

SPECIAL REPORT

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BITE SIZED SUPPLY CHAIN/LOGISTICS INFORMATION



“It’s way more important than it sounds.”

– *Elon Musk, describing Tesla’s new patent for a jelly roll lithium-ion battery cell that replaces tabs with conductive spikes built into the cap, saving manufacturing time, resources, and costs.*



A HIRE Calling

As e-commerce sales continue to balloon as a result of the COVID-19 pandemic, Amazon will tell 125,000 of the 175,000 U.S. warehouse workers it had temporarily hired that they can keep their jobs.



A HIGHER Calling

Amazon’s Prime Air fleet will grow to about 200 planes—up from 42 now—in the next seven or eight years, creating an air cargo service that could rival UPS, according to a report issued by DePaul University’s Chaddick Institute for Metropolitan Development.

\$58,000

Average pay for truckload national, irregular route solo van drivers, up \$6,000 from 2017.

– *The American Trucking Associations’ Driver Compensation Study (based on 2019 data).*

“It is a big advantage being an omnichannel retailer and that is showing right now. We had backups in our fulfillment centers too but were able to quickly use stores to fill online orders.”

– *Walmart executive vice president and chief financial officer Brett Biggs in an interview with The Wall Street Journal. Walmart’s e-commerce sales jumped 74% in April 2020 as millions of consumers switched to ordering online for home delivery or picking up items in the company’s parking lots.*



How Bot That?



• Between 1990 and 2017, the United States added

ONE
additional robot for every
1,000
workers.

• Each additional robot replaces approximately 3.3 jobs as a whole in the United States.

– *A Massachusetts Institute of Technology study to determine how many jobs robots actually replace.*

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With exacting specifications and transportation challenges heightened by the pandemic, shippers are bringing these partners into the mix to move chemicals safely and optimize supply chains.



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Supply chain partners committed to a sustainable future

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ETA: 9:30 - 11:30 A.M.



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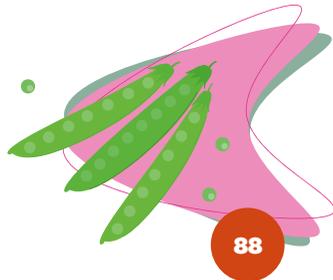
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To steer his company through a pandemic, Andrew Kirkwood, chief executive officer of BluJay Solutions, continues to connect with customers and internal staff, keeps learning, and doesn't mind some teasing from his team.



Renewables are on the rise

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JUNE 2020



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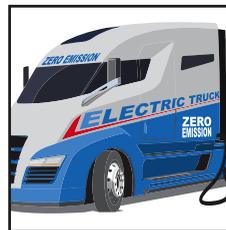
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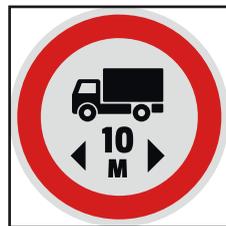
CARBON NEUTRALITY IS SHAPING THE FLEETS OF THE FUTURE

Achieving carbon neutrality is an increasingly popular goal for major brands. Transportation companies are part of that wider goal. Short of converting your entire fleet to electric vehicles, these are some key steps for making your fleet more carbon friendly.
bit.ly/FutureFleets



HOW MACHINE LEARNING SOLVES THE SUPPLIER DISCOVERY DILEMMA

Shippers across all industries are struggling to keep personal protective equipment on hand to continue operating safely. Machine learning can help keep your operation stocked with the raw materials you need as well as the products themselves.
bit.ly/COVIDMachineLearning



HOW CAN TRUCKING COMPANIES NAVIGATE REGULATION COMPLEXITY?

Regulatory compliance is a moving target for front-line transport workers and leaders amid the COVID-19 pandemic, as some states begin to open while others remain closed. Collaboration can help you take it in stride—no matter how long the crisis lasts.
bit.ly/TruckRegulations

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In Defense of You



Keith Biondo, Publisher

You've failed at logistics. So says David Segal in his recent article entitled "What Happened to the Great American Logistics Machine?" in *The New York Times*.

Here are the article's punchlines: The virus is "winning at the logistics game," and "let us acknowledge the obvious: The country is flunking a curriculum that it basically wrote." So somehow this is all your fault?

Wait, there's more to this off-the-mark article: "Rationing meat. Scrambling for masks. Running low

on critical drugs. The early shortages for the pandemic—swabs, toilet paper, ventilators—were a foreshadowing, not an aberration. Our national pantry, long bursting, lacks essentials."

All that was temporarily true. But why? The author tries to explain by rambling about pizza, Dean Martin, Henry Ford, iPhones, Google, and an eight-year-old study on the U.S. Postal Service from Britain.

Plenty of reasons exist for this so-called logistics failure, but "there's no point in tagging this a problem endemic to the U.S. government." Reason? Segal uses that old study to laud the performance of delivering letters (letters, mind you, not the explosion in post office e-commerce deliveries these past eight years that eclipses the importance of letters from a logistics perspective) to make the case that the "logistics failure" he points to is not the government's fault.

I guess the writer missed that whole lockdown thing ordered by governments, or the man-caused malfeasance of global virus dissemination, or encouraging offshoring of vital U.S. manufacturing capacity (as *The New York Times* has done for many years), or the Fourth Estate engendering panic-buying with less-than-sober coverage of the crises.

I'm not for pointing fingers here. If fault is what the *Times* is looking for, it can look outside the logistics sector. Can a logistics machine, or any machine, function without workers? Were global supply chains disrupted by supply chain managers? Were missed truck deliveries the carriers' failure? The drivers' fault? Were warehouse operators and workers driving the pandemic pain? Were port operations stalled just because? Were cargo planes to take off and land without pilots and crew?

So what happened to the Great American Logistics Machine? It may be obvious to the monumentally misinformed that the failure lies in the logistics sector, but it is not obvious to me. This country and its skilled and dedicated women and men did not flunk at a "logistics curriculum it basically wrote."

You will overcome all the impediments others put in front of you and continue writing the future of logistics. That's why I wrote this editorial in defense of you. ■

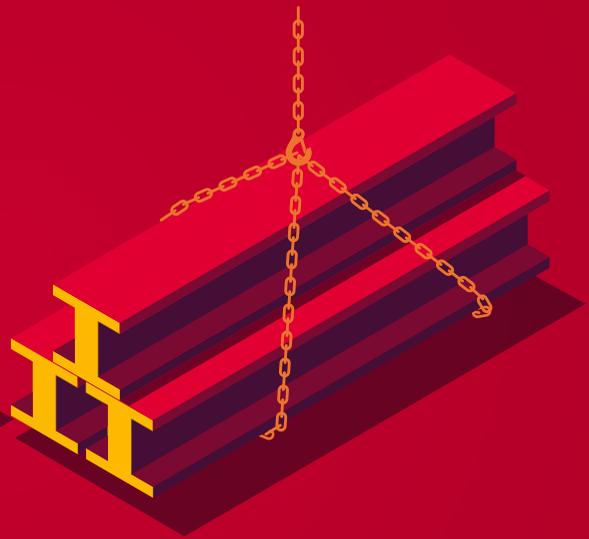
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GOODQUESTION

Readers Weigh In

What COVID-19 supply chain pivot impressed you the most? Why?

Tesla's pivot to ventilators. Tesla tapped its HVAC experts to use parts and raw materials from an existing vehicle HVAC supply chain to design essential medical devices. Developing new products from existing inventory shows a high willingness across the organization and its supply chain to adapt quickly and ensure some manufacturing could continue as part of an essential business offering amid shutdowns.

—Albert Lee

CTO, Odyssey Logistics & Technology

The grocery sector meeting increased demand caused by stay-at-home orders and hoarding behavior. It was fascinating to see the way companies like US Foods, which saw volume plummet as restaurants closed, were able to partner with retailers to loan drivers and workers to meet this demand and keep people employed.

—Jeremy Tancredi

Director, Operations Excellence
West Monroe

Limiting driver-recipient interaction, specifically making signature-less delivery the norm. Not all shippers were comfortable with this before COVID-19, despite more consumers asking for it. This change keeps people safe—and aligns with a growing consumer want.

—Webb Estes

VP, Process Improvement, Estes

From never to right now. All the companies that “could never” work from home...now working from home.

—Kyle Morris

Logistics Solutions Specialist
Ward Transport & Logistics Corp.



One Million Masks, founded by Shafqat Islam, which has built a digital supply chain. Powered by UPS, they have secured hundreds of thousands of PPE units for hospitals. Furthermore, it demonstrates a supply chain that was built in months that otherwise would have taken years. Over the coming months, we will continue to see this type of rapid innovation from savvy organizations.

—Rob Bailey

CEO & Founder
BackboneAI

Customers strengthening relationships with goods and service providers to navigate production timeframes. Some shippers brought their logistics providers immediately into the fold in February, conducting crisis avoidance analysis daily. These customers helped to innovate alternative supply chains and cooperatively streamline the balance of supply and demand.

—Kirk McCann

Executive Director, North
American Development
TransGroup Global Logistics

Pitney Bowes continuing to help businesses manage mail centers.

When COVID-19 forced office staff to work from home, Pitney Bowes showed office administrators how to use *SendPro Enterprise* to maintain centralized cost control, while enabling thousands of employees to ship cost-effectively, efficiently, and safely.

—Bob Malley

Managing Director
Pierbridge

Retailers of all sizes have rapidly adapted. From groceries to home improvement, they've digitized their operations and offered contactless delivery that is scalable and provides end-to-end visibility.

—Bruce Williams

CEO, Haultail

Supply chain scenario analysis helped manage uncertainty and complexity.

One customer evaluated close to 150 supply/demand scenarios using supply chain optimization technology to understand end-to-end projected financials and operational implications, including key issues and constraints.

—**Roch Gauthier**

Senior Director, Product Management
AspenTech

Our supply chain partners seamlessly transitioned to a combination of a remote and rotational workforce without impacting operations.

Working within restrictions, the industry continued to meet the needs of the marketplace as well as aggressively pursue solutions.

—**Guido Gries**

Managing Director
Dachser Americas

Changing the ratio of B2B and B2C over the course of a weekend.

So responsive and intellectually elastic; moving from bulk, pallet-based shipping to high-touch, high-volume batched order picking—and ramping to exceptional productivity—was awesome to see and effective. It demonstrated a solid understanding of change management and group leadership with results.

—**Don White**

CEO North America
SnapFulfil

Dramatically re-tooling production

to make priority items (e.g., surgical masks, medical products, hand sanitizer) during COVID-19. Many companies also swiftly adapted the transportation component of their supply chains to prioritize the delivery of these items to distribution centers across the country through the last mile.

—**Dave Marshall**

Director, Industry Strategy
Descartes

Most logistics companies accelerated their technology integration—in a matter of days rather than years.

As companies look to shed their office space, we expect swift migration to data integration between supply chain stakeholders, enhanced data transport innovation, more desktop functionality, and increased video conferencing capabilities.

—**Thomas Martucci**

VP, Technology
Consolidated Chassis Management

Businesses rethinking supply sources and even the overall route of supply chains.

It had to happen rapidly. This has challenged executives managing procurement operations to build in solutions for increased efficiency and flexibility in supply chains to ensure the end result remains as close to business-as-usual as possible.

—**Roy Anderson**

Chief Procurement Officer
Tradeshift

Companies utilized technology such as mobile route management, analytics for performance monitoring, and supply and demand planning for inventory management, to fill the gap with supply chain import and export distribution issues.

—**Kevin Beasley**

CIO, VAI

The way the market pivoted up to meet the initial massive demand at the middle to the end of March. Store shelves may have been wiped out, but they were regularly restocked despite how often the stores were riddled with panic buying.

—**Jake McLeod**

Chief Commercial Officer, RPM

The Houston Food Bank experienced an unprecedented challenge when COVID-19

simultaneously disrupted their distribution network of volunteer organizations and demand increased due to a sharp rise in unemployment. An AI-powered application was developed and deployed within weeks to reveal the most underserved areas and prioritize limited resources.

—**Dr. Madhav Durbha**

Group Vice President, Industry Strategy
LLamasoft

Forward-thinking manufacturers quickly pivoted business to meet the needs of front-line pandemic workers—producing face shields, masks, and other essential supplies.

These unsung heroes deliver a nationwide service that highlights American entrepreneurship, the value of smart factory technologies like 3D printing, and the importance of flexible production.

—**James Crean**

Co-founder, President, and CTO
CREAN Inc.

Have a great answer to a good question?

Be sure to participate next month. We want to know:

If you could speed the development or deployment of a technology that affects the supply chain, what would it be and why?

We'll publish some answers.

Tell us at editorial@inboundlogistics.com or tweet us [@ILMagazine](https://twitter.com/ILMagazine) **#ILgoodquestion**

[INSIGHT]

DIALOG

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Quick TIP

Have a backup to your primary producing facility, and a backup to that—three levels deep; a syndicated supply chain is essential.

—Jane Mosbacher Morris
CEO and Founder
To The Market

measure and work to minimize our carbon footprint every day.

—Jim Monkmeyer
President
Transportation, North America
DHL Supply Chain



Re. April 2020 Checking In
By *IL* Publisher Keith Biondo
bit.ly/NowTheyKnow

Great article. We are seeing several of these data points and helping our customers with visibility and execution.

—Sam Abolgar
Controller, IntelliTrans

AW, SHUCKS...

If I had only one choice of media to bring me thorough and well-written logistics news, it would be *Inbound Logistics*.

—Joe Alba

Re. Green Supply Chains: Sustainability Sells
bit.ly/green_sells



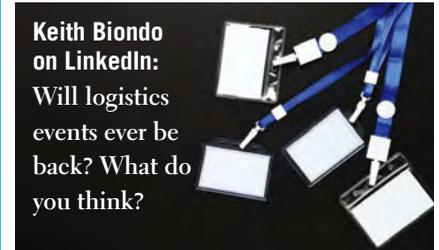
While many companies in North America may focus on cost, given the choice between lower costs and becoming more sustainable, it doesn't have to be a trade-off anymore.

More and more consumers and customers are prioritizing green solutions.

DHL is closely following the Electric Class 8 market, having invested in 10 Teslas; we expect these trucks will be ready for operation at some point in 2021. We are also talking to other suppliers and exploring options they are bringing to market, so it is essentially a question of which solutions become available first.

There is still some work to do to further innovate in the electric and alternative fuel truck space, particularly in terms of advances in fuel cell technology that can support better range and performance.

We also provide shippers with our carriers' SmartWay scores when making carrier selections to help drive them to a more sustainable solution. Our optimization tools and logistics engineers



Keith Biondo on LinkedIn:
Will logistics events ever be back? What do you think?

They will be back. I was looking forward to Multimodal at the NEC, Birmingham in June (rescheduled for November). Plenty of room at these events for one-way systems and social distancing if they choose to.

—Andrew Kennedy, ESCM
Logistics Manager
Kitagawa Europe Ltd.

They'll be back but more on a virtual level.

—Marquita Jones
Truck Driver
J.B. Hunt Transport Services

We have mixed opinions on this topic in the Barry household. While my daughters miss the swag bag souvenirs, my wife is happy at the lack of paraphernalia coming into the house.

—John Barry
Director of Business Development
Radiant Clipper



Re. COVID-19 Supply Chain Resources & Strategies

bit.ly/COVID_SC_strategies

A lesson learned from previous financial crises is the need to maintain supply chain integrity by ensuring that suppliers have access to liquidity in order to produce goods. Following the outbreak, we've seen suppliers enlisting in supply chain finance programs and using cash from receivable conversions as working capital for manufacturing.

A buyer could either stockpile a reserve of goods to be used in case of a supply shortage—or expand its network of suppliers to reduce reliance on any given one.

However, both options can be expensive. There are storage costs for holding inventory. And the more suppliers a buyer uses, the fewer price efficiencies the buyer can achieve.

Certain buyers have faced supply shortages when factories in China were shut down as a result of the pandemic. They will reassess their dependence on any one region and create workarounds with other suppliers to avoid bottlenecks in similar future situations.

—Maureen Sullivan
Head of Supply Chain Finance
Mitsubishi UFJ Financial Group

This increased pressure on the supply chain and the transportation of goods has illustrated the complexities of the supply chain and how much it relies on technology.

When the importance of digitization in the supply chain is not prioritized, we experience delays and interruptions, and face shortages of critical items. The pandemic is forcing the acceleration of the adoption of digital solutions in the supply chain, which has traditionally been slow to adopt new technologies.

Additionally, as people reduce in-person shopping and increase online purchases, retailers and delivery workers

DIALOG

Fast TAKE

As companies emerge from this pandemic, we'll see a deglobalization of the supply chain. For years, companies have been focused on cost efficiency, and in just a few weeks, much of the savings generated by focusing on costs have been wiped out. For the long term, companies should diversify and shorten the distance of their supply chain options.

—Arshad Matin
President and CEO, Avetta

are seeing a level of demand that is similar to the holiday season. But, with this increased volume of demand, there are also increased expectations of quick delivery, something that has long been a challenge for retailers.

Specific technology solutions can analyze external and internal data to meet and predict consumer demands.

For example, 5G enables retailers to more accurately predict potential shipping delays and use artificial intelligence to optimize fleet routes

based on real-time data. Leveraging this in combination with connected devices (IoT), retailers can provide customers with the up-to-the-second tracking.

A central repository of information empowers an organization to reduce costs, streamline processes and raise supply productivity, and ultimately improve the consumer experience.

—Yamini Vellore
CIO, Head of Customer Success
Blume Global

LOGISTICS LEXICON FOR THE TIMES

Industry experts are coining new terms for coronavirus-spurred supply chain strategies and coping mechanisms.



Hedging

Locking in prices and quantities from suppliers months in advance. How some grocers, food manufacturers, and restaurant chains managed costs after the pandemic disrupted the U.S. meat supply.



Just-in-case inventory

An alternative approach to just-in-time; padding inventory levels in case of supply chain disruption. Coined by Georgia Ports Authority.



Preighter

A passenger plane retrofitted to transport cargo instead of people. Coined by Lufthansa Cargo.

10 TIPS

Reducing the Pandemic's Impact on Transportation

Implementing these best practices can help companies reduce the impact to transportation operations and save costs during business disruptions.

1 COLLABORATE WITH TRADING PARTNERS BY CONNECTING TO A DIGITAL SUPPLY NETWORK.

By connecting to a digital supply network, you gain visibility across the supply chain, helping you to proactively respond to what is happening on the network and share loads with other shippers for fuller trucks and lower expenses.

2 IMPROVE THE CUSTOMER EXPERIENCE WITH ENHANCED CUSTOMER SERVICE.

Differentiate your organization by providing better on-time delivery, ensuring orders are delivered safely and efficiently. Proactively alert customers if there is a delay in a shipment.

3 ANALYZE HISTORICAL RECORDS AND TRENDS.

This will help you uncover any issues within your transportation operations that can challenge efficiencies, add to bottom-line costs, and inhibit improvement.

4 AUDIT ALL FREIGHT INVOICE CHARGES.

A high percentage of freight bills are incorrect, and if you don't review them, you are leaving money on the table. Make sure you understand all surcharges and accessorial charges and that you are being charged accordingly.

5 PAY CARRIERS QUICKLY.

Carriers can decide who they want to do business with, so make it easy to do business with your company by becoming a preferred shipper. To that end, treat your carriers as partners and pay them quickly.

6 ELIMINATE UNNECESSARY FEES.

Sharing a sales forecast with your carriers alerts them as to when you need a truck so you can avoid expedited charges. Minimize accessorial charges by ensuring documentation is accurate and communicating clearly with those who apply these fees.

7 UTILIZE A TRANSPORTATION MANAGEMENT SYSTEM.

A transportation management system (TMS) optimizes routes to reduce mileage; offers multiple modes including ocean and air; supports multiple languages, multiple currencies, and multiple time zones; optimizes multi-leg trips; integrates with other systems, such as an enterprise resource planning system (ERP) or warehouse system; and more. The TMS's optimization engine can balance customers' service-level requirements as cost efficiently as possible.

8 CONNECT TRANSPORTATION TO OTHER OPERATIONS, ELIMINATING SILO MANAGEMENT.

When the TMS, procurement, ERP, and other systems integrate, barriers come down between departments, which provides opportunities for greater visibility, communication, and collaboration.

9 MINIMIZE RISK BY CONNECTING TO A NETWORK THAT CAPTURES DATA FROM ALL TRADING PARTNERS.

A shared data network delivers transparency across the value chain. Some networks track global incidents and connect these incidents to purchase orders and shipments to assess the potential impact to stakeholders.

10 USE NEXT-GENERATION TECHNOLOGIES POWERED BY DATA TO MAKE MORE INFORMED SUPPLY CHAIN DECISIONS.

Machine-learning algorithms can enhance the data you capture from trading partner communications, transactions, and collaborations across the supply chain, delivering more problem-solving insights, such as alternative sources of raw materials or logistics services.

SOURCE: DAVID CAHN, DIRECTOR OF GLOBAL MARKETING, ELEMICA

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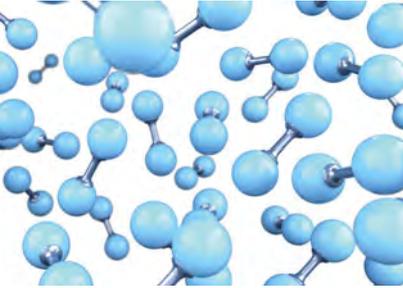


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Renewable Energy



LIGHTING UP RENEWABLE HYDROGEN

A coalition of major European electricity groups has urged the European Commission to prioritize renewable hydrogen in its COVID-19 pandemic recovery plan. Hydrogen powered by 100% renewable electricity has zero greenhouse gas emissions and should be Europe's top priority when supporting a clean hydrogen supply chain, the coalition says.

Wind and solar power are now the least expensive electricity sources, and are expected to play a major role in decarbonizing the economy; however, some industries such as steel, chemical, and heavy-duty transport are too expensive or difficult to electrify. Renewable hydrogen will play a key role in these sectors, according to the coalition.

However, almost all hydrogen comes from fossil fuels—76% comes from natural gas and 23% from coal, according to the International Energy Agency. The remaining 1% comes from renewable electricity.

Scaling up hydrogen with renewable electricity "would require an ocean of subsidies, and would likely fail to deliver the volumes needed to make a real difference," says François-Régis Mouton of the International Association of Oil and Gas Producers.

CLEAN ELECTRICITY WILL SHINE

Renewable electricity will be the only source resistant to the COVID-19 pandemic, according to the International Energy Agency (IEA). The steady rise of renewable energy, combined with the drop in demand for fossil fuels, means clean electricity will play its largest-ever role in the global energy system in 2020, and help erase a decade's growth of global carbon emissions.

The IEA report predicts:

Demand drops: Global energy demand is likely to drop by 6% in 2020, the equivalent of losing the energy demand of India. The pandemic's impact on energy use will be greater in advanced economies—demand is expected to fall by 9% in the United States and by 11% in the European Union.

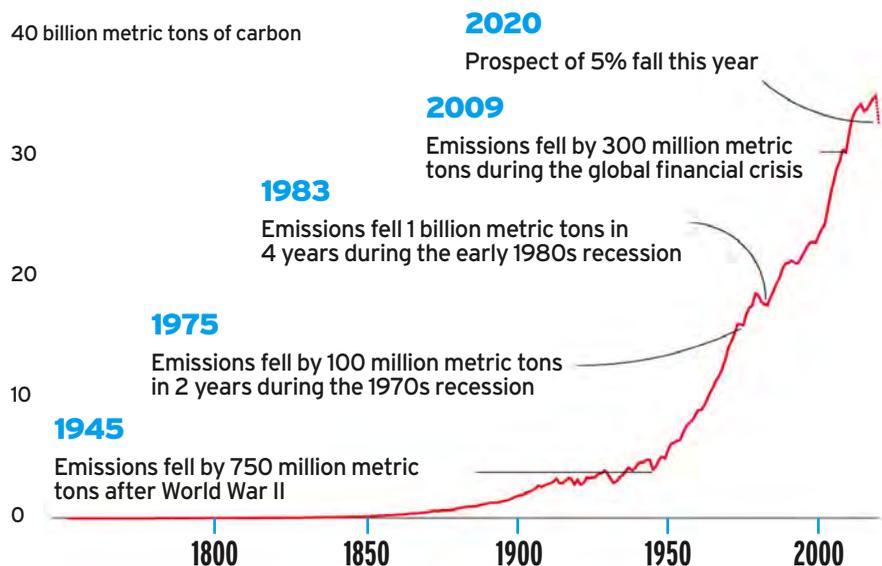
Emissions fall: The collapse of fossil fuel demand may cause global emissions to fall

by 8% in 2020 compared to 2019, a drop six times larger than the record fall after the 2009 financial crisis.

Renewables rise: Renewable energy is expected to grow by 5% in 2020, to make up almost 30% of the world's decreasing demand for electricity. The growth of renewables may prompt fossil fuel companies to generate more clean energy and urge governments to include clean energy in economic stimulus packages.

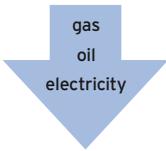
Oil, gas, and coal drop: Global efforts to curb the spread of COVID-19 led to severe restrictions on travel and the global economy that will cause the biggest drop in global oil demand in 25 years. Demand for gas is expected to fall by 5% after a decade of growth. Coal demand is predicted to fall by 8%, its largest decline since the end of World War II.

THE COVID-19 PANDEMIC MAY RESULT IN A 5% FALL IN GLOBAL CARBON EMISSIONS



SOURCE: THE GUARDIAN

COVID-19 CALLS FOR SUSTAINABLE ENERGY



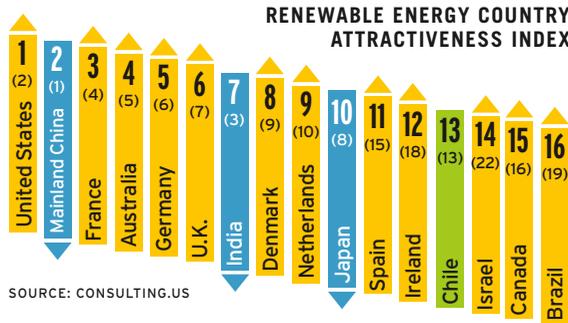
The COVID-19 lockdown has led to a significant drop in energy consumption across gas, oil, and electricity. Business leaders, experts, and policymakers are still assessing virus's impacts on the energy landscape, according to the United Nations Economic and Social Commission for Asia and the Pacific (ESCAP).

Lower electricity demand, if sustained, may put fossil fuel generators in a difficult economic position of constrained output and dwindling revenues. This may lead to early closure of some privately owned fossil fuel power plants, particularly older units, the ESCAP says.

Renewable energy operators face relatively lower economic impacts in comparison. Renewable outputs are dispatched first in many national grids, meaning they can continue selling energy without interruption. As a result, many grids have seen renewable energy reach unexpectedly high levels.

One medium-term impact of COVID-19 may include decreased investment in energy access, as national budgets refocus on other priorities. This would severely impact the capacity of rural health centers to support front-line health workers and provide essential services to COVID-19 patients.

The anticipated coronavirus vaccine will need cold storage and refrigerated transport over large areas for large-scale immunization in developing countries. Technologies such as solar will play an indispensable role in this effort, the organization says.



