Apply Technology to Reduce Greenhouse Gas Emissions in Logistics

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By Analysts Bart De Muynck

Initiatives: Logistics and Customer Fulfillment; Supply Chain Technology Strategy and Selection

Companies contending with customer risk and investor demands to reduce their carbon footprint are seeking greener transportation solutions. This research provides logistics leaders with ways to do so, from alternative fuel trucks to an emphasis on transportation optimization and collaboration.

Overview

Key Findings

- Sustainability is becoming more of a priority for logistics leaders, especially as customers are demanding more sustainable delivery.

- Carbon emissions are expected to more than double by 2050, which puts more emphasis on transportation and logistics to reduce emissions.

- Consumers want their manufacturers and retailers to be more sustainable in how they deliver their products.

Recommendations

Logistics leaders responsible for sustainability should:

- Create a clear strategy around sustainability for their organization by drawing up a roadmap that includes projects that will help reduce their greenhouse gas emissions.

- Identify the technologies that will help them reduce their carbon footprint through an investment in transportation applications and intelligent things.

- Collaborate with other organizations, as well as their customers, to achieve their sustainability goals.

Introduction

According to the U.S. Environmental Protection Agency (EPA), 80% of all the greenhouse gas emissions (GHG) come from carbon dioxide (CO2). Transportation activities accounted for 28.7 percent of U.S.
greenhouse gas emissions and 34.5% percent of carbon dioxide emissions across all industries in 2019. It is easy to see why sustainability and green practices are of such importance in commercial transportation (see Figure 1).

![Figure 1: 2019 Sources of U.S. GHG Emissions](image)

Implementing sustainable practices also benefits transportation companies and their customers, as many green strategies also reduce costs long term, such as fuel tax, maintenance, fuel expenses and labor.

Emissions are often expressed in metric tons of CO2. To put it into perspective, a ton of CO2 would fill a modest one-story house with a footprint of 1,250 square feet (116 square meters) and an average height of 13 feet (3.9 meters).

Furthermore, governments will impose further regulations around emissions. To speed up the emission-reduction process, the California ACT Rule puts regulations in place that require the sales of all medium- and heavy-duty vehicles to be zero-emission vehicles by 2045, and several states are following California's lead. EU regulations require a 15% reduction in emissions for large trucks from 2025 on, and a 30% reduction in emissions from 2030 on. Noncomplying fleets will face hefty fines.  

According to the 2020 Gartner Sustainability Survey, customers are one of the main stakeholders that drive organizations to focus on sustainability and initiatives to improve their environmental footprint (see Figure 2). Besides customers, investors and regulators are the top stakeholders for the organization.
to invest in sustainability. The COVID-19 pandemic has also increased momentum for environmental change. Just under half (49%) of the participants in our sustainability survey outlined that the pandemic has increased the pace of environmental sustainability efforts; one-third (35%) said there was no impact; and 17% said the pandemic has deprioritized these initiatives. Seventy percent also said the pandemic has boosted the priority of social issues in their organizations.

Figure 2: Stakeholders Driving Sustainability Focus

**Top Three Stakeholder Groups Creating Pressure to Invest in Sustainability Initiatives**

<table>
<thead>
<tr>
<th>Stakeholder Group</th>
<th>First Choice</th>
<th>Sum of Top Three</th>
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<tbody>
<tr>
<td>Customers</td>
<td>20%</td>
<td>63%</td>
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<tr>
<td>Investors</td>
<td>23%</td>
<td>48%</td>
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<td>Regulators</td>
<td>19%</td>
<td>46%</td>
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<td>Employees</td>
<td>15%</td>
<td>45%</td>
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<td>Public</td>
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<td>NGOs and Environmental Activists</td>
<td>5%</td>
<td>21%</td>
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<tr>
<td>Politicians</td>
<td>2%</td>
<td>14%</td>
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<tr>
<td>Supply Chain</td>
<td>3%</td>
<td>13%</td>
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<tr>
<td>Other</td>
<td>2%</td>
<td>7%</td>
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n = 183; all respondents
Q: What are the top three stakeholder groups creating pressure for your organization to act on/invest in sustainability initiatives?
Source: 2020 Gartner Sustainability Survey
Note: First choice totals may not equal 100% due to rounding.

