

2023 State of Drayage

First Mile in Logistics: Challenges and Future Growth

Carriers competing in the complex, risky, and highly regulated drayage market have reached a turning point: manual, outdated operations are no longer an option.

Drayage carriers must embrace technology and digitize for the modern era to take advantage of new opportunities in the years ahead.



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A critical moment for drayage

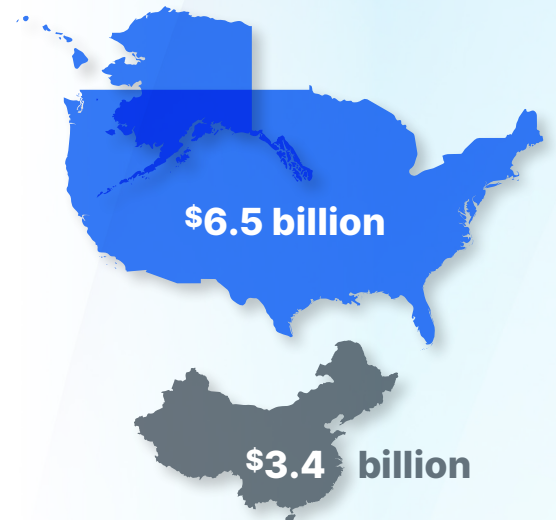
The world of transportation is rapidly evolving and the drayage market is in a unique position to capitalize on ongoing demand for globally sourced goods. As providers servicing the crucial first mile of the supply chain — transporting goods from “port to door” — drayage carriers play a vital role in keeping commerce moving from point of origin to point of destination.

This comprehensive report will take readers behind the scenes of the drayage world to examine its crucial importance to the supply chain and highlight the transformational role technology can play in modernizing the industry. The term “drayage” refers to a specialty logistics service, which carries freight over short distances, mainly in the same metropolitan area between ports, facilities, rail yards, or other shipping hubs.

5 Key Takeaways

- 1 The U.S. drayage market’s impact on the economy is massive, and poised to grow from \$6.1 billion in 2022 to \$8.3 billion by 2027.¹
- 2 Primary growth drivers come from a global increase in consumer demand for e-commerce. Areas to keep an eye on for more future growth include: electronics, food and beverage, autos, chemicals, oil and gas, and pharmaceuticals.
- 3 Drayage is a critical industry, on the front lines of the supply chain — yet at a technological crossroads. Growth-minded drayage carriers are embracing technology to digitize operations and improve efficiency and services. Hindered by manually-based systems, carriers now recognize that adopting technology is the only way to survive today.
- 4 Forecasts call for increased investments to strengthen the infrastructure of the entire port ecosystem — all to accommodate growth in consumer spending and imports. This impacts all the players - with improvements to bridges (e.g. heightening to accommodate larger ships); new equipment (e.g. cranes); new larger vessels; overall operation expansion; new technologies; and more employees.
- 5 A sustainable future is top of mind, but slow in adoption. Carriers share concerns for building infrastructure to support e-fleets and other AI opportunities on the road, and in warehouses.

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How big is the drayage market?

The U.S. easily ranks as the largest drayage market in the world, representing a market size of \$6.5 billion in 2022 – nearly double China’s \$3.4 billion market. The U.S. market is expected to expand to \$8.3 billion by 2027 – a compounded annual growth rate of 5.07%. At that rate, the U.S. will make up 29.35% of the world’s drayage industry in four years (up from 25.61% in 2022).²

Globally, the drayage services market was valued at more than \$25.2 billion in 2022 and is estimated to grow to more than \$28.2 billion in 2027. Estimated annual growth globally is projected to range from just 1.06% in 2023 to 3.87% in 2027. Growth is expected to come from market share, making competition fierce. With capital requirements high, new entrants to the market will be limited – so that the growth will be concentrated on existing providers.³

Drayage plays a critical role in the economy in the import-heavy United States, where the trade deficit neared \$1 trillion in 2022.⁴ However, despite its critical place on the front lines of the supply chain, drayage historically has been overlooked and unsung – its perception not matching its importance. The result is an entire link in the supply chain that frequently is taken for granted.

