

## PERSPECTIVE

# Logistics: The Invisible Wheel That Keeps the Economy Rolling

The first thing that often comes to mind when we think about logistics is transporting property. But it also means moving people. When we talk about logistics, we're really talking about optimization, that is, going beyond simply moving from A to B at the best price possible. It's a booming market due to a number of developments. The COVID-19 pandemic has been the driving force behind certain trends, including e-commerce, which forced many businesses to adapt and increasingly turn to logistics. Furthermore, it increased the need for information along the entire supply chain. In the short and medium terms, demand for logistics will probably grow despite the trend toward protectionism. In the long term, a close eye will have to be kept on changing technologies and the future direction of local and international trade relations. This analysis will focus primarily on goods.

## Logistics: More than Just Transporting Goods

Transportation is only one link in the logistics chain, but it's the one the public usually sees. This link, in turn, is made up of many sub-links, which include choosing the mode of transportation, planning routes and schedules, filling out the paperwork for Customs and coordinating the delivery with recipients, to name but a few. Everything must be done to the customer's satisfaction, which means a customized service each and every time.

Upstream, customer orders must be processed and planned, and commodities or products sourced. Each of these steps also means making decisions and choices, and involves different, overlapping phases that need to be coordinated. What we're really talking about is a supply chain.

Managing a supply chain requires a lot of different skills. Using logistics specialists or launching an operation of this size within a company helps reach other objectives beyond delivering goods or services. The goal is to reduce not only supply costs (commodities, semi-finished or finished products), but also the cost of managing inventories and distribution.

Logistics experts emphasize that their efforts help their employers use their assets more efficiently by improving the way human, financial and material resources are allocated. This requires accurately defining the roles and responsibilities of company personnel. Given the detailed information that the digital economy can provide, it becomes easier to understand operations and the related data. More information also means

easier decision-making. This, in turn, helps deliver a better service, whether it means the time it takes to get back to customers or even the planning a company needs to do to manage its customer and supplier relationships.

Becoming more efficient means doing more than just moving goods. Optimization is maintaining a supply of the commodities or products needed, which includes the storage conditions and locations, the time needed to access and deliver them and the cost of each operation. In other words, logistics can be found in everything that a company does.

## A Booming Market... until Now

The global logistics market changes as trade changes. Logistics is not a fad; it's a necessity at a time when the competition is getting fiercer. Depending on the source, the global logistics market is estimated to be worth US\$4,000B to US\$5,000B (in 2018 or 2019) (table 1 on page 2). Some suggest that it represented as much as 10% of global GDP. The estimates vary because they don't take into account the same things. Some don't include optimization software, others only include shipping and the operations that immediately relate to it (e.g., customs brokerage).

Still, there's one point on which the different analyses agree: The Asia-Pacific region leads in the global logistics market. Since this region is the world's biggest manufacturer, it should come as no surprise that the need is high and growing. Moreover, the recent trade agreement signed by 15 Asian and Pacific countries in mid-November promises to speed up the trend.

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NOTE TO READERS: The letters k, M and B are used in texts and tables to refer to thousands, millions and billions respectively.

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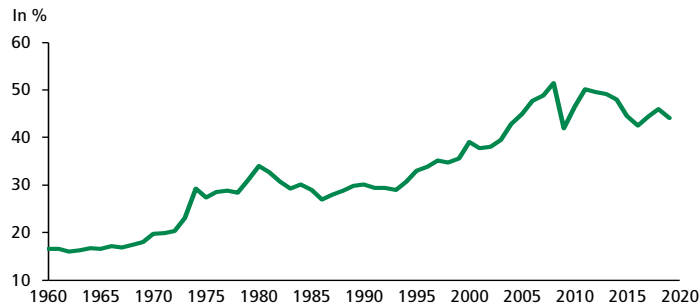
**TABLE 1**  
**Estimates of the global logistics market value in 2018 or in 2019**

