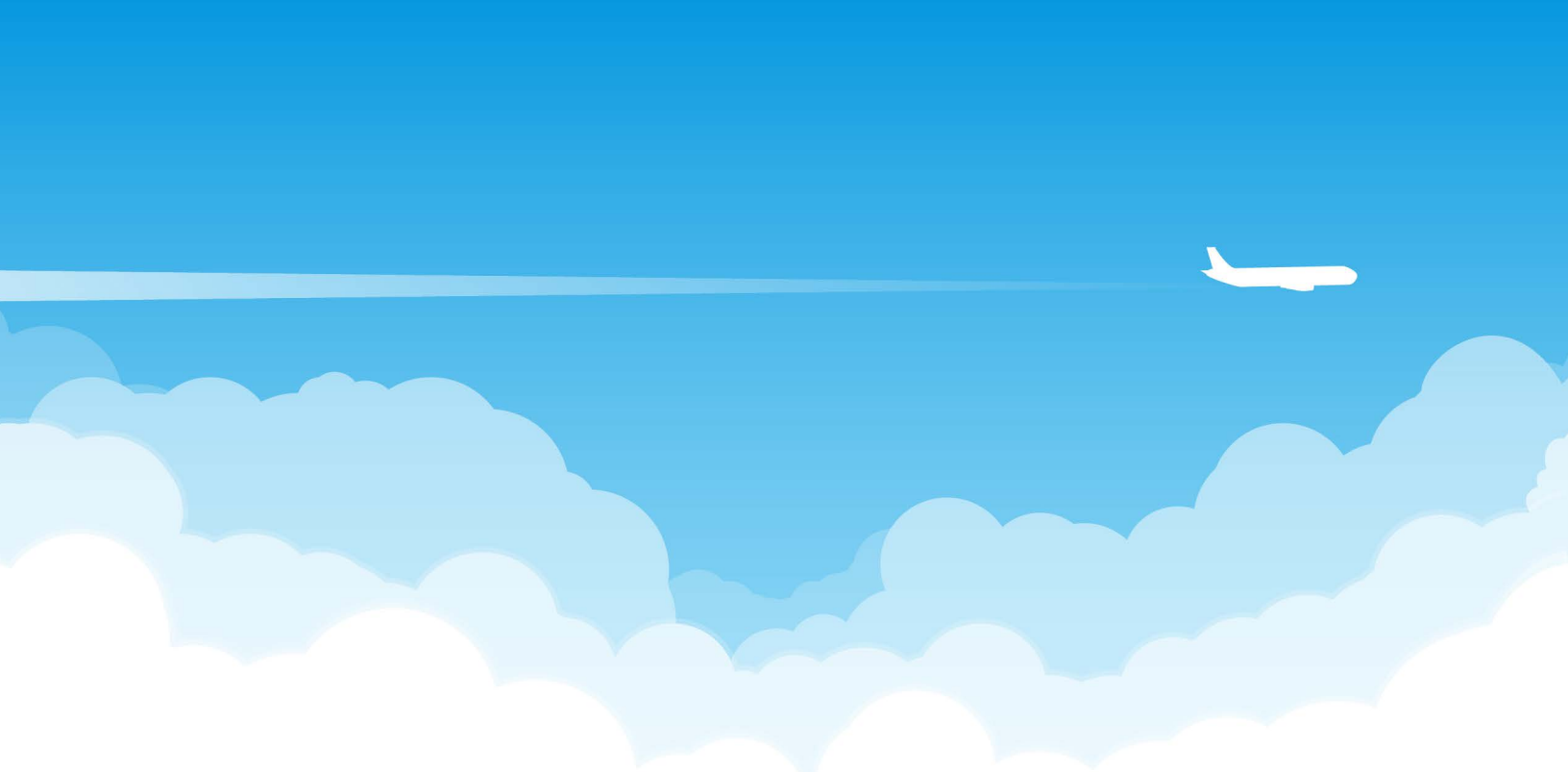


**Deloitte.**



## The growing opportunity in air cargo

Laying a runway for collaboration  
across Canada's aviation ecosystem



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**The research and considerations in this report reflect the economic and geopolitical climate known in July 2022.**

# Introduction



The air cargo sector is a key component of Canada's aviation industry and an important enabler of the Canadian economy. A vital link in the supply chains of many industries, it's responsible for ensuring Canadians have fast, reliable access to fresh food, health care supplies, pharmaceuticals, and other goods.