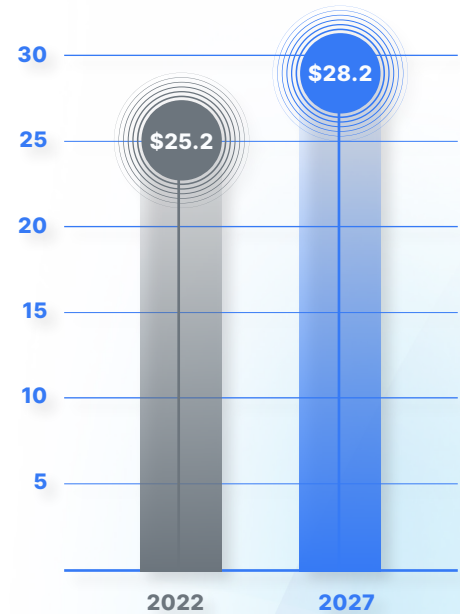
Drayage routinely being neglected can be traced in part to the deceptive simplicity of the process – moving containers over short distances, such as from a port to a rail yard, trucking hub or warehouse. As a result, the challenges that carriers in the field face can be minimized. For instance, drayage carriers are heavily reliant on the infrastructure outside of ports' gates, which is often congested or in poor condition, according to the Report Card for America's Infrastructure, which noted that just 9% of intermodal connector pavement — the portions of roadway that connect a port to other modes — are in good or very good condition⁵. Overall, ship drayage represents the largest segment of the global market with an estimated size of \$9.7 billion by 2027 with rail (\$9.4 billion) and truck (\$9.1 billion) close behind.⁶

Rail drayage is also expected to grow globally 2.24% by 2027, though at a slower rate than the overall market. The rail category's strength lies in part in its flexibility, as it encompasses rail-to-rail, rail-to-sea and sea-to-rail transportation.

There are multiple players in this field – from drayage carriers and freight forwarders to shippers and port authorities – resulting in complexities and a lack of cohesion and consistency in how they operate. This leads to confusion not only among carriers but among the partners who work with them.

The need to interact with so many varied players can lead to complications that drive pain points and inefficiencies for drayage carriers. This fragmented framework makes it challenging to manage, coordinate, and optimize drayage activities effectively. For drayage carriers, efficiency can be more about the status of their partners than their own efforts. The result is that they can feel boxed in, constrained by the many different parties and stakeholders involved. Consequently, carriers must delicately balance the needs and processes of all their partners, deftly threading the needle to succeed.

Global market size of drayage in billions



Growth is expected to come from market share, making competition fierce.

The whiplash of the market in recent years

Drayage was at the center of the storm when congestion choked the ports, particularly on the West Coast, and customers throughout the country faced delays on the deliveries of products. News coverage focused on the backups at the ports, and drayage carriers encountered long lines that drastically hampered their productivity.

Demand for drayage skyrocketed, and drayage carriers grew to meet that demand – while seeing their profile raised dramatically. “During the pandemic, more people began to understand that getting the first mile right is just as important as getting the final mile right,” said Emmanuel Carrillo, CEO of Talon Logistics, a California-based provider of freight solutions specializing in port/rail drayage, warehouse-to-warehouse solutions, and logistic solutions.

Recently, cargo volumes have slowed, particularly on the West Coast, a consequence of a host of unexpected global challenges that include Russia’s invasion of Ukraine, high inflation and higher interest rates in the U.S. Those factors, in addition to an inevitable leveling-out after the robust recovery from the COVID-19 pandemic, have weakened demand in the U.S. and Europe, in particular, and curbed global trade growth. Imports at some of the nation’s busiest container ports fell at a double-digit annual pace for several months to start the year.⁷

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**— Emmanuel Carrillo, CEO
Talon Logistics**

How are drayage carriers coping with lower demand?