SOURCE: CONSULTING.US

U.S. REACHES NO. 1 FOR RENEWABLES

The United States now ranks No. 1 in the renewable energy market (see chart) because of a short-term extension to the Production Tax Credit, projected long-term growth in offshore wind, and plans to invest \$57 billion and install up to 30 gigawatts by 2030, according to Consulting.us.

China dropped to No. 2 due to reduced demand resulting from COVID-19, as well as government policies. France jumped from fourth to third place, with awards of 1.4 gigawatts for wind and solar developers as the country shifts away from nuclear power.

Despite the pandemic affecting renewables projects in the short term, declining costs and technological advancements will continue to drive growth in the sector in the long term, Consulting.us says.

ZINC-AIR BATTERIES INCLUDED

The global rise in electricity generation via renewable sources has increased the demand for advanced batteries that can strengthen this intermittent supply. This is especially important in areas with unreliable or nonexistent grid connections, according to Zinc8 Energy Solutions.

One challenge to growing a North American energy storage industry has been a dependency on hardware components, metals, and chemicals, many of which come from outside North America. Price volatility and security of supply also impact metals such as lithium and vanadium, used in some batteries.

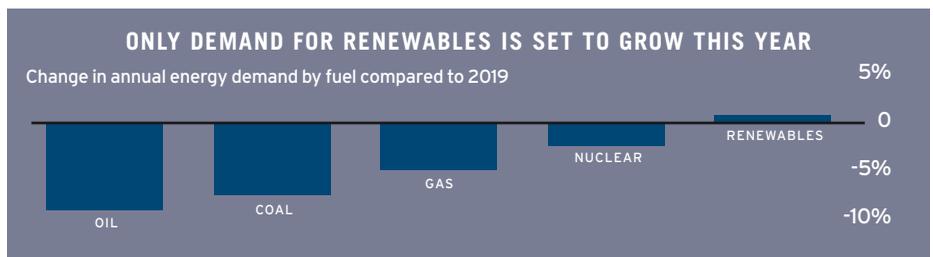
Zinc-air batteries may offer a viable solution. Zinc is abundant and inexpensive in North America, and its chemistry is robust and safe. A zinc-air battery has decoupled energy and power, making it a low-cost, long-duration battery storage solution that could help support renewables.

A GROWING SOLAR SYSTEM

The global renewable energy market size is projected to grow from \$184.3 billion in 2020 to \$226.1 billion by 2021, with the solar segment dominating the industry, according to a Research and Markets forecast report.



Some of the major solar energy producers include Canadian Solar (Canada), Jinko Solar (China), SunPower (United States), and Tina Solar (China). These manufacturers are still operating with limited production capacities. Their product portfolio includes inverters, cells, and modules, the report says.



SOURCE: BLOOMBERG

LEADERSHIP

Conversations with the Captains of Industry

Strategize. Inspire. Listen.



Andrew Kirkwood
CEO, BluJay Solutions

To steer his company through a global pandemic, Andrew Kirkwood rolls up his sleeves, continues to connect with customers and internal staff, keeps learning, and doesn't mind some WhatsApp teasing from his team.

by Merrill Douglas

Andrew Kirkwood has been hooked on supply chain management since his university days, when he wrote a dissertation on food retail logistics in the United States and U.K.

"The movement of goods has always fascinated me," says Kirkwood, who in January 2019 became chief executive officer of global supply chain software and services provider BluJay Solutions. "It's a people-centric, complex industry," he says.

He also enjoys the roll-up-your-sleeves environment found in supply chain management. "I love that you can walk factory floors, distribution centers, and rail yards, as well as do all the things you do in an office," he notes.

Kirkwood, who is based in BluJay's Manchester, U.K., office, spoke with us in mid-April 2020. In the midst of the coronavirus pandemic, the central role of the supply chain in everyone's life became more apparent than ever. We discussed the impact of the disruption on BluJay and its customers, as well as his leadership strategies.

IL: Any "war stories" from early on in your career?

In my early 20s, while working at Dallas Systems (now part of Infor), I was thrown into the deep end to help with a challenging technology implementation. My colleagues were working all hours across multiple shifts, trying to make sure the system worked so food could be delivered to retail stores.

With no experience to guide me, I started listening to people and then using the data and applying my intelligence to problem-solving. People believed the system wasn't working, but I established that the system's users were doing things that could be improved with better training. I learned a lesson about listening. And I learned not to assume, but instead to use data to help drive decisions.

IL: When you became chief executive officer at BluJay, what were your goals?

The first was to listen—to customers, employees, partners, the market—to hear what BluJay did and didn't do well.

Second was to develop a clear strategy for the business. When I asked people to explain what the company did, I got different answers. We needed to make sure that everyone understood what BluJay was about.

Third was creating a cohesive leadership group built on trust. To achieve that, we had to encourage an environment of transparency and what I call cross-functional

collaboration. When people in one department made changes, they needed to think about the impact on other parts of the business.

IL: Describe your role at BluJay in three words?

Strategize. Inspire. Listen.

IL: What projects get most of your attention these days?

If you'd asked me that eight weeks ago, I'd have given you a different answer. As a result of COVID-19, I'm doing a lot of scenario planning and trying to evaluate assumptions we made about the business months ago. Are they still valid? How should they change?

IL: How has BluJay modified operations due to the pandemic?

We operate directly in 16 countries, and our leadership in the United States is spread out. But when I joined BluJay, the business wasn't leveraging video technology at all. We embraced it from the moment I arrived. And by the time the lockdowns started, we already had a business continuity team set up. So we were well positioned for this emergency.

To maintain engagement and connectivity, we do a lot of outreach. For example, in addition to regular all-company and leadership calls, we have people doing fitness programs in the evenings. In the U.K., we have a cup of tea and a chat.

Prior to the pandemic, I spent a ton of my time traveling to meet with customers. I don't think that will change. What will change is whether I need to get on a plane to do that. Companies have had to learn quickly how to work remotely.

IL: What's your leadership style?

The first thing I ask of my team is transparency. I want the relationships to be collegial. I want them to be empowered and accountable. Trust and friendship are important. I'm the boss, but the people who work for me are far smarter than I am. I just encourage them to collaborate to come up with the right answers.

When we communicate on WhatsApp, we're constantly joking, and no one on the team is shy about making fun of me. That's the culture. If you can't have a bit of fun while you're working hard, then it's just going to be really hard work.

The BluJay Way

Andrew Kirkwood has enjoyed many excellent days since he took the helm at BluJay Solutions, but one of the most outstanding came in January 2020, when he traveled to Hyderabad, India, to inaugurate the company's new office there.

"We decided to relocate the office and invest in good collaborative space, with great working conditions," he says. "It was exciting to see how proud the associates were of that office, and the welcome they gave us."

Some of those associates created a dance to mark the occasion. "The dance celebrated Indian culture as well," Kirkwood says. "There have been other office openings, but that one encapsulated the company's culture and what we call the BluJay Way."

IL: What's the hardest part of your job?

There are two things. One is when we lose business. We hope that never happens, but the reality is that sometimes, despite all the effort we put into winning someone's business, we simply don't. That's painful. The other difficult thing is having a conversation with a disappointed customer. It hurts, but it also motivates us to do better.

IL: If you could trade places with anyone for a day—alive or from history—whom would you choose?

Given where we are at the moment, I'd choose Winston Churchill. He was a man for a crisis and always seemed to have the right words for the right time when the odds looked impossible.

IL: What advice would you give your 18-year-old self?

Listen more. You think you know everything, and you know nothing.

IL: What important lessons have you learned from mentors or role models?

One important thing they've taught me is to get feedback from peers. Sometimes it's difficult feedback that you don't want to hear, but you take it in. I'm a big believer in the growth mindset—that you can always teach a dog new tricks. I like to think of myself as a sponge who's constantly learning from people who are looking to improve what they do every day. ■

[IN FOCUS]

NOTED

The Supply Chain in Brief



> SEALED DEALS

• Beauty and personal care brand **Shiseido Company** selected **XPO Logistics** to provide omnichannel logistics services throughout the United Kingdom. XPO will handle business-to-business replenishment of bareMinerals, NARS, Laura Mercier, Shiseido, Serge Lutens, Dolce&Gabbana Beauty, and other products, as well as U.K. and Ireland e-commerce fulfillment for the NARS, Shiseido, and bareMinerals brands. XPO will manage Shiseido's logistics from an 80,000-square-foot distribution center in Derby, England.

• Supply chain data analytics provider **BridgeNet Solutions** selected **3Gtms'** transportation management system to expand services in North America. The cloud-based

software orchestrates the order-to-settlement process in real time on a single platform. 3Gtms' built-in optimization engine also manages complex constraints and data changes to determine the best possible plan.

• **Grohe**, a Germany-based provider of bathroom solutions and kitchen fittings, chose technology service provider **Jaggaer** to manage its purchasing and logistics. Based on current stock level and anticipated consumption, suppliers can now organize delivery from Grohe in real time. More than 90% of direct material suppliers work within the Jaggaer supplier portal and use it to handle ordering, creating a transparent process design and eliminating ordering costs.

> GOOD WORKS

Crowley Logistics joined Caribbean Produce Exchange and Puerto Rico farmers to ship 16,000 pounds of fresh fruit, plantains, and other local products to the Puerto Rican and Hispanic communities of New York City impacted by the COVID-19 pandemic. The food was distributed to seniors, low-income families, and community centers in partnership with City Harvest.

Georgia Ports partnered with America's Second Harvest of Coastal Georgia organization to distribute food to local communities throughout Coastal Georgia. Since March 2020, Second Harvest has distributed 4 million pounds of food by providing mobile food pantries and grab-and-go meals for school-aged children.

Sustainable meat supplier **D'Artagnan** donated 44,000 pounds of meat worth approximately \$430,000 to Table to Table, a not-for-profit organization that rescues perishable food. Table to Table distributed the meat to organizations that serve families in Northern New Jersey to help meet heightened demand caused by the COVID-19 pandemic.



Through its Kids Around the Corner foundation, **Fleet Advantage** made a donation to the Jacksonville School for Autism to aid in medical insurance costs for teachers and staff members furloughed due to COVID-19. The school is a full-service K-12 educational center for students and young adults with autism spectrum disorders.

BYD Motors donated \$1 million in medical supplies, including surgical masks, respiratory protective devices, hand sanitizer, and personal protective equipment to transit agencies and first responders throughout North America. The supplies were transported to various U.S. distribution centers to be closer to the locations where they are needed most.

m&a

- International transport and logistics company **Bolloré Logistics** acquired a majority stake in Swedish company **Global Freight Solutions AB**.

- International warehousing and logistics company **Lineage Logistics** acquired last-mile food distributor **Maines Paper & Food Service**.

- **Rand Logistics**, a dry bulk shipping service in the Great Lakes region, acquired **American Steamship Company** from GATX Corporation.

- Alabama-based **PS Logistics** entered an agreement to acquire **CT Transportation**, a flatbed subsidiary of Georgia-based Comcar Industries.

- Container database management provider **SynchroNet Marine** acquired **MatchBack Systems**, an automated software-as-a-service platform.

> UP THE CHAIN

Jenell R. Ross, president of the Bob Ross Auto Group, was elected as an independent director to **Hub Group's** board of directors. Her company is the first African American-owned Mercedes-Benz dealership in the world. Ross previously served on the Ohio Motor Vehicle Dealers Board and chaired the American International Automobile Dealers Association.

Jim Gehr joined **United Natural Foods** as chief supply chain officer. Gehr, previously president of North America retail at DHL Supply Chain, will lead 12,000 associates and 59 distribution centers that deliver to the natural/organic and conventional grocery wholesaler's customers.



> GREEN SEEDS

- **DHL Express** partnered with REEF Technology, an operator of parking and logistics hubs, to pilot four low-power, electric-assist e-Cargo Cycles for deliveries in Miami, Florida, as part of the DHL GoGreen strategy to reduce its carbon footprint. Each e-Cargo Cycle deployed enables DHL to take one conventional delivery van off the road, reducing traffic, noise, and pollution. DHL plans to implement clean pickup and delivery solutions for 70% of its operations by 2025.

- **Campbell Soup Company** plans to transition 100% of its packaging to compostable or recyclable designs and materials by 2030 and incorporate 25% post-consumer recycled content into polyethylene terephthalate bottles. The New Jersey-based food company also plans to advance infrastructure development to expand access to recycling.

> RECOGNITION

- Gartner named **MPO** the sole **Visionary** in the 2020 Magic Quadrant for Multi-Enterprise Supply Chain Business Networks, honoring the cloud platform's ability to boost customer experience and operational excellence and help businesses become flexible and resilient.

- **The Raymond Corporation** received an **Edison Award bronze medal** in the Transportation and Logistics—Autonomous Work Solutions category for its Raymond Courier 3030 automated stacker. The award recognizes excellence in materials science and engineering equipment technology.



- Old Dominion Freight Line honored **Harold Hyde**, a Nashville, Tennessee, pickup and delivery driver, with the **2020 John Yowell OD Family Spirit Award**. In August 2019, Hyde was en route to make a delivery when he saw a young boy in the middle of the road. Hyde pulled his tractor-trailer across both lanes of traffic to barricade the street and help the four-year-old to safety.

- **Averitt Express** received the **2019 Carrier of the Year Award** from nVent Electric for exceeding expectations to deliver the manufacturer's electrical products to customers. Averitt met several operational performance criteria for the award, including high on-time service, low exception and claims ratios, and accurate billing.

[IN FOCUS]

TAKEAWAYS

Shaping the Future of the Global Supply Chain

SOURCE: THOMAS INSIGHTS

Make a New Plan, Stan

More than half of surveyed industry professionals say their supply chain planning process is only “somewhat effective,” regardless of the technology used, finds new research by AIMMS. A combined 28% state that their planning process is “very effective” or “extremely effective,” while 15% say their process is “not so effective,” and 2% say it is “not at all effective.” The survey was launched in February 2020, coinciding with the spread of COVID-19, and offering insight into organizations’ preparedness to respond to ongoing disruption.

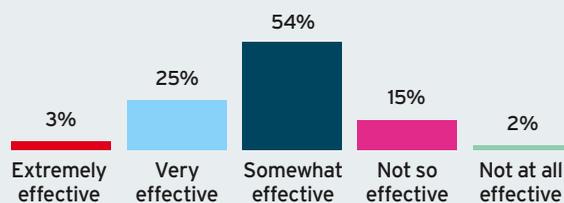
When it comes to accuracy in long-term planning, 52% are looking to attain enough accuracy to make a resilient decision, 22% don’t have enough time for long-term planning, and 26% are looking to attain the same level of accuracy for short- and long-term planning.

However, accuracy in long-term planning is increasingly difficult to achieve. Accuracy in the short term and resilience in the long run is key to uphold service levels. Yet, for 31% of respondents, upholding service levels is a constant challenge given the chaos they face day to day.

Several factors hinder a team’s ability to advance their planning capabilities, the research shows. Besides lacking a formal commitment to this purpose, many still use spreadsheets, which are error-prone and make collaboration difficult. Only 17% use scenarios in real time, during meetings, to agree on a course of action.

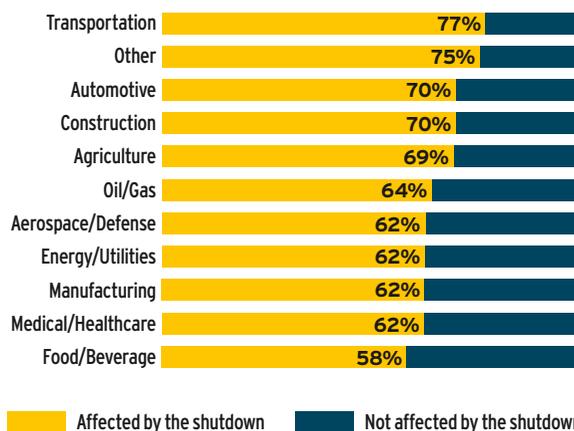
Organizations that have incorporated scenario planning into their process may be better prepared to cope with today’s scope of disruption and growing uncertainty. For those who have not advanced their planning capabilities, weathering the storm of events like the coronavirus pandemic, and preparing for the next disruption, may not be as easy.

REGARDLESS OF TECHNOLOGY, HOW EFFECTIVE DO YOU THINK YOUR PLANNING PROCESSES ARE?



SOURCE: AIMMS

INDUSTRIES IMPACTED BY NONESSENTIAL BUSINESS SHUTDOWNS



Manufacturers Remain Optimistic

Despite continued impacts across industries (*see chart above*), approximately 91% of manufacturers believe that North American manufacturing can recover from the COVID-19 pandemic, according to a survey by Thomas Insights. The report also highlights the following key findings:

A significant jump in COVID-19-related impacts occurred—89% of manufacturers surveyed say they felt impacts from COVID-19 in April 2020 compared to 45% in March 2020, and 41% expect a decrease in demand for their products and services.

Their two biggest concerns are reduced market demand and disrupted cash flow. Many manufacturers say they are also concerned about staffing issues due to challenges in maintaining social distancing and personal protective equipment supply.

Manufacturers are restructuring—44% say they have already experienced or are planning layoffs, and 31% say they are hiring. One in seven report that they pivoted to COVID-19-related manufacturing.

Two-thirds of respondents say they are likely to reshore. Of those, 20% say they are extremely likely to reshore, compared to 9% in March 2020.

TIPPING THE SCALES ON INTERNATIONAL TRADE

Several key events including the COVID-19 pandemic, the U.S. presidential election, and the United States-Mexico-Canada Agreement (USMCA) implementation, can directly impact international trade in 2020, according to DHL's survey of U.S. small and mid-sized businesses. DHL's key findings include:

- **Pullback on international business outlook:** 49% of respondents say COVID-19 has caused them to take a more conservative approach to their business' global trade strategy. Only 15% report taking a more aggressive approach, while 36% report staying the

course on their international approach as a result of COVID-19.

- **Revenue decreases may result in more conservative decision-making:** 78% of respondents say their business revenues decreased either slightly or significantly due to COVID-19.

- **Asia remains a top business target:** 32% of respondents say Asia is the top-priority region for their business in 2020 compared to 21% in 2019. This increase in confidence may be due to progress in potential relief from China tariffs, DHL says. Vietnam and Japan have also emerged as top

trade and manufacturing partners for U.S. businesses as a result of the U.S.-China trade war.

- **International policies will tip the scales at voting booths:** 78% of respondents say the U.S. presidential candidate's view on international trade will affect the way they vote in this election cycle.

- **Business owners are willing to make sacrifices to make trade easier:** 37% say they would forgo all their vacation for one year if it guaranteed no additional international trade barriers or regulations for their business.

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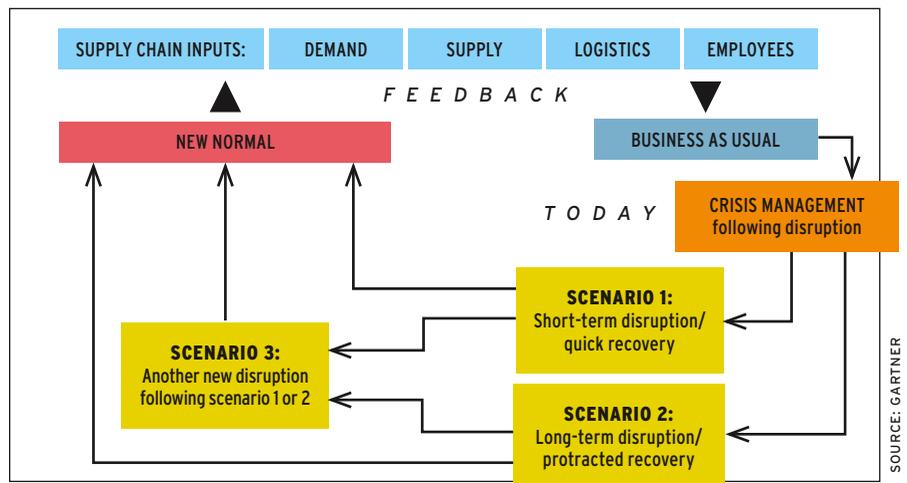
How Will the Future Unfold?

As the coronavirus continues to disrupt global supply chains, Gartner developed three scenarios to help chief supply chain officers (CSCOs) prepare for recovery and make preemptive decisions to set up their organizations for success.

Gartner polled 833 IT and IT/business professionals and found that 84% of organizations are facing varying forms of disruption—from slight disruptions to operations being reduced, restricted, or closed.

Scenario planning enables supply chain leaders to anticipate how the coronavirus disruption will unfold and identify both risk and opportunities. It provides CSCOs with the data to demand investments in supply chain resiliency and agility.

Gartner identified three pre-vaccine scenarios (see chart) that CSCOs can utilize in their decision-making. The scenarios will vary based both on geography and product.



These three pre-vaccine scenarios can help supply chain leaders make decisions that set their businesses up for success.

Scenario 1: Short-term disruption. In this scenario, there is significant impact from COVID-19 in the short term, but the virus will be dealt with quickly. Eventually, restrictions are lifted, and customer confidence increases.

A quick move into the recovery phase also creates short-term competition for logistics services. Space on planes, trucks, and ocean carriers will be in high demand and result in increased

costs. CSCOs must work with their logistics partners to plan ahead and prioritize shipments based on customer demand, shelf life, and anticipated competitor position.

Scenario 2: Long-term disruption. This scenario describes a world in which the virus takes longer to contain, and restrictions remain in place for many months. Customer confidence declines, and a recession follows.

In the long term, consumer behavior and spending habits may change, as financial insecurity will increase the emphasis on personal financial resilience, which may decrease spending on luxury goods. Consumers are likely to stick with e-commerce channels driven by concerns about physically shopping in store.

Scenario 3: Secondary crisis. After organizations experience either the first or second scenario, it's also possible that a second disruption will follow—caused by COVID-19, natural disasters, or other major incidents. Therefore, it is important that CSCOs learn from the current crisis and improve their supply chain's resiliency to all forms of disruption.

UPDATED HOURS-OF-SERVICE RULES DRIVE FLEXIBILITY, MAINTAIN SAFETY

The U.S. Department of Transportation's Federal Motor Carrier Safety Administration updated the hours-of-service rules to provide professional drivers with more flexibility without sacrificing safety. The changes include:

- Bringing the short-haul on-duty period in line with the rest of the industry, while increasing the air-mile radius of short-haul trucking to 150 air miles.
- Allowing drivers, under certain adverse driving conditions, to extend their driving window by up to two hours.
- Requiring a 30-minute rest period after eight consecutive hours of driving time has elapsed rather than the first eight hours of duty.
- Allowing the 30-minute rest period to be taken as on duty, not driving.
- Allowing greater flexibility for how drivers split their sleeper berth time.

"No rule will satisfy everyone, even within our industry, but this one—crafted with a tremendous amount of input and data—is a good example of how by working with stakeholders on all sides, government can craft a rule that simultaneously benefits the industry, specifically drivers, and maintains highway safety," says American Trucking Associations Chairman Randy Guillot, president of Triple G Express.

TAKEAWAYS

More Companies Seek Sustainability Data

An uptick of 24% more companies are asking their suppliers to report environmental data in 2020 through nonprofit CDP Global, with a 34% surge of growth in North America.

Suppliers report data on their impacts, risks, opportunities, and strategies related to climate change, deforestation, and/or water security through CDP's platform. Companies then use the data to inform procurement decisions and supplier engagement strategies, CDP says.

These new companies join Walmart, Microsoft, and other leaders, bringing the total number of CDP supply chain members to more than 150 (see chart) with a combined procurement spend of approximately \$4 trillion. About 15,000 suppliers were asked to report environmental data in 2020.

While most companies have focused their data requests on climate change, six new companies, including U.K. supermarket Sainsbury's, toymaker Lego

Group, and Chinese poultry giant Sunner Group, asked for forest data in 2020, bringing the total to 19.

"With emissions in the supply chain being on average 5.5 times higher than a company's direct emissions, the buyer-supplier dynamic will make or break whether our economy can reach net zero by 2050, as the science demands," says Dexter Galvin, global director of corporations and supply chains at CDP.

Organizations that Joined CDP in 2020

17

in North America, including Nike, Prudential, Clorox, Nordstrom, and the NY Metropolitan Transport Authority

10

in the EU, including Airbus, Ørsted, and Bayer

6

in the U.K., including Sainsbury's, HSBC, CBRE, and GSMA

3

in Latin America, including Vale and Empresas CMPC

1

in Australia: Telstra Corporation

1

in China: Fujian Sunner Group

1

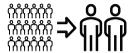
in Japan: Yokohama Rubber Company

SOURCE: CDP

Sustainable automated packaging **PAYS BACK BIG.**



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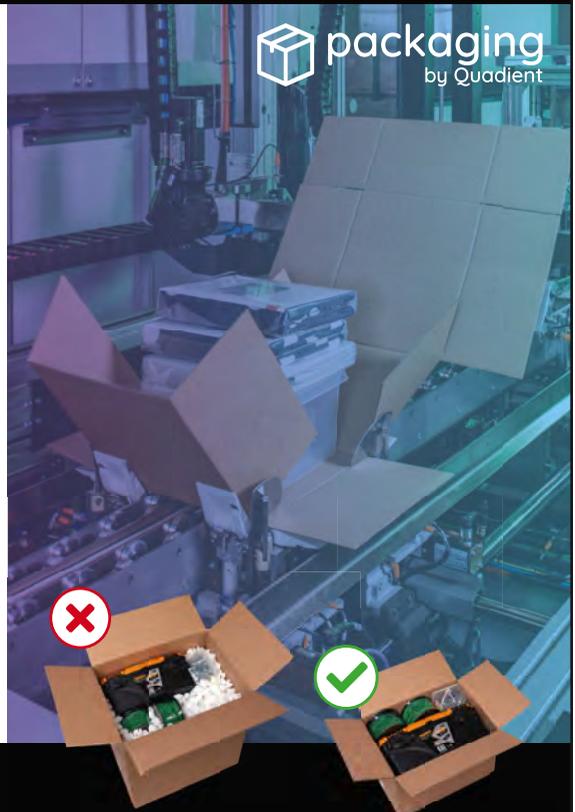
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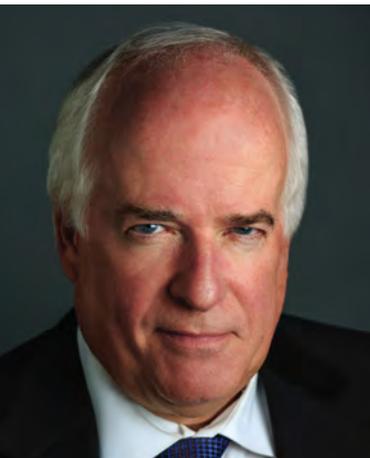


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[INSIGHT]

REVERSE LOGISTICS

by *Eric Allais*

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How Returns Impact the Warehouse and What You Can Do About It

Returns have always been a challenge, but distributors today are experiencing a surge in returned items and orders. The cost of return deliveries in the United States will increase to \$550 billion in 2020, according to Statista. That's up from \$314 billion just four years ago.

Staggering as it may seem, that's just the cost to ship returns. That figure doesn't consider the costs associated with processing, restocking, and reselling these returned goods.

While it's easy to pass off returns as primarily an e-commerce or retail issue, the fact is it's a challenge all distributors face.

YOU'RE DOING WHAT WITH RETURNS?

What's a distributor to do? Without a proper receiving process in place, returns and inbound items may get mixed up and processed similarly. Then salespeople must spend hours locating returned products: Are they on the shelf? Still in the returns pile? Already been resold? If your workers don't have visibility into the location and status of returns, you're wasting valuable time and energy that would be better spent filling other orders.