Air cargo was a bright light for the aviation industry during the early stages of the COVID-19 pandemic, when passenger volumes and related revenues plummeted and supply chains snapped. It kept vital goods and online purchases flowing, and generated at least some revenues for the industry. Today, passenger volumes have recovered so strongly that airlines are challenged to keep up with demand, but the Canadian aviation industry now sees air cargo as an important and growing source of additional revenue that offers a form of insurance against future passenger-volume volatility.

The global outlook for the sector's growth is currently tempered by the ongoing impact of the pandemic, the ongoing war in Ukraine, continued supply chain weaknesses, inflationary pressures, and economic uncertainties. The Canadian market isn't immune to these issues, but it remains strong, resilient, and full of opportunity. Taking advantage of this will, however, require the aviation industry—airlines, airports, logistics companies, shippers, and others—to find new ways of working together to address and overcome a number of challenges.

In this report, we explore the state of the Canadian air cargo sector, its potential for growth, and the strategic decisions that can enable participants across the aviation industry to achieve and accelerate that growth.

## Canada's air cargo sector: an overview

The air cargo sector in Canada encompasses a large range of companies. It includes logistics giants such as FedEx, DHL, UPS, and Amazon, with global operations and multimodal capabilities. It also includes the major passenger airlines Air Canada and Westjet, whose aircraft and networks play a key role in the ecosystem, and Cargojet, a dedicated carrier that has strengthened its competitive position through strategic partnerships. And it includes the regional air carriers that provide critical linkages to remote and Northern communities as well as the smaller express freight and courier services that connect with and ship goods via air cargo providers.



The ecosystem also encompasses Canada's airport operators, whose facilities serve as the critical nodes for the entire network. Most of Canada's overnight air cargo travels via Hamilton airport (YHM), a cargo-focused facility that also serves as Cargojet's home base. Vancouver (YVR) and Toronto (YYZ) airports, meanwhile, are vital conduits for international air cargo.

Cargo is shipped both in dedicated freighters and in the bellies of passenger aircraft, on both scheduled routes and unscheduled flights. Typically, the major carriers fly a sizable proportion of flights from at least one hub, connecting to other flights along various "spokes." Regional carriers connect to and support these hub-and-spoke networks, flying smaller aircraft out of smaller cities. The networks also connect to other modes of transport, particularly those involved in transborder shipping; these connections often have room for enhancement.

### Air cargo demand—and revenue—is trending upward

Demand has been steadily trending upward since prior to the pandemic. Globally, air cargo tonne kilometres (CTK) rose 8.9% between December 2019 and December 2021. In North America, CTK rose 21.7% over the same period.<sup>1</sup>

The Canadian air freight sector carried 2.4 billion CTK in 2020, and this is expected to rise more than 30%, to 3.15 billion CTK by 2025.<sup>2</sup> Carriers transported 920,000 tonnes of cargo in 2019. This dipped to 872,000 tonnes in 2020, but by 2021 it had risen to more than one million tonnes.<sup>3</sup>





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# 66.7%

**increase in revenue per  
goods tonne-kilometre from  
December 2019 to December 2021**

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Air cargo revenues have also jumped. According to Statistics Canada, Canadian air carriers saw goods revenue per goods tonne-kilometre increase 66.7% between Q4 2019 and Q4 2021, from \$0.51 per goods tonne-kilometre to \$0.85 per goods tonne-kilometre.<sup>4</sup> Total revenues for the sector grew from US\$6.15 billion in 2019 to US\$6.58 billion in revenue in 2020 and were estimated to reach US\$7.95 billion in 2021.<sup>5</sup> Canadian air carriers are also deriving a significantly larger proportion of revenue from air cargo operations, even as passenger traffic has begun to rebound. In Q4 2018, goods revenue represented 7% of carriers' total operating revenue; by Q4 2021, that figure had risen to 19.9%.<sup>6</sup>

The sharp rise in revenue reflects the impact of the pandemic on air cargo capacity and utilization rates. Before COVID-19, approximately half of Canada's air cargo was carried in the bellies of passenger aircraft.<sup>7</sup> When pandemic-related measures grounded flights, it created a huge capacity shortfall that coincided with rising demand for personal protective equipment, a spike in online shopping, supply chain

disruptions, and other factors. Utilization rates for remaining capacity soared, sending yields and revenues higher.

