 Future of Supply Chain Survey cited “raw material availability due to geopolitical changes” as a key challenge in the next one to three years.

Our research identifies three key barriers preventing supply chain leaders from taking sufficient action to address constrained resources. Our process leveraged primary data, conducted interviews and reviewed written submissions from supply chain organizations to unearth keys to success for overcoming these barriers. We ultimately outlined three categories of action that supply chain leaders should undertake to meet the constrained present and future with focus, strategy and innovation (see Figure 1):

- **Don't fight the enterprise tendency to prioritize short-term issues.** Leverage it to motivate investment and action by temporarily deprioritizing long-term constraints, such as anticipated limits on greenhouse gas (GHG) emissions.
- **Make changes in product and supply chain design,** where a small shift delivers outsized impacts. Design solutions that address both short- and long-term constraints.
- **Engage the marketplace** — from suppliers to innovative startups and solution providers — to overcome internal barriers to implementing and scaling innovative solutions.

» Figure 1: Shift From Business Vulnerability to Business Viability



Source: Gartner



Motivate Action by  
Deprioritizing Long-  
Term Constraints

Few supply chain leaders will debate that resource constraints are a problem that will be more severe in the future.

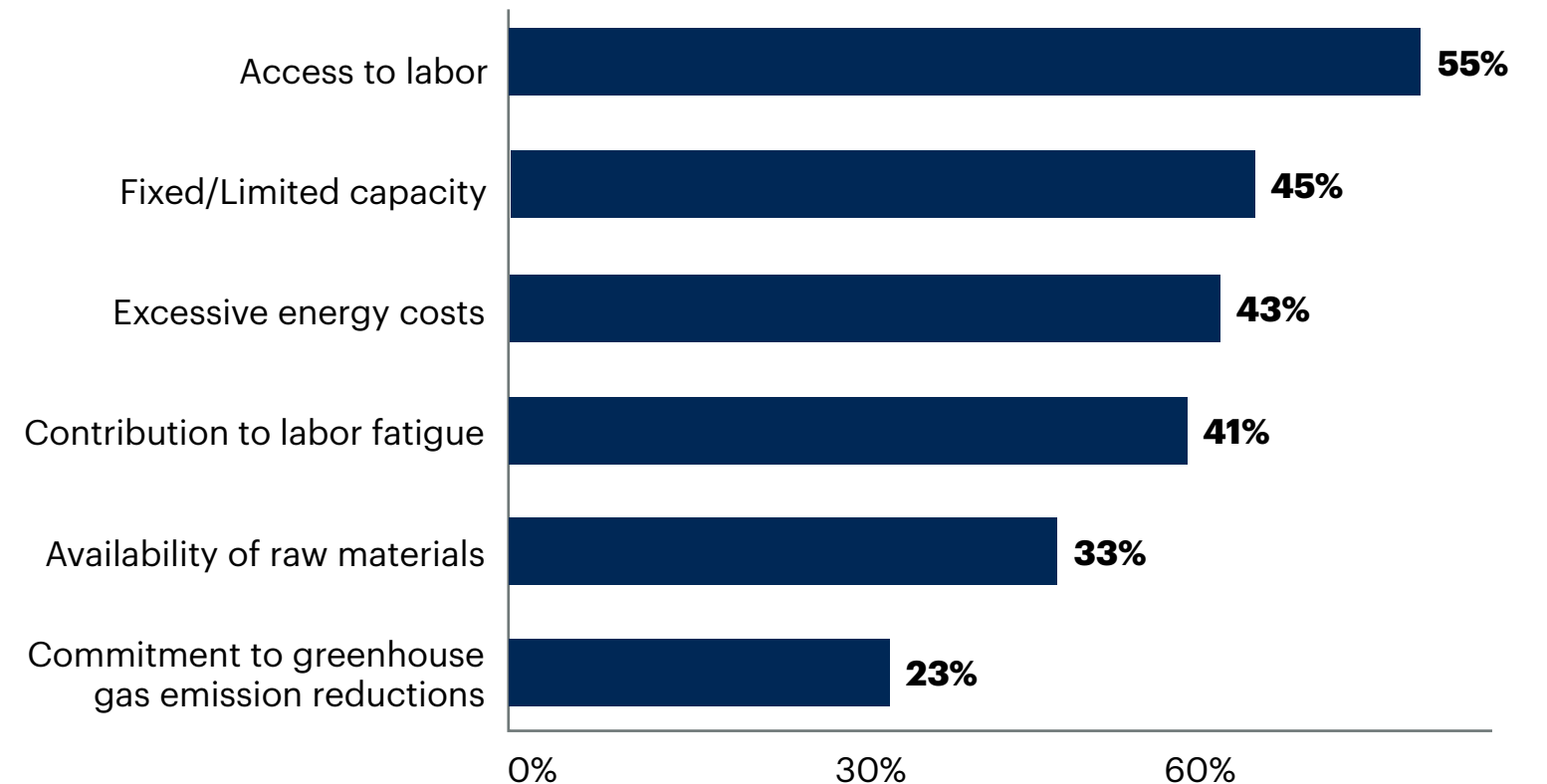
Yet, in the face of more immediate priorities, supply chains delay action on those longer-term constraints. Many organizations try to motivate action to address long-term constraints **despite** this tendency, by increasing the accuracy and broadening the inclusion of different negative impacts of the longer-term risk. But leading organizations take a different approach.