Analysis

Create a Clear Strategy Around Sustainability

There are many ways companies want to be more sustainable and environmentally conscious.

In transportation, a large part of the focus is on reduction of carbon emissions, which is part of the environmental supply chain targets over the next 18 months (see Figure 3).
Logistics leaders on an emissions reduction journey are already measuring performance, using standards such as the GLEC framework, and many have put in place optimization strategies (see 3 Transformative Partnerships to Accelerate Transportation Emissions Reduction).

In transportation, the main focus in sustainability is for organizations to reduce their carbon footprint.

There are several ways to accomplish this. One way would be to invest in technologies that either reduce the current carbon footprint, such as optimized routing. Another way would be to invest in newer technologies that replace current heavy emission assets, such as replacing a diesel truck with an electric vehicle or hydrogen-fuel-powered vehicle. Another way is to use carbon offsets. A transport carbon offset can be leveraged to decommission the oldest, dirtiest vehicles and vessels using carbon as a metric, see Transport Carbon Offsets.

Recommendations:
Identify the Technologies That Reduce Carbon Footprint

Transportation is a major contributor to pollution and creator of CO2 emissions. These emissions come mainly from aviation, shipping, trucking and passenger cars. In this note, we focus on the different modes of transportation used to move goods in the Supply Chain (see Figure 4).

There are many ways companies can use technology to reduce their carbon footprint. See the different types of technologies that exist for the different modes of transportation in Table 1.
### Table 1: Carbon Reduction Technologies by Mode of Transportation

**Enlarged table in Appendix**

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<tr>
<th>Mode of Transportation</th>
<th>Technologies to Improve Sustainability</th>
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                          ■ Application Technologies  
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| Ocean/Ports            | ■ Asset Technologies  
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                          ■ Application Technologies  
                          ■ Container Management  |
| Air                    | ■ International Carbon Dioxide Emissions Standards  
                          ■ Hydrogen Fuel Planes  |
| Last Mile              | ■ Electric Last-Mile Vehicles  
                          ■ Urban Delivery Robots  
                          ■ Bicycles/E-Bikes  |

*Source: Gartner (June 2021)*

**Road — Asset Technologies**

**Electric Vehicles**

Electric vehicles (EVs) use battery-stored electricity to power one or more electric motors or traction motors for propulsion. They are recharged by connecting the vehicle to a public or private charging infrastructure. Continued R&D efforts into developing battery technology to achieve longer driving ranges are crucial to make EVs a viable alternative powertrain technology for passenger and commercial vehicles.

One truck has the same carbon footprint as 14 people in a year: 223 tons of carbon dioxide (CO2) emissions. The lack of infrastructure and the cost to put the infrastructure in place might outweigh the advantages of the EV.

**Hydrogen Fuel Cell Vehicles**
Hydrogen fuel cell vehicles are a great option in the green vehicle arena. A fuel cell is a device that converts chemical potential energy into electrical energy. Hydrogen fuel cells require hydrogen combined with oxygen (air) and produce water, heat and electricity. This technology (when including a hydrogen tank) is an alternate energy source to battery storage. With the trucking industry pressure to reduce CO2e emissions reinforced by sharply rising road tax for diesel trucks, it provides motivation to move to greener fuel sources. Fuel cells have greater range and faster refueling than battery power alternatives. However, huge investments in the total supply chain are needed for this new energy source. According to the Gartner Hype Cycles, the time to mainstream adoption is more than 10 years. There have been a number of partnerships to develop fuel-cell-powered trucks, including Daimler Group and Volvo Group, Nikola and VectraIO, Toyota and Hino Motors, and China-backed Foton Motor Group (see Hype Cycle for Automotive Technologies, 2020).