### **Rising demand prompts air carriers to expand cargo fleets**

Rising demand—and yields—for air cargo has prompted many carriers to make strategic investments in expanding their dedicated fleets.

Air Canada was the first global airline to temporarily convert several passenger Boeing 777s and Airbus A330s into “freighters” in 2020 to enable cargo-only flights and crucial revenue to continue to flow; those have since returned to full-time passenger service.<sup>8</sup> The company added one Boeing 767 dedicated freighter to the fleet in December 2021, and added a second in April 2022; it expects 10 such aircraft to be in operation by the end of 2023. In response to continued strong demand in the Pacific-Americas region, Air Canada finalized an agreement in July 2022 for the purchase of two new Boeing 777 freighter aircraft; delivery is expected in 2024.<sup>9</sup>

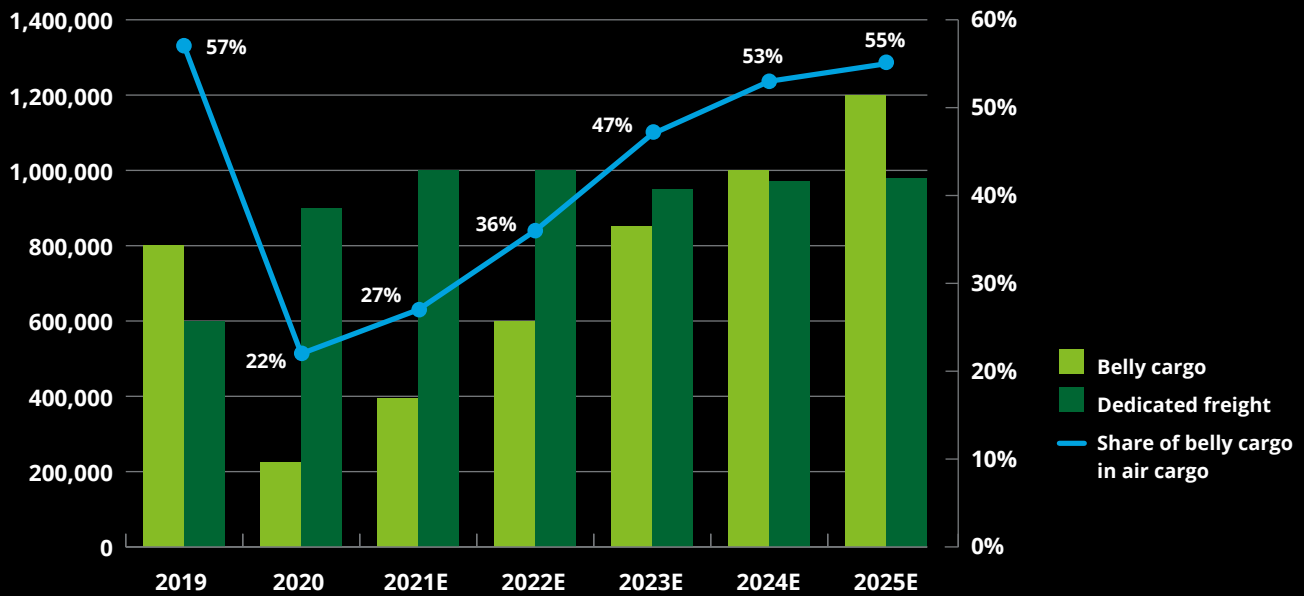
WestJet plans to launch its own standalone freighter division, with two converted Boeing 737-800 freighters, with plans to add two more later.<sup>10</sup> The company operated cargo-only flights using Boeing 787 passenger jets for several months during the height of the pandemic. Signalling its ambitions in the space, WestJet has also recruited a new executive vice president for cargo from Qatar Airways, one of the world's top cargo airlines.<sup>11</sup>

Cargojet is adding 12 Boeing freighters—six 757s and six 767-300s—to its fleet between now and 2023, and unveiled plans to acquire eight Boeing 777 freighters between 2023 and 2025. In March, the company also announced a long-term strategic partnership with DHL Express.<sup>12</sup>