You can take some simple steps in the warehouse to streamline the returns

process. A full-featured warehouse management system (WMS), for example, can make it faster and easier to identify and track returned items, providing complete visibility—so inventory is never lost—and control over the warehouse throughout the entire reverse logistics process.

Here's how a WMS can improve (and reduce) your returns process:

Sorry, wrong item. When you utilize an automated WMS to fulfill customer orders, you not only want to fill orders faster, but you also want to drastically reduce the number of errors. While errors are an inevitable part of warehouse order fulfillment, easy-to-use software encourages employees to do their jobs better, meaning efficiency improves and mistakes decrease considerably.

Few mistakes mean fewer customer complaints and fewer returned orders. Reductions in order returns have an obvious financial benefit, but can you put a price on happier customers?

Damaged goods. Whether the item was defective and slipped through quality control or damaged during delivery, someone needs to fix it without taking time away from their normal duties.

Using reason codes, a WMS can identify trends such as defective products or frequently returned items. While an ERP can likely provide this information as well, this is only the case once the return has gone through the entire—often slow and painstaking—process, which is typically why companies avoid it.

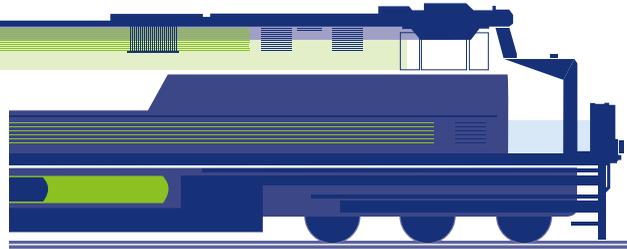
Too little, too late. A WMS with parcel shipping integration software simplifies warehouse shipping, package tracking, and route management to get products to customers quickly, securely, and affordably. What's more, it can prioritize expedited deliveries, so they are picked, packed, and shipped in the right order relative to others in the system. Get the order to your customer on time and you're less likely to see it as a return later.

IMAGINE THE POSSIBILITIES

Instead of a returns area overrun with hundreds of untracked items, imagine the business gains that can come from streamlining the returns process and reducing returns in the first place. ■



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[INSIGHT]

GLOBALLOGISTICS

by *Eugene Laney*

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USMCA: A Bright Light for Shippers

Many businesses around the country are suffering due to the economic impacts of COVID-19. Small and mid-sized businesses especially are being hit hard, with thousands in survival mode. Furthermore, declines in exports and global commerce are affecting the logistics and transportation sectors. However, there may be some light at the end of the tunnel.

The United States-Mexico-Canada Agreement (USMCA) was formally ratified in March 2020 and, once implemented, will create opportunities for countless companies that already do business with—or that plan to start doing business with—Canada and Mexico.

The USMCA will streamline trade among the three countries by adopting new customs procedures such as increasing Mexico and Canada's de minimis, e-signatures, self-certification of origin, and other measures. It will boost e-commerce and the digital economy by ensuring that data moves freely across borders and prohibiting data localization.

The USMCA also contains strong protections for intellectual property rights, including enforcement tools to guard against counterfeiting and piracy.

The USMCA will replace the 25-year-old North American Free Trade Agreement (NAFTA). The Mexican legislature ratified the deal in June 2019 and the U.S. Congress followed suit in

January 2020. The Parliament of Canada passed it right before Canada's shutdown in response to COVID-19.

Unfortunately, COVID-19 may delay the agreement's June 2020 implementation goal as the world deals with the global pandemic and looks toward economic recovery. In the meantime, companies can utilize the resources available to them—such as the programs established by the Coronavirus Aid, Relief, and Economic Security (CARES) Act—to help provide relief for workers and their businesses.

E-COMMERCE CLICKS WITH CUSTOMERS

Businesses should also review their e-commerce capabilities to take advantage of many customers around the world relying on online shopping as many brick-and-mortar stores remain closed. The consumer's comfort level with online shopping has increased and e-commerce platforms have become more intuitive and ubiquitous, so the

digital side of the retail business must be improved to preserve the trust of customers and retain loyalty.

For example, businesses should clearly communicate shipping options and safety measures on their websites. They should also consider updating their free shipping threshold since most brick-and-mortar stores have had to close, and online delivery may be the only way for customers to get this product. A strong logistics partner can support these efforts and guide businesses through COVID-19 changes as they prepare for USMCA implementation.

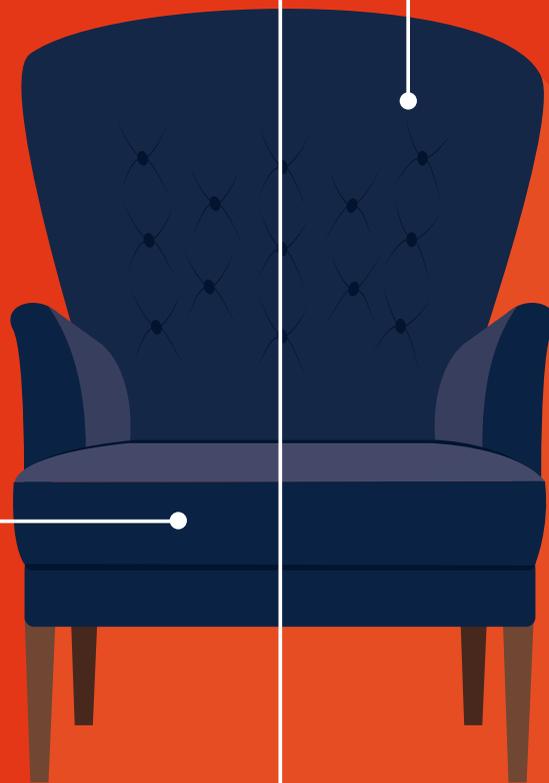
The current COVID-19 situation also highlights how relations between Canada, Mexico, and the United States are more important than ever as more companies turn to nearshoring in an effort to leverage trade opportunities closer to home. The ease of collaboration, proximity for travel, and minimal time-zone difference and cultural discrepancies make the North American countries critical partners during these uncertain times and beyond.

The agreement's advancements in areas such as trade facilitation and customs simplification, cross-border data flows, and reduced tariffs and barriers, for example, will benefit U.S. small and mid-sized businesses and multinational corporations that ship internationally. ■

CONSUMERS SEE

SC PORTS SEES

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A streamlined supply chain and strong business partnership that offers fast, reliable and efficient shipping of any product.



COVID-19
RESETS

LOGISTICS DRAWS THE LINE





**Adept pivots. Generous acts.
Creative solutions.
Logistics and supply chain
companies put one foot in
front of the other and face
down a global pandemic.**

BY KAREN KROLL

Construction workers and outdoorsy types know Carhartt for its rugged apparel. “A hardworking brand for hardworking people,” is how William Hardy, senior vice president of supply chain, describes the company. When the Kentucky Department of Emergency Management asked Carhartt to make medical gowns and masks for those on the front lines fighting COVID-19, management and employees asked, “How quickly can we do it?” Hardy says.

Twenty-four hours after receiving samples, the company was manufacturing its own. Within four weeks, Carhartt was producing gowns.

To accomplish this, Carhartt created a new materials supply chain to find fabric that would be durable, but also light enough to be comfortable for healthcare workers. It turned to its existing suppliers, who then connected the company with vendors of the three fabrics ultimately used in the gowns and masks. “Everyone wanted to help even if we weren’t purchasing from them,” Hardy says.

As of mid-May 2020, Carhartt had made more than 50,000 medical gowns at its plants in Kentucky, Tennessee, and Mexico, and distributed them to healthcare providers.

The pandemic has brought out the best in many people and their

organizations. Like Carhartt, supply chain organizations across multiple industries have donated generously, worked long hours, and crafted innovative ways to make and distribute essential supplies and food.

“The pandemic has shined a light on the supply chain,” says Joe Vernon, practice leader, supply chain analytics, with research firm Capgemini. “It’s moving from the second tier to the top tier of strategy.”

SHIFTING PRODUCTION

Like Carhartt, numerous manufacturers pivoted from their usual production runs to create items desperately needed by front-line workers. For example, Boston-based New Balance is known for its athletic shoes and apparel. Yet when several healthcare groups reached out, management considered how the company could best leverage its manufacturing capabilities to assist in the fight against the pandemic. “We landed on masks,” says Dave Wheeler, chief operating officer.

New Balance employees consulted with experts from area hospitals and the Massachusetts Institute of Technology, and then worked over a weekend to create a prototype by Monday. By Friday, the masks were in production.

Two keys to the company’s rapid response were strong relationships

“The most important element for the supply chains of the future will be the ability to pivot from one option to the next to address changing market and customer demands.”

—James Tompkins, founder and chairman, Tompkins International

with domestic suppliers and deep expertise in U.S. manufacturing. “We’ve invested a lot of money in domestic manufacturing,” Wheeler says, such as automated laser cutting equipment.

Once cut, the pieces needed for each mask are gathered and move through a heat press that binds them together, eliminating perforations that would result from sewing. Final products are automatically labeled and shipped from the company’s distribution center. New Balance is currently producing about 100,000 masks weekly and making them available at cost or as donations.

Stratasys launched its GrabCAD online community in January 2020 to enable engineers and designers to share designs, CAD files, and other information, says Scott Drikakis, healthcare segment leader with the Eden Prairie, Minnesota-based firm. It’s also helping Stratasys’ pandemic efforts.

Stratasys’ leadership, working with healthcare providers, knew the company



New Balance quickly shifted from manufacturing sneakers to face masks. The company also donated 13,000 pairs of shoes to front-line healthcare workers.

could quickly create digital patterns for face shields and then produce the shields themselves. When Stratasys let its medical customers know what it was doing, it received 300,000 requests within 36 hours.

“We knew we needed assistance,” Drikakis says. So, he and his colleagues reached out to Stratasys’ other customers and business partners. More than 100 signed on to help make the shields.

Stratasys leveraged GrabCAD to route and track orders and shipments. “If we didn’t have GrabCAD, I’m not sure how logistically we could operate 100-plus companies accepting, fulfilling, and shipping orders,” Drikakis says. As of early May 2020, the companies had shipped more than 100,000 shields.

DISTRIBUTION PIVOTS

As stay-at-home orders proliferated throughout the United States in March and April 2020, many restaurants closed and consumers overran grocery stores.

C&S Wholesale Grocers partnered with several food service companies. Warehouse and delivery employees from these firms temporarily transferred to similar job functions within C&S while remaining employees of their respective companies.

“These partnerships allow C&S to alleviate a potential worker shortage stemming from increased food retail demands,” while also providing temporary work opportunities for other individuals, says Mike Duffy, chief executive officer of C&S.

The restaurant shutdowns also left many growers with excess products. Produce distribution firm Pacific Coast Fruit Company, through a contract from the U.S. Department of Agriculture, is working with local nonprofits to distribute more than 800,000 boxes of produce and dairy products to families in need.

As a first step, Pacific Coast contacted the growers with which it had relationships, as well as other growers, such as dairy farms, to determine those that were interested. It also identified interested nonprofit organizations, determined the number of boxes they

A SAFE BET

Along with extraordinary efforts to move essential products, supply chain organizations are implementing new processes and tools to keep their drivers safe.

Truck drivers may pass through more than one dozen states in a single week, says Steve Syfan, executive vice president with Syfan Logistics. Once they arrive at a shipping office, they often interact with employees to obtain additional instructions and complete various forms.

While the company provides truckers with masks and gloves, he would like to see drivers remain in their trucks during pickups and deliveries to further reduce the risk of inadvertently spreading any virus with which they may have been in contact. Communication and document transmissions, such as bills of lading, would be completed electronically. “The driver won’t be exposed and neither will the people in shipping and receiving,” he says.

Currently, many big companies can transmit electronic bills of lading, but some smaller ones can’t. Making this shift would likely take several years and require the support of regulators and elected officials. Syfan adds that he has been in contact with state and national leaders and most are “100% on board,” he says.

“Everyone now uses electronic logging devices and has adjusted to them. They could also adjust to electronic billing,” he says. Along with keeping everyone safer, the change would boost efficiency.

could safely store and distribute, and evaluated access to their facilities.

“Some pickup locations anticipated more than 500 cars picking up boxes,” says Sara Thompson, director of purchasing and wholesale sales with Pacific Coast. Thompson and her team then organized equipment, drivers, and drop-offs.

Another challenge was making sure growers and producers had enough product to ship, with little notice. The project has also been a “great reminder that with a project this large, you need to have good relationships with your growers and manufacturers,” Thompson says.

“When you see the overwhelming number of cars and people waiting at a drop site for our truck to bring the boxes, it’s humbling,” she adds.

3PLs SHOW THEIR STRENGTH

Given the heightened focus on supply chain resulting from the pandemic, many third-party logistics (3PL) providers have supplied expertise and systems. Oren Zaslansky, chief executive officer

and founder of Flock Freight, realized early in the pandemic that sales for some of Flock’s clients would spike, while others likely would see a drop. Using SIC codes, he and his colleagues were reasonably able to predict which fell into each group.

Flock Freight asked customers apt to need extra support, such as those shipping personal protective equipment (PPE), how they could help. For instance, some needed to move smaller quantities into the supply chain more quickly than they normally would.

Zaslansky then asked some other customers if they could manage slightly longer delivery times, often in exchange for slight discounts. All agreed. “People were looking for opportunities to be part of the solution,” he says.

Omnae, a startup focused on supply chain management technology, had previously partnered with manufacturers in Asia to build custom products. As the pandemic took hold, Omnae’s employees, many of whom had taken time off, went back to work. Within a few weeks, they’d launched a medical supply

“The pandemic has shined a light on the supply chain. It’s moving from the second tier to the top tier of strategy.”

—Joe Vernon, practice leader, supply chain analytics, Capgemini

sourcing business and identified factories that could produce masks, PPE, and other items.

Employees quickly became experts on specifications and certifications, and on distinguishing real products from counterfeits. The company’s freight forwarder allocated some of its reserved future capacity to Omnae’s shipments, ensuring the products would be expedited.



C&S Wholesale Grocers provided front-line workers with an appreciation bonus and all employees with additional paid time off in the wake of the COVID-19 pandemic.



By leveraging preexisting processes and relationships, Omnae was able to quickly deliver 400,000 units of PPE to local Canadian hospitals and healthcare practitioners.

During the course of several weeks, Omnae delivered or donated 400,000-plus units of PPE to healthcare providers. “It was an absolute whirlwind,” says Dan Lionello, chief executive officer and founder of the Vancouver, British Columbia-based firm. Employees have since shifted back to the company’s primary business.

Moving medical equipment into hospitals in Manhattan is challenging any time. Amidst a pandemic, it becomes even more fraught. To minimize the risk of exposure, engineers couldn’t enter the hospitals to calibrate the equipment, as they normally would.

Pilot Freight Services arranged for a client’s medical equipment to be delivered to a Pilot facility in New Jersey; engineers would test it there. Pilot then repackaged the equipment and transported it to Manhattan, where it could be put into immediate use. “We were flexible and came up with solutions,” says John Hill, president and chief commercial officer with the Glen Mills, Pennsylvania-based firm.

NAVIGATING TURBULENCE

The drop in passenger flights resulting from the pandemic also cut airfreight capacity, as much air cargo transport occurs in passenger planes. To mitigate this, DHL Global Forwarding U.S. established dedicated charter flights for shippers moving PPE and medical supplies. For instance, it’s providing charter flights from Europe to the United States for Getinge, a manufacturer of ventilators based in Sweden. It’s also helping fast-track the priority shipments through customs.

“Our relationships with not only airlines, but also with customs helps expedite these valuable shipments,” says David Goldberg, chief executive officer.

As the severity of the pandemic became clear, Federal Emergency Management Agency (FEMA) began routing planes filled with PPE and other essentials through several airports, including Rickenbacker International Airport in Columbus, Ohio, a cargo-only airport.

“Some people wondered why FEMA was sending shipments to Ohio,” says Bryan Schreiber, manager of air cargo business development with Columbus Regional Airport Authority. “We’re well equipped to handle those shipments quickly and efficiently.”

When PPE is arriving, trucks are at the dock and the freight is on the road about six hours after it lands. At some airports, this could take a day or two.

TRUCKERS KEEP ROLLING

The nation’s 3.5 million truck drivers move more than two-thirds of all goods (by weight) in the United States. While the volume of long-haul trips has dropped by about one-third during the pandemic (*see chart*), trips of less than 100 miles more than doubled, according to the American Transportation Research Institute (ATRI). Anecdotal evidence suggests this has been driven by the need to move consumer products from regional warehouses to stores, ATRI notes.

Along with food and household goods, truckers are moving medical equipment. When Aultman Orville Hospital had to move hospital beds—each weighing 500-plus pounds—as well as IV poles and other equipment from the University of Akron-Wayne College to the hospital, they couldn’t turn to their own employees. Many were already dedicated to delivering PPE within the Aultman Orville system. “Our first call was to PackShip USA,” says Angela Caldwell, chief operating officer of the hospital.

PackShip USA freed up five employees to move the equipment quickly and safely, says Aaron Nussbaum, director of logistics and operations. He credits their success to a well-trained staff with experience moving high-value, fragile, and bulky items.

CHANGING SUPPLY CHAINS

Even as many companies and countless employees worked tirelessly and devised ingenious ways to help in the fight against COVID-19, the pandemic also “created a new awareness of the volatility and uncertainty of the

AVERAGE LENGTH OF HAUL BEFORE AND DURING PANDEMIC

	% BEFORE PANDEMIC	% DURING PANDEMIC
LOCAL (less than 100 miles per trip)	7.8%	18.2%
REGIONAL (100-499 miles per trip)	31.0%	33.8%
INTERREGIONAL (500-999 miles per trip)	28.6%	25.2%
LONG HAUL (1,000+ miles per trip)	32.7%	22.7%

While the volume of long-haul trips dropped during the COVID-19 pandemic, trips of less than 100 miles more than doubled, possibly driven by the need to move consumer products from regional warehouses to stores.

supply chain requirements,” says James Tompkins, Ph.D., and founder and chairman of Tompkins International, a supply chain consultancy.

Rather than a return to an old normal or even a new normal, supply chains will move to “the next normal,” Tompkins says. “The most important element for the supply chains of the future will be optionality—the ability to pivot from one option to the next to address changing market and customer demands.” That will require agility, flexibility, and visibility, he adds.

To be sure, many organizations had already been moving to digitized, smarter supply chains. Yet, few previously had reason to feel a sense of urgency.

“Companies didn’t understand how such a disruption would highlight their inability to operate at velocity without tools like digitization,” which allow them to work from exceptions, rather than adjusting for each order, says Cyndi Lago, vice president of supply chain at Capgemini.

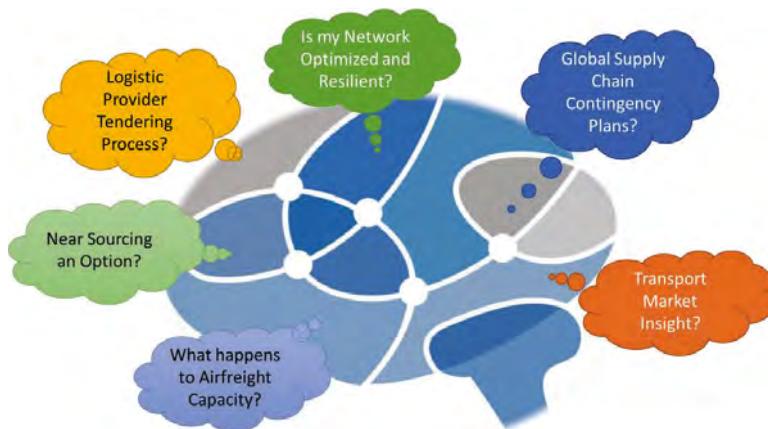
Another coming shift in some industries will be greater use of near sourcing, or working with vendors close

to where the company’s products are sold, Lago predicts. More companies will likely work with multiple suppliers.

When the pandemic subsides, supply chain organizations will face numerous challenges. They can take pride in the work they’ve done to meet the challenges arising from the COVID-19 pandemic.

“At a time when a lot of people were scared and hunkering down, we had a purpose,” Lionella of Omnae says. “Everyone knew they were doing something to help others and went above and beyond.” ■

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15

Down & Dirty

WAYS

TO GET

GREEN

NOW

by Merrill Douglas



Ready to reduce your company's carbon footprint and cut waste in the supply chain? These steps will help you plant the seeds.



Fending off climate change is an immense and complex project. But it's easy to plant one tree. Dig a hole, lower the root ball, shovel back the dirt, add water, and voila! The world is that much greener. Like gardening, supply chain management offers many practical opportunities to improve the health of the earth. Here are some ideas.

PACKAGING



1 Shrink the dunnage. Sometimes you can't help but leave a little space around a packaged product, especially if it's fragile or irregular in shape. But creative shippers or their third-party logistics (3PL) providers can find ways to reduce the material needed to fill the void. For instance, when Boxzooka, a Secaucus, New Jersey-based firm that provides e-commerce and warehousing services, took over fulfillment for a customer, the packaging process the company requested called for about 30 feet of paper dunnage per order. "We implemented a new type of paper and a machine that crinkled up the paper in an automated format," says chief executive officer Brendan Heegan. "This process ends up using about 12 feet of paper per order instead of 30."



5 Right-size your boxes. "Reducing the size and volume of packages is super important for an e-commerce retailer," says Heegan. The smaller the box, the less cardboard it consumes, and the less space it takes up during transport. Shrink enough boxes, and you could cut the number of trucks your operation puts on the road. Boxzooka works with e-commerce merchants to help them ship in smaller packages.

2 Skip the box. Rather than place product in a branded package and then insert that in a shipping box, one of Boxzooka's e-commerce merchants might design a small shipping box, or polyethylene envelope (poly mailer), printed with its own logo. The merchant ships its product to Boxzooka in bulk. "Then we ship it out the door to the end consumer in their branded shipping boxes or poly mailers," says Heegan. A customer who decides not to keep the product can send it back in the same mailer.

Some e-commerce merchants use a different tactic to remove packaging from the returns process. "Offering a packageless dropoff solution is a good way to reduce cardboard boxes," says Ann Starodaj, senior director of sustainability at Optoro, a Washington, D.C., firm that offers a technology platform for managing product returns. A customer takes the unwanted product to a retail store or other dropoff point, which consolidates numerous returns into one shipment.

French firm Quadiant, with U.S. headquarters in Milford, Connecticut, provides automated systems that build shipping boxes tailored to the dimensions of each outbound item. "One customer eliminated 92 truckloads annually by implementing the solution," says Sean Webb, business development executive for the Packaging by Quadiant product line.

WAREHOUSING



“Green up” your physical facility. Boxzooka has taken numerous steps to reduce emissions and waste in its two warehouses. For example, it uses LED lighting and motion sensors to reduce energy consumption. And the company recycles all the materials it can, including plastics, aluminum, and wooden pallets.

Trucks used to arrive at Boxzooka’s facilities once or twice weekly to pick up dumpster loads of cardboard for recycling. But new equipment that bales and compacts the cardboard has reduced those trips significantly.

“Now we fill the capacity of multiple dumpsters once monthly,” Heegan says.



5 Adjust your scheduling.

The hours of operation in a warehouse can impact how much energy that facility consumes.

“We keep all our business consolidated into one shift, or sometimes we flex and do an extended shift,” says Heegan. The company finds that running, for example, one shift with 30 associates is more environmentally sustainable than running three shifts with 10 associates each.

“Or maybe we’ll do a 10-hour shift instead of two eight-hour shifts, with different people coming in and overlapping one another,” he adds.

Besides the number of hours a warehouse operates, choosing specific hours can also have an impact.

“If you have the right air conditioning and you’re a food vendor in the summer, you might want to do some of your work at night when it’s coolest,” says Kevin Beasley, chief information officer at VAI in Ronkonkoma, New York, which provides an enterprise resource planning solution and related software.



STRATEGY

6 Enlist a 3PL. Without incurring significant costs, a company can reduce its carbon emissions by operating more efficiently, says Mark Kunar, executive vice president at DHL Supply Chain North America in Westerville, Ohio.

In fact, by making better use of transportation and warehouse capacity, reducing the aggregate distance traveled by each transportation unit, and eliminating unnecessary use of resources, a company can reduce costs, move inventory faster, and become more responsive to customer demand, while also helping to green the planet, he says.

“Shippers can do this by evaluating the tools that can provide the biggest network and capacity benefits,” Kunar says. Or they can rely on tools deployed by supply chain partners.

“DHL Supply Chain, for example, deploys services such as an optimization tool, network design consulting, and the ability to broker loads for backhauls to match capacity,” he adds.

Companies that use 3PLs would do best, environmentally and otherwise, to rely mainly on one partner rather than spread their business across several, says Andrew Lynch, president of Zipline Logistics, a 3PL based in Columbus, Ohio.

That 3PL can then take a big-picture approach to making your operation more efficient. “Allow your partner to work with you in a strategic way, and you’ll be surprised at what kind of sustainability initiatives come about,” Lynch says.



7 Measure your current state.

“Take a look at your business and understand its impact from a sustainability standpoint,” says Webb of Packaging by Quadient. “How many trees are being impacted? How much plastic are you using in your solution?”

Experts in the field, such as companies that manufacture packaging materials, can help with those calculations. With a clear picture of your current impact on the environment, you can set goals for improvement.



TRANSPORTATION

8

Get smart about routing.

Trucks that lose less time in peak-hour traffic burn less fuel. So do trucks that seize backhaul opportunities rather than pull empty trailers. “Many supply chain applications incorporate artificial intelligence (AI) to quickly analyze backhaul and truck routing options,” says VAI’s Beasley.



9

Choose a primary LTL carrier.

A company that ships even moderate volumes of less-than-truckload (LTL) freight might use six LTL carriers to send its freight to different markets, says Lynch. Each of those companies sends a truck to pick up one or two pallets, returns that freight to its terminal, and then sends it back out again.

Zipline can work with a customer to identify one LTL carrier that provides good service to perhaps 85% of its markets. Based on that volume, Zipline negotiates an attractive rate for the freight.

“Then we can bring in one trailer and pick up all the LTL shipments in one day, as opposed to having multiple trucks driving in and out,” Lynch says. “That’s a great way to take four or five trucks off the road for that individual shipper. And that has a significant impact on their overall carbon footprint.”



10

Join SmartWay.

Run by the U.S. Environmental Protection Agency (EPA), the SmartWay program helps carriers, 3PLs, and shippers adopt transportation practices that reduce their carbon footprint. A registered company reports its transportation-related carbon emissions to the EPA, which ranks its performance against other companies in its business sector.

“Asset-based capacity providers give the EPA their carbon footprint scores based on miles run, waste, and diesel usage,” says Zipline’s Lynch. “Then, as a third-party participant, we do our best to funnel business toward the more efficient carriers.”

Shippers in the program maintain their scores by working directly with SmartWay carriers or with 3PLs that use those carriers.

Participation in SmartWay is one tactic shippers can use to understand the emissions generated by their operations and by their suppliers. “Shippers should challenge suppliers to specify reduction benefits from solutions posed or delivered (baseline versus improvement), and to incorporate visibility on emissions tracking and reduction as a standard within their warehousing and transportation management systems,” says DHL’s Kumar.

11

Urge carriers to do the right thing.