### Focus on the Right Fight (Not the Good Fight)

If you're early in your long-term resource constraint journey, don't fight the fight you know you won't win, as it is difficult to gain leaders' attention on long-term issues when they face urgent challenges. Further, the effort to overcome long-term resource constraints in the present is likely to be deprioritized when the supply chain faces disruption. Instead, make the case for resources by focusing on the clear and present danger to your business strategy and objectives facing you today (see Figure 2). Across all the interviews we did in the formulation of this research, one thing was clear: there is no magic wand that secures business viability through a future of resource constraints. To prepare requires investment. To get those investments, you must secure a mandate.

### » Figure 2. Top 6 Current Constraints

Percent of supply chain leaders experiencing or expecting constraints



n = 60-143 supply chain leaders

Q. Which of the following are significantly constraining your supply chain? Select all that apply.

Source: 2024 Gartner Geopolitical Risks Impacting the Supply Chain Survey

It will be easier getting that enterprise mandate by focusing on risks that are clear and present dangers to your business' viability and long-term financial sustainability — not the environmental impact of your business, but rather your business' sustainability in the long term. For practicality's sake, focus on those dangers and deprioritize long-term constraints. You'll overcome those long-term constraints through designing your solution, and not through establishing a mandate for action. But for now, take a practical approach, and prioritize gaining mandate on the constraints that you're already experiencing which may become long-term.

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You'll have an easier time getting enterprise support, because it rests upon, rather than fights against, the enterprise impulse to focus on the short term.