Regional airlines have also been actively expanding their cargo fleet offerings. Quebec-based Chrono Aviation, for example, announced plans to fly Canada's first Boeing 737-800SF freighter on a route between Winnipeg and Iqaluit.<sup>13</sup> Purolator contracted with Voyageur Aviation to use two Dash 8-100s for cross-border express shipping.<sup>14</sup> And Air Inuit has taken delivery of a Dash 8-300 with an expanded cargo door to facilitate shipping larger items to remote communities.<sup>15</sup>

This expansion of dedicated fleets and the return of normal passenger traffic should restore Canada's air cargo capacity to pre-pandemic levels, especially in terms of passenger-aircraft belly capacity. However, more passenger flights could mean more planes flying with mostly empty bellies, which would likely lead belly-capacity utilization to dip toward pre-COVID-19 rates (see Figure 1). But with innovation, collaboration, and strategic investments, airlines and airports can connect with shippers to provide fast, flexible air cargo services—and improve utilization and generate incremental revenue in the process.

Figure 1: Belly vs. dedicated freight cargo loaded/unloaded in Canada ('000 metric tonnes)



Rising demand—and yields—for air cargo has prompted many carriers to make strategic investments in expanding their dedicated fleets.

The strong long-term  
growth potential of air cargo





The global air cargo sector faces undeniable headwinds in 2022. The Russia–Ukraine conflict has removed significant Russia-based dedicated air cargo capacity from the market, especially on key Asian routes.<sup>16</sup> At the same time, rising inflation, interest rate increases, ongoing supply chain disruptions, and bearish stock markets are combining to temper the sector’s global growth in the months ahead.

However, its long-term growth prospects remain strong, buoyed by e-commerce and air freight trends. Boeing, for one, expects the air cargo market to grow 4.1% annually over the next 20 years.<sup>17</sup> Canada’s sector is expected to grow 8.3% a year for much of the decade and reach US\$13.85 billion by 2028, outpacing the sector’s growth in either the United States or Mexico.<sup>18</sup>

### **E-commerce will be an important driver of demand**

By one estimate, 17% of pre-pandemic air cargo was e-commerce traffic being shipped through express, general, air freight, and postal networks—not including shipments into distribution centres.<sup>19</sup> E-commerce continues to be viewed as a strong source of growth for the air cargo sector globally, despite the fact that its growth has stalled in 2022 due to capacity constraints and regulatory changes.

This positive outlook is rooted in the fact that the major global e-commerce retailers and marketplaces—Alibaba, Amazon, and a dozen other platforms—account for more than 50% of e-commerce worldwide. These companies have a tremendous impact on shaping e-commerce logistics requirements, and are large buyers of air freight capacity and other logistics

services. Moreover, they continue to grow: Amazon, for example, sold US\$600 billion worth of goods in 2021, compared to US\$277 billion in sales in 2018. Most of this growth is driven by the platform’s third-party marketplace, not Amazon itself, and if it continues at this rate, the company will likely reach \$1 trillion in sales by 2026.<sup>20</sup>

Small and mid-sized enterprises (SMEs) represent another potentially significant source of growth. E-commerce penetration among SMEs is relatively low compared to larger companies, according to European Commission research, and logistics providers are increasingly seeking to provide SMEs with a pathway to global markets via e-commerce offerings and delivery fulfillment.<sup>21</sup>

In Canada, e-commerce represents a slightly smaller proportion—approximately 10%<sup>22</sup>—of overall air cargo volumes, and this tends to make its air cargo sector more resilient to fluctuations in the e-commerce market. However, e-commerce is likely to be a source of growth. Overall revenue rose 41% between 2019 and 2020,<sup>23</sup> and continued to rise through 2021; while that pace is expected to moderate, total e-commerce sales growth in Canada is still projected to reach CAD\$128 billion by 2025.<sup>24</sup>

Recent Deloitte research suggests inflationary pressures are unlikely to put much of a dent in Canadian e-commerce spending. Despite the rising cost of living, consumers’ discretionary spending intentions are generally holding steady: they plan to allocate about one-third of their budgets to more discretionary items. And while Canadians don’t seem to be buying quite as many goods online as they did during the pandemic, they still intend to buy 34% of electronics, 30% of clothing and footwear, 20% of personal care products, and 15% of everyday household items online.<sup>25</sup>