ORGANIZATIONS	ESTIMATES
Valuate Reports (2018)	More than US\$4,000B
Research Markets (2018)	US\$4,730B
IMARC Group (2019)	US\$4,963B
World Bank (2018)	US\$4,300B

Sources: Valuate Reports, Research Markets, IMARC Group, World Bank and Desjardins, Economic Studies

According to a World Bank analysis, the trade in goods has garnered a growing share of global GDP since the 1950s. Graph 1 shows how its relative size increased, especially since the 1990s, and it makes sense to suppose that the need for logistics kept pace. It's easy to think that trade globalization, especially as trade agreements multiplied, China's entry into the World Trade Organization (WTO) and the race to lower the cost of commodities and products drove the demand for transporting goods and logistics.

**GRAPH 1**  
**Global trade as a share of global GDP has grown since the 1960s**

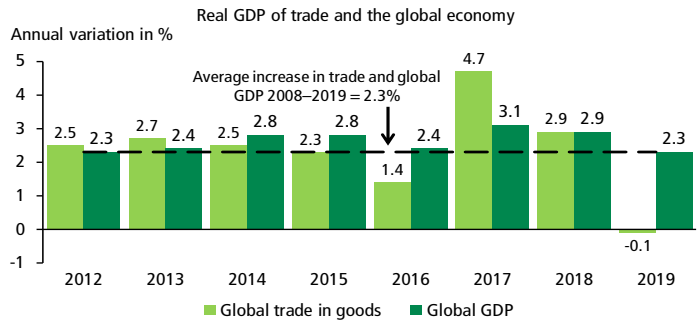


Sources: World Bank and Desjardins, Economic Studies

If we compare the increased volume of the global trade in goods with that of global real GDP (graph 2) between 2008 and 2019, we see that both indicators rose 2.3%. WTO data show that the trade in goods was already slowing down in 2019 before the World Health Organization officially declared the COVID-19 pandemic. The WTO attributes this slowdown to two factors in particular: slower growth globally that year and heightened trade tensions between countries, for example, the growing friction between the United States and China in recent years.

The pandemic suddenly intensified the decline already underway. Consequently, as the WTO reported in its Goods Trade Barometer, global trade posted a historic decline in Q2 of 2020. Two opposing phenomena co-existed: On the one hand, there was the drop in demand for goods due to the lockdown measures and the resulting economic downturn. On

**GRAPH 2**  
**The volume of global trade in goods was already declining in 2019**



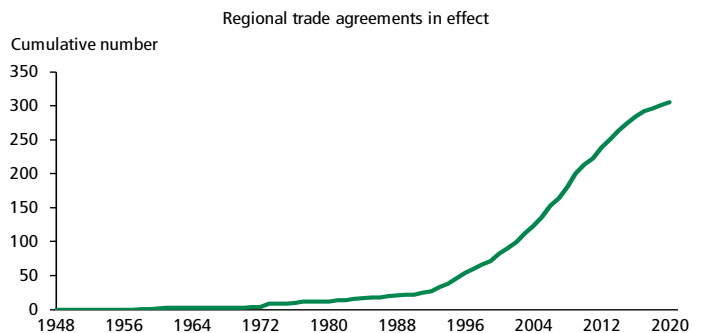
Sources: World Trade Organization and Desjardins, Economic Studies

the other hand, there was a frantic race worldwide to source protective equipment and drugs against the virus. It appears that the general slowdown of the economy prevailed, since global trade is currently operating at 84.5% of the recent trend. Still, a recovery was expected in Q3, although the extent is not yet known and the duration extremely uncertain due to the second wave of COVID-19 around the world. Global trade is likely to rebound once the pandemic no longer poses a threat. The assumption is that logistical needs will follow the trend. We'll discuss the pandemic's effects later in this article.