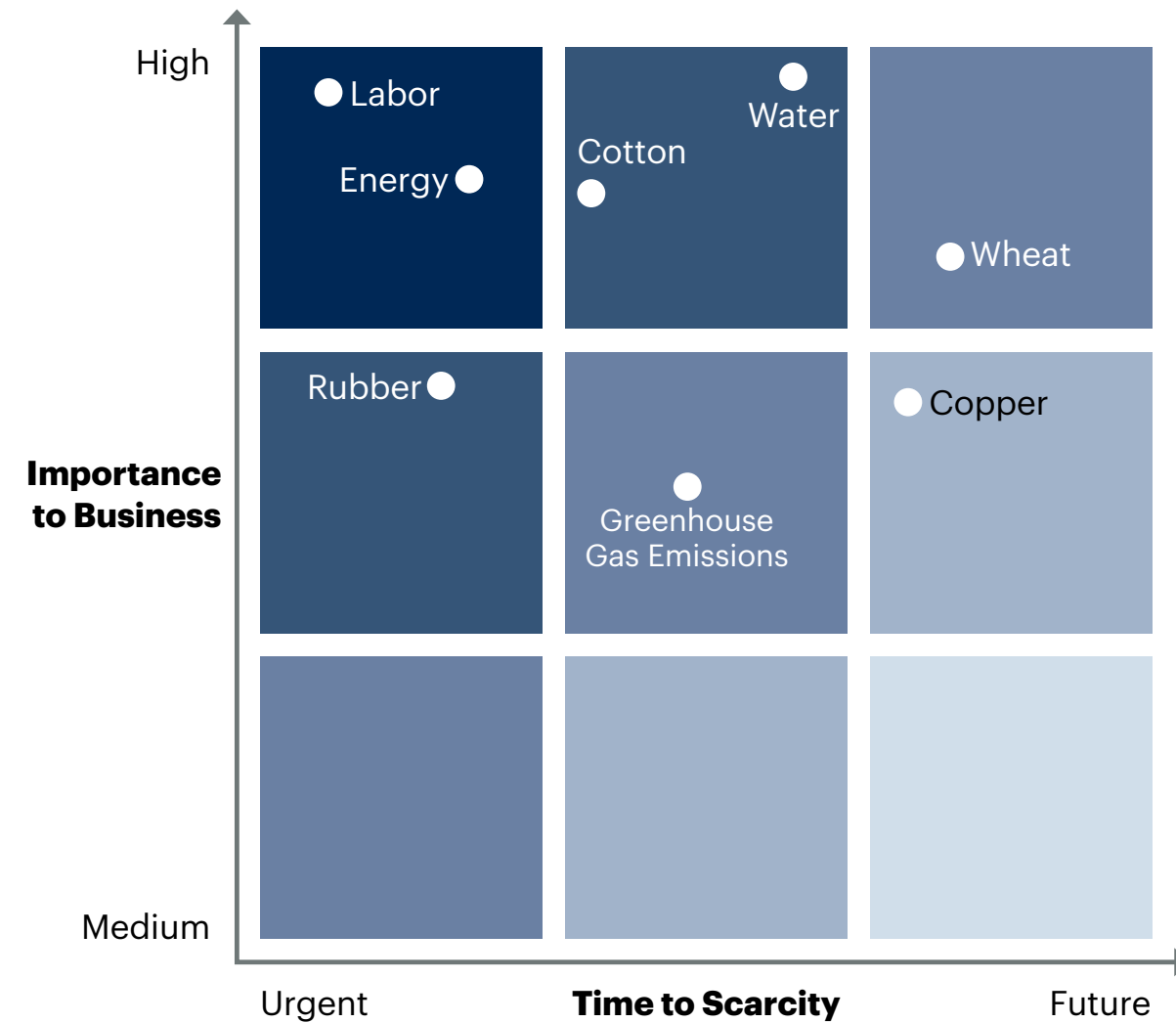
### Clarify What You Value and What Risks You're Unwilling to Accept

To fight the right fight, begin with a clear sense of your priorities.

- **Conduct a critical resource assessment** to surface the resource constraints that most threaten your enterprise and supply chain's ability to achieve your organization's strategic goals (see Figure 3). Evaluate critical inputs to your products and enterprise, including raw materials, energy, water and materials, such as packaging and containers that are required for the supply chain to function. Also, assess outputs that are subject to legislative constraints, such as GHG emissions (e.g., carbon credits, emissions caps).

» Figure 3. Critical Resource Assessment to Determine Key Constraints

Illustrative



Source: Gartner

- **Quantify the impact of these most urgent resource constraints** to your supply chain and enterprise. Also include mitigations currently in place, as well as those you could implement, their potential impact and the cost for each. This allows a sober conversation about the value and trade-offs associated with mitigation.
- **Communicate your findings to key stakeholders** in terms relevant to them (e.g., loss of market share) to determine their level of comfort with the current state. This risk appetite discussion will determine what resource constraints you currently face and what you will need to address them. Be clear that this is not a choice between business as usual and investment. Rather, your risk assessment represents risks you are already taking.