In addition, Canadians’ embrace of online shopping, coupled with the rapid rise of truly global e-commerce marketplaces, is projected to drive a 28.4% annual growth in international e-commerce between now and 2027, particularly from destinations in the United States, China, and the United Kingdom. With 80% of global e-commerce purchases shipped by air, Canada’s air cargo sector is likely to benefit.<sup>26</sup>



**“Ordinary” air freight volumes are also expected to rise**

E-commerce may be seen as the air cargo sector’s exciting new growth frontier, but the vast bulk of shipments comprise regular freight, both cargo and mail. As the volume of this “ordinary” air freight grows, as is anticipated, demand for cargo capacity will surely rise.

According to Deloitte research, the volume of domestic, transborder, and international cargo loaded and unloaded in Canada could grow to 2.15 million tonnes by 2025, up from 1.16 million tonnes in 2019, supported by the normalization of air travel post-pandemic and reasonably steady consumer confidence. A considerable proportion of this growth is likely to come from a number of time-sensitive product categories that depend on air transportation, such as food, beverages,

and other perishables; the growth of shipments of these are expected to rise 8.8% between now and 2025. Over the same period, expedited air-freight volumes are projected to rise 9.5% annually, while air shipments of pharmaceuticals and other health products are anticipated to grow 11.3% per year.<sup>27</sup>

The implications of the growth in volume will be felt throughout the air cargo sector. Airlines, airports, cargo handlers, and logistics firms will need to ensure they have both the capacity and the services, such as cold chain facilities to ensure perishable goods are properly stored and transported. Addressing the challenges inherent in the growth of air freight will require stakeholders across the ecosystem to find new ways to connect, collaborate, and innovate to streamline the flow of cargo.

Figure 2: Loaded/unloaded air cargo volume ('000 tonnes)

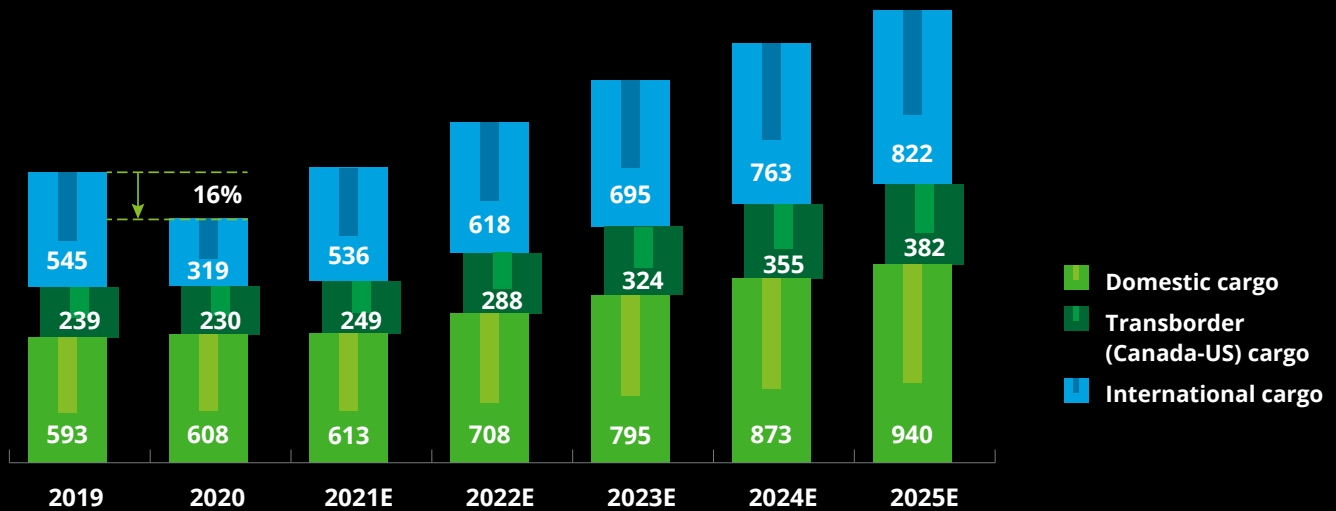
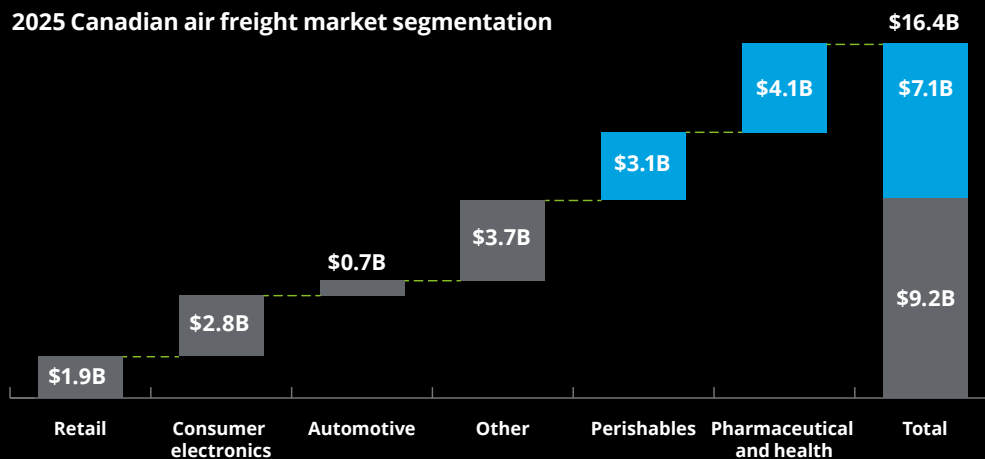