**Factors Influencing Logistics**

So, what was behind the rise in logistics here and elsewhere in the world? Greater trade and the many agreements reached are just two of the reasons, as mentioned earlier (graph 3). The growth in e-commerce through sales sites available around the clock, regardless of the time zone and the weather conditions, sped up the need to plan, pick orders, warehouse and deliver around the world. The pressure could be felt in both domestic and international markets.

**GRAPH 3**  
**Regional trade agreements have multiplied around the world since the 1990s**



Sources: World Trade Organization and Desjardins, Economic Studies

What could further push companies to turn to logistics? The exponential growth of the internet of things (connected things) may be one factor boosting the demand for logistics. Using technologies like radio frequency identification (RFID)<sup>1</sup>, which allows things and people to be tracked remotely, Bluetooth and, more recently, drone deliveries, requires coordination if they're going to produce the expected results.

We might think that, to the extent that new technologies help protect the environment, they may create interesting business opportunities. Urban congestion and environmental concerns may also promote other ways of organizing shipments and raise the demand for logistics. Last year, a pilot project was organized in downtown Montreal. The eco-friendly urban delivery project "Colibri" allows trucks to unload their goods at the former Voyageur bus terminal, where zero-carbon emission vehicles, such as electric cargo bikes, take over to deliver them. These tiny vehicles can deliver packages faster and cheaper than conventional trucks can.

What could stop the use of logistics? Aside from an economic downturn, whether it's caused by a pandemic or not, high prices and a lack of space could slow down the trend. In Quebec, especially Montreal, the competition from U.S. cities looking to position themselves as a North American transportation hub could limit the growth of our own homegrown logistics industry.

### Rethinking Operations and Business Connections

Logistics calls for rethinking how a company should operate. It forces us to reflect on issues such as choosing which markets to supply right now, identifying potential customers, sub-contracting some operations, locating warehouses to store commodities and products, determining the optimal quantities to warehouse, choosing business partners, selecting transportation modes and understanding the cost of each of these operations. It's also worth noting that there may be tried-and-true solutions, but none of them will translate perfectly from one business to another.

Moreover, developing close links with suppliers and customers may mean sharing internal information to improve coordination. Other targeted objectives include ensuring trade relationships run smoothly and service quality meets customers' expectations. For example, automated ordering and order picking systems need information on each customer's inventory levels to supply them in a timely manner. In short, the possibilities are vast. The degree of confidence about such sensitive data needs to be high. In highly competitive sectors, where flexibility is key and operating costs need to be strictly controlled and understood, logistics is essential.

<sup>1</sup> RFID: includes all technologies that use radio waves to automatically identify objects and people. The RFID system ... is a technology that helps memorize and recover information remotely using a radio-wave emitting tag. Source: [ooreka.fr](http://ooreka.fr).

### Logistics in Quebec

Quebec can't escape the requirements and complexity of trade relations. Although not all Quebec companies trade directly in foreign markets, managing a supply chain can prove difficult even in the domestic market. Suppliers of local products and sub-products can, in turn, call on sub-contractors here and elsewhere. Thanks to globalization and sophisticated communications technologies (including digitization), trade networks have become more complex, and the speed at which goods move has increased.

Over time, as the population and trade grow, the amount of goods delivered has risen without the transportation and loading infrastructure keeping pace. If the transit of goods can increase gradually and continuously, infrastructure capacity (e.g., roads and air, rail and port terminals), for its part, often expands in fits and starts as investment in these projects progresses. Therefore, it means always dealing with congestion and wait times due to more and more traffic and ongoing work to improve this infrastructure.

According to [Statistics Canada](https://www150.statcan.gc.ca/n1/pub/28-263-x/2019001/article/00001-eng.htm), nearly 6,500 businesses were offering logistics outsourcing services in Quebec in the late 2010s. Nearly half of them had fewer than five employees. The services offered ranged from shipping goods to covering all aspects of the supply chain. Still, logistics could help businesses get ahead, especially by getting IT tools like integrated management<sup>2</sup>, Web-based sourcing or even transportation systems<sup>3</sup>.