“By adding alternative fuel and drive-train



solutions to your transportation requests for proposals, for example, and rewarding providers who are prepared to offer them, shippers can help to drive the market and to make these solutions more accessible, economically viable, and appealing in the future,” says Kumar.

Large shippers might encourage smaller carriers, or the 3PLs that use those carriers, to invest in tools such as SmartWay-certified or electric vehicles and alternative fuels. Then they could reward these green efforts with volumes on key routes. Such tactics might cost more in the short term, but could pay off in the future.

12

Consolidate freight.

Rather than fulfill small to mid-sized orders with separate LTL shipments, a shipper can put all the freight bound for a single market on one truck, which then delivers orders to multiple customers.

“We saved our customers about 1.2 million miles in 2018 through operating this way,” Lynch says.



REVERSE LOGISTICS

15 Minimize transportation. When a customer returns an item to a brick-and-mortar store, Optoro's technology helps the merchant decide immediately how to dispose of that product.

"If it's not worth shipping back to the return center, and it's best to donate it from the store, then donate it from the store," says Starodaj.

That decision, high in the reverse supply chain, can reduce the use of truck transportation. It may also cut waste by averting accidents that can occur when shipping miscellaneous products to a returns center. "Say a bottle of detergent leaks over everything," Starodaj says. "That all needs to be thrown out."

14 Rescue returned product. For most retail goods, the part of the life cycle that harms the environment most is manufacturing. "The best thing you can do is try to extend the life of that product," says Starodaj.

If the first buyer doesn't want it, get it to a secondary consumer. Then no one needs to make a second product to satisfy the second person's need. "From a waste and carbon footprint perspective, reuse is huge," she says.

Along with its returns platform, Optoro operates two "re-commerce" channels. One sells returned merchandise to consumers, and the other to businesses. Also, merchants often donate returned items, Starodaj adds.

ADVANCED DATA SCIENCE

15

Use cognitive automation.

Traditional forecasting tools aren't accurate or agile enough to match manufacturing to customer demand in today's highly volatile markets,

says Ram Krishnan, chief marketing officer at Aera Technology. Based in Mountain View, California, Aera provides solutions based on AI to enhance supply chain management.

When a company doesn't understand true customer demand, it may order more materials than it needs, and manufacture and ship more product than customers will buy—wasting resources and increasing its carbon footprint, Krishnan says.

AI, or cognitive automation, can help a company quickly assemble and analyze large volumes of data from diverse sources to get a true picture of customer demand. Then, as supply chain systems execute on that forecast, the AI system provides advice about course corrections to make in real time to account for demand fluctuations.

"You produce and ship the right amount of product, constantly optimizing and improving," Krishnan says.

VAI offers predictive analytics software that reduces waste by determining how much product to buy and when to buy it, based on future need. "If you're bulk buying and that product sits in your warehouse for a year, that has a carbon footprint effect," says Beasley. "That space is being used, heated, and cooled."

On the other hand, if you order product only as you need it, you put more trucks on the road. Predictive

analytics software can help a company strike the optimal balance.

"Instead of getting a delivery from a vendor two or three times a week, maybe I can get it every 10 days or every two weeks if I can predict what my product turnover will be," he says. ■





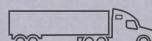
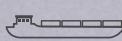
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75 GREEN SUPPLY CHAIN PARTNERS

Inbound Logistics' annual G75 is an editors' choice list of 75 companies that go above and beyond to ensure their global supply chains are sustainable, and that their operations are socially and environmentally friendly. These companies are dedicated to developing and implementing best practices to ensure they leave a positive footprint on the world.

48FORTY SOLUTIONS

48forty.com

48forty repairs, recycles, and reissues 110 million wooden pallets annually. The company minimizes waste and repurposes materials through its pallet repair and remanufacture programs. When a pallet reaches its end of life, it is disassembled. The wood waste is converted into landscape mulch, pellets for stoves and fireplaces, or biofuel. 48forty works with metal recyclers to repurpose the nails.

CURRENT GREEN INITIATIVES

- Reuse/recycling program
- Sustainable packaging
- Environmental impact calculator
- Online portal allowing customers to go paperless

NOTABLE ACHIEVEMENT

Using recycled instead of new pallets is equivalent to 10,866,240 trees saved and 2,279,970 tons of lumber diverted from landfills.



AAA COOPER TRANSPORTATION

aaacooper.com

AAA Cooper Transportation has installed enhanced/full aerodynamic fairing packages, converts oil to lighter-weight synthetic for better fuel economy, installs tire pressure systems designed for drive tire position to enhance MPG, and installs next-generation skirting on van trailers for better airflow direction.

CURRENT GREEN INITIATIVES

- Reduce greenhouse gas emissions
- Reuse/recycling program
- Use wastewater
- Reduce energy usage
- Sustainably source materials
- Energy-efficient lighting

NOTABLE ACHIEVEMENT

AAA Cooper designs its data centers to reduce HVAC demands and overall utility consumption.

ALASKA AIR CARGO

alaskaair.com

Alaska Air Cargo's environmental strategy encompasses four main areas designed to reduce emissions from planes and equipment, waste from flights and other facilities, consumption of nonsustainable resources, and energy use in its buildings. Alaska Airlines, the Port of Seattle, and Boeing partnered to power all flights by all airlines at Seattle-Tacoma International Airport with sustainable aviation biofuel.

CURRENT GREEN INITIATIVES

- Reduce greenhouse gas emissions
- Reuse/recycling program
- Use wastewater
- Reduce energy usage
- Sustainably source materials
- Energy-efficient lighting

NOTABLE ACHIEVEMENT

For the fifth year in a row, Alaska Airlines ranked No. 1 in fuel efficiency for U.S. airlines, in a report released by the International Council on Clean Transportation. Alaska Airlines outperformed the least fuel-efficient carrier by 25%.

ALASKA RAILROAD

alaskarailroad.com/freight

The Alaska Railroad's real estate and facilities department used thermal imaging to identify and repair sources of heat loss in more than 70 railroad facilities. Additional facility improvements yielded conservation results in the areas of natural gas (annual use reduction of 500,000 cubic feet) and water and hazmat reductions (boiler uses about one-sixth the water and one-third the chemicals). Upgrades to locomotives and innovative idle-reduction procedures continue to lower emissions and conserve fuel. Vehicle conservation/emission reduction efforts have improved fuel efficiency through purchase decisions and GPS-based idle tracking.



CURRENT GREEN INITIATIVES

- Reduce greenhouse gas emissions
- Reuse/recycling program
- Use wastewater
- Reduce energy usage

NOTABLE ACHIEVEMENT

The Alaska Railroad is one of Alaska's earliest Green Star Award recipients, earning a Green Star Award in 1993 and repeatedly recertifying.

ALLIANCE SHIPPERS

alliance.com

Alliance Shippers has been a SmartWay participant provider since 2006, and in 2017 and 2019 earned a SmartWay Excellence Award. Building a fleet of refrigerated equipment with the most current technology enables the company to move refrigerated goods via the nation's railroad system, reducing carbon output by 67% or 1 billion pounds, as compared to moving the same goods via trucks. Alliance Shippers also invested in solar panels to charge the batteries on its fleet.

CURRENT GREEN INITIATIVES

- Reduce greenhouse gas emissions
- Use alternative fuels or energy sources (e.g., electric vehicles)
- Reuse/recycling program
- Reduce energy usage
- Solar panels
- Energy-efficient lighting



NOTABLE ACHIEVEMENT

Alliance Shippers recently added 100 energy-efficient, 53-foot refrigerated containers to increase its fleet to nearly 1,700 ARB-compliant trailers that will run via rail/intermodal service. The purchase included refrigeration units with electric standby, which allows units to plug in to an electric source while sitting in a yard or at a dock, reducing the need to power the refrigeration unit with diesel power.

AMERICAN AIRLINES CARGO

aacargo.com

American Airlines seeks a reduction in net aviation carbon emissions of 50% by 2050. During the past four years, the air carrier emitted almost 6.4 million metric tons of carbon dioxide equivalent less than it would have if its fuel efficiency had remained at the 2014 level. American established a company goal to source 2.5 million gigajoules—the energy equivalent to almost 20 million gallons of jet fuel —of cost-competitive renewables by 2025. It deploys more than 5,000 reusable, lightweight composite cargo containers to reduce weight and save more than 1 million gallons of fuel every year.



CURRENT GREEN INITIATIVES

- Reduce greenhouse gas emissions
- Use alternative fuels or energy sources (e.g., electric vehicles)
- Reuse/recycling program
- Reduce energy usage

NOTABLE ACHIEVEMENT

American Airlines is ranked No. 46 on the Green Power Partners Fortune 500 list, higher than any other domestic airline.

BNSF RAILWAY

bnsf.com



BNSF is committed to improving the energy efficiency of its locomotives and facilities and continues to reduce its total energy use, with major reductions in locomotive diesel consumption. The rail operates the newest and cleanest-burning locomotive fleet in North America. Increased fuel efficiency helps BNSF reduce greenhouse gas emissions into the environment. It continues to implement operational changes, such as anti-idling practices and energy management software.

CURRENT GREEN INITIATIVES

- Reduce greenhouse gas emissions
- Use alternative fuels or energy sources (e.g., electric vehicles)
- Reuse/recycling program
- Reduce energy usage

NOTABLE ACHIEVEMENT

One BNSF intermodal train removes up to several hundred long-haul trucks from the nation's highways.

C.H. ROBINSON

chrobinson.com

C.H. Robinson participates in several offset projects, including Gold LEED certification in its largest operating facility in Chicago; single-sort recycling in its offices, resulting in 120 tons of waste being saved from landfills at its headquarters during the course of one year; and paperless invoicing for customers, with a goal of going 100% paperless. C.H. Robinson has been a long-time partner of the U.S. EPA's SmartWay Transport Partnership.

CURRENT GREEN INITIATIVES

- Reduce greenhouse gas emissions
- Use alternative fuels or energy sources (e.g., electric vehicles)
- Reuse/recycling program
- Reduce energy usage
- Solar panels
- Energy-efficient lighting

NOTABLE ACHIEVEMENT

C.H. Robinson plans to reduce its carbon intensity 40% by 2025 over its 2018 baseline numbers by finding energy efficiencies within its facilities, leveraging renewable energy, and investing in renewable energy certificates.

CABKA NORTH AMERICA

cabka.com

CABKA closes the loop by creating product solutions from recycled plastic. It obtains the basic materials for its products from industrial production scraps, packaging waste from private households, and worn-out plastic products. Its mechanical processes enable CABKA to process and reuse complex composite materials and mixed plastics without chemical or thermal disintegration. CABKA's EcoProducts also feature high load-bearing capacity and stability.

CURRENT GREEN INITIATIVES

- Create products from recycled plastic
- Reduce energy usage
- Solar panels
- Energy-efficient lighting

NOTABLE ACHIEVEMENT

CABKA was among the first companies in the industry to produce lightweight plastic pallets for worldwide product transportation, and one of the first to turn to recycled plastic to manufacture new products.



CANADIAN NATIONAL (CN)

cn.ca

CN's environmental strategy focuses on emissions and energy efficiency, waste management, and biodiversity and land management. The railroad consumes almost 15% less fuel per gross ton mile than the industry average. Preventing and minimizing waste also plays a critical role in CN's sustainable resource management and conservation. It focuses on reducing waste at the source by pursuing greener procurement options and improving waste management at its facilities and across its network through comprehensive reuse and recycling programs.



CURRENT GREEN INITIATIVES

- Reduce greenhouse gas emissions
- Use alternative fuels or energy sources (e.g., electric vehicles)
- Reuse/recycling program
- Reduce energy usage
- Solar panels
- Energy-efficient lighting

NOTABLE ACHIEVEMENT

The goals of CN's EcoConnexions programs include conserving energy, reducing waste, and improving housekeeping at yards and offices across North America. Investments for these initiatives are supported by the \$5 million CN EcoFund, which reinvests the significant cost savings generated by its EcoChampion initiatives into new capital projects that conserve energy and reduce waste.

CHEP

chep.com

CHEP's sustainability program operates on three levels: 1) Share and reuse replaces disposable

packaging with high-quality, reusable pallets and containers to eliminate waste and make businesses more efficient. 2) Collaboration projects allow CHEP to analyze supply chains and identify and address specific logistical challenges. 3) Best practices and credentials provide access to CHEP's supply chain sustainability expertise. CHEP's sustainable solutions include carbon-neutral platforms, collaborative transport, platform mix optimization, reverse logistics, unsaleables reduction, and platform management.

CURRENT GREEN INITIATIVES

- Reuse/recycling program
- Reduce energy usage
- Energy-efficient lighting

NOTABLE ACHIEVEMENT

CHEP developed Zero Waste World, an innovation program enabling retailers and consumer goods companies to create smarter, more sustainable supply chains by eliminating packaging and food waste, eradicating empty transport miles, and cutting out inefficiency.

CROWLEY

crowley.com



Crowley designed and implemented the EPA's Tier IV engines and exhaust after-treatment systems in new and existing ship-assist tugs and tank vessel tugs to lower emissions, as well as ballast water closed-loop systems that restrict discharges. In 2019, the company began the first year of full operation of liquefied natural gas-fueled containerships, which eliminated or reduced emissions. Additionally, Crowley invested in new reefer containers that have higher efficiency refrigeration units to optimize technology.

CURRENT GREEN INITIATIVES

- Reduce greenhouse gas emissions
- Use alternative fuels or energy sources (e.g., electric vehicles)
- Reuse/recycling program
- Use wastewater
- Reduce energy usage
- Sustainable packaging
- Sustainably source materials
- Energy-efficient lighting

NOTABLE ACHIEVEMENT

The Chamber of Shipping of America awarded 117 Crowley owned or operated vessels with Environmental Achievement Awards for safe operations.

CROWN EQUIPMENT

crown.com

By designing energy-efficient features into its products, Crown helps customers meet their own sustainability goals. And by manufacturing up to 85% of the parts used in its lift trucks, Crown controls its production processes and only manufactures what is needed to manage inventory with precision. Crown also makes continuous efforts to recycle and reuse materials, preserve natural resources, and reduce waste and energy consumption in its facilities.

CURRENT GREEN INITIATIVES

- Use alternative fuels or energy sources (e.g., electric vehicles)
- Reuse/recycling program
- Reduce energy usage
- Sustainably source materials
- Energy-efficient lighting

NOTABLE ACHIEVEMENT

Crown's environmental management systems achieved ISO 14001 certification. The company operates five zero-waste-to-landfill status facilities and redeveloped more than 500,000 square meters of brownfield space.



CSX

csx.com



CSX has committed to reducing greenhouse gas emissions intensity by more than 37% between 2015 and 2030. The rail delivers efficiency gains by investing in employee training, technological advancements, programmatic efforts, and locomotive upgrades. Fuel-saving technologies and processes include implementing the CSX operating model of scheduled railroading and deploying distributed power on certain trains.

CURRENT GREEN INITIATIVES

- Reduce greenhouse gas emissions
- Use alternative fuels or energy sources (e.g., electric vehicles)
- Reuse/recycling program
- Use wastewater
- Reduce energy usage
- Sustainable packaging
- Sustainably source materials
- Energy-efficient lighting

NOTABLE ACHIEVEMENT

CSX is the only U.S. Class I railroad with a greenhouse gas emissions goal approved by the Science Based Targets Initiative.

CT LOGISTICS

ctlogistics.com

Among CT Logistics' environmental commitments: At least 40% of its six-acre corporate campus will remain undeveloped and wooded. It recycles all cardboard, paper, copier and printer toner and ink cartridges. The 3PL also recycles all old, broken, or technologically outdated electronic equipment, and repurposes it or disposes it

safely. The company first explores telecommunication options for client and vendor interactions instead of travel. All facility lighting utilizes LED lamps and bulbs for electrical efficiency. All buildings use intelligent thermostats, incorporating off-hour energy conservation.

CURRENT GREEN INITIATIVES

- Reuse/recycling program
- Reduce energy usage
- Energy-efficient lighting

NOTABLE ACHIEVEMENT

CT Logistics has developed a Sustainability Program with specific actions and goals to reduce its environmental footprint.



DHL SUPPLY CHAIN

dhl.com

DHL Supply Chain's corporate social responsibility extends to its goal of zero-emission logistics by 2050. DHL delivers sustainable supply chains through its environmental protection program, GoGreen, which improves carbon efficiency and reduces air, waste, and noise pollution. The company implements measures to improve fuel efficiency across its fleet while optimizing networks and routes, and drives energy efficiency with building standards.

CURRENT GREEN INITIATIVES

- Reduce greenhouse gas emissions
- Use alternative fuels or energy sources (e.g., electric vehicles)
- Reuse/recycling program
- Reduce energy usage
- Sustainable packaging
- Sustainably source materials
- Energy-efficient lighting

NOTABLE ACHIEVEMENT

DHL encourages individual associate action via its goal to train 80% of associates as Certified GoGreen Specialists by 2025 and offering a getGREEN associate incentive program.



DEPENDABLE HAWAIIAN EXPRESS (DHX)

dhx.com

During the past nine years, DHX reduced its facilities' carbon emissions by 813.5 metric tons, a 76% reduction from their 2011 baseline. Additionally, in 2019, the company began carbon-neutral operations in its warehouses, investing in VCS Standard carbon offsets to compensate for the negative impact of those emissions. All larger facilities are solar powered, and the company continues to invest in truck technology to reduce emissions.

CURRENT GREEN INITIATIVES

- Reduce greenhouse gas emissions
- Reuse/recycling program
- Reduce energy usage
- Solar panels
- Energy-efficient lighting

NOTABLE ACHIEVEMENT

In 2019, DHX purchased carbon offsets in sufficient quantity to operate its warehouses in Maui, Guam, Kona, and Los Angeles on a carbon-neutral basis.



DSC LOGISTICS

dsclogistics.com

DSC has tracked sustainability on five metrics—electricity, natural gas, water, propane, and recycling—across 40-plus locations for nine years, and has tracked waste tonnage for three years. Its emissions reduction initiative goals include lowering electricity and water use across all locations in the DSC network. The company is also committed to reducing utility usage by an average of 8% year over year. DSC is a partner in the EPA's SmartWay Transport Partnership.

CURRENT GREEN INITIATIVES

- Reduce greenhouse gas emissions
- Use alternative fuels or energy sources (e.g., electric vehicles)
- Reuse/recycling program
- Use wastewater
- Reduce energy usage
- Sustainable packaging
- Sustainably source materials
- Solar panels
- Energy-efficient lighting

NOTABLE ACHIEVEMENT

DSC Logistics' goal is to improve transportation consolidation by 2% (regarding carbon emissions) per year. A monthly transportation consolidation status report helps track and evaluate this activity. Through its consolidation services, DSC averages an 11% reduction in carbon emissions.

ECHO GLOBAL LOGISTICS

echo.com



Echo works with its shipper and carrier partners to adopt procedures that reduce waste through recycling practices,

minimize impact by reducing pollutants, increase the use of environmentally acceptable materials, and actively promote environmental awareness. Echo is certified in the ISO standard 14001: 2015. Since 2010, Echo has partnered with the EPA's SmartWay Transport program.

CURRENT GREEN INITIATIVES

- Reduce greenhouse gas emissions
- Reuse/recycling program
- Reduce energy usage
- Energy-efficient lighting

NOTABLE ACHIEVEMENT

Echo shares freight activity with the EPA, which tracks emissions of carbon dioxide, nitrogen oxide, and particulate matter. Echo's emissions scores rank above average and have continued to improve over time.

enVISTA

envistacorp.com

In addition to network design, enVista offers consulting services to promote sustainability. Its core service offerings include optimizing less-than-truckload and truckload freight and modeling private fleets. enVista's analysis and implementation is designed to reduce total miles and required assets to move freight.

CURRENT GREEN INITIATIVES

- Reduce greenhouse gas emissions
- Reduce energy usage
- Reduce carbon footprint from optimization, for example from less-than-truckload to truckload
- Reduce mileage via fleet optimization in dynamic routing

NOTABLE ACHIEVEMENT

enVista completed a sustainability project designing and optimizing a large retailer's supply chain network and inventory strategy. enVista implemented tools to maintain inventory and ship from stores, eliminating costly distribution center operations. The optimized network saves the retailer an average of \$4.1 million annually.

FEDEX

fedex.com



FedEx focuses on the following initiatives: Commitment to a continual improvement process in environmental management; evaluation of environmental impacts of FedEx packaging products, operations, and facilities with a commitment to minimize impacts and restore properties affected by its operations; efficient use of natural resources to minimize waste generation through recycling, innovation, and prevention of pollution; measurement of environmental performance using a framework to set and review objectives and targets, audit progress, sanction employee accountability, and report to senior management and external stakeholders; and integration of environmental responsibilities and considerations into daily operations and business decision-making.

CURRENT INITIATIVES

- Reuse/recycling program
- Use wastewater
- Reduce energy usage
- Sustainable packaging
- Sustainably source materials
- Solar panels
- Energy-efficient lighting

NOTABLE ACHIEVEMENT

FedEx's Reduce, Replace, Revolutionize strategy has contributed to a 40% reduction in carbon emissions intensity on a revenue basis across the enterprise since FY 2009. The company avoided more than 3 million metric tons of carbon dioxide equivalent emissions as a result of enterprise-wide fuel and energy saving initiatives; that's equivalent to the carbon sequestered by more than 4 million acres of U.S. forests in a single year.

FLORIDA EAST COAST RAILWAY

fecrwy.com

Florida East Coast Railway (FECR) is committed to providing shippers with sustainable intermodal and carload supply chain solutions that reduce highway congestion, air pollution, and greenhouse gas emissions. FECR has chosen to use liquefied natural gas (LNG) as a fuel source for its locomotive fleet, as it is cleaner and more environmentally friendly than traditional fuels. The railroad also has Federal Railroad Administration concurrence to run LNG as a locomotive fuel for revenue service across its network, and provides transparency through online portal FECR Connect.

CURRENT GREEN INITIATIVES

- Reduce greenhouse gas emissions
- Use alternative fuels or energy sources (e.g., electric vehicles)

NOTABLE ACHIEVEMENT

FECR's fleet of LNG locomotives produce 75% less carbon emissions than regular diesel fuel.



GEODIS

geodis.com

GEODIS operates a number of environmental programs, from recycling various commodities such as cardboard, plastic wrap, pallets, metal, and paper to reducing power consumption in the warehouses by using LED lighting, running a managed print program, and recycling toner. Several locations have Green Teams, led by GEODIS teammates and a management sponsor. GEODIS also awards a certificate through its Green Site Certification Program. Facilities earn points for sustainable practices and are awarded one of three levels. The company shares weekly

communication about green practices on its intranet site. It also shares a dashboard showing the recyclable tonnage, as well as how it is managing waste tonnage.

CURRENT GREEN INITIATIVES

- Reduce greenhouse gas emissions
- Reuse/recycling program
- Reduce energy usage
- Energy-efficient lighting

NOTABLE ACHIEVEMENT

"Be a good citizen" is one of the company's seven Golden Rules and encompasses social, societal, and environmental domains. GEODIS' corporate social responsibility goal is to reduce greenhouse gases by 30% in 2030.

GEORGIA PORTS AUTHORITY

gaports.com

As part of its environmental initiatives, Georgia Ports Authority (GPA) coordinated pickup of unusable surplus electronics and disposed of them in an environmentally friendly manner. The ports also use electric refrigerated container racks, with each avoiding the use of 54,000 gallons of diesel annually. Electric ship-to-shore cranes have integrated generators to capture power while lowering boxes. In this way, the cranes produce enough energy to power themselves for 18 minutes of each operating hour. GPA uses new lighting controls and fixtures to reduce energy consumption by up to 60%. Using all-electric rubber-tired gantry cranes at the Appalachian Regional Port reduces fuel consumption by more than 95% per crane. The eRTG program virtually eliminates emissions of carbon dioxide, nitrogen oxide, and particulate matter compared to diesel-powered RTGs.



CURRENT INITIATIVES

- Reuse/recycling program
- Use wastewater
- Reduce energy usage
- Sustainable packaging
- Sustainably source materials
- Solar panels
- Energy-efficient lighting

NOTABLE ACHIEVEMENT

GPA converted its fleet of container handling equipment and trucks to ultra-low sulfur diesel, cutting emissions by 10%. As a result, the ports avoid the release of hundreds of tons of nitrogen oxide, carbon emissions, and particulate matter into the air.

HUB GROUP

hubgroup.com

Hub Group offers several green services such as network optimization to reduce mileage, backhaul conversion to eliminate empty miles, and consolidations that maximize capacity utilization. The company has been recognized with multiple awards, including the SmartWay Excellence award. New network visibility tools use artificial intelligence and machine learning to help customers dynamically manage dock schedules, reducing idling traffic. Hub Group's lightweight day cab trucking fleet includes new devices that monitor acceleration and speed. The company's LEED Gold-certified headquarters includes rainwater harvesting, LED lighting, and dynamic light fixtures to maximize natural lighting.

CURRENT GREEN INITIATIVES

- Reduce greenhouse gas emissions
- Reuse/recycling program
- Use wastewater
- Reduce energy usage
- Sustainably source materials
- Energy-efficient lighting

NOTABLE ACHIEVEMENT

As an early intermodal pioneer, Hub Group evaluates every truckload RFP it participates in for intermodal conversion opportunities. Through these practices, the company helped shippers avoid emitting 1.5 short tons of carbon in 2019.

HYSTER COMPANY

hyster.com/north-america/en-us

Hyster mitigates the environmental impact of manufacturing processes and meets strict emission standards with lithium-ion battery and hydrogen fuel cell power options. The Hyster J60XNL counterbalanced lift truck is engineered around an integrated, space-saving lithium-ion battery producing zero emissions and requiring zero off-gassing during charging processes.



CURRENT GREEN INITIATIVES

- Reduce greenhouse gas emissions
- Use alternative fuels or energy sources (e.g., electric vehicles)
- Reuse/recycling program
- Reduce energy usage
- Energy-efficient lighting

NOTABLE ACHIEVEMENT

The Hyster Power Match lift truck power selection tool evaluates the best-fit power source for an operation. Hyster experts research and calculate several variables to arrive at a power choice based on fleet size and characteristics, number of shifts, utility prices and grid stability, space requirements, and operator discipline.

iGPS LOGISTICS

igps.net

iGPS Logistics supplies plastic pallets that are 100% recyclable for cradle-to-cradle sustainability. Because iGPS pallets are 35% lighter than nonplastic alternatives, much less fuel is used during transport. iGPS pallets can also be sanitized to limit exposure to pathogens. The company's business model ensures pallets are used and reused by customers in the same area, minimizing the need for pallets to be shipped long distances.



CURRENT GREEN INITIATIVES

- Reduce greenhouse gas emissions
- Reuse/recycling program
- Reduce energy usage
- Sustainable packaging

NOTABLE ACHIEVEMENT

An independent life-cycle analysis showed that compared to multiuse and single-use nonplastic pallets, the iGPS pallet has 91% to 92% less impact on ozone layer depletion; 75% to 80% less impact on eutrophication (excessive algae growth in waterways due to runoff); 25% to 35% less impact on abiotic depletion (fossil fuel consumption); 65% to 70% less impact on global warming; 60% to 65% less impact on photochemical oxidation; and 60% to 65% less impact on acidification.