Drayage firms that beefed up their staffs and resources to contend with the demand of the pandemic now are struggling to find enough work to keep their workers occupied, and to make monthly payments on new equipment. Today, carriers are working hard to attract business. In those circumstances, Carrillo said drayage operators have been forced to adjust and seek ways to provide “value add” services to their clients, such as providing space solutions and chassis at discounted prices. “It’s about being a good partner and helping them find value,” Carrillo said. Many are leaning on their warehousing services to pick up the slack of their trucking divisions.

Some industry experts believe the drayage field will constrict. “[Federal Motor Carrier Safety Administration] authority revocations have been at all-time highs,” said

Kerry Byrne, president of Cincinnati-based Total Quality Logistics. “While the data isn’t broken out by equipment type, the information is signaling that the surge of new authorities [of motor carriers] that occurred in late 2020 and through early 2022 are exiting the market. Carriers now face lower rates and higher fixed equipment costs that make business financials unsustainable for many,”⁸ he added.

Long-term prospects are more favorable. Seaborne trade is expected to see particularly strong growth in the years ahead, helping to drive drayage growth. Experts predict the global marine port services market will grow from \$73.91 billion in 2021 to \$101.98 billion in 2028, due to increased demand for globally manufactured electronics, food, pharmaceuticals, metals, and more.⁹

The electronics and electrical category is the largest end user of drayage, representing about 43% of the global market with a market size of \$10.9 billion in 2022, followed by food and beverage (\$5.1 billion) and consumer goods and retail (\$4.3 billion). Those segments are expected to see continuing growth, as are other key categories that include autos, chemicals, oil and gas, and pharmaceuticals¹⁰. Cargo volumes at many ports may have dropped sharply in the initial months of 2023, but volumes remain higher than they were before the pandemic, suggesting a return to normal trade patterns rather than a cargo collapse.¹¹

In North America, the drayage services market is expected to benefit from an increase in freight volumes at U.S. ports of entry.

The biggest drivers of growth are:

- **Increased trade between the United States-Mexico-Canada** (USMCA) during the next five years as a result of growth in industrial manufacturing and consumer spending.
- **Increased e-commerce** via online shopping is driving global business and will continue to create more demand for drayage, particularly cross-border e-commerce in the U.S., China, Singapore, Indonesia, Australia, France, Mexico and India.
- **Increased free trade agreements between countries** promise to encourage manufacturers to import and export more products.

7 Key Challenges Drayage Carriers Face Today

Drayage carriers of all sizes face similar issues including:

- 1 Costly Fees** This includes demurrage and detention per diem and pier pass fees which are charged when containers are not loaded or unloaded within the specified time at the port. In addition, drayage carriers are often at the whim of market conditions when it comes to time frames around demurrage and detention. If ports need to speed up or slow down the flow of goods to optimize market conditions, they may alter their requirements and either increase or decrease the turnaround times on containers.
- 2 Pier Congestion** When ports and piers are overloaded, it means longer wait times for drayage carriers. This, in turn, delays the delivery of goods, which can lead to increased transportation costs and reduced efficiency.
- 3 Asset Utilization** When determining how best to utilize their assets, drayage carriers must factor in demand fluctuations, their own capacity constraints plus equipment constraints at ports, as well as downtime for maintenance and repair on their trucks.
- 4 Recruitment and Retention Issues** During COVID, carriers staffed up to meet demand and now need to balance workloads with seasonal demands without letting anyone go. Shortages of skilled warehouse workers also can cause delays at the end of the drayage process, and labor issues at prominent ports create costly interruptions and slowdowns.
- 5 Operations and Communication** There are multiple stakeholders influencing a container's journey. At any given time carriers are juggling port congestion, equipment shortages, container imbalances, and seasonal fluctuations. Managing all of these factors and the various players requires expertise and patience.
- 6 Increasing government regulations are a persistent challenge for drayage firms.** Compliance with regulatory measures around safety factors, environmental issues, and labor laws can be costly, especially for smaller firms that may not have the resources to invest in the necessary technology, training, and equipment.
- 7 Uncertainty in fuel prices.** Volatility in crude oil prices affect the margins of freight carriers.