Biofuels
In April 2021, the U.S. Department of Energy (DOE) announced $61.4 million for technologies that produce low-cost, low-carbon biofuels. Biofuels are derived from renewable resources, and can power heavy-duty vehicles that are difficult to electrify with current technologies — including airplanes and ships — to help accelerate America's path to a net-zero emissions economy by 2050. Biofuels are produced by converting biomass — made up of recently-living organic materials like crop waste, food waste and algae — and other waste resources into a liquid fuel. Biofuels can serve as a low-carbon equivalent to fossil-based fuels, such as gasoline, jet and diesel fuel. ³

Alternative Fuel
There are also other alternative fuel options, such as renewable natural gas and compressed natural gas. Many of the world's largest companies have already implemented sustainable strategies. The Coca-Cola Co. will reduce emissions by 30% by 2030 and be carbon neutral by 2040; IKEA will be climate positive by 2030; AB InBev will reduce emissions by 25% by 2025; and Amazon will be carbon neutral by 2040.

Anheuser-Busch, a wholly owned subsidiary of global brewer AB InBev, will convert 30% of its dedicated fleet to renewable natural gas (RNG). The vehicles will travel more than 8.5 million miles each year. Anheuser-Busch has also placed an order from Agility Fuel Solutions to equip new Class 8 trucks with compressed natural gas (CNG) fuel systems that can run on RNG. In 2014 and 2015, the company had already converted 160 diesel trucks in Houston and St. Louis to CNG engines.

In 2020, AB InBev moved several loads through the digital freight platform sender using an alternative fuel vehicle, combining digital freight with sustainability.

Cleaner Diesel
Besides looking at alternatives for diesel, companies are also looking at cleaner ways to use combustion engines to lower CO2 and nitrogen oxides (NOx) emissions. The Ultra-Low NOx Heavy-Duty Truck Demonstrator program is part of California Climate Investments. CALSTART is managing the project, which includes collecting and analyzing emissions and performance data of the engines used in
multiple OEM trucks. Walmart is one of the companies piloting this technology as part of their goal of zero emissions and zero carbon. In Phase 2 of the project, the company realized a 7% reduction in CO2 and a 96% reduction in NOx.  

**Truck Platooning**

A form of autonomous trucks is used in truck platooning, where the first truck has a driver and the other trucks are self-driving, using connected vehicle technology to follow the leading truck. Platooning provides less drag, and hence, less fuel consumption, leading to a more sustainable form of transportation. Fuel reduction can reach up to 5% for the leading vehicle and 10% for the following vehicles.

Companies like Volvo, Tesla, Peloton and Locomotion are developing capabilities for platooning.

**Trailer Yard Vehicles**

Yard trucks, also known as hostlers, terminal tractors or goats, pull cargo containers and semitrailers in freight or intermodal yards or at large manufacturing sites. These vehicles are Class 8 trucks and they operate almost continuously with maximum loads of around 80,000 pounds between the trailer and tractor. Most of these vehicles are diesel powered, creating huge amounts of diesel exhaust.

Vendors such as Outrider offer electric alternatives to these diesel-powered terminal tractors and also eliminate manual tasks that are hazardous and repetitive (see Cool Vendors in Supply Chain Execution Technologies).

**Use Case: Frito-Lay Replaces All Diesel Vehicles at California Facility With Cleaner Tech**

Frito-Lay has largely completed the transformation of a snack food facility in California to use zero-emission and near-zero-emission technologies for production and transportation.

The company has replaced all of the diesel vehicles at its Modesto, California, site. It is now using 12 Crown lithium-ion electric forklifts and three BYD yard trucks for internal operations at the 500,000-square-foot factory, and six 220EV Peterbilt electric box trucks to distribute snacks to local retailers. A fleet of 38 Volvo VNL compressed natural gas tractors is handling larger local and regional hauls.