Quebec businesses, albeit not all of them, have long been dealing with logistics. In 2011, Quebec established a centre of excellence<sup>4</sup> in [ground transportation](#) made up of four niches of excellence<sup>5</sup> spread throughout Quebec. One of these deals with advanced technologies in transportation equipment and logistics. The Montreal and Laval regions have a metropolitan logistics and transportation cluster ([CARGOM](#)), which brings together all the stakeholders involved in logistics and transporting goods in the Greater Montreal Area.

Furthermore, training through college and university programs (certifications, certificates, graduate programs) abounds, with many educational institutions offering courses throughout Quebec. In addition, the college technology transfer centre dedicated to logistics, Institut d'innovation en logistique du

<sup>2</sup> ERP: Enterprise Resource Planning.

<sup>3</sup> TMS: Transport Management System.

<sup>4</sup> A [centre of excellence](#) is a niche or group of niches of excellence in the same economic sector with province-wide scope. Source: Ministère de l'Économie et de l'Innovation.

<sup>5</sup> A [niche of excellence](#) is a group of businesses in the same region carrying out interrelated economic activities. The purpose of this group is to successfully compete with other regions in international markets using skills that only it has. Source: Ministère de l'Économie et de l'Innovation.

Québec ([InnovLOG](#)), is based at CEGEP André-Laurendeau. The École des hautes études commerciales (HEC) business school, Laval University and the University of Montreal offer research programs in addition to the training programs mentioned above.

One sign of the turmoil in Quebec's logistics sector is the urgent need for workers. Despite and because of the pandemic (more on this later), the industry is actively seeking workers. Truck driver is the one job that is the most in demand, followed by forklift operator, shipper and receiver, order picker, day labourer, warehouse clerk, logistics coordinator and buyer. Despite the growing use of automation in this sector, companies are still actively recruiting workers.

### The Various Effects of the COVID-19 Pandemic

The pandemic has put supply chains and the logistics underpinning them to the test around the world. The urgent need to provide medical and protective equipment quickly revealed the strengths and weaknesses of these supply chains. Efforts were frantic during the first wave. Since then, a new normality has set in, with many businesses forced to implement changes because of the surge in demand, while others reacted to their markets collapsing.

In fact, according to industry observers<sup>6</sup>, the main impact on supply chain operations is accelerated digitization and automation. Networks also had to be redesigned primarily because of the boom in e-commerce and employees having to adhere to the health measures. Physical distancing led some businesses to turn to mobile robots. The pandemic increased the need for real-time data on inventories specifically and on production capacity, which heightened the need for digitization. It also caused businesses to think about diversifying their supply chains, or more accurately, reducing their dependence on one, faraway supplier and questioning the use of centralized means of distribution.

This year, we became aware of the close ties between transporting people and transporting goods. For example, we learned that more than 50% of all air freight is shipped in the holds of passenger flights. So, what happens when 90% of the flights are cancelled? In some cases, the aircraft were converted to transport goods, not people.

The pandemic sparked the development of artificial intelligence projects to locate goods to process urgent needs (e.g., medical equipment, drugs) first and speed up the delivery of essential items. The pandemic also drove a number of other innovations, including the use of delivery drones, which had already been making progress. For example, they were used to deliver medical supplies to hospitals and clinics, and food and drugs to people in lockdown.

<sup>6</sup> The information appears in the October 28, 2020 issue of [magazine Inside Logistics](#).

The pandemic is having other noticeable effects with an indirect impact on the logistics sector. We've seen a rise in what some call "precautionism," including a limit on the export of essential items, such as protective equipment (e.g., gowns, masks and gloves), as well as food and fuel. The international flow of goods was restricted, whereas shipments within domestic borders were encouraged due to the urgency of the situation. Furthermore, we still don't know what effect national buy-local campaigns have had on the transit of goods; some businesses will have benefited; others not. Without a doubt, the joint impact of "precautionism" and buying locally will have shortened value chains. Is this trend here to stay? It could be around for many years to come.