### **Remove Competitive Barriers to Action**

Stakeholder buy-in can be challenging due to fears of competitive disadvantage. If you invest in a solution to address your exposure to a resource constraint, will competitors benefit from your innovation without the burden of investment?

Leaders approach this challenge by finding allies and spreading the work. Keep in mind that resource constraints threaten your competitors as well. Engage your most innovative suppliers, customers and even competitors to share ideas and collectively overcome barriers.

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Reprioritize Long-Term  
Resource Constraints  
to Design Solutions

Supply chains are inherently designed for a world without resource constraints — a consequence of a well-intentioned growth mindset. They are also designed for maximum operating efficiency and profitability.

So, stakeholders anticipate that a transition to a supply chain design that addresses current constraints while also designing out future constraints will require a costly transformation. As a result, many organizations try to optimize what they have given current constraints, including cost and opportunity cost. They will often opt for less costly and easier solutions that narrowly address constraints today, failing to ensure the sustainability (read as: viability) of their business into the future. They optimize for evolution, rather than revolution, presuming they can't make marginal change and achieve their long-term goals.

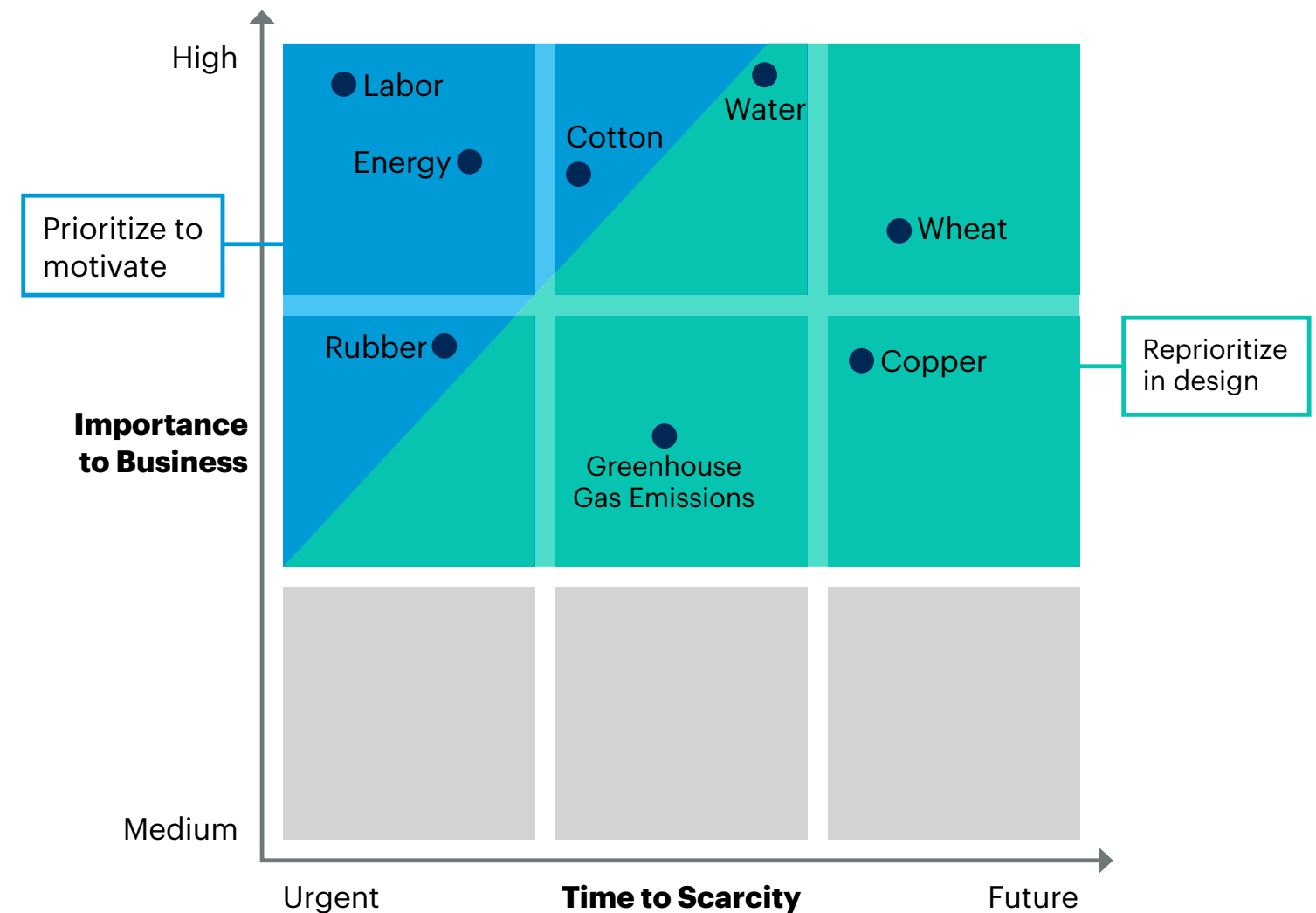
## Marginal Design Changes Can Lead to Transformational Results