The transition from a low-tech past to a high-tech future

Among its greatest obstacles to growth and progress, drayage must contend with a notoriously low-tech, manual history. The lack of tech-enabled visibility and communication in drayage created pandemonium, resulting in port congestion. Michael Mecca, CEO and founder of PortPro, estimates that a staggering 75% of drayage carriers still use Google Sheets, leading to inefficiencies throughout their operations. There are many reasons for the industry's slowness to incorporate technology, including a lack of resources and expertise at many carriers, the complexity of adopting new tools, and a perception that new tech tools were unnecessary.

The field also has unique obstacles to navigate. For instance, drayage has a variety of partners with their own tech tools, and those preferences influence the decisions that drayage carriers make – creating a major roadblock to true integration with other systems.

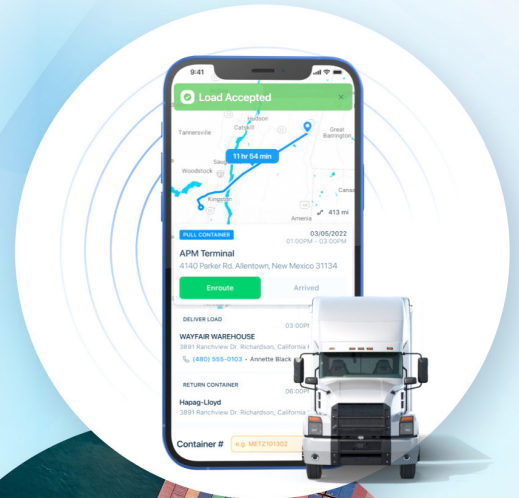
However, tech usage is on the rise since the pandemic. Drayage is entering a new phase of technology adoption with widespread use of tools such as transportation management systems (TMS) and GPS. The challenges heaped upon drayage carriers during the pandemic inspired them to become more innovative so that they could work better and faster – and that meant turning to technology with fresh intensity.

The benefits of digital drayage

The drayage field's previous slowness in adopting technology means that the industry could make major, consequential gains with a more ambitious approach to tech. For instance, widespread digitization in the industry could lead to real-time tracking that transforms drayage. Shippers have long been able to track their containers on steamship lines but once a vessel reached the port their visibility often would go dark.

This lack of visibility leads to costly headaches like containers and equipment being double-handled, and drivers stuck waiting in line at marine terminals. It also causes a whole host of operational inefficiencies that ripple across the enterprise for drayage carriers.

An increased emphasis on sustainability is poised to bring electric trucks to drayage on a large scale. Drayage is a natural fit for the technology because of the trucks' relatively short trips and frequent need to idle to load and unload containers. Similarly, drayage often is cited as a potential early adopter of autonomous vehicles because of the relative predictability of the trucks' routes.



Drayage experts such as Carrillo and Mecca believe autonomous vehicles in the field would still need drivers rather than being fully autonomous, using autonomous functionality and features to improve the driver experience and attract more people to the role. Carrillo said one of the promising developments to come out of the pandemic was that technology providers now are paying attention to drayage in a way they had not before, tailoring solutions to meet drayage's unique needs rather than simply directing their resources to serving full truckload or LTL trucking. That trend promises to make technology adoption more feasible for many drayage carriers. A more connected future promises to reshape the industry and the way it does its business. Technologically savvy ports can help push drayage in new, beneficial directions, and some European ports are breaking new ground to demonstrate how.

For instance, George Lawrie, vice president and principal analyst for Forrester Research, pointed to the ports in Rotterdam and Hamburg applying advanced analytics to data to more effectively synchronize drayage with release of consignments from ports. In addition, the Rotterdam port built a digital twin of berths and assets – virtual representations of them that allows for virtual testing of scenarios involving them – to more effectively turn around vessels and vehicles, including drayage trucks.

At Hamburg, Lawrie noted, the port uses the Internet of Things to trigger messages to trucks to collect their consignments, helping them avoid clogging the streets of the city. "Most vessels declare their unloading sequence to port authorities long before they are assigned to berths, but previously there was little incentive to use the data to reduce driver waiting time," Lawrie said.