Figure 3: Compound Annual Growth Rate (CAGR) through to 2025 for each category



2025 Canadian air freight market segmentation



## The growing opportunity in air cargo



### Airports are already investing to meet demand

As critical hubs for air cargo, airports must prepare for its growth. While volume (measured in net tonnage loaded and unloaded) dropped approximately 16% between 2019 and 2020 due to the pandemic, this was largely due to a sharp decline in transborder and international shipments. Domestic volume actually rose by nearly 3% over the same period; several mid-market airports also experienced net growth, including Montreal (YUL), Winnipeg (YWG), Calgary (YYC), and Edmonton (YEG)—not to mention Hamilton (YHM), Cargojet’s hub, which saw domestic air cargo volumes jump nearly 25%.

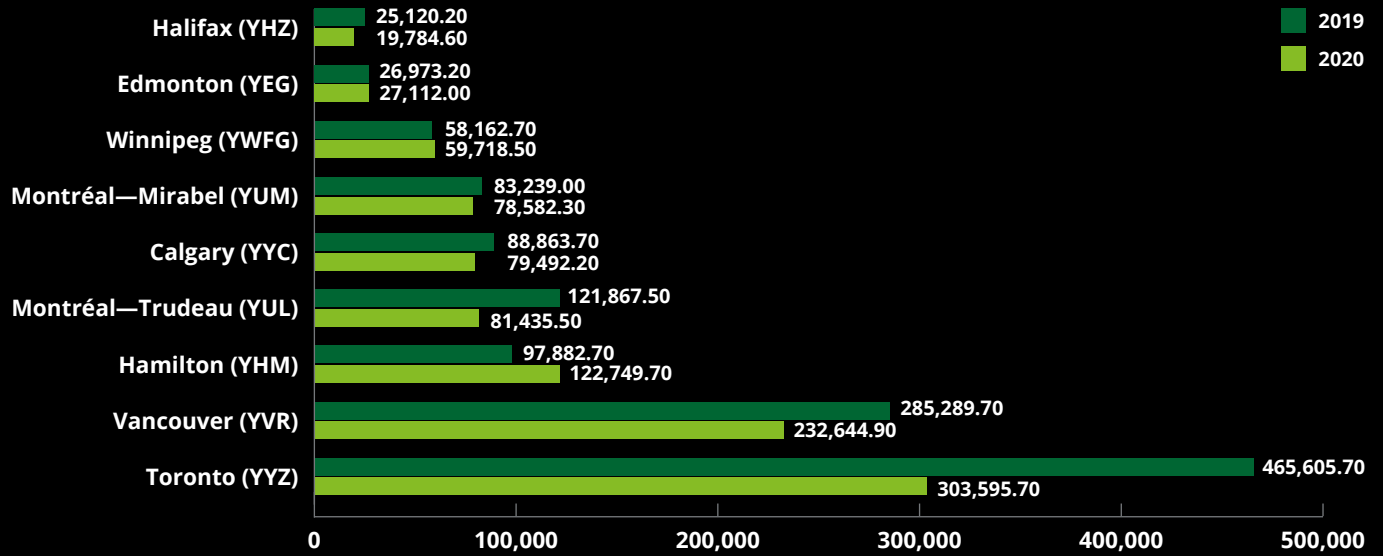
After the pandemic highlighted airports’ reliance on passenger-related revenue streams—and their vulnerability when those revenue streams are disrupted—many airports across the country have been working with logistics companies and others to invest in new infrastructure in a bid to diversify their revenue sources, reduce their risk, and position themselves as leaders in the air cargo space. In addition to benefiting the airports, these investments will create new regional economic opportunities by improving the ability of local businesses and communities to connect to other markets.