Leading supply chains in our research prove that, in fact, small changes in the right place deliver outsized impact. While most supply chains treat short-term constraints as a sourcing problem, these leading supply chains understand, instead, they have a design problem. So, they make present and future constraints tangible today in the design of their solution to resource constraints. They set requirements today that design out constraints long into the future (see Figure 4).

### Make Present and Future Constraints Salient Today

Enhance the long-term viability of the supply chain and its products by ensuring current constraints are reflected in design processes, and by bringing forward future constraints. Supply chain leaders rarely have direct ownership of product design,

» Figure 4. Design Out Current and Future Resource Constraints  
Illustrative



Source: Gartner

but leaders work in close partnership. For example, the 2023 Gartner Top 25 Supply Chain Research Information Packet (SCRIP) Data showed 51% of companies included in the analysis reported that the supply chain owns and executes the new product introduction process.

Product design can be adjusted to incorporate renewable materials, which address exposure to raw material constraints. Thoughtful product design can also mitigate exposure to capacity constraints due to limited skilled labor, assets or equipment.

### **Design Present and Future Constraints Out of the Supply Chain**

Engage with relevant internal and external stakeholders to ensure present and future constraints are considered as part of the design process. Redesigning every existing product is an overwhelming task. Instead, focus on designing resource constraints out of new products, phasing in more sustainable and viable products for the future. Guide design decisions using principles, measurement indexes and clear decision criteria:

- **Adopt design principles:** Design principles guide design decisions to consider important goals, including mitigating resource constraints. Adopt effective design principles that recognize that design colleagues are problem solvers and empower them with the right questions to inspire improvements like reduced waste, circulation of materials and enhanced durability. Contribute supply chain expertise to inform these principles.
  - **Leverage procurement and the supplier network:** Key design decisions are often made by upstream supplier partners. Partner with existing suppliers with the capacity for innovation, and evaluate whether potential new suppliers can support design innovation in alignment with goals.
  - **Bring forward likely future constraints:** Apply likely constraints to inform decisions in product design, as well as in supply chain design and planning, so that the supply chain can more easily adjust. For example, include resource constraints in the integrated business planning process to optimize for a constrained future.
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Leverage the Marketplace  
to Learn and Innovate

Once supply chain leaders have a mandate and determine key constraints and design solutions, a difficult, albeit less obvious challenge emerges. Innovating new solutions to unfamiliar and uncertain challenges, such as designing a reverse supply chain, is met with internal drag.

The knowledge barriers are high, and the technical case for changes meets extreme scrutiny, and oftentimes, skepticism. The supply chain generally believes that, given these big barriers and obstacles for change, redesign will be prohibitively expensive, or just impossible.

Many supply chains abandon course at the mere thought of these challenges. Those who persist often get stuck. They pilot, but struggle to scale. They innovate, but struggle to transform. And the result is institutional drag that forces transformation back to marginal improvements.

### **Create the Market You Want to See**

Leading supply chains cleverly avoid this aversion to change and regression to average results, by creating opportunities to learn and leveraging their standing as customers to overcome drag. Further, they rely on external partners to overcome technical and regulatory barriers.