Innovative new drayage tools mark the road ahead

The bottlenecks at the prominent West Coast ports that attracted near-feverish media attention also led many U.S. importers to shift more of their freight to East Coast and Gulf Coast ports. That shift was not solely temporary – a report from Cowen suggested that the West Coast could permanently lose as much as 10% of the seaborne cargo that has been diverted to the East Coast and Gulf Coast in recent years. The East and Gulf Coast ports have gained 3.2% of market share just since May 2022. Consequently, drayage operators will continue to face pressures to add new locations or even relocate to the East Coast to chase cargo. In addition, new environmental and labor regulations in California are creating challenges for carriers. For instance, California's new Advanced Clean Fleets rule requires all new medium and heavy-duty vehicles sold or registered in the state to be zero-emission by 2036, and will ban new diesel trucks from ports and rail yards starting next year.¹³

Though drayage has been a laggard in the technology realm over the years, operators today and in the years ahead are going to find that they don't have the choice of moving slow on tech if they want to survive. The larger supply chain ecosystem, including the port communities, is moving faster on technology, and that will mean drayage will have to keep up. For smaller operators, the pressure to be ambitious with tech investments will only intensify.

As drayage operators have begun to adopt sophisticated technology solutions such as TMS and GPS to better track containers, their standing has improved with their customers, Carrillo said. "Visibility and technology are making things a lot better for our customers, and that's helping a lot," he said.

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Electric vehicle adoption in drayage fleets

Meanwhile, the march toward a more sustainable future will bring its own pressure. Zero-emissions goals are becoming commonplace – from individual ports to shipping companies – and those goals often depend on partnering with those who are able to meet a zero-emissions milestone themselves. According to the American Association of Port Authorities (AAPA), 63% of ports have completed projects to electrify terminal equipment and fleet vehicles. An AAPA survey shows that \$50 billion of green infrastructure projects are planned at ports over the next 10 years.¹⁴

Lisa Wan, executive vice president, operations, for California-based RoadEx CY, said carriers face stiff challenges adopting electric vehicles. A limited supply of available trucks, unstable prices and insufficient infrastructure, such as a scarcity of charging stations, makes it difficult for carriers to ambitiously convert their fleet to electric on a large scale, Wan said. Carriers also have to weigh other EV complications, such as the long charging time that could potentially take trucks out of circulation when they are needed.

In addition, Wan said, a large investment in electric now carries risks down the road as the EV market develops. “We have to worry about the green truck price being so expensive now, and it’s a five-year lease,” Wan said. “What if two years down the road someone has a new technology and then the trucks are much cheaper? It’s a double-edged sword.”

The drayage services industry is part of a larger ports community that has been the target of new investments in the wake of the pandemic challenges that could help drive progress for its partners. Most prominently, the federal \$1.2 trillion Infrastructure Investment and Jobs Act includes over \$6.5 billion exclusively for port programs and an additional \$27 billion that ports would be eligible to apply for – with funding for the bill, which is above and beyond annual baseline appropriations, spread over five years.¹⁵

Conclusion

The inherent complexities of the drayage business paired with the outdated operational approach common to most drayage trucking firms, challenge the sector’s well-being. Transforming from an industry mired in outdated, manual processes to one that embraces cutting-edge technological solutions is necessary for the drayage industry to move to the next level.

By investing in operational software, transportation management solutions and other technology tools, drayage carriers can gain crucial supply chain visibility, improve efficiencies, boost customer service, and improve margins. For example, carriers can

automate manual tedious tasks, such as tracking containers, setting rates, paying drivers, dispatching and managing documents. Advancing their businesses through technology will also enable drayage trucking firms to better connect with partners across the supply chain, leading to increased opportunities to scale their businesses. When the next major disruption arrives, the industry will be ready to not only navigate unexpected challenges but to go on the offensive and take advantage of new opportunities. With a more sophisticated approach to their business, drayage operators will be better-positioned to excel in any climate.

“What if two years down the road someone has a new technology and then the trucks are much cheaper? It’s a double-edged sword.”

— Lisa Wan, Executive Vice President of RoadEX CY

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