Later this year, Frito-Lay is scheduled to take delivery of 15 electric Tesla Semi rigs, also for regional hauling.

**Road — Application Technologies**

**Transportation Optimization**

Transportation costs are directly related to fuel consumed and distance traveled and, as such, optimizing on cost inherently reduces carbon footprint. Transportation management systems have optimization engines that create fewer, more consolidated shipments using more efficient modes of transportation (see Magic Quadrant for Transportation Management Systems). This optimization leads to cost savings and greater utilization and efficiency, and hence, directly improves sustainability. Optimized routes
increase efficiency from point A to B and may reduce each truck’s fuel consumption by 10 to 15 percent (see How to Calculate the Return on Investment for a Transportation Management System).

Fuel Optimization

A fuel optimization system allows a shipping company to reduce fuel consumption. Fuel consumption optimization systems not only provide the amount of fuel used during the trip, but also provide additional data related to fuel usage. Breakthrough is one of the technology vendors that companies can use to lower emissions. The company’s technology calculates the cost of fuel for truckload, intermodal and ocean freight. The resulting data is used to provide a business intelligence (BI) platform showing fuel consumption, forecasts and carrier compliance. The solution helps manage fuel and reduces costs by an average of 28%. Consumption is also reduced, thereby lowering harmful emissions.

Trailer Optimization

Fill rates in trailers have historically been underperforming. The increase in e-commerce movements, where transportation is a race against time (and not load optimization), has had a negative impact on trailer load fill rates. Some vendors, such as Zebra SmartPack, offer solutions that use real-time visibility to optimize trailer loading, enhance worker productivity and reduce operational costs. As load percentages increase, the numbers of trailers that are used decrease and so do carbon emissions as well as transportation costs.

Transportation Visibility Platforms

Providing visibility is a core part of supply chain technology, and it plays a complementary function that supports different supply chain functions, such as transportation management, warehouse management, yard management and fleet management. It allows logistics leaders insights into what is happening in the organization as well as outside their organization to control end-to-end processes. These solutions can also provide valuable insights in the carbon footprints of the shippers and highlight areas where carbon emissions can be reduced (see Magic Quadrant for Real-Time Transportation Visibility Platforms).

Road — Digital Freight Networks

Digital freight networks are freight marketplaces that use machine learning, automation and other software services to efficiently connect shippers and domestic carriers. These digitized freight networks can help companies identify real-time available capacity and reduce transportation costs during the current crisis as well as during future turns in the transportation industry. Several of the vendors have also started looking into providing more sustainable solutions to their shipper customers. One of those vendors is Convoy, who helps customers identify and make decisions to improve the sustainability of their transportation across and environmental and social performance. A few of the methods used to accomplish this are automated reloads/batched shipments, green appointment windows, eco-driving fuel-efficiency training and the use of carbon offset programs.

Road — Coalitions
Shippers with common goals have created coalitions that focus on emissions and work together to improve their carbon footprints.

The most notable coalitions are:

- **GLEC**: A voluntary partnership of companies, industry associations and green freight programs, backed by governments and other stakeholders. They developed the GLEC framework for logistics emissions accounting and reporting.

- **EPA developed the SmartWay program**: The SmartWay Transport Partnership is a business organization administered by the U.S. government and designed to encourage businesses to manage logistics in an environmentally responsible way. The program was formed in 2004, and is administered by the U.S. Environmental Protection Agency (USEPA) and is housed within the USEPA’s Office of Transportation and Air Quality (OTAQ) — Transportation and Climate Division (TCD). SmartWay aims to voluntarily achieve improved fuel efficiency and reduce environmental impacts from freight transport. SmartWay currently has approximately 600 member businesses; membership is voluntary. The organization provides incentives and recognition for top performers to encourage continued improvement.

**Ocean/Port — Asset Technologies**

**Hydrogen Fuel Ocean Vessels**

Hydrogen fuel cells for ocean-going ships and inland waterways are gaining more interest.