J.B. HUNT TRANSPORT SERVICES

jbhunt.com

J.B. Hunt has received the SmartWay Excellence Award from the U.S. EPA for 10 consecutive years. The agency also named the company a 2019 SmartWay High Performer. J.B. Hunt added the first all-electric, medium-duty box trucks with zero tailpipe emissions to its private fleet and quadrupled its number of temperature-controlled intermodal containers. Additional sustainability initiatives include reducing engine idle time, governing top speed limits, engineering fleet routes that maximize efficiency, and using biodiesel fuels when possible.



CURRENT GREEN INITIATIVES

- Reduce greenhouse gas emissions
- Use alternative fuels or energy sources (e.g., electric vehicles)
- Reuse/recycling program
- Reduce energy usage
- Solar panels
- Energy-efficient lighting

NOTABLE ACHIEVEMENT

In 2018, J.B. Hunt prevented nearly 1.6 million tons of carbon dioxide from entering the atmosphere through intermodal conversion, which is equivalent to removing more than 334,000 passenger vehicles from the road for one year.

KENCO LOGISTICS

kencogroup.com

Kenco explores opportunities for sustainability and reduced carbon footprint in its operations. By reducing the number of trucks on the road by optimizing modes and routes, Kenco helps mitigate the carbon footprint and impact to the nation's infrastructure of its customers' and its own operations.

CURRENT GREEN INITIATIVES

- Reduce greenhouse gas emissions
- Use alternative fuels or energy sources (e.g., electric vehicles)
- Reuse/recycling program
- Reduce energy usage
- Sustainable packaging
- Sustainably source materials
- Solar panels
- Energy-efficient lighting

NOTABLE ACHIEVEMENT

Kenco's supply chain solutions division analyzes customer supply chains and makes recommendations to improve sustainability.

KNIGHT-SWIFT

knight-swift.com

Knight-Swift continues to substantially reduce carbon emissions while reducing pollutant criteria emissions in its truckload operations. The carrier also promotes a sustainable lifestyle among its customers and 28,000 employees.

CURRENT GREEN INITIATIVES

- Reduce greenhouse gas emissions
- Use alternative fuels or energy sources (e.g., electric vehicles)
- Reuse/recycling program
- Reduce energy usage

NOTABLE ACHIEVEMENT

The carrier received the 2019 SmartWay Excellence Award for setting efficiency benchmarks in transporting products and supplies.

LUFTHANSA CARGO

lufthansa-cargo.com/green

Lufthansa Cargo is aiming for a 25% reduction in carbon emissions by the end of 2020 compared to 2005. The carrier company continuously invests in fuel-efficiency measures as well as energy-efficient conveyor and building technology, demonstrating sustainability through innovation (e.g., lighter loading equipment, loading support material made from alternative raw resources or upcycling products) and through green initiatives.



CURRENT GREEN INITIATIVES

- Reduce greenhouse gas emissions
- Use alternative fuels or energy sources (e.g., electric vehicles)
- Reuse/recycling program
- Use wastewater
- Reduce energy usage
- Sustainable packaging
- Sustainably source materials
- Energy-efficient lighting
- Reduce aircraft noise

NOTABLE ACHIEVEMENT

Lufthansa Cargo continues the rollover from the aircraft MD11 (six in operation) to the new twin-engine Boeing 777 (seven in operation, two more to deliver) with the aim of running a fleet composed entirely of these fuel-efficient planes in 2021.

LYNDEN

lynden.com



Lynden is the first Alaska-based transportation company to be recognized by SmartWay (in 2008) and the first trucking company to earn the Green Star Award for Alaskan businesses. Despite operating in steep terrain and extreme conditions, its fleets consistently score among the most efficient in the country in terms of carbon dioxide per ton mile as measured by the SmartWay Transport Partnership. Its bulk tanker company consistently scores in the top 1% of tanker carriers for low carbon monoxide, nitrous oxide, and particulate matter emissions per ton mile.

CURRENT GREEN INITIATIVES

- Reduce greenhouse gas emissions
- Use alternative fuels or energy sources (e.g., electric vehicles)
- Reuse/recycling program
- Reduce energy usage
- Sustainable packaging
- Sustainably source materials
- Energy-efficient lighting

NOTABLE ACHIEVEMENT

Lynden's super-efficient reefer units, shore-side plug-in technology, and electric forklifts save fuel and reduce emissions. LED lighting has improved safety and reduced energy use, and its stormwater pollution prevention exceeds local requirements.

MAERSK

maersk.com

Maersk's sustainability strategy focuses on four shared value programs: climate change/ decarbonizing logistics, inclusive trade, reducing food loss, and responsible ship recycling.

CURRENT GREEN INITIATIVES

- Reducing greenhouse gas emissions on the way to zero-carbon shipping for customers' cargo
- Continued work to establish responsible vessel recycling programs and reporting
- Providing a vessel to support The Ocean Cleanup
- Partnering with a coalition of Danish companies to produce green hydrogen
- Partnering with NOAA to collect high-quality weather and ocean data globally

NOTABLE ACHIEVEMENT

Maersk has achieved a total 43% relative reduction in carbon emissions from its ocean shipping compared to its 2008 baseline. Maersk has set an industry-leading goal of net zero carbon emissions from its own activities by 2050. Net-zero carbon shipping based on biofuel is already available for ocean shipments on a limited basis.

MATSON

matson.com

Matson's fleet modernization program will reduce sulfur oxide emissions. Its four newest vessels are equipped with dual-fuel engines, which can run at full power on low-sulfur fuel or liquefied natural gas. Its newest Kanaloa Class vessels have Tier III engines, which are designed to meet the strictest International Maritime Organization nitrogen oxide emissions standards. All vessels meet or exceed the reduced fuel tolerances of the IMO 2020 regulations.

CURRENT GREEN INITIATIVES

- Reduce greenhouse gas emissions
- Use alternative fuels or energy sources (e.g., electric vehicles)
- Reuse/recycling program
- Reduce energy usage
- Protect water quality
- Reduce waste

NOTABLE ACHIEVEMENT

By the end of 2020, nine of Matson's 13 active vessels are expected to have exhaust gas cleaning systems, or scrubbers, that virtually eliminate particulate matter and sulfur from engine exhaust.

NORFOLK SOUTHERN

nscorp.com

Norfolk Southern's fuel-efficiency initiatives combine energy management technologies and smart rules-based operating practices. For example, the company leveraged its investment in positive train control (PTC) by integrating onboard locomotive energy-management train-handling systems into the safety-based PTC technology, improving locomotive fuel economy. Its onboard energy management systems identify the proper throttle position and dynamic braking setting to achieve optimal fuel efficiency based on track topography and train tonnage. By mid-2019, it had outfitted approximately 1,300 road locomotives—about two-thirds of its road fleet—with energy management technology integrated into PTC.

CURRENT GREEN INITIATIVES

- Reduce greenhouse gas emissions
- Reuse/recycling program
- Reduce energy usage
- Sustainably source materials
- Energy-efficient lighting
- Capturing, treating, and reusing stormwater in work processes



NOTABLE ACHIEVEMENT

Since 2018, Norfolk Southern has conserved a cumulative 47 million gallons of diesel fuel and avoided more than 481,000 metric tons of greenhouse gas emissions.

NORTH CAROLINA PORTS

ncports.com

North Carolina Ports is recognized for environmental stewardship, self-sustaining operations, a highly efficient workforce, and modern, well-maintained facilities and equipment.



CURRENT GREEN INITIATIVES

- Reduce greenhouse gas emissions
- Use alternative fuels or energy sources (e.g., electric vehicles)
- Reuse/recycling program

NOTABLE ACHIEVEMENT

The port's \$200 million capital improvement plan includes steps to avoid or minimize any adverse environmental impacts while deepening its navigational channel depth to 47 feet. The avoidance and minimization efforts influenced channel design, including plans to avoid impacts to groundwater resources, waterfront infrastructure, and natural and historic resources.

NORTHWEST SEAPORT ALLIANCE

nwseaportalliance.com

As the fourth-largest containerized gateway in North America, Northwest Seaport Alliance takes a proactive and collaborative approach, working with supply chain partners, stakeholders, and communities throughout the Puget Sound to improve its facilities, processes, and best practices to minimize environmental impacts from its operations and create a cleaner and healthier environment.

CURRENT GREEN INITIATIVES

- Reduce greenhouse gas emissions
- Use alternative fuels or energy sources (e.g., electric vehicles)
- Reuse/recycling program
- Use wastewater
- Reduce energy usage
- Sustainable packaging
- Sustainably source materials
- Energy-efficient lighting
- Habitat development
- Mitigation banking
- Contaminant source control
- Clean up legacy contamination
- Clean Truck program
- Green Marine membership
- Shore power use

NOTABLE ACHIEVEMENT

Northwest Seaport Alliance has achieved progress toward the Northwest Ports Clean Air Strategy, greenhouse gas and diesel particulate matter reduction goals, and implementing its Clean Truck Program.



ODYSSEY LOGISTICS & TECHNOLOGY

odysseylogistics.com

Odyssey recently invested in two compressed natural gas (CNG) tractors for its subsidiary Linden Bulk Transportation, and acquired RPM Consolidated Logistics, which has 21 liquefied natural gas and eight CNG tractors in its fleet. Its use of food-grade, bulk-liquid, one-way, refrigerated Flexitank containers reduces customers' carbon footprint by 50% or more—their single-use design eliminates the need to clean, reduces water waste, and prevents cross-contamination. Its food transportation solutions use intermodal tanks, which are stackable, reusable, and streamline carbon emissions. The company is certified as an ACC Responsible Care partner and SmartWay Transport Program member.



CURRENT GREEN INITIATIVES

- Reduce greenhouse gas emissions
- Use alternative fuels or energy sources (e.g., electric vehicles)
- Reuse/recycling program
- Reduce energy usage
- Sustainable packaging

NOTABLE ACHIEVEMENT

Odyssey's investment in two CNG tractors for subsidiary Linden Bulk Transportation will help reduce greenhouse gas emissions by 70%.

OLD DOMINION FREIGHT LINE

odfl.com

With an average vehicle age of 3.5 years old, Old Dominion Freight Line's fleet is one of the youngest in the industry, with 100% low rolling resistance. The company works with original equipment manufacturers to custom-build efficient tractors, including tire inflation systems, to reduce emissions and increase fuel mileage. Other green initiatives include leveraging trailer skirts, air dams and deflectors on tractors, and line-haul trailers to minimize air resistance at highway speed to achieve enhanced fuel economy and reduced emissions. In addition to recycling everyday materials like oil, filters, scrap steel, and wood, the company adopted a no-idle policy that helps reduce unnecessary fuel use and emissions. Old Dominion is EPA SmartWay certified.



CURRENT GREEN INITIATIVES

- Reduce greenhouse gas emissions
- Reuse/recycling program
- Use wastewater
- Reduce energy usage
- Solar panels
- Energy-efficient lighting

NOTABLE ACHIEVEMENT

In 2019, the company invested \$475 million in capital expenditures to improve efficiency in operations, including \$150 million for a tractor replacement program and \$225 million in real estate.

ORBIS CORPORATION

orbiscorporation.com

ORBIS' packaging replaces one-time-use materials. It can be recovered, recycled, and reprocessed into new packaging at the end of its service life. ORBIS also provides alternatives to the disposal of excess, damaged, or obsolete packaging to reduce waste. ORBIS has begun repurposing material found near major waterways into its products. ORBIS also offers reusable packaging management services, ensuring packaging is cleaned, handled, transported, tracked, and returned properly, extending packaging life and preventing loss.

CURRENT GREEN INITIATIVES

- Reduce greenhouse gas emissions
- Reuse/recycling program
- Reduce energy usage
- Sustainable packaging
- Sustainably source materials
- Energy-efficient lighting

NOTABLE ACHIEVEMENT

ORBIS offers a variety of services that can help shippers reduce and measure their overall environmental impact, including life-cycle assessments, which are used to understand a reusable packaging program's supply chain impact.

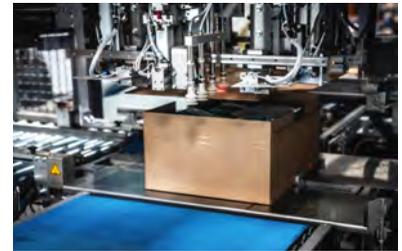
PACKAGING BY QUADIENT

us.packagingbyquadient.com

The company's auto-boxing systems create fit-to-size boxes for each single- or multi-item order of either soft or hard goods while eliminating or reducing void fill. Its CVP Everest solution uses a patented gluing system to affix a custom-fit lid to each box for a more sustainable fulfillment process. The corrugate can be 100% recycled, and the boxes can be reused for returns or other items.

CURRENT GREEN INITIATIVES

- Reduce greenhouse gas emissions
- Reuse/recycling program
- Sustainable packaging



NOTABLE ACHIEVEMENT

By right-sizing boxes with Packaging by Quadient solutions, shippers use an average of 29% less corrugate and reduce material costs by an average of 38%. These solutions also decrease shipping volume by an average of 50%, which allows more orders to fit onto delivery trucks, reducing greenhouse gas emissions with fewer trucks needed.

PECO PALLET

pecopallet.com

PECO cycles pallets an average of four times per year and maintains them to prolong their useful life. PECO block pallets allow four-way entry for more efficient stacking and transportation, which can significantly reduce fuel costs and reduce shippers' carbon footprint. Once pallets are retired, parts are recycled to keep materials out of landfills.

CURRENT GREEN INITIATIVES

- Reduce greenhouse gas emissions
- Reuse/recycling program
- Sustainable packaging

NOTABLE ACHIEVEMENT

PECO works with retailers to find ways to cut costs, reduce product losses, streamline materials handling, and improve safety and efficiency throughout the supply chain.



PENSKE LOGISTICS

penskelogistics.com



Penske Logistics received the EPA SmartWay Excellence Award in the truck carrier category for running a cleaner fleet. Penske Truck Leasing is doing exciting work in the area of electric vehicles, partnering with Daimler Trucks on the Freightliner Electric Innovation Fleet. In addition, Penske conducts an annual greenhouse gas emission inventory, discloses emissions to the Carbon Disclosure Project, implements solid waste reduction initiatives, and supports renewable energy generation and energy reduction efforts.

CURRENT GREEN INITIATIVES

- Reduce greenhouse gas emissions
- Use alternative fuels or energy sources (e.g., electric vehicles)
- Reuse/recycling program
- Reduce energy usage
- Solar panels
- Energy-efficient lighting

NOTABLE ACHIEVEMENT

Penske opened several high-speed commercial electric truck charging stations in Southern California to support electric vehicle units.

PERFORMANCE TEAM

performanceteam.net

A SmartWay Partner since 2008, Performance Team continues to undertake green initiatives. Its entire fleet has SmartWay-approved tires and uses trailer skirts and under trays to improve fuel efficiency. Performance Team utilizes on-demand packaging and works with corridor recycling to help recycle and reduce obsolete hardware in its facilities.

CURRENT GREEN INITIATIVES

- Reduce greenhouse gas emissions
- Use alternative fuels or energy sources (e.g., electric vehicles)
- Reuse/recycling program
- Use wastewater
- Reduce energy usage
- Sustainable packaging
- Sustainably source materials
- Solar panels
- Energy-efficient lighting

NOTABLE ACHIEVEMENT

In the past six years, Performance Team has transloaded more than 300,000 containers. Using a 3:2 compression standard, this translates into approximately 200,000 outbound trailers and a carbon footprint reduction of 30%.



PILOT FREIGHT SERVICES

pilotdelivers.com

SmartWay certified, Pilot partners with carriers in the program and is committed to growing these partnerships by 10% annually. Pilot has a strict no-idle policy for company vehicles, vendors, and carrier partners. In 80 stations, Pilot reduces, reuses, and recycles as much material as possible using cardboard balers. Pilot has replaced most fossil fuel-run warehouse equipment with electric forklifts. Its headquarters and many stations feature occupancy and LED lighting, computer-controlled HVAC, and water bottle refill stations, reducing use of plastic bottles by 10,000 annually.

CURRENT GREEN INITIATIVES

- Reduce greenhouse gas emissions
- Use alternative fuels or energy sources (e.g., electric vehicles)
- Reuse/recycling program
- Reduce energy usage
- Sustainable packaging
- Sustainably source materials
- Energy-efficient lighting

NOTABLE ACHIEVEMENT

Pilot Freight Services' application Compass Dispatcher creates time- and fuel-efficient routes, while the tracking system alerts customers of delivery status, so fuel isn't wasted rerouting the truck.

PITT OHIO

pittohio.com

In 2019, PITT OHIO's average truck miles per gallon improved by 1.1%, saving an estimated 175,000 gallons of diesel fuel. With renewable energy a key part of its strategy, the company is using solar and wind energy to power three of its facilities. Renewable energy makes up 7% of PITT OHIO's electricity. When its new Cleveland facility opens in 2020, 10% of energy will be renewable. In 2019, the company tested an electric vehicle and researched fast charging for trucks off its microgrid.

CURRENT GREEN INITIATIVES

- Reduce greenhouse gas emissions
- Use alternative fuels or energy sources (e.g., electric vehicles)
- Reuse/recycling program
- Use wastewater
- Reduce energy usage
- Solar panels
- Energy-efficient lighting

NOTABLE ACHIEVEMENT

In 2020, the PITT OHIO team is set to improve miles per gallon another 4% through its equipment mix, driver metrics, and maintenance processes, which is the equivalent of lowering diesel usage by almost 600,000 gallons.



PORT EVERGLADES

porteverglades.net

Port Everglades is dedicated to careful, ecologically sound growth, as a custodian of one of the most diverse ecosystems in the country. For example, it has conserved more than 70,000 baby mangroves and native plants. To ensure the long-term interest of the fragile environment within and around the port, it employs best management practices, careful study, and remedial and protective measures.

CURRENT GREEN INITIATIVES

- Reduce greenhouse gas emissions
- Use alternative fuels or energy sources (e.g., electric vehicles)
- Reuse/recycling program
- Reduce energy usage
- Manatee protection
- Mangrove conservation

NOTABLE ACHIEVEMENT

In 2018, Port Everglades was the first U.S. port to collaborate with the EPA on a report outlining baseline and future-year emission inventories for nitrogen oxides, particulate matter, and other harmful pollutants that result from typical port operations. The report examines cleaner technologies and more efficient operational strategies.



PHOTO: BROWER COUNTY'S PORT EVERGLADES

PORT JERSEY LOGISTICS

portjersey.com

Operating 1 million square feet of warehousing space, Port Jersey Logistics designed each of its facilities to reduce greenhouse gas emissions. The company employs electric forklifts and energy-efficient lighting in all its warehouses. From cardboard recycling programs to solar panels, Port Jersey employs initiatives to ensure energy efficiency across the board.

CURRENT GREEN INITIATIVES

- Reduce greenhouse gas emissions
- Use alternative fuels or energy sources (e.g., electric vehicles)
- Reuse/recycling program
- Reduce energy usage
- Solar panels
- Energy-efficient lighting

NOTABLE ACHIEVEMENT

Port Jersey Logistics partners with shippers to develop customized warehouse, logistics, and distribution solutions to increase supply chain efficiency.

PORT OF NEW YORK AND NEW JERSEY

panynj.gov

As the largest port on the East Coast and the third largest in the United States, the Port of New York and New Jersey is committed to safeguarding natural resources, continuing to drive down diesel emissions, and minimizing noise, congestion, and environmental impacts. Through collaborative initiatives, including the Clean Air Strategy and the Port Master Plan, the port prioritizes environmental stewardship to protect the environment while providing economic benefits to the region. Between 2006 and 2017, the port decreased emissions despite a 32% increase in cargo volume during the same time frame.

CURRENT GREEN INITIATIVES

- Reduce greenhouse gas emissions
- Use alternative fuels or energy sources (e.g., electric vehicles)
- Reuse/recycling program
- Reduce energy usage
- Truck replacement program
- Drayage truck registry
- Cargo-handling equipment modernization program
- Clean vessel incentive program
- Environmental management system
- Low-sulfur fuel incentive program

NOTABLE ACHIEVEMENT

Key environmental initiatives span five categories, including truck, cargo-handling equipment, ocean-going vessels, harbor craft, and rail. These initiatives put the port on track to meet its greenhouse gas reduction goal of 35% by 2025 and 80% by 2050.

PORT OF LONG BEACH

polb.com

Port of Long Beach implements sustainable practices, reduces harmful air emissions from port-related operations, improves water quality in the harbor, and protects marine wildlife. The port aims to preserve natural resources by considering eco-friendly alternatives in design and construction, operations, and administrative practices, with a goal of transitioning terminal equipment to zero emissions by 2030 and on-road trucks by 2035.

CURRENT GREEN INITIATIVES

- Reduce energy usage
- Reduce greenhouse gas emissions
- Reuse/recycling program
- Evaluate land for solar and wind power opportunities

NOTABLE ACHIEVEMENTS

Port of Long Beach implemented the Green Port Policy, which aims to reduce the negative impacts of port operations in addition to its 20-year history of environmental protection programs. The port funded technologies and policies that allow massive cargo ships to switch off diesel engines at berth, launched hybrid diesel-electric tugboats in the harbor, and replaced a 15,000-vehicle drayage truck fleet.



PORT OF LOS ANGELES

portoflosangeles.org

The California Air Resources Board awarded \$41 million to the Port of Los Angeles for the Zero-Emission and Near Zero-Emission Freight Facilities project, which is part of a statewide initiative to put billions of cap-and-trade dollars to work reducing greenhouse gas emissions and improving the environment. For the past 10 years, the Port of Los Angeles has invested more than \$350 million in environmental programs and initiatives to continue greening Los Angeles Harbor.



CURRENT GREEN INITIATIVES

- Reduce greenhouse gas emissions
- Use alternative fuels or energy sources (e.g., electric vehicles)
- Reduce energy usage
- Solar panels

NOTABLE ACHIEVEMENTS

The port's Zero and Near Zero-Emission Freight Facilities project aims to reduce emissions by 465 metric tons of greenhouse gas and 0.72 weighted tons of nitrogen oxide, reactive organic gases, and particulate matter. The port collaborates with Japan's Nagoya port on sustainability, including the development of zero-emission vehicles and equipment.

PORT OF OAKLAND

portoakland.com

The Port of Oakland works to mitigate unintended negative impacts, including pollution (air, water, noise) and infrastructure wear and tear. The port is involved in dozens of innovative programs, including creative partnerships and collaborations that help identify, quantify, and meet environmental challenges.

CURRENT GREEN INITIATIVES

- Reduce greenhouse gas emissions
- Use alternative fuels or energy sources (e.g., electric vehicles)
- Reuse/recycling programs
- Use wastewater
- Reduce energy usage
- Sustainably source materials

NOTABLE ACHIEVEMENTS

The Port of Oakland's energy efficiency rebate program provides tenants the opportunity to replace energy-inefficient electric equipment and fixtures. The port's energy rebate program encourages energy-saving initiatives in the facility, and its clean water program helps reduce pollutants in runoff.

PORT TAMPA

porttb.com

Port Tampa partners with the Tampa Bay Estuary Program, regional partners, and its tenants to minimize the impact of day-to-day operations, reduce waste, conserve energy, and raise awareness. The port finds beneficial uses for dredge spoil materials and commits to keeping waters clean as part of the Hillsborough Trash-Free Waters Partnership.

CURRENT GREEN INITIATIVES

- Use alternative fuels or energy sources (e.g., electric vehicles)
- Reuse/recycling program
- Use wastewater
- Reduce energy usage
- Sustainably source materials
- Energy-efficient lighting

NOTABLE ACHIEVEMENTS

Port Tampa reduces air emissions by using electric gantry cranes, scheduling truck arrivals to reduce idling, and creating a dedicated truck lane that reduces wear on local roads. The port also created two islands in Hillsborough Bay to store material removed from shipping channels, which are now home to rare populations of nesting birds.

RAYMOND CORPORATION

raymondcorp.com

Raymond upgraded to an automated logic and lighting controls program to zone and control lighting, heating, and air conditioning based on utilization; incorporated occupancy sensors to eliminate wasted lighting in its offices; and installed supplemental active solar lighting.

CURRENT GREEN INITIATIVES

- Use alternative fuels or energy sources (e.g., electric vehicles)
- Reuse/recycling program
- Use wastewater
- Reduce energy usage
- Sustainably source materials
- Solar panels
- Energy-efficient lighting

NOTABLE ACHIEVEMENTS

100% of Raymond's wood pallets are recycled/reused, and it recycles 97.6% of byproducts. The company established a program with its Sales & Service Centers to recycle metal skids and cradles, and uses the recycled metal on new shipping cradles, which keeps reusable materials from cluttering scrap yards.

RINCHEM COMPANY

rinchem.com

Rinchem uses a just-in-time model that brings in only as much material as needed to avoid excessive inventory and transportation. Its automatic trucks reduce its carbon footprint and miles per gallon. Rinchem uses reverse logistics to support returnable totes/drums, which reduces waste and plastics disposal.

CURRENT GREEN INITIATIVES

- Reduce greenhouse gas emissions
- Use alternative fuels or energy sources (e.g., electric vehicles)
- Reuse/recycling program
- Reduce energy usage
- Sustainably source materials
- Solar panels
- Energy-efficient lighting

NOTABLE ACHIEVEMENTS

Rinchem has implemented LED and motion sensor lights in all its U.S. facilities, solar panels, and paperless transactions through a custom online system. Rinchem recycles all cardboard and pallets and 85% of its forklift fleet is electric.



RR DONNELLEY / DLS WORLDWIDE

rrdonnelley.com

RR Donnelley's sustainability policy focuses on four objectives: resource efficiency, procurement, waste minimization, and stewardship. The company implements energy efficiency programs and technologies in its plants worldwide, invested in enhanced energy consumption and recovery systems, and works with customers and suppliers to ensure that packaging and other materials meet environmentally responsible specifications. RR Donnelley is a SmartWay Partner.

CURRENT GREEN INITIATIVES

- Reduce greenhouse gas emissions
- Reuse/recycling program
- Use wastewater
- Sustainable packaging
- Reduce energy usage
- Paperless initiatives

NOTABLE ACHIEVEMENTS

RR Donnelley invests in emerging technologies that prioritize using less natural gas while achieving better overall performance. The company maintains Forest Stewardship Council Chain of Custody-certified locations in the United States, Canada, Latin America, Europe, and Asia.

RUAN

ruan.com

Ruan focuses on utilizing cleaner fuel options, including renewable fuel alternatives such as compressed natural gas, renewable natural gas, biodiesel, and renewable diesel to reduce carbon emissions. Its fleet is made up of lightweight trucks and trailers with green specifications to keep fuel consumption low. The company received the National Biodiesel Board Initiative Award and the SmartWay Excellence Award.

CURRENT GREEN INITIATIVES

- Reduce greenhouse gas emissions
- Use alternative fuels or energy sources (e.g., electric vehicles)
- Reuse/recycling program
- Reduce energy usage
- Sustainably source materials
- Energy-efficient lighting

NOTABLE ACHIEVEMENTS

Ruan has traveled more than 100 million miles on natural gas power, used 160 million gallons of biodiesel blends between 2013 and 2019, purchased 2 million gallons of renewable diesel in 2018-2020, and collaborated with electric vehicle manufacturers.

RYDER SYSTEM

ryder.com

To improve fuel economy and reduce emissions, Ryder utilizes cleaner-burning fuels and invests in alternative fuel technology. It is the exclusive distribution and service provider for several electric vehicle manufacturers, and has partnered with InCharge to provide charging infrastructure. Ryder's warehouses operate under lean principles to minimize waste, and the 3PL has been recognized by the EPA with a SmartWay Excellence Award for reducing greenhouse gas emissions.