### **Leverage External Partners to Make the Technical and Regulatory Case**

Many organizations rely on internal R&D and engineering partners for support. But those experts rarely have the bandwidth and cognitive energy necessary to truly innovate to alleviate current and future constraints. Perceived regulatory, operational and technical hurdles discourage change, and taking an unconventional approach involves organizational and individual risks. Without aligned goals enabled by appropriate organizational design and decision rights, supply-chain-initiated design changes often struggle to grab hold.

Leading supply chains leverage their status as customers to avoid the focus

on barriers and obstacles and encourage innovation. In those customer-supplier relationships, they are able to have sober conversations about what regulation and technical burdens they must meet in order to achieve design changes that will eliminate resource constraints into the future. But they don't let those hurdles stifle action.

### **Use Pilots to Overcome Barriers**

Pilot programs are often used simply as test cases for consumer acceptance of innovative products, or to test a range of disparate solutions. These tests can lead to "perpetual pilots." Instead of using pilots to test external factors, leading companies forge partnerships with innovators, startups and solution providers with a

### **Leverage the Ecosystem to Develop Solutions That Work**

Maintaining momentum during implementation requires resourcefulness and a commitment to seeing it through. This often means collaboration with ecosystem partners, through win-win partnerships that overcome barriers and unlock collective progress. When a redesign cannot be immediately implemented, leaders build bridge solutions, which mitigate exposure to resource constraints until they can be fully "designed out." Meanwhile, they build momentum by identifying and exploiting co-benefits of improved designs.

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Conclusion

Resource constraints are a real business risk that threaten not only the ability of a business to achieve environmental sustainability, but even to survive. The solutions that work to address them, therefore, follow a risk management process, as well as a sustainability one. Nevertheless, most of this report is about environmental sustainability.




The solution requires CSCOs to address the sustainability of their business — not its environmental impact, but rather its viability. It just so happens that addressing the root cause of resource constraints also leads to environmental sustainability. In this way, sustainability is no longer an altruistic initiative by businesses to make the world a better place. Rather, resource constraints are a business problem for which sustainability is the solution.

## Recommendations

- Deliver progress toward environmental sustainability goals and secure business viability, by motivating the organization to allocate the budget, headcount and strategic focus these goals require.
- Leverage these resources to design resource constraints out of products and supply chain processes, for both short- and long-term threats.
- Maintain momentum around transformational, rather than marginal, changes by leveraging unique partners, including startups, upstream suppliers and solution providers.

Consider the following questions in Table 1 as you craft the resource viability strategy:

» Table 1. Questions to Prepare the Response to Resource Scarcity

Action	Questions to consider
 <b>Motivate</b>	<ul style="list-style-type: none"> <li>• Do I have sufficient budget and headcount to mitigate my supply chain’s exposure to resource constraints?</li> <li>• What are the critical resources my organization and supply chain need to function?</li> <li>• Which of these critical resources are subject to scarcity in the short, medium and long term?</li> <li>• What are the biases and priorities of the key organizational stakeholders who can unlock resources to address constraints?</li> </ul>
 <b>Design</b>	<ul style="list-style-type: none"> <li>• Which products and processes can be shifted to reduce exposure to resource constraints?</li> <li>• How long is the product life cycle of constrained products? What additional hurdles need to be addressed when improving product and process design (e.g., regulatory requirements, testing, etc.)?</li> <li>• How is my supply chain organization engaging with product and supply chain design functions? What mechanisms can be implemented to deepen collaboration?</li> </ul>
 <b>Innovate</b>	<ul style="list-style-type: none"> <li>• Which external stakeholders have aligned incentives to implement solutions that mitigate my supply chain’s exposure to resource constraints?</li> <li>• What co-benefits are available that can help maintain momentum?</li> <li>• Are there bridge solutions to explore that can provide near-term risk mitigation on the path to redesign?</li> </ul>

Source: Gartner (April 2024)

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