Hydrogen fuel cells continue to be viewed as one of the most promising technologies to meet the maritime industry’s goals to reduce and eliminate greenhouse gas emissions. A broad range of companies are all working to develop the technology, with two additional programs joining the efforts to use the technology in the propulsion of an increasing range of shipping.  

Joining global shipping giants like NYK and CMA CGM Group, No. 2 ocean carrier MSC joined the Hydrogen Council in early 2021. MSC joined as a steering member, vowing to accelerate R&D on clean hydrogen-derived fuels. Other big names that are already part of the leading hydrogen research council are the Port of Rotterdam and industrial behemoths like SABIC, Anglo American and Uniper.

**Electric Port Assets**

The ports of Long Beach and Los Angeles in California deploy zero-emissions vehicles at some of their terminals, as they continue testing technology that will help them become more eco-friendly. Both ports have made it their goal to fully transition from diesel-powered to zero-emission cargo-handling equipment by 2030.

**Ocean/Port — Application Technologies**

**Container Management**
Container management helps the transportation industry reduce carbon emissions by standardizing and providing easy-to-use tools for reuse, pick up or drop off empty containers. E2open is one of the companies that helps organizations to reduce carbon emissions through container reuse transactions. In most cases, the truck driver transports a full import container from the port to the customer and drives back empty to the port. By triangulating street turns, the trucker finds an export shipment ready for pickup before taking an empty trip back. Hence, empty miles are reduced and carbon emissions decrease, leading to millions of dollars in total savings.

Air
The EPA, along with the Federal Aviation Administration at the United Nations’ International Civil Aviation Organization, have developed international carbon dioxide emissions standards for aircraft. The EPA is also now working through the process of potentially setting domestic regulations under the Clean Air Act that address GHG emissions from certain classes of engines used in aircraft.

Airbus unveiled three design concepts, including the turboprop in 2020, when it said it would focus on hydrogen technology to tackle the problem of growing carbon dioxide emissions. While Airbus moves ahead with its zero-emission plans, Boeing has said that hydrogen technology is still decades away, and is focused on developing planes that can use sustainable aviation fuels.

Last Mile
In recent years, the retail industry has become obsessed with reducing fulfillment lead times for orders driven by online shoppers’ expectations. In some cases, this path has been taken by retailers that have chosen to follow market trends and actions of high-profile retailers rather than to comprehensively canvas the opinions of their consumers, around which they could build fulfillment strategies.

By failing to obtain a clear signal of consumer requirements, many retailers have instead taken their lead from the activities of their competitors and the wider market. In doing so, retailers have based the design of their fulfillment operations on an assumption that a consumer’s sole desire is to receive orders more quickly. This has created an unchallenged race toward fulfillment speed becoming the dominant barometer of retail operational excellence.

While this race has been taking place and more retailers decide to join in, consumer sentiments toward fulfillment speed have been changing. Retailers that failed to receive a clear consumer mandate and have become blinded by the need to fulfill faster and faster are now even more detached from the shifting demands of their consumers (see The Need for Multispeed and Sustainability in Retail’s Last Mile).

These shifting demands have seen the emergence of two new key requirements that conflict with the current operating models of many retailers, forcing retailers to:

- Be more environmentally sustainable in their fulfillment operations.
In a 2020 study, 64% of Asia/Pacific (APAC) respondents maintained they would pay more for an eco-friendly product. Brands that champion this approach are often praised publicly, engaging customers and strengthening the foundation for future loyalty with those who identify strongly with sustainability and ethics in their buying behavior.  

This drive to be more environmentally sustainable in their fulfillment operations has led shippers to invest in the following technologies:

**Electric Vehicles for Last Mile**

**United States**

In the U.S., Amazon will invest $2 billion in sustainable vehicles through a partnership with Rivian. Amazon will purchase 100,000 electric delivery vans from Rivian to be produced by 2030, with the first delivery of 10,000 by end of 2022. The initial Rivian Prime delivery vans are scheduled to have a single battery pack with a 150-mile range.  