### The Road Ahead

Before the pandemic hit, various observers' prognostications were extremely positive. Some predicted that the annual composite growth rate of the global logistics market would be 4.9% between 2019 and 2024.<sup>7</sup> The COVID-19-related downturn and its impact on trade caused this rate to slow. However, the changes that many businesses had to implement as quickly as possible to digitize and automate their supply chains to respond to urgent demands partially offset the lower rate of growth.

According to McKinsey, a consulting firm operating in 65 countries, logistics, like finance and advanced manufacturing, may benefit from the expected developments in [quantum computing](#). As a result, multi-factor problems, such as logistical ones, could be solved much, much faster. Real-life applications could launch between 2022 and 2026 according to McKinsey's forecasts.

Moreover, McKinsey's researchers predict that the new generation of technologies will have a considerable impact on trade flows and logistics.<sup>8</sup> They group them into three types: Technologies that reduce transaction costs (e.g., the internet of things, e-commerce, blockchain<sup>9</sup> and automated document processing), those that change production methods (e.g., artificial intelligence, automation, 3D printing) and new products (e.g., electric vehicles, renewable energy and digital goods) (table 2 on page 5).

The first group is believed to lower transaction costs, which could result in the trade in goods increasing US\$4,700B by 2030. However, the technologies changing production methods will bring manufacturers and customers closer together, lowering the cost of trading goods by US\$4,000B by 2030. Lastly, new products could lead to an estimated US\$310B reduction within the same time frame. For example, new sources of energy

<sup>7</sup> Research and Markets, [Global Logistics Markets, 2011-2018 & 2019-2024](#), July 19, 2019 media release.

<sup>8</sup> For an in-depth analysis, see: [Next-generation technologies and the future of trade](#)

<sup>9</sup> A blockchain, or chain of blocks, is used to store and transmit information with no official oversight. Source: Wikipedia.

**TABLE 2**

**According to McKinsey, technology is reshaping trade flows in the value chain in three ways**

TYPES	EXAMPLES OF TECHNOLOGIES	ESTIMATED IMPACT ON THE GLOBAL LOGISTICS MARKET BY 2030
Reduce transaction costs	Internet of Things E-commerce Blockchain Automated document processing	Up to US\$4,700B increase in goods trade by 2030 as transaction costs are reduced
Change production processes	AI Automation 3D printing	Up to US\$4,000B reduction in goods trade by 2030 as production moves closer to consumers
New goods	Electric vehicles Renewables Digital goods	Up to US\$310B less goods trade by 2030 through changes in composition and tradability of goods

Sources: McKinsey Global Institute and Desjardins, Economic Studies

(especially solar and wind) will require fewer oil shipments, and electric vehicles will reduce the need for parts associated with combustion vehicles. These are only estimates based on what we know today, but they're a sign of the upheaval still to come. Logistical needs will be different, but there will be some.

The industry will face many challenges in future. The advent of electric vehicles will cause major adjustments: Managing a fleet of electric vehicles instead of diesel trucks will be different. The use of autonomous vehicles will require rethinking urban mobility. With increased digitization and information sharing, ensuring the data is secure will take time. And, from now on, there will be more concern about health standards, even after the pandemic is over.

**The Post-pandemic Era**

What will the logistics market look like? In the short term, the needs will likely remain high. The COVID-19 pandemic drove certain trends, including e-commerce, which forced a lot of businesses to adapt. Furthermore, it increased the need for information on supplies, inventory levels, order follow-up and forwarding goods. It also forced tighter links with suppliers.

In the short and medium terms, the demand for logistics will probably grow despite the moves toward protectionism. In the long term, keeping a close eye on the effect of changing technologies and the trend in local and international trade relations will be critical.

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