CURRENT GREEN INITIATIVES

- Reduce greenhouse gas emissions
- Use alternative fuels or energy sources (e.g., electric vehicles)
- Reuse/recycling program
- Use wastewater
- Reduce energy usage
- Sustainable packaging
- Sustainably source materials
- Solar panels
- Energy-efficient lighting

NOTABLE ACHIEVEMENTS

Each year, Ryder recycles nearly 3 million gallons of used oil, more than 880,000 gallons of oily water, more than 12,000 drums of used oil filters, nearly 48,000 gallons of solvent, and more than 2 million oil filters.

SADDLE CREEK LOGISTICS SERVICES

sclogistics.com

Saddle Creek Logistics Services works to minimize fuel use and emissions by adopting the use of compressed natural gas, and continues innovative initiatives such as converting older diesel tractors into dual compressed natural gas/diesel fuel vehicles to reduce emissions. The dual fuel conversion extends the life of the vehicles by six years. Saddle Creek is also installing event recorders in all tractors to train drivers how to achieve maximum fuel efficiency.

CURRENT GREEN INITIATIVES

- Reduce greenhouse gas emissions
- Use alternative fuels or energy sources
- Reuse/recycling program
- Reduce energy usage
- Energy-efficient lighting

NOTABLE ACHIEVEMENTS

Saddle Creek launched a fleet of eco-friendly compressed natural gas trucks, each of which saves about 120,000 pounds of carbon per year. The company purchased 20 new diesel tractors with Freightliner's RunSmart Predictive Cruise Control, 13 of which have technology that reduces fuel use.

SAIA

saia.com

Environmental sustainability drives Saia's business decisions, from decreasing overall carbon dioxide emissions to saving energy and cutting fuel costs. A SmartWay Excellence Award recipient, all of Saia's trailering equipment runs on SmartWay-approved tires. Since 2017, air inflation systems have been placed on all trailers and gears to ensure proper pressure for optimal fuel efficiency. To mitigate idling and minimize fuel consumption, Saia has a five-minute engine-controlled shutoff restriction on all tractors.

CURRENT GREEN INITIATIVES

- Reduce greenhouse gas emissions
- Use alternative fuels or energy sources (e.g., electric vehicles)
- Reuse/recycling program
- Reduce energy usage
- Sustainably source materials
- Solar panels
- Energy-efficient lighting

NOTABLE ACHIEVEMENTS

Since 2015, Saia has replaced 59% of its 5,300 tractors and 56% of its 22,000 trailers, improving fleet miles per gallon by 16%. Approximately 16% of the fuel purchased in 2019 was renewable diesel. The company piloted a solar panel system at one terminal that puts energy back into the grid, and plans to pilot compressed natural gas and electric tractors by 2021.

SCHNEIDER

schneider.com

Schneider's on-site engineers have tested and evaluated new products and technologies continuously via SAE methodology since 1989. This data provides Schneider with the ability to spec the most advanced, energy-efficient components on its equipment. Schneider is a charter member of the EPA's SmartWay program and is a 10-time Award of Excellence winner.

CURRENT GREEN INITIATIVES

- Reduce greenhouse gas emissions
- Use alternative fuels or energy sources (e.g., electric vehicles)
- Reuse/recycling program
- Use wastewater
- Reduce energy usage
- Sustainably source materials
- Energy-efficient lighting

NOTABLE ACHIEVEMENTS

Most new tractors added to Schneider's fleet are equipped with a battery-powered auxiliary power unit, which reduces idling of the main engine. The transition to the latest clean diesel emission-compliant engines is well underway, with more than 99% of the fleet meeting 2014 emissions standards and 68% of the fleet meeting 2017 emissions standards.



THE SHIPPERS GROUP

theshippersgroup.com

The Shippers Group participates in the Texas Emissions Reduction Plan program to help reduce emissions from vehicles and equipment, uses LED lighting and high-efficiency electric chillers, implemented a zero landfill initiative, and removed high-emissions forklifts from its fleet.

CURRENT GREEN INITIATIVES

- Reduce greenhouse gas emissions,
- Use alternative fuels or energy sources (e.g., electric vehicles)
- Reuse/recycling program
- Use wastewater
- Reduce energy usage
- Sustainable packaging
- Sustainably source materials
- Solar panels
- Energy-efficient lighting

NOTABLE ACHIEVEMENTS

The Shippers Group has recycled 65 tons of cardboard, paper, and plastic and reused 5,000 airbags and dunnage.

SOUTH CAROLINA PORTS AUTHORITY

scspa.com



South Carolina Ports Authority's environmental stewardship includes low gate turn times for truckers, fully electrified cranes and terminal transloading equipment, a reduction of idling on or near port property, and 100% compliance with air-quality standards and voluntary air monitoring. The port also partners with state and federal agencies to help bring sustainable practices to the region.

CURRENT GREEN INITIATIVES

- Reduce greenhouse gas emissions
- Use alternative fuels or energy sources
- Reuse/recycling program
- Reduce energy usage
- Sustainably source materials
- Energy-efficient lighting

NOTABLE ACHIEVEMENTS

South Carolina Ports Authority reduced port-related air emissions and funded two air-monitoring stations. The ports also developed an inland port network consisting of two facilities in South Carolina—Inland Port Greer and Inland Port Dillon—that increase freight tonnage moved by rail per gallon of fuel.

TOYOTA MATERIAL HANDLING

toyotaforklift.com

Toyota Material Handling offers eco-friendly forklifts, featuring recyclable parts and emission systems that meet California's stringent standards. Its manufacturing facility implemented 1,700 energy-saving measures during the past five years, which reduced 120,000 tons of carbon emissions.

CURRENT GREEN INITIATIVES

- Reduce greenhouse gas emissions
- Use alternative fuels or energy sources
- Reduce energy usage

NOTABLE ACHIEVEMENTS

Toyota is the first manufacturer to have UL-listed, EPA, and CARB-certified compressed natural gas-powered forklifts. Its 8-Series substantially reduces the use of environmentally harmful substances in manufacturing and increases the number of recyclable parts used.

TRANSGROUP GLOBAL LOGISTICS

transgroup.com

Through its TransNeutral Green Program, TransGroup takes steps to mitigate the impacts of transportation and logistics activities by offering greenhouse gas-limiting warehousing and distribution. TransGroup has been a member of the EPA's SmartWay Transport Partnership since 2007.



CURRENT GREEN INITIATIVES

- Reuse/recycling program
- Reduce energy usage
- Energy-efficient lighting

NOTABLE ACHIEVEMENTS

Internal company sustainability initiatives include energy conservation, recycling, waste reduction, and paperless initiatives. TransGroup has reduced its fossil fuel consumption, atmospheric pollution, and greenhouse gas emissions. It closes product life-cycle loops, maximizes the value of unused or end-of-lease/life assets, and tracks shipment emission metrics.

TRANSPORTATION INSIGHT

transportationinsight.com

Transportation Insight's integrated enterprise logistics solutions leverage multimodal insight, expertise, and technology-driven data analysis to help clients improve supply chain performance and sustainability. It is an ongoing participant in the SmartWay Partnership program.

CURRENT GREEN INITIATIVES

- Reduce greenhouse gas emissions
- Reuse/recycling program
- Reduce energy usage
- Sustainable packaging
- Energy-efficient lighting

NOTABLE ACHIEVEMENTS

Transportation Insight's proprietary and commercial technology applications capture, manage, and act on supply chain data that improves customer service while reducing fuel usage, air emissions, vehicle miles, and energy consumption.

UNION PACIFIC RAILROAD

up.com

Union Pacific Railroad reduces waste by reusing and recycling materials, and diverts approximately 70% of its waste from landfills. In addition to helping customers take advantage of rail's fuel efficiency and the resulting emissions savings, the rail collaborates on service parameters to optimize shipments and avoid wasting resources.

CURRENT GREEN INITIATIVES

- Reduce greenhouse gas emissions
- Reuse/recycling program
- Reduce energy usage
- Sustainably source materials
- Solar panels
- Energy-efficient lighting

NOTABLE ACHIEVEMENTS

Since 2000, Union Pacific has improved fuel efficiency by 19%. Since 2009, it has spent about \$3.4 billion to purchase fuel-efficient locomotives, and retired 2,300 older locomotives to reduce greenhouse gas emissions. In a

typical year, Union Pacific recycles 400,000 pounds of electronic equipment, 1 million pounds of signal batteries, and more than 4 million gallons of oil and diesel fuel.

UPS

ups.com

UPS invests in alternative fuel and advanced technology vehicles, and uses renewable energy to reduce the environmental impact of its operations. UPS was named to the *Forbes* and *Just Capital* annual Just 100 list for corporate citizenship, has been recognized on the Dow Jones Sustainability World & North America Indices, is on *Barron's* list of 100 Most Sustainable Companies, and was chosen by 3BL as one of the 100 Best Corporate Citizens.

CURRENT GREEN INITIATIVES

- Reduce greenhouse gas emissions
- Use alternative fuels or energy sources (e.g., electric vehicles)
- Reduce energy usage
- Sustainable packaging
- Solar panels
- Energy-efficient lighting

NOTABLE ACHIEVEMENTS

UPS plans for 25% of its total electricity to come from renewable sources by 2025. By that time, the company also aims to source 40% of all ground fuel from sources other than conventional gasoline/diesel. UPS plans to purchase more than 6,000 natural gas trucks through 2022, and invested in the U.K.-based technology startup firm Arrival, committing to buy 10,000 of their electric vehicles.



VERITIV LOGISTICS SOLUTIONS

veritivcorp.com

Veritiv supports efforts to preserve, replenish, and enhance the environment for future generations. The company creates lightweight, sustainable packaging that minimizes dimensional weight, improving freight and warehouse efficiency in the form of space savings, shipping cost savings, and waste reduction. Since 2014, the company has been a SmartWay partner committed to reducing carbon emissions.



CURRENT GREEN INITIATIVES

- Reduce greenhouse gas emissions
- Reuse/recycling program
- Reduce energy usage
- Sustainable packaging

NOTABLE ACHIEVEMENTS

Veritiv implemented paperless billing, reducing the consumption of paper by almost 1 million sheets per year. The company also created a paperboard-based packaging option made with 100% sugarcane bagasse fibers, an annually renewable, tree-free fiber source that is recyclable and compostable.

WERNER LOGISTICS

werner.com

Since becoming the first motor carrier to implement electronic logging devices in 1998, Werner has driven more than 18 billion miles with this technology, allowing the company to reduce its out-of-route miles, save fuel, and reduce emissions for more than 20 years. Werner received a 2019 SmartWay Excellence Award and was selected as the SmartWay High Performer winner for its sustainability achievements.

CURRENT GREEN INITIATIVES

- Reduce greenhouse gas emissions
- Reuse/recycling program
- Reduce energy usage
- Energy-efficient lighting

NOTABLE ACHIEVEMENTS

Since 2007, Werner has saved more than 282 million gallons of fuel and reduced carbon emissions by 3.2 million tons.

WSI

wsinc.com

WSI promotes environmental, social, and organizational sustainability through its interactions with customers, employees, and suppliers and is committed to green initiatives. WSI employs natural landscaping and green space to minimize stormwater runoff and surface pollutants and uses electric-powered equipment where possible.

CURRENT GREEN INITIATIVES

- Reduce greenhouse gas emissions
- Use alternative fuels or energy sources (e.g., electric vehicles)
- Reuse/recycling program
- Reduce energy usage
- Sustainable packaging
- Sustainably source materials
- Solar panels
- Energy-efficient lighting

NOTABLE ACHIEVEMENTS

WSI actively runs recycling programs at all facilities, totaling thousands of tons of material recycled annually.

XPO LOGISTICS

xpo.com

XPO has expanded the use of efficient mega-trucks, which can reduce road miles and cut carbon emissions by as much as 20%. The company prioritizes energy-saving policies and a phased upgrade to LED lighting. XPO is the first global logistics company to join Massachusetts Institute of Technology's Industrial Liaison Program.



CURRENT GREEN INITIATIVES

- Reduce greenhouse gas emissions
- Use alternative fuels or energy sources (e.g., electric vehicles)
- Reuse/recycling program
- Reduce energy usage
- Sustainable packaging
- Sustainably source materials
- Solar panels
- Energy-efficient lighting
- Network optimization
- Sustainability reports

NOTABLE ACHIEVEMENTS

XPO added to its fleet of liquefied natural gas vehicles with 500 new vehicles in the United States and 200 in Europe, where approximately 98% of its fleet is compliant with key European emissions standards.

YALE

yale.com/north-america/en-us



The Yale Power Suite provides a range of lift trucks that offer unrestricted choice of hydrogen fuel cells, lithium-ion batteries, internal combustion engines, and lead-acid batteries. This enables a power solution built around requirements for cost, labor, maintenance, emissions, and space, giving end users a sustainable power option that helps eliminate harmful emissions, off-gassing, and other hazardous chemicals.

CURRENT GREEN INITIATIVES

- Reduce greenhouse gas emissions
- Use alternative fuels or energy sources (e.g., electric vehicles)
- Reuse/recycling program
- Reduce energy usage
- Energy-efficient lighting

NOTABLE ACHIEVEMENTS

Yale's lithium-ion battery-powered lift trucks can last up to five times longer than those using a lead-acid battery, reducing recycling waste. Based on projected electricity generation from the U.S. power grid versus on-site hydrogen generation from natural gas, hydrogen fuel cell-powered lift trucks save greenhouse gas emissions by 33% compared to lead-acid batteries charged from the electrical grid.

YRC WORLDWIDE

yrw.com

YRC's fleet strategy centers on equipment use, cleaner-burning fuels, and fuel-efficient engines. Its less-than-truckload companies prioritize greenhouse gas reduction, pollution prevention, waste reduction, and conservation. The carrier restricts power-unit idling to reduce emissions and save fuel, and uses biodiesel fuel. YRC companies have received the SmartWay Environmental Excellence Award, and the EPA named its team a SmartWay Champion.

CURRENT GREEN INITIATIVES

- Reduce greenhouse gas emissions
- Use alternative fuels or energy sources
- Reuse/recycling programs
- Reduce energy usage
- Energy-efficient lighting

NOTABLE ACHIEVEMENTS

Since 2015, YRC has replaced 20% of its tractors and 15% of its trailers. YRC also caps speed below 65 mph on all units, which reduces fuel consumption and emissions.



YUSEN LOGISTICS

yusen-logistics.com



Yusen Logistics upgraded its Carson, California, facility with energy-efficient lighting, as well as a white roof, which keeps the warehouse cool by deflecting up to 80% of sunlight, resulting in significant energy savings. Yusen Logistics is rolling out lithium-battery-powered forklifts in Carson, as well as at its Sumner, Washington, facility. The company has ISO 14001 certification for its warehouses and offices, and reduces environmental loads by using resources efficiently, saving energy, and reducing waste. Yusen has a large-scale solar power generator in New Jersey that generates electricity in the warehouse, with excess wattage sold to local power companies.

CURRENT GREEN INITIATIVES

- Reduce greenhouse gas emissions
- Use alternative fuels or energy sources
- Reduce energy usage
- Solar panels
- Energy-efficient lighting

NOTABLE ACHIEVEMENTS

The company's investment in more than 30 lithium-ion battery powered forklifts will result in an average energy savings of 16% per truck. It also achieved a lifetime carbon reduction of 24.7% and helped protect more than 270 acres of rainforest in Southern Papua, New Guinea, to mitigate 100% of the unavoidable embodied carbon associated with the development of its new warehousing facility.

HONORABLE MENTIONS

GREEN COMPANIES OF NOTE

A. DUIE PYLE

aduiepile.com

A. Duie Pyle's fleet is equipped with adaptive cruise control and self-inflating tires, boosting efficiency and reducing fossil fuel waste. Pyle piloted two of the first 20 electric and emission-free eCenter FUSO trucks introduced in North America. Its electric forklifts reduce carbon emissions by 24,000 pounds per unit.

DELTA CARGO

deltacargo.com

Starting March 1, 2020, Delta Air Lines committed \$1 billion during the next 10 years to mitigate all emissions from its global business going forward. The airline will invest in advancing clean air travel technologies, accelerating the reduction of carbon emissions and waste, and establishing new projects to mitigate the balance of emissions.

DSV / PANALAPINA

dsv.com

DSV's group customer service rep department plans and manages sustainability initiatives throughout the organization and performs on-site reviews to ensure local compliance with global policies. DSV reports to the UN Global Compact and CDP annually on its sustainability activities. Initiatives include energy-efficient buildings and recycling and sorting to reduce emissions.

FINSA

finsa.com

FINSA is committed to ensuring its manufacturing processes have the least environmental impact possible. FINSA optimizes all manufacturing processes to achieve maximum energy savings by co-generation (exploitation of the heat and energy produced by its own factory) and minimum waste production.



LOGISTICS

GETS

The writing is on the wall. Logistics and supply chain companies that invest in ongoing education, innovation, and research can attract new talent and better serve customers.

BY KAREN KROLL

SCHOOLED

When Andrew Lynch started in the logistics business nearly 20 years ago, he had to learn the distance between hundreds of routes—say, from Ashtabula, Ohio, to Edison, New Jersey—as well as the cost to move a shipment from one location to the other. Today, logistics professionals like Lynch, president and co-founder of Zipline Logistics based in Columbus, Ohio, can retrieve this information online. Instead, they're faced with more complicated challenges, such as finding the optimal way to move a shipment when it has to be delivered in the middle of the night, incurring accessorial fees along with standard freight charges.

As logistics challenges become more complex and technology advances,

ongoing education, innovation, and research has become a competitive imperative for logistics and supply chain companies.

A commitment to education and innovation is also key to attracting younger employees to logistics. “With millennials making up an increasing part of our workforce, it is critical that we modernize our processes and tools,” says Gina Chung, vice president, innovation, Americas research and development with DHL.

Moreover, attracting and retaining logistics employees remain critical, even as the COVID-19 pandemic has caused soaring unemployment in some sectors. In contrast, many logistics firms are busy keeping supplies moving. “Within the

logistics sector, there are still people hiring,” says Gary Allen, vice president of supply chain with Miami-based Ryder Supply Chain Solutions.

Just as important, some shippers do not have the resources needed to develop new capabilities or to monitor technological advances in logistics. Instead, many ask their logistics partners to keep abreast of emerging technologies and then use their knowledge to drive solutions.

GETTING AHEAD OF THE CURVE

The goal of Ryder's innovation and product development group is “to get ahead of the curve regarding what's next,” Allen says. One result is the Coop platform. Developed within Ryder, Coop

FROM ECONOMIC DEVELOPMENT TO TALENT DEVELOPMENT

Several years ago, when leadership at KC SmartPort talked with different companies, they learned labor and workforce concerns had risen to the top of the list when evaluating new markets, along with real estate and the cost of doing business, says Elli Bowen, KC SmartPort's vice president of business development.

In response, KC SmartPort, a nonprofit economic development organization working to attract freight-based companies to the Kansas City region, increased its focus on workforce development.

To address the skills and interests gaps, the organization reached out to universities, community colleges, and even high schools. A number of these institutions now offer supply chain programs. One example is a range of programs in railroad conducting offered through a partnership between the National Academy of Railroad Sciences, Johnson County Community College, and BNSF Railway.

These initiatives reach students who may not have been aware of the opportunities in the supply chain field. "We're shifting the mindset of what it means to be in supply chain," Bowen says.

connects fleet managers who have idle vehicles with businesses interested in renting them. Lenders on the site report average monthly earnings of more than \$3,000 per single truck, and \$4,000 for a sleeper truck.

Because innovation also occurs outside logistics companies, a number of logistics providers monitor and evaluate emerging technologies. "Our customers don't necessarily have the time to stay in touch with everything going on in emerging technology, especially in supply chain," says Andy Moses, senior vice president of global products with

Penske Logistics. To assist them, Penske's emerging technologies team uses both internal and external resources to monitor emerging technologies such as blockchain and 5G.

"Penske doesn't pick winners and losers," notes Moses. Instead, they stay up on the key players in each technology sector, potential headwinds, and changes likely to occur in the near or mid term.

INNOVATION STATION

Several years ago, customers of Kenco Group began asking the third-party logistics (3PL) provider to look at innovation that might help them. At the same time, Kenco leadership was working to identify the steps needed to remain competitive in the future, says Kristi Montgomery, vice president of innovation, research, and development, and director of the Chattanooga, Tennessee-based firm's innovation lab.

One result is a 10,000-square-foot working warehouse, complete with racking, a forklift, pick areas, and other features found in typical warehouses. "The lab allows us to test technologies," Montgomery says, and determine which will likely work for different customers.

For instance, a consumer packaged goods company was considering implementing robotics as the volume of its smaller e-commerce orders grew. Kenco tested various options and concluded that an autonomous tugging solution that could carry a larger product assortment than some other robots would provide the efficiency the company needed.

By design, the lab is not a "showcase, but a working warehouse," Montgomery says. This allows Kenco to test products in an environment that mimics real life—that is, with noise and fans and other attributes common in warehouses.

The term "research and development" often prompts images of expansive laboratories with equally mammoth price tags. But it's possible to incorporate



COLLEGE INTERNS AT GEBRÜDER WEISS DON'T JUST MAKE COFFEE RUNS. THEY DIVE INTO REAL-WORLD LOGISTICS, MANAGING THEIR OWN ACCOUNTS AND ADDRESSING ACTUAL CHALLENGES.

innovation on a smaller scale. For instance, conversations with customers prompted Zipline to develop KanoPI, its logistics technology suite.

Many of Zipline's customers are mid-market businesses, and yet they were competing with firms that had invested millions in transportation management systems (TMS)—an option beyond many budgets. "They need a transportation management partner, and not just software," Lynch says. While Zipline maintains KanoPI, its customers can access order information, see their freight in transit, and request quotes, among other capabilities.

Ideas received through Zipline's innovation lab also generate internal efficiencies, such as a suggestion to create an application program interface connection between KanoPI and its less-than-truckload (LTL) carriers, cutting the need to manually update progress on different shipments.

"It saves time for our team and our LTL partners," Lynch says.

EDUCATION NATION

To develop their workforces and enhance innovation initiatives, a number of logistics firms partner with universities and even high schools.

College internships help Gebrüder Weiss (GW) identify talented students while also providing them with opportunity, says Mark McCullough, U.S. chief executive officer; the company's global headquarters are in Vorarlberg, Austria.

Students typically remain with GW for about six months, working around their class schedules. On the job,

they're "diving into real-world logistics, managing their own accounts and addressing actual logistics challenges," says Sandra Musielak, human resources manager. "They're not just going for coffee."

GW also offers Orange College, an interactive mini-university available to all employees. Subjects include freight forwarding basics, customer service, and compliance with different regulatory bodies.

COHABITATION REALIZATION

At Georgia Tech, university-business partnerships tend to fall into several groups, says Tim Brown, managing director of the school's Supply Chain and Logistics Institute. One-to-one collaborations between the university and a company can range from one semester to several years. A company might partner with the school for several years, for instance, to conduct an in-depth study of a new containerization approach across a 3PL network.

An increasingly popular approach is what Brown calls the "cohabitation of industry and academia." Georgia Tech's Advanced Technology Development Center, a business incubator, provides space and expertise to startups in a range of industries. Nearby, a growing number of established companies are building offices.

"It creates an intermingling of faculty, students, researchers, startups, and established companies," Brown says.

What distinguishes a university partnership from a traditional consulting arrangement? Yossi Sheffi, director of the MIT Center for Transportation and Logistics, points out a few differences. "If we know the conclusion to the problem, the school won't work on it," he says. For instance, organizations shouldn't expect to partner with the university to help with a software installation.

The students are always involved in these collaborations. "It's part of their learning," Sheffi says. In addition, a researcher needs to be interested in the problem. "There are more problems than researchers," he adds.

Finally, MIT never commits to delivering a specific solution. "We promise our best effort," Sheffi says. "But there may not be a solution."

A few logistics firms are reaching out to high schools. A group of high school students helped Kenco improve dock door turn time and reduce detention charges stemming from drivers who had to wait to load or unload their trailers.

Their solution? Place large television sets that act as monitors at each dock door and display data, such as order number and due-out time. The background color changes from green to yellow when the due-out time hits 30 minutes, and a red background means due-out time has passed. A supervisor at a facility with dozens of doors can easily see which are bumping against deadlines. Among other benefits, the solution has reduced detention charges and boosted performance.

While innovation and education are key to advancing technology, they're also critical to enhancing skills such as

leadership and quality management. "We need engaged workers," says Hiram Hartnett, executive vice president of sales with Pegasus Logistics, based in Coppell, Texas. He adds that 80% of most problems are people related.

Pegasus Logistics' Leadership Training Program extends for eight months, during which students participate in workshops on leadership effectiveness, retention and talent development, and delegation. "The focus is on leadership, learning, and management," Hartnett says.

Another program, Level Up, will launch later in 2020 to prepare participants to "better understand the levers used to manage the business," Hartnett says. To that end, it will offer exercises in managing conflict and analyzing financial statements, among other subjects.

Research, education, and innovation are helping logistics firms advance both their technology and their workforce. All parties involved—the logistics firms, their employees, and their clients—benefit. ■

DRIVER TRAINING GETS REAL

About 15 years ago, faced with older drivers retiring and other drivers using increasingly advanced technical tools, UPS started examining its driver training procedures, says Jon Bowers, director of learning technology at UPS.

By leveraging a \$1.8 million grant from the Department of Labor and collaborating with the Massachusetts Institute of Technology, Virginia Tech, and the Institute for the Future, UPS built a high-tech, next-generation training facility: UPS Integrad. Ten Integrad sites are now located across the United States, along with two international sites.

A key feature is Integrad's replica outdoor city, Clarkville, which boasts real streets, street signs, sidewalks, and simulated commercial and residential delivery and pickup sites. Students maneuver their trucks and pick up and deliver packages throughout the city.

This "experiential learning" has helped boost safety, performance, and employee retention, Bowers says.



UPS Integrad training extends to on-road supervisors who manage drivers. The program teaches supervisors to observe, apply, and demonstrate driving skills in a controlled environment.

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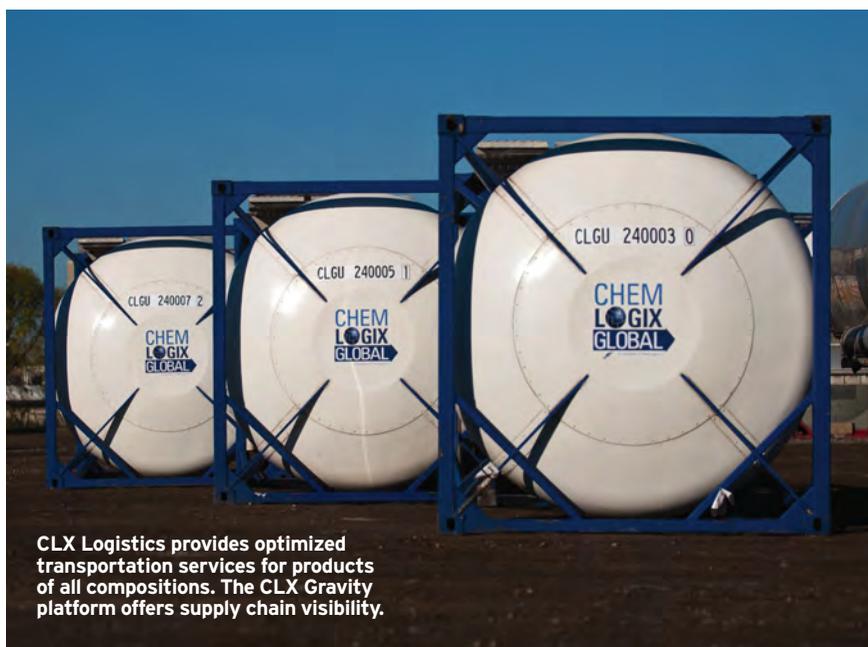




With exacting specifications and transportation challenges heightened by the COVID-19 pandemic, shippers are turning to these partners to move chemicals safely and optimize supply chains.