**United Kingdom**

Arrival is introducing a fully electric van that excels across both payload (1,975 kilograms) and cargo volume (2.4m3 per meter in length) at a price comparable with fossil fuel vehicles, and with a substantially lower total cost of ownership (TCO). These vehicles will hit the road in the summer of 2021, performing pilots with several customers. In 2020, UPS announced an order of 10,000 electric vans from Arrival. The initial 10,000 vehicles will be rolled out in the U.K., Europe and North America from 2020 to 2024. UPS also invested in Arrival through its UPS venture capital arm.  

**India**

The third-party logistics service provider, FM Logistic India, is deploying its first batch of electric vehicles in Bengaluru for the intra-city last-mile delivery. These EVs are three-wheelers with a load capacity of 500 kilograms. The vehicles take approximately three hours for charging and can cover a distance of about 80 kilometers in a single charge. The EVs will be used to carry out hyperlocal deliveries to local Kirana stores, supermarkets as well as end consumers for WayCool.  

**Urban Delivery Robots**

Urban delivery robots are increasingly viewed as a potential option for last-mile deliveries over the next five to 10 years. The COVID-19 pandemic has caused a boom in online food and shopping deliveries, and the “contact-free economy” that drives additional interest and investment in urban delivery robots.

These robots can help to remove delivery trucks from the road, at least in congested areas. Urban delivery robots are electric vehicles. If the electricity is generated from renewable energy, then there will be zero emissions. In addition, they run quietly, meaning deliveries could be made during the nighttime.
Urban delivery robots provide sustainable and less-expensive delivery options, especially in urban centers. Aside from saving money, some retailers, restaurants and other groups view last-mile delivery robots as a way to improve customer service and differentiate themselves from their competition (see Supply Chain Brief: Urban Delivery Robots Make Slow Progress in Drive for Last-Mile Delivery Solution).

Companies such as Amazon, FedEx, Starship and Uber are developing, piloting and deploying these delivery robots with the goal of reducing the costs of last-mile deliveries. They have been rolled out in the U.K., Japan, the U.S. and elsewhere.

Bicycles/E-Bikes

Electric-assisted cargo bikes (e-cargo bikes) can be a viable alternative for last-mile delivery. It uses an electric motor in order to haul more freight or travel challenging distances. According to DHL Express, e-cargo cycles have the capacity to carry 400 pounds of cargo, and each one saves an estimated 101,000 kilograms of CO2 emissions annually. That's the GHG equivalent that about 22 passenger cars emit in a year, according to the EPA. Parcel delivery companies such as UPS, DHL and Amazon, along with restaurants and food delivery companies, are deploying an increasing number of e-cargo bikes in major urban areas. In the U.K., delivery bikes are replacing delivery vans in London as they provide more sustainable solutions for the last mile. The new Ultra Low Emissions Zone charges do not apply for noncombustion engine vehicles, and the cost of investment and operations is far lower than, for example, a diesel van. After analysis, it was determined that the bikes were actually twice as fast; the bikes could go around heavy traffic congestion and also take routes nonaccessible to larger vehicles.

Amazon has about 200 e-cargo bikes in New York that it uses to make deliveries from three Whole Foods locations in Manhattan, Williamsburg and Brooklyn. Each bike carries up to 45 packages.

Recommendations:

- Accelerate greenhouse gas emissions improvement by identifying new technologies for modes and markets the enterprise operates in.

- Identify the most prevalent transportation modes where first-mover advantages can be gained among asset technologies and application technologies for greenhouse gas reductions.

- Participate in industry associations and coalitions, such as GLEC and SmartWay.

Collaborate With Other Organizations

As transportation capacity and cost challenges rise, and as customers require more efficient delivery of products, shippers will have to look at collaboration as a way to secure capacity, reduce costs, improve sustainability and more efficiently deliver customer orders.