When much of the world came to a halt in spring 2020 to stop the spread of COVID-19, supply chains had to respond and evolve. That includes many within the chemical sector.

“For a range of companies, COVID-19 is affecting demand, supply, and customer confidence as value chains are being disrupted in unprecedented ways,” says Chris Karney, head of supply chain business process services with consulting firm Accenture Operations.



CLX Logistics provides optimized transportation services for products of all compositions. The CLX Gravity platform offers supply chain visibility.

To navigate the upheaval caused by COVID-19, supply chain organizations need to minimize unknowns and control their shipping processes, essential data, and decision points. “For chemical manufacturers, knowing what you don’t know about your transportation process can be your greatest asset,” says Andrew Hamilton, director of marketing with CLX Logistics, LLC, a global 4PL whose origins lie in the chemical industry.

The impact of the pandemic varies by sub-sector. Operations at many companies whose products are distributed into the automotive sector were upended by plant shutdowns. Similarly, many organizations in the petrochemicals sector saw demand plummet as workers and consumers

holed up at home. In contrast, sales of chemicals used for cleaning and sanitizing have been going strong, says Rob Handfield, Ph.D., professor of supply chain management and director of the Supply Chain Resource Cooperative with North Carolina State University.

COVID-19 also intensified challenges resulting from an aging driver population. As the pandemic spread, some drivers opted either not to work or cut their hours out of concern for

more companies implement electronic signature applications.

To enhance safety in the meantime, some shippers place bills of lading and other paper documents in plastic bags they set outside their facilities, reducing the need for drivers to go into their offices and coming into contact with others. “It’s all done at a distance,” he adds.

The U.S. Department of Transportation has tried to address the challenges heightened by the pandemic with updated rules around truckers’ hours of service. Among other changes, updated regulations announced in May 2020 allow drivers more flexibility in choosing when to take breaks.

Shippers also can act to mitigate the impact of these challenges on their shipments. One step is reducing dependence on the spot freight market. While it can be tempting to flock to this market when prices drop, shippers tend to gain more consistent access to capacity if they assemble a solid slate of contract carriers, and then add a few spot market providers for flexibility.

“When capacity tightens, carriers are going to give preference to those who have contracts with them,” Midkiff says.

Another step, albeit a difficult one in the current unsettled environment, is to provide carriers a forecast of estimated

Many chemical distributors are addressing the challenges facing their sector through technology, such as solutions that enhance shipment tracking and tracing.

their health. “You had equal or more work, but fewer people,” says Charlie Midkiff, senior vice president, global MLS and client services with Odyssey Logistics & Technology, based in Danbury, Connecticut. “It became a double whammy.”

Another challenge comes—as mundane as it might sound—from shippers’ bills of lading, many of which still come in paper form and thus require drivers to obtain handwritten signatures. Midkiff predicts this practice will phase out over the next few years, as

shipment volume. “Even if you have to revise, a forecast helps carriers plan their equipment use,” Midkiff says. Odyssey also is encouraging its clients to ship earlier to compensate for any slowdowns or lack of capacity, he adds.

REGULATORY CHALLENGES IN THE MIX

Surveys of chemical distributors show that maintaining compliance within an ever-intensifying regulatory environment remains an ongoing concern, says Eric Byer, president and chief executive officer with the National Association

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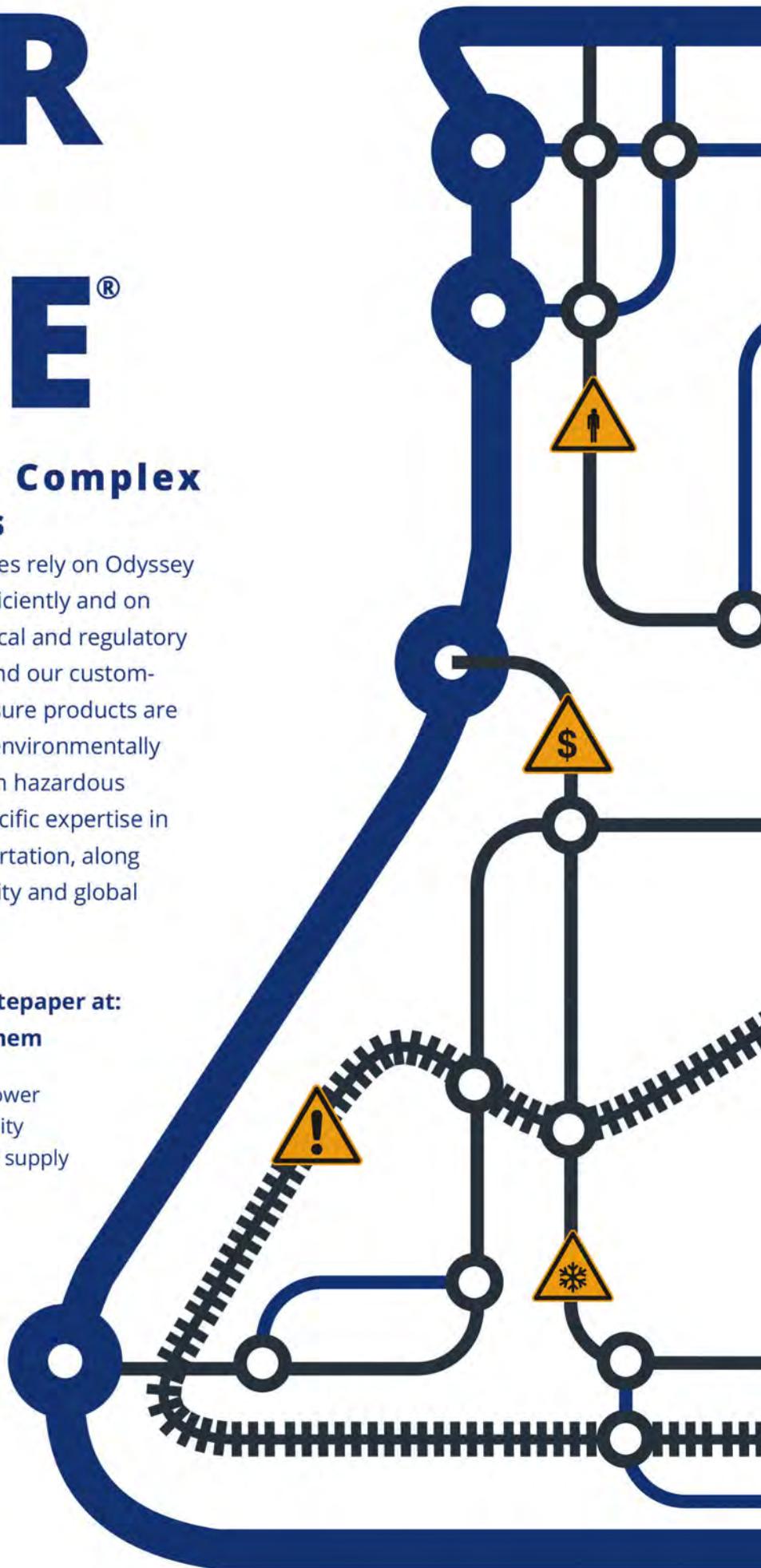
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A growing number of chemical manufacturers outsource distribution and transportation functions to third-party logistics providers (3PLs).



Chemical companies and their supply chain partners comprise the National Association of Chemical Distributors (NACD), an industry group that aims to improve safety.

of Chemical Distributors (NACD), an industry group. He adds that many chemical distributors must comply with a regulatory checklist that's several dozen pages in length. "It's a daunting process and it doesn't matter how big you are," he says.

As the number of regulations in the United States has increased, more chemical production has moved to Asia and some areas of the Middle East, contributing to the shortage of disinfectants and other cleaning supplies when the pandemic hit, Handfield says. If the pandemic lingers or spikes again, some capacity may return to the United States, he adds.

Similarly, the production of some specialty medical chemicals—such as Propofol, which is used to sedate patients, including those who require mechanical ventilators—may also return, he adds. While fairly low volume, these are critical therapeutics.

A similar shift may occur with chemicals used in kits that test for COVID-19, many of which currently also are produced outside the United States. In May 2020, the U.S. Department of Health and Human

Services announced an expansion of U.S.-based pharmaceutical manufacturing as part of its pandemic response. Even so, boosting domestic manufacturing to any degree likely will occur over the longer-term, given the cost and time required to build chemical plants, Handfield says.

No matter where supply chain operations are located, interest in "the greening of the supply chain," is growing, Hamilton says. Green supply chains go beyond standard responsible business practices and require all participants to consider how their processes and actions can be supported by nature and society.

THE TECHNOLOGY FORMULA

Many chemical distribution organizations are taking steps to address the challenges facing their sector through their use of technology, such as solutions that enhance shipment tracking and tracing.

"In the past, it was difficult to track shipments when they were in ports, in customs, even in railcars," Handfield says. Sensors and analytics help shippers and third-party logistics (3PL) providers better monitor shipment location.

Many 3PLs and carriers are deploying more technologies within their trucks, including forward-, inward- and rear-facing cameras that can track incidents that occur on the road, says Greg Rhoads, CSP, chemical transportation consultant and senior advisor to the Responsible Care® program with the American Chemistry Council. These can help in assessing responsibility for any incidents.

In addition, a growing number of chemical manufacturers have decided that rather than assemble internal distribution or transportation departments, they'll outsource these functions to 3PLs. "Outsourcing these activities can help streamline their operations," Rhoads says

Chemical logistics companies currently employ more than 80,000 people and generate about \$7.5 billion in tax revenue, according to NACD. The chemical logistics companies profiled here are part of this industry.

ODYSSEY LOGISTICS & TECHNOLOGY: OPTIMIZING OPERATIONS

Chemical shippers can leverage the expertise of the management team at Odyssey Logistics & Technology Corporation to generate sustained cost savings and optimize their operations. On average, each member of Odyssey's management team possesses more than 25 years of experience in the chemical distribution sector.

Each year, Odyssey transports more than \$60 billion in cargo around the globe, continually enhancing its knowledge of intermodal and bulk chemical transportation, as well as the regulations that govern the transport of hazardous and non-hazardous products. Odyssey's knowledge and market intelligence can help shippers inform their decision-making.

As important, Odyssey's global TMS platform helps clients optimize costs, identify the most efficient routing options, and control all modes of transportation. To that end, the platform assembles information impacting transportation from a range of sources.

NACD Program Ensures Seamless Partnerships

Warehouses and carriers are critical elements of the supply chain for the U.S. chemical distribution industry, which has a total economic impact of nearly \$20 billion and provides more than 80,000 jobs across all 50 states. Chemical products are used in nearly every industry sector in the U.S. economy, and chemical distributors play an important role in providing those goods to more than 750,000 end users in industries as diverse and essential as building and construction, medical technology, electronics, cleaning and sanitation, and more.

Many of the nearly 430 member companies of the National Association of Chemical Distributors (NACD) outsource some of their operations to a third-party logistics (3PL) provider. However, the chemical distribution industry poses a unique challenge for warehouses and carriers due to the wide range of goods that fall under strict regulatory requirements for the handling, storage, and shipping of those products.

Finding a 3PL partner who meets the needs and expectations of the organization is critical for chemical distributors, and often requires considerable research and evaluation.

NACD Program Focused on Safety

For more than 25 years, NACD and its members have been focused on finding new ways to enhance security, improve safety, reduce environmental impact, and strengthen efforts to have the highest health standards in the industry through participation in the association's environmental, health, safety, and security program, NACD Responsible Distribution®. In keeping with the tenets of Responsible Distribution, chemical distributors must perform exhaustive audits when selecting warehousing or carrier partners to ensure they are adhering to industry best practices on safety, U.S. Occupational Safety and Health Administration regulations, and all other requirements for storing or transporting potentially hazardous chemicals responsibly.

To help take the guessing game out of finding a warehousing partner and to reduce the time spent by warehouses and carriers undergoing exhaustive audits, NACD established the Chemical Handler Affiliate program. NACD

Chemical Handler Affiliates follow Responsible Distribution practices, ensuring contracted warehouses and carriers are adhering to best-in-class industry practices. While Responsible Distribution is mandatory, NACD offers a special exemption for any chemical handler who has already implemented and actively participates in the American Chemistry Council's Responsible Care® or Responsible Distribution Canada's program.



By: Eric R. Byer
President and CEO
NACD
communications@nacd.com

Becoming verified under Responsible Distribution not only helps 3PLs more safely and properly handle the materials they are storing or shipping, but it also helps them stand out from their peers, potentially increasing their customer base by eliminating the need for distributors to perform their own audits. Being able to provide a Responsible Distribution certificate rather than going through a new client audit also saves considerable time for warehouses and carriers.

Reducing risk in their supply chain is of utmost importance to chemical distributors. Having a warehousing and logistics partner that can store and transport potentially hazardous chemicals responsibly is imperative. By becoming Responsible Distribution verified, warehouses and carriers can reduce audit costs and times and ensure safe and proper handling of the materials they are storing or shipping, while increasing their visibility as a preferred provider for the chemical distribution industry.

Warehouses and carriers interested in learning more about expanding their business and their business connections, while better managing their facility and excelling in compliance, should contact NACD to learn more about our membership options.

For instance, the platform accesses historical shipment volumes from Odyssey's internal data warehouse and uses it as a starting point for future forecasts.

Odyssey's global TMS platform also pulls external data, such as weather changes, road construction, and the locations of COVID-19 outbreaks, so shippers can adjust to them. "We have seen shipping patterns change to move production away from COVID hotspots," Midkiff says. If a region faces driver capacity constraints, Odyssey can identify additional carriers and/or help shippers assess the costs and benefits of changing carriers or shipping from a secondary location.



With expertise in intermodal and bulk chemical transport, Odyssey Logistics & Technology transports more than \$60 billion in cargo around the world each year.

To minimize the manual steps often found in supply chain processes, the platform can integrate with the ERP systems of Odyssey customers, as well as Odyssey's own transportation management system. Data flows securely and electronically between Odyssey, its carriers, and its clients. "You remove as much paper and manual processing as possible," Midkiff says.

Once shipments are on the road, the visibility afforded by the Odyssey TMS platform enables Odyssey and its clients to track shipments in real time and mitigate potential delays. "The technology allows us to quickly identify

any problems with a shipment and jump on the solution," Midkiff says.

Odyssey is certified by the American Chemistry Council as a Responsible Care® partner company.

NACD: IMPROVING SAFETY AND BEST PRACTICES

The NACD, established in 1971, is made up of about 430 chemical distributors and their supply chain partners, which together represent about 90% of the industry's gross revenue.

One is Brook Warehousing Corporation, which has been an NACD Affiliate for about 10 years, says John Auger, vice president with the Bridgewater, New Jersey-based company.

For instance, as the FDA was crafting the Food Safety Modernization Act, one proposal would have had warehouse operators handle recalls and inspection.

"We have no right to do that, as we don't own the products," Auger says. Through NACD, Auger and others provided insight that helped in the development of regulations that would improve safety, without imposing requirements that couldn't be met.

The educational opportunities offered through NACD also are key, Auger says. Throughout the COVID-19 pandemic, NACD has hosted webinars and provided materials to help its members navigate both health and business concerns, such as primers on the Paycheck Protection Program. "As a small organization, we'd be stressed to assemble the various sources of information and make them coherent," Auger says.

In addition to formal learning opportunities, NACD members strive to continually improve and implement best practices. Member-to-member discussions help everyone learn from others' successes, mistakes, and growing pains, Auger says.

By getting to know other NACD members, Auger has developed a list of reputable companies to which he can refer customers when they need assistance outside Brook's geographic range of operations. "I know other NACD members will provide the same

Chemical distributors must comply with a lengthy regulatory checklist in the United States. Leveraging the expertise of supply chain partners helps with compliance.

"We recognized a growing number of our customers were NACD members and it made sense for us to join, share insights, and identify common interests," he says.

Through NACD, Auger and his company also have a voice in Washington. "We get a seat at the table and can offer commentary to help regulators understand how proposals might impact us," Auger says.

level of service and compliance that I would," he says.

Similarly, when talking with an NACD member who's a potential customer, "I'm talking to someone who wants to do it right," Auger says. "I'm not worried they're going to ask me to cut corners."

Indeed, NACD's Responsible Distribution program provides a "higher level of safety within the chemical

The Ultimate Catalyst for Chemical Logistics Success



CLX Logistics: Delivering Innovation through People, Process and Technology

At CLX Logistics, we know what it takes to navigate worldwide logistics in one of the most complex and challenging environments, chemical logistics. We're experts in managing chemical logistics and providing reliable services to our clients and their customers. Our knowledge combined with our best-in-class TMS technology and our industry-leading suite of managed services, allows us to deliver exceptional outcomes, risk reduction and cost savings.

CLX LOGISTICS

INNOVATION THROUGH PEOPLE, PROCESS AND TECHNOLOGY

Philadelphia, PA (HQ) | Chicago, IL | Eindhoven, NL | +1 (800) 288-4851 | +31 (0)40 293 86 16 | CLXLogistics.com

MANAGED SERVICES • ON-DEMAND GLOBAL TMS • INTERMODAL • BENCHMARKING & BIDS • FREIGHT PAY • RAIL MANAGEMENT • INTERNATIONAL • BROKERAGE

CHEMISTRY & SUSTAINABILITY

Creating Energy-Saving Solutions

Many renewable and energy-efficient materials and technologies are made possible by the products of chemistry.



High-performance building insulation and windows



Solar panels and wind turbines



Energy-efficient lighting and appliances



Lightweight packaging and vehicle parts

Improving Industry Performance

Since 1974, the U.S. chemical industry has improved its energy efficiency by 38%.

Driving Innovation

The chemistry industry is a leader in the use of combined heat and power (CHP), also known as cogeneration—the simultaneous production of electricity and heat from the same source. CHP facilities are often twice as efficient as older coal-burning electric utilities.

Energy Recovery

Plastics have a high energy content that can be converted to electricity, synthetic gas, fuels, and feedstocks. Recovering this abundant energy reduces waste sent to landfills and complements plastics recycling.

distribution sector,” Byer says. All NACD chemical distributors regularly complete the comprehensive environmental, health, safety, and security verification, which is conducted by an impartial third-party organization. While a rigorous program, NACD offers resources and mentors to help companies complete it.

The Responsible Distribution program offers several benefits. To start, it builds consistency, Auger says. Without an industry-recognized standard, it’s likely chemical distribution companies would need to comply with multiple standards.

The Responsible Distribution program also helps to level the playing field, as every company that completes it has made a substantial investment in safety training, technology, and processes.

Through NACD, companies can help to move the chemical distribution industry forward in a way that isn’t

possible individually. “You won’t have the leverage or reach,” Auger says.

CLX: ENABLING VISIBILITY AND DATA INSIGHTS

CLX Logistics, a global provider of transportation management systems, supply chain consulting, and other services, had long been recognized for its expertise in chemical logistics. ChemLogix, CLX’s industry-recognized chemical 4PL division, has gained the trust of leading chemical manufacturers and shippers around the globe, Hamilton says.

In contrast to some international logistics companies, CLX leverages its global fluency, international presence, and dedicated chemical supply chain management specialists to provide optimized transportation services for products of all compositions, no matter

where they’re heading. In doing so, it simplifies its partners’ transportation management and international logistics.

The CLX Gravity™ platform allows shippers to build a next-generation, responsive supply chain that can respond to all challenges. It also optimizes the visibility and speed of its customers’ chemical supply chains. CLX deployed the CLX Gravity™ in its partnership with a global chemistry company, improving transportation visibility by combining data from multiple sources. This is helping the company set transportation performance targets and prioritize transportation spend.

Alone in the industry, CLX’s on-demand SAAS-TMS covers all modes of transportation and all regions of the globe. “The TMS and carrier network provide real-time visibility into shippers’ global and domestic supply chains, and deliver planning and execution capabilities across road, rail, ocean, and intermodal networks,” Hamilton says.

CLX Logistics advocates for green logistics and sustainable supply chain management practices that reduce the environmental impact of shippers’ transportation operations. To this end, CLX follows international standards, like the GHG Protocol, to minimize damage to the environment by reducing emissions and energy consumption.

Moving forward, chemical companies will need to continue building agile and responsive supply chains. To accomplish this, they’ll need effective information management, Hamilton says. While a robust reporting system will be essential, a constant stream of incoming data regarding weather, transportation destinations, origins, timing, and invoices, can be overwhelming. Shippers need a reporting system that provides useful insights and drives innovation.

Chemical companies also will need to take a two-pronged approach in analyzing the market, Hamilton says. That is, they’ll need to stay abreast of the overall transportation market, such as carrier rates and local players. They also need to monitor the chemical-specific market, including current rules

Moving forward, chemical companies will need to continue building agile and responsive supply chains. To accomplish this, they'll need effective information management.

for shipping hazardous materials. An awareness of the current market is key to implementing transportation methods like intermodal that continuously reduce costs and environmental impact and improve overall program efficiency, Hamilton says.

CLX Logistics can help. “CLX offers the expertise and capabilities necessary to move hazardous liquids or solid chemical substances to their destination safely and on time while also protecting the earth,” Hamilton says.

CHANGE AS A CONSTANT

The changes underway in the chemical logistics sector show no signs of stopping. If anything, more are coming. For instance, “fast-moving digital players” are eying the industrial distribution market, according to a 2019 McKinsey & Company report, *The Coming Shakeout in Industrial Distribution*. These companies’ generally deep pockets and sophisticated systems, such as Amazon Business’ integrated procurement system, feature multiuser accounts, flexible payment options, and enhanced invoicing capability, notes the report.

That’s why, along with moving more chemical manufacturing and distribution closer to demand and pursuing greater diversity in sourcing, chemical logistics companies also will need to “fully digitize and use artificial intelligence and machine learning,” Karney says.

For example, some chemical companies today would struggle to meet an order deadline if an incoming shipment was waylaid by weather or other disruption, Karney says. A fully digital supply network would offer real-time visibility and the ability to maneuver around—or even avoid—potential disruptions from weather or traffic or port congestions, Karney says.

A report from the World Economic Forum and Accenture, *Digital Transformation Initiative: Chemistry*

and *Advanced Materials Industry*, estimates digitization could unlock up to \$550 billion in value for the chemical industry, with digital supply chain initiatives driving \$70 billion of that amount.

On top of that, digitization could cut carbon dioxide emissions by up to 100 million tons and avoid several thousand injuries over the next decade.

Today’s supply chains will need to morph to “supply networks,” Karney says.

The difference? Rather than the linear flows of information and goods typical of supply chains, supply networks are agile and flexible. They’re fully integrated, digitized, and use real-time data, making it possible to derive insights without human intervention, he adds.

Technological innovations in the fuels that power the trucks hauling chemicals continue as well. At least one company is engaging in innovative testing with hydrogen fuel cells for some longer hauls, Rhoads says.

“Fleets across the industry are looking to reduce their fuel usage and carbon footprints to meet their own goals, as well as shipper and societal needs,” he adds. ■

CHEMICAL RESOURCE GUIDE

These logistics partners are rolling out solutions of substance, helping shippers meet specialized requirements and comply with chemical supply chain needs.

CLX Logistics clxlogistics.com 800-288-4851

Chemical companies around the world turn to CLX Logistics to build and deliver transportation solutions that meet unique regulatory pressures and safety and security concerns. For chemical companies looking to outsource some or all of their logistics functions, CLX has the expertise and capabilities to get hazardous liquids or solid chemical substances to their destination safely and on time.

National Association of Chemical Distributors nacd.com 703-527-NACD (6223)

The National Association of Chemical Distributors (NACD), established in 1971, is an international association of chemical distributors and their supply chain partners. Member companies process, formulate, blend, re-package, warehouse, transport, and market chemical products for over 750,000 customers. The NACD’s mission is to enhance and communicate the professionalism and stewardship of the chemical distribution industry.

Odyssey Logistics & Technology Corporation odysseylogistics.com 855-875-0681

With origins in chemical logistics, Odyssey Logistics & Technology Corporation offers solutions for every aspect of the chemical supply chain, including bulk transportation, sample fulfillment, and managed services/consulting. Leading chemical companies rely on Odyssey Logistics & Technology to move their products around the world safely, cost efficiently, and on time. Odyssey’s experts have experience navigating the particular challenges that chemical logistics can create.

IN THIS SECTION:
3PL

3PL

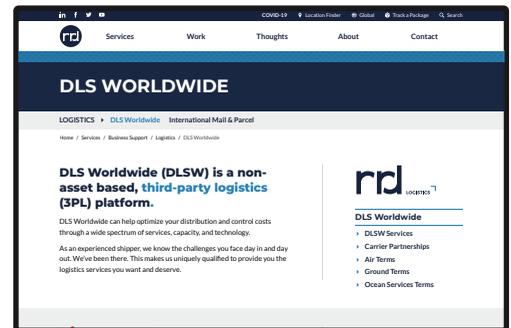


CT LOGISTICS • www.ctlogistics.com

Since 1923, organizations have leveraged CT Logistics to provide global freight audit & payment and transportation management solutions. Partner with CT to design and implement customized supply chain and rate management solutions. CT's Business Intelligence platform provides global spend visibility and data analysis using SOCII and ISO 9001:2008 certified processes. Services also include: shipment execution, bid management, shipment planning and execution software, and professional services for consulting and advising.

DLS WORLDWIDE/RR DONNELLEY • dlsworldwide.rrd.com

Experience the benefits that only come from working with a major, global shipper that is also a top-ranked 3PL. We offer multiple transportation modes, an established multi-carrier network, volume-leveraged rates and service levels, along with technology-enabled systems and processes. Visit our website and contact us today to see why customers have relied on us for nearly 150 years.

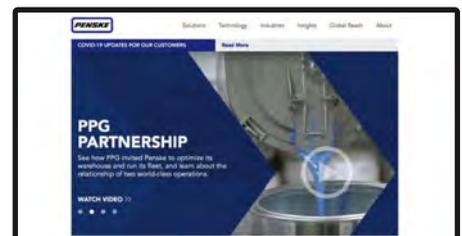


ECHO GLOBAL LOGISTICS • www.echo.com

Echo Global Logistics, Inc. (Nasdaq: ECHO) is a provider of technology-enabled transportation and supply chain management services. Echo maintains a proprietary, Web-based technology platform that compiles and analyzes data from its network of more than 50,000 transportation providers to serve its clients' needs. Offering freight brokerage and managed transportation services across all major modes, Echo works to simplify the critical tasks involved in transportation management.

PENSKE LOGISTICS • www.penskelogistics.com

Penske Logistics is an award-winning logistics services provider with operations in North America, South America, Europe, and Asia. Our products and services range from dedicated contract carriage and distribution center management to transportation management and fully customized solutions. No matter what your needs or industry, Penske Logistics engineers supply chain solutions that deliver business results like boosting productivity, improving service, and shrinking carbon footprints. Call us today at 1-800-529-6531 to learn more.