Some examples of transportation collaboration scenarios:

- Shippers collaborating with suppliers and customers on more efficient transportation scenarios.
Part of the outcome of collaboration is a reduction in trucks used, miles driven and other factors resulting in improved sustainability.

Here are some platforms companies use to enable collaboration:

- **FourKites**: FourKites’ network visibility allows shippers to collaborate on the network through identification of empty lanes. Its algorithms allow these empty lanes to be utilized by the partners on the network, and hence, reduce empty miles and CO2 emissions.

- **Lanehub**: Lanehub automatically identifies and connects companies with complementary freight lanes to find efficiencies and save on shipping expenses as well as reducing empty miles, increasing load percentages and decreasing CO2 emissions.

- **SemiCab**: SemiCab is a cloud-based platform, built to predict and optimize millions of loads and hundreds of thousands of trucks. SemiCab uses optimization techniques across multiple shippers to eliminate empty lanes and empty miles, and hence, increase performance, lower costs as well as have an impact on truck capacity and environmental impact.

**Recommendations:**

- Collaborate with other organizations as well as their customers to obtain their sustainability goals.

- Alert customers to the impacts their shipping choices have on the creation of greenhouse gas emissions by providing transparent data and analysis.

**Evidence**

*This research is drawn from extensive research drawn from interactions with both end users as well as service and technology providers during 2020 and 2021.*


ShipStation Happy Customers, Healthy Planet Report 2020

Amazon’s Rivian Prime Electric Delivery Van Deep Dive: What’s in the Box, MotorTrend.

Arrival Unveils Electric Van Taking to Public Roads This Summer, Arrival.

FM Logistic Deploys Electric Vehicles in Bengaluru for Intra-City Delivery, Indian Transport & Logistics News.

Will E-cargo Bikes Take Over Last-Mile Delivery?, FreightWaves.

2020 Gartner Sustainability Survey

The study was conducted to understand how stakeholder (customers, employees, investors, regulators and partners) pressure for more aggressive economic, social and environmental sustainability action is growing and identify best practices from early adopters to provide sustainability advice to the Gartner clients. The study explores different sustainability goals/targets set by organizations and how the level of investment in the sustainability programs has changed over time. It also focuses on the value and benefits derived from the sustainability programs.

The research was conducted online during Nov-Dec, 2020 among 183 respondents from North America, Europe, APAC across all industries except Energy and Utilities, in $250 Million or more USD in annual revenue. Respondents were screened for Director level or above and their level of involvement in their organization's sustainability. Any respondent whose organization did not engage in sustainability activities at all or was limited to achieving compliance was screened out.

The study was developed collaboratively by Gartner Analysts and the Research and Data Analytics Team.

Gartner’s Future of Supply Chain Survey, 2020

In September and October 2020, Gartner Supply Chain Research sent invitations to complete an online survey to its community members, to Gartner clients, and to a wider group of practitioners in supply chain and other functions globally. We received 1,346 completed responses during the survey period for
this 2020 Future of Supply Chain Survey. We had participants across industries, e.g., high tech (20%), healthcare & pharma (14%), CPG (11%), industrial (10%), food & beverage (9%) and retail (9%), and mostly worked in supply chain related functions, e.g., supply chain (49%), logistics/transportation and distribution (9%), purchasing/procurement (9%) and operations (7%). Of the respondents, 57% were from North & South America, 29% were from EMEA, 13% were from Asia & Australia and others were from the rest of the world. 63% of the participants were from $10bn plus companies. 62% of the participants were at VP/director level or above.

Recommended by the Author

Executive Pulse: Sustainability and Business Strategy Converge

3 Sustainability Trends Shaping Supply Chains in 2021

Autonomous Trucking 2021: Readying to Disrupt Global Supply Chains

The Need for Multispeed and Sustainability in Retail's Last Mile

3 Transformative Partnerships to Accelerate Transportation Emissions Reduction
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