IN THIS SECTION:
3PL – Chemical Logistics

3PL



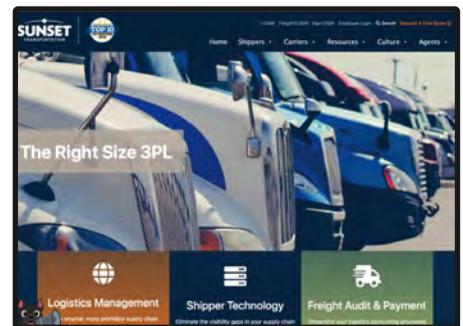
SADDLE CREEK LOGISTICS SERVICES • www.sclogistics.com

Saddle Creek is an omnichannel supply chain solutions company providing a variety of integrated logistics services, including warehousing, fulfillment and transportation. Our custom solutions leverage advanced operational methods and sophisticated technologies to help retailers, manufacturers and e-commerce companies get products where they need to be quickly, cost-effectively and seamlessly. For more information, visit www.sclogistics.com.

SUNSET TRANSPORTATION • www.sunsettrans.com

Sunset Transportation isn't just another 3PL. We are driven by the right-size fit for each business, using all levels of global and domestic supply chain resources and services. Our culture allows customers to feel like family, while offering advanced TMS solutions, reporting, and shipment reliability.

Our approach is simple: through analysis of historical shipping data, we identify opportunities for optimization, service improvement, and technology enhancements. All this is done with five promises we make to every customer, every day: savings, visibility, data-driven decisions, continuous improvement, and relationships. Sunset is the right size 3PL for your growing business.



WSI • www.wsinc.com

Reliability is everything. At WSI, that has been our approach to integrated logistics and supply chain solutions for over 50 years. Our promise of Condition, Count & Time ensures accurate, timely, and sound performance—every time. Recognized as one of the top 3PL providers in North America, WSI delivers custom solutions for warehousing/distribution, fulfillment, transportation, import/export, information technology, and customer support services. Depend on WSI for increased efficiency, reduced costs, and absolute reliability.

CHEMICAL LOGISTICS

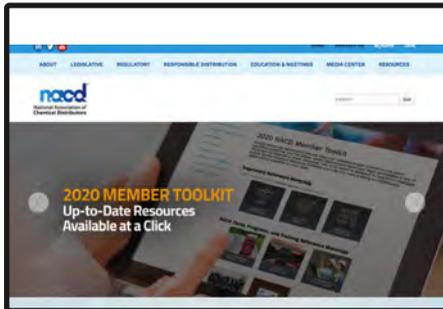
CLX • www.clxlogistics.com

CLX Logistics is a global provider of comprehensive logistics management, technology, and supply chain consulting services to a broad base of industry verticals. From chemical and energy to manufacturing, retail, agriculture, automotive, and heavy haul, we help clients in nearly every industry to realize sustainable supply chain value by employing a mix of managed services, on-demand global TMS technology, and comprehensive transportation management services to improve performance and reduce cost. CLX Logistics is dedicated to solving its customers' most vital logistics challenges.



IN THIS SECTION: Chemical Logistics – Intermodal

CHEMICAL LOGISTICS



NACD—NATIONAL ASSOCIATION OF CHEMICAL DISTRIBUTORS www.nacd.com

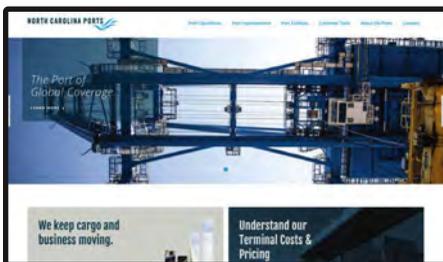
NACD connects chemical handlers with industry leaders in every stage of the distribution supply chain. Through NACD Responsible Distribution®, chemical handlers will operate more safely and perform more efficiently while decreasing the impact of/need for customer audits. In addition, NACD provides best practices for facility management and unmatched professional growth programs while serving as a unified voice that protects our industry's interests at the local, regional, and national level.

ODYSSEY LOGISTICS • www.odysseylogistics.com



Odyssey Logistics & Technology Corporation (Odyssey) combines deep industry expertise with leading technology to provide multimodal logistics management services to the chemical industry and other process manufacturers. Odyssey enables clients to outsource any part of their logistics processes to achieve savings through reduced transportation and infrastructure costs, measurable customer service and process improvements, and improved data quality and management. Odyssey is a leader in intermodal with expertise in liquid food, chemicals, and metals transport.

FURNITURE TRANSPORT & LOGISTICS



NORTH CAROLINA STATE PORT AUTHORITY • www.ncports.com

North Carolina Ports has convenient locations in Wilmington and Morehead City, plus an inland port in Charlotte. Our customer-focused approach offers shippers excellent port communication and customized service. Customers experience the fastest turn times on the United States East Coast, with Wilmington featuring three neo-Panamax cranes and a new, 101,000-square-foot, on-terminal storage facility that can accommodate more customers than ever.

INTERMODAL

ALLIANCE SHIPPERS INC. • www.alliance.com

Delivering The Perfect Shipment® from pick up to destination. With operating facilities in the United States, Canada and Mexico, Alliance Shippers Inc. combines excellent customer care with state-of-the-art rail, highway, ocean and air transportation solutions. Additional services include warehousing, distribution, customs clearance, equipment/driver leasing and expedited transportation. For cost-effective logistic solutions tailored to your company's exact needs, contact Alliance Shippers Inc.



IN THIS SECTION:
Intermodal – Ports

INTERMODAL



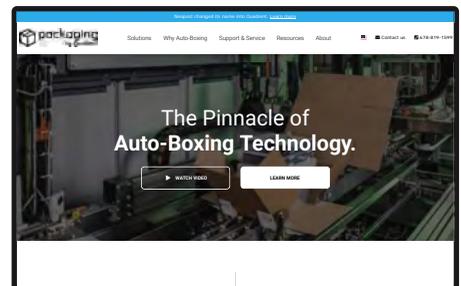
HUB GROUP • www.hubgroup.com

Hub's extensive service network—built over many years—enables it to provide innovative transportation solutions that are versatile, flexible, and designed to deliver maximum efficiency. With this advantage, Hub Group is able to collaborate with customers daily to help them meet their transportation challenges. With intermodal, highway, and logistics transportation offerings, the Hub Network is your single source—coast to coast, border to border. Visit the website to learn what Hub can do for you.

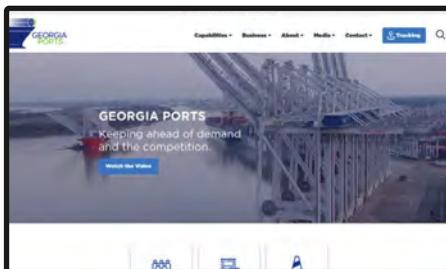
PACKAGING

PACKAGING BY QUADIENT • us.packagingbyquadiant.com

Packaging by Quadient—a product line of Quadient, which was founded in 1924—is passionate about eliminating excessive packaging and increasing operational fulfillment efficiencies. Packaging by Quadient helps companies rethink and streamline their parcel packaging processes while ensuring production levels are met or exceeded. The company's success is not only due to the quality of its product engineering; it's also its passion, approach and the way it treats customers.



PORTS

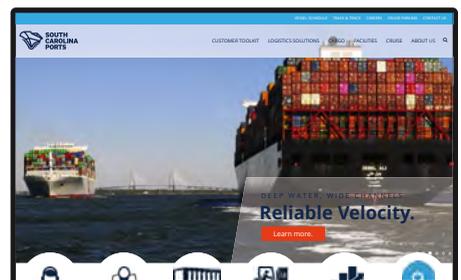


GEORGIA PORTS AUTHORITY • www.gaports.com

The Georgia Ports Authority (GPA) includes the Port of Savannah, the Port of Brunswick, the Bainbridge Inland Barge Terminal, and the Columbus Inland Barge Terminal. Its home page offers history and background about the Ports Authority, a port directory, shipping directory, GPA statistics, maps, photos, and more.

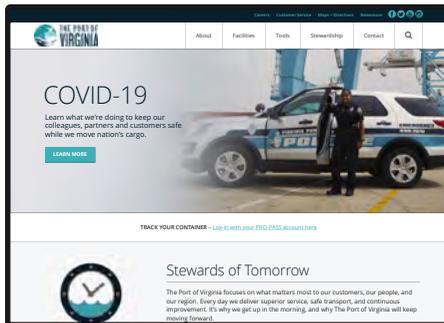
SOUTH CAROLINA STATE PORT AUTHORITY www.port-of-charleston.com

In a world where speed to market, seamless processes, and flexibility are essential, South Carolina's ports deliver. Home to the Southeast's deepwater port, the South Carolina Ports Authority is the industry leader in productive operations, big ship handling, efficient market reach, and environmental responsibility.



IN THIS SECTION: Ports – Sustainability

PORTS



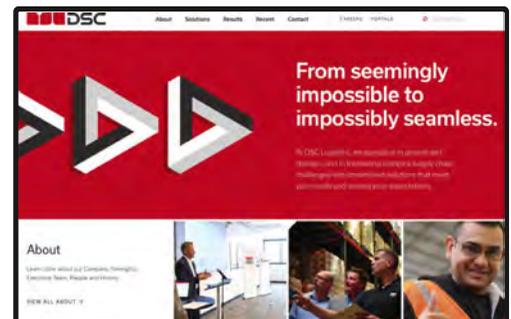
VIRGINIA PORT AUTHORITY • www.portofvirginia.com

Virginia's strategic mid-Atlantic location and unparalleled transportation infrastructure offer steamship lines and shippers unbeatable access to two-thirds of the U.S. population with more than 75 international shipping lines and one of the most frequent direct sailing schedules of any port. The bottom line is in the numbers: The Port of Virginia transports more intermodal containers to more cities faster and more efficiently than any other U.S. port. As the largest intermodal facility on the U.S. East Coast, Virginia offers six direct-service trains to 28 major cities each day. A modern network of interstate and local highways permits fast, direct inland motor freight transportation to any point in the United States.

SUSTAINABILITY

DSC LOGISTICS • www.dsclogistics.com

With experience, knowledge, and IT — as well as supply chain capabilities that are adaptable, versatile, and focused on changing customer needs — DSC Logistics helps companies reach their business goals. DSC provides supply chain analysis and design, strategic solutions-based consulting, systems integration, process improvement, and management of logistics operations such as warehousing, transportation, packaging, and fulfillment. In today's business environment, filled with rapid and unpredictable change, DSC manages change and information in the supply chain by using a strategy called sense-and-respond and by being ready for anything!



EPA SMARTWAY • www.epa.gov/smartway

In 2004, EPA launched SmartWaySM — an innovative brand that identifies products and services that reduce transportation-related emissions. The impact of the brand, however, is much greater, as it signifies a partnership among government, business, and consumers to protect the environment, reduce fuel consumption, and improve air quality. All EPA SmartWay transportation programs result in significant, measurable air quality and/or greenhouse gas improvements while maintaining or improving current levels of other emissions and/or pollutants. Find out what you can do to save fuel, money, and the environment with SmartWay.

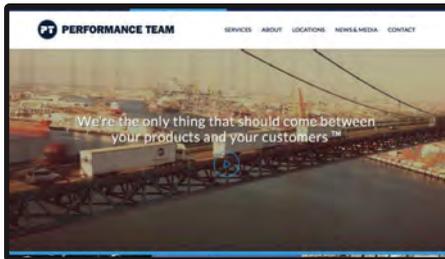
LYNDEN • www.lynden.com

Over land, on the water, in the air—or in any combination—Lynden has been helping customers solve transportation problems for almost a century. Operating in such challenging areas as Alaska, Western Canada and Russia, as well as other areas around the globe, Lynden has built a reputation of superior service to diverse industries.



IN THIS SECTION: Sustainability – Warehousing

SUSTAINABILITY

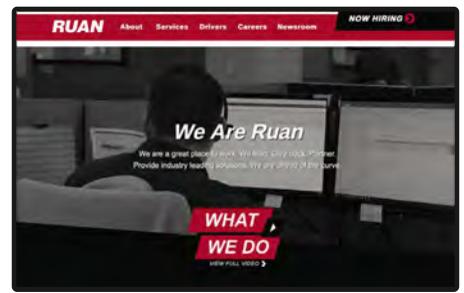


PERFORMANCE TEAM • www.performanceteam.net

Performance Team (PT) is an industry-leading third-party logistics company with nearly 30 years of experience in warehousing, distribution, consolidation and transportation. PT has 12 domestic hubs (and nearly 7 million square feet of space) strategically located near major ports, interstate highways, and intermodal rail lines, allowing us to provide the retail and manufacturing industries with flexible B2B and B2C solutions for the movement, handling, and distribution of goods. PT also offers a full suite of retail, wholesale, e-commerce, and omni-channel distribution and transportation services.

RUAN • www.ruan.com

Ruan's Integrated Supply Chain Solutions offer it all, including Dedicated Contract Transportation, Managed Transportation, and Value-Added Warehousing. We combine the flexibility of our non-asset and asset-based capabilities with optimal technology and superior service focused on continuous improvement, cost savings, and supply chain efficiency. The Ruan team partners with customers to evaluate, optimize, and deliver a one-source, integrated supply chain solution.



TRUCKING



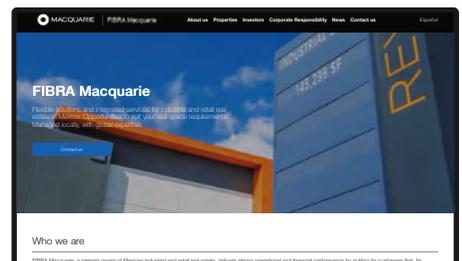
OLD DOMINION FREIGHT LINE • www.odfl.com

Old Dominion Freight Line is a less-than-truckload carrier providing complete nationwide service within the continental United States. Through its four product groups, OD-Domestic, OD-Expedited, OD-Global, and OD-Technology, the company offers an array of innovative products and services to, from, and between North America, Central America, South America, and the Far East. The company also offers a broad range of expedited and logistical services in both domestic and global markets.

WAREHOUSING

FIBRA MACQUARIE • www.fibramacquarie.com

FIBRA Macquarie is a Mexican real estate investment trust focused on the acquisition, ownership, leasing and management of industrial and retail real estate properties in Mexico. The company is well-positioned to capitalize on the favorable long-term economic and demographic trends in Mexico. FIBRA Macquarie provides consistently strong operational and financial performance by putting customers and investors first.



Supply Chain Insights

THE LATEST FREE WHITEPAPERS, VIDEOS, PODCASTS, AND MORE...

webinar

TRANSPORTATION TOWN HALL: HOW COVID-19 IS IMPACTING THE SHIPPING AND DELIVERY INDUSTRY

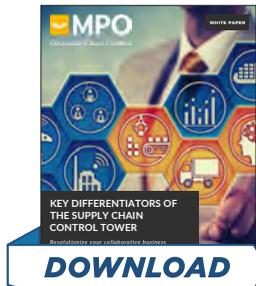
Offered by Pierbridge

bit.ly/TrnsprtnTownHall

Shippers have held steady during the COVID-19 pandemic, continuing to transport essential items. With uncertainty surrounding the long-term impact of the crisis, strategies will need to evolve. Tune in as leadership from Pierbridge, Banyan Technology, and ConnectShip share what they see on the front lines, discuss the role technology will play in shipping and delivery, and answer pressing transportation questions.



whitepapers



bit.ly/MPOMay20SCI

Key Differentiators of the Supply Chain Control Tower

Offered by MPO

Many control tower options are available, but in today's evolving climate, businesses require a supply chain platform that enables systems unification, network-wide collaboration, and process convergence. This free whitepaper outlines key differentiators of the control tower for supply chain orchestration, which helps businesses stay resilient and better mitigate risk.

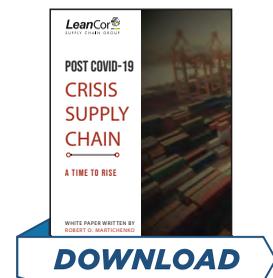


bit.ly/BrotherMayEB

How Hardware-as-a-Service Improves Business Operations

Offered by Brother

Businesses of all sizes use hardware-as-a-service (HaaS) to break through common procurement roadblocks. HaaS can shift acquisition costs to operational expenses rather than capital expenses, making the latest technologies more attainable. Read this free whitepaper to learn how your business can benefit from the HaaS subscription model.



bit.ly/SupplyChainCrisis

Post-COVID-19 Crisis Supply Chain: A Time to Rise

Offered by LeanCor Supply Chain Group

To be successful during disruption, businesses must plan and practice before the event occurs. When a disruptive event happens, your operation must gather and share data quickly. Download this free whitepaper to learn how supply chain leaders can rise to the challenge with a one-team approach during crises like COVID-19.

Supply Chain Insights

whitepapers



DOWNLOAD

bit.ly/PortBuildingBlocks

Port of the Future: 7 Building Blocks

Offered by Port of Rotterdam

As supply chain leaders find the path to economic recovery, they also face energy transition, digitization, shifting trade patterns, and other rapid changes. This whitepaper outlines where to start when preparing your port for the future in a disrupted environment, including seven distinct building blocks: organization, assets, infrastructure, engagement, energy, digital transition, and innovation.



DOWNLOAD

bit.ly/ReopenPlaybook

7 Actions Businesses Need to Take as the Economy Reopens

Offered by Oracle/NetSuite

As some states start to reopen their economies, every business needs to assess its business model and financial health, as well as understand the impact of these health and safety issues. This free e-book teaches shippers how to retain and acquire customers and how to package and price their offerings, providing an action plan in the form of a checklist for each area.



DOWNLOAD

bit.ly/PierbridgeMay20SCI

Business Continuity Requires an Enterprise Approach to Home Office Shipping Solutions

Offered by Pierbridge

Instead of managing four offices, companies must now manage 4,000 home offices as employees work remotely during the COVID-19 pandemic—all without a centralized mail room. This free e-book shows how a cloud-based, multicarrier management solution can maintain centralized control while giving employees the tools they need to efficiently ship materials from home.

podcast

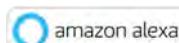


Wes Wheeler

How UPS Healthcare Supports Efforts to Combat COVID-19

Guest: Wes Wheeler, President, UPS Healthcare

What's it like to launch a new division right before a global pandemic? Wes Wheeler, president of UPS Healthcare, tells *Inbound Logistics* how he and his team rallied to move COVID-19 test kits, samples, and personal protective equipment all over the world in response to the outbreak.



[IN FOCUS]

INBRIEF

New Services and Solutions

>PRODUCTS

> Air cargo can be safely transported in airplane cabins designed for passengers with the use of cargo seat bags from insulated air cargo cover maker **Trip & Co.** Produced in collaboration with engineering company SII Netherlands, the bags are watertight, chemical and UV resistant, and able to transfer products in a range of temperatures.

> **Toyota Material Handling**, a maker of sit-down counterbalance, 4-wheel electric lift trucks, introduced 3,000- and 3,500-pound capacity models designed to boost both productivity and uptime. Operators can also expect improved ergonomics and up to 27% faster travel and lift/lower speeds.

>SERVICES

> The Smart Crate system from **Averitt Express** lets shippers crate their goods at the point of production. Its modular design allows users to transport products of various sizes, ranging from computer servers to mechanical components. The system also provides real-time location tracking and conditioning monitoring.

> **Echo Global Logistics** partnered with TruckPark, a truck parking service, to add benefits for members of its EchoDrive Preferred rewards program. Members now get access to TruckPark's network of overnight, commercial truck parking resources at a discounted rate. EchoDrive Preferred complements the EchoDrive web portal and mobile app.

> **CaptureTech's** CapCleaner UV-C cleans and sanitizes mobile devices and other warehouse equipment, such as handheld scanners and headsets. Using UV light to disinfect equipment, the CapCleaner kills viruses and bacteria directly, enabling people to avoid coming into contact with the harmful light.



> **Infinity Intermodal** launched an expedited temperature-controlled intermodal option from Salt Lake City to Chicago, with return service. Transit time is three days door to door. The service provides refrigerated intermodal transportation to shippers throughout greater Salt Lake City, including areas of southern Idaho such as Pocatello, Twin Falls, Heyburn, Burley, American Falls, Jerome, and Idaho Falls.

> **Ryder System** expanded its e-commerce fulfillment network's food-grade capabilities by opening a facility near Philadelphia and adding food-grade capabilities to two facilities near Los Angeles and Dallas. Ryder's new e-commerce fulfillment center near Philadelphia integrates automation technology that will let Ryder scale the operation to fulfill more than 70,000 packages daily with future expansion to more than 136,000 packages in a three-shift operation.

> **YRC Worldwide** expanded its regional next-day freight service to include Fort Worth and Garland, Texas, connecting 10 terminals across the state. San Antonio serves as the hub.

>TECHNOLOGY

> Materials handling automation solution provider **MHS** launched *Helix*, a warehouse software solution that supports rapid e-commerce growth. The software consists of

template-based modules for equipment control, inventory management, and order fulfillment functions.

> **Ensol**, a maker of lithium industrial batteries, released the Ensol Smart self-reporting battery and the Ensol Cloud solution. Ensol Cloud is an Internet-of-Things platform for materials handling fleet management that enables fault alerts and tracks equipment utilization benchmarks.

> **3PL Central**, a cloud-based warehouse management system provider, released SmartDock, a dock-scheduling solution that allows warehouses to add more control to their receiving and shipping processes by eliminating manual appointment scheduling.

> Transportation management system (TMS) provider **Rose Rocket** released a solution that provides tracking and order management. The TMS integrates with the Geotab platform, leveraging GPS and hours-of-service data.

> **GEODIS** and **Delta Drone** launched the GEODIS Countbot, a warehouse inventory solution that can perform inventory counts quickly and with only one supervising operator. The solution combines a robot, a telescopic mast, and a drone that ensures the quality of the images collected.

>TRANSPORTATION

> **American Airlines** expanded its cargo schedule to provide 140 weekly flights to 15 cities in Asia Pacific, Europe, and the Caribbean. New services include daily flights between Dallas-Fort Worth and Hong Kong, and weekly flights from Chicago and Paris, and Philadelphia and three cities: Rome, San Juan, and Zurich.

> **CMA CGM Group** launched SeaPriority Go, a service that offers priority vessel boarding for goods during the loading process.

> Shippers transporting goods to Alaska now have a new option called **Arctic On-Demand**, an Alaska-specific air charter that delivers cargo to even the most remote Alaskan locations.



> **Lufthansa Cargo** now offers up to 14 additional cargo flights per week from Shenzhen, China, to Frankfurt, Germany. The first aircraft (*pictured*), an Airbus A330-300 from Lufthansa, took off from Shenzhen on May 18, 2020, carrying three million respiratory masks and other medical protective equipment on behalf of logistics company Fiege.

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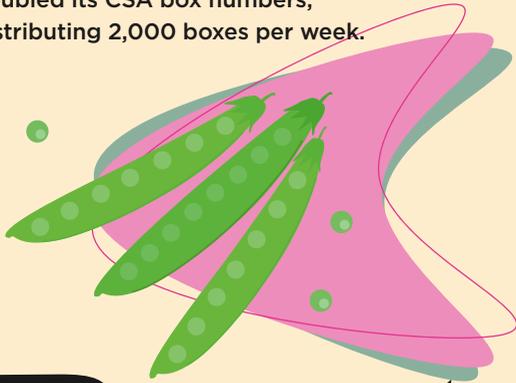
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Farm Fresh

A growing number of consumers are sharing in the harvest—from fruits and vegetables to milk, eggs, and meat. In community supported agriculture (CSA), members buy a share of a farm's harvest, which gets delivered every week in a box. CSAs from California to Maine report surging demand. For example, Northern California-based Full Belly Farm, a certified organic farm, has doubled its CSA box numbers, distributing 2,000 boxes per week.



Got Milk?

The milkman (or woman) is back. Demand for this old-fashioned distribution setup is no longer bottled up. For example, Pennsylvania-based milk delivery company Cow Belle has seen home deliveries jump from 120 to 360 per week since mid-March 2020.

In addition, distributors that have long shuttered home delivery, such as Connecticut-based Wade's Dairy, are reviving the service to provide another channel for milk produced by local farmers.

These companies are hoping demand won't curdle as consumers continue to support local farmers and thirst for fresh milk long after the pandemic.



Reset, Rewind

As the pandemic redefines consumer demand and reconfigures supply chains, some old products and services are new again.

Here's the Soup

Grocery shoppers are revisiting a familiar staple: Campbell's Soup. The company reports a 35% increase in U.S. retail soup sales for the three months ending April 26. Simmering demand has spurred the company to change its 2020 projections from predicting net sales would be down as much as 1% or up as much as 1% to now saying it expects between 5.5% to 6.5% growth for the year.



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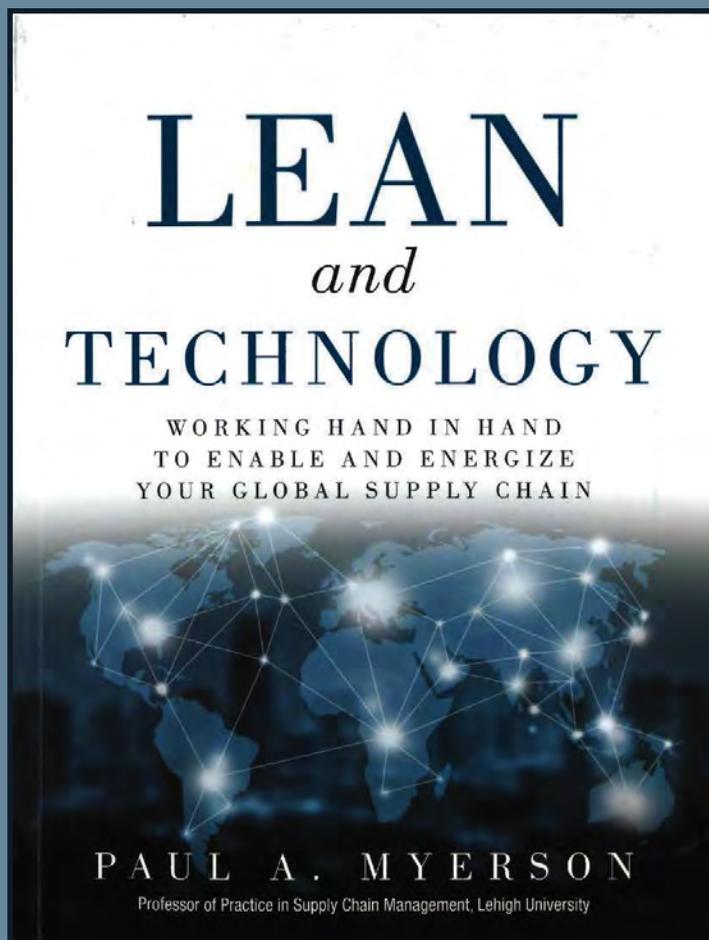
Rolling in Dough

Yeast sales rose 410% year over year for the four-week period ending April 11, according to market research firm Nielsen. While yeast manufacturers are ramping up operations, yeast production can't be rushed—taking about 10 days from growing the yeast in vessels to the packaged product leaving the warehouse. Consumers can opt to go even more old-school, growing yeast at home, a household chore long abandoned as commercially produced yeast hit store shelves in the late 1930s.



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