Examples include:

- **Hamilton (YHM)**—In late 2021, DHL opened a new international gateway facility, its largest in Canada, capable of processing 28,000 packages per hour,<sup>28</sup> while Amazon opened a new advanced robotic fulfillment centre in April 2022 that can serve 325,000 customers a day.<sup>29</sup>
- **Edmonton (YEG)**—As part of its \$36-million cargo expansion, the airport is expanding its cold-storage Fresh Cargo Centre to allow for transport of more perishables; the airport is currently the only one in Canada with IATA CEIV Pharma certification, meeting the highest standards for handling temperature-sensitive cargo.<sup>30</sup>
- **London (YXU)**—One of the airport’s three cargo handlers recently introduced new cargo-screening technology to better compete with handlers at the Toronto and Hamilton airports.<sup>31</sup>
- **Quebec City (YQB)**—The federal government recently announced a \$12.5-million investment to increase the airport’s cargo capacity by developing a new centre that will include dedicated space for regional carriers serving remote communities.<sup>32</sup>
- **Halifax (YHZ)**—The airport’s new Air Cargo Logistics Park includes specialized cargo-handling facilities, cold storage facilities for seafood exports, and five aprons for cargo aircraft.<sup>33</sup>
- **Winnipeg (YWG)**—Federal funding will enable the airport to add dedicated vehicle access lanes for processing cargo, among other improvements.<sup>34</sup>
- **Victoria (YYJ)**—Amazon is moving into a new 115,000-square-foot delivery facility at the airport in late 2022, which will serve as a last-mile delivery station.<sup>35</sup>
- **Toronto (YYZ)**—As part of its move into air cargo, Danish shipping giant Maersk announced plans to build a 568,000-square-foot multimodal distribution centre near the airport to expand its e-commerce freight activities and operational footprint in North America.<sup>36</sup> And Purolator is building a 430,000-square-foot national hub near the airport.<sup>37</sup>

Airports can play an even larger role in the air cargo ecosystem, however. They can invest in new digital technologies to improve coordination among stakeholders. They can upgrade physical infrastructure to meet the sector’s growing needs. They can take the lead on sustainability. And they can transform airports into the heart of a thriving, connected community that works together to bring prosperity to the region.

Figure 4: 2020 air cargo total net tonnage (loaded/unloaded) at select Canadian airports



# Capitalizing on the air cargo opportunity: 5 key considerations

Canadian airlines, airports, and other air cargo stakeholders are making investments in recognition of the fact the sector has strong long-term growth potential.





To fully capitalize on the opportunities and ensure the growth benefits Canadian businesses and communities more widely, more must be done. It's vital that all stakeholders across the ecosystem work together to identify and eliminate friction points, ensure the available capacity is appropriately utilized, and build a stronger cargo hub for their regions.

The following are our top five considerations for how this can be achieved.

### 1. Collaborate to innovate

The pandemic and more recent world events have made it clear that supply chains designed to optimize costs and facilitate just-in-time trade lack the resilience and agility required to deal with disruptions and uncertainties. Supply chains need to evolve so that they can anticipate, respond to, and recover from sudden capacity constraints and fluctuating transport rates.

The air cargo sector has an important role to play in accelerating this evolution. But it will take innovation—and close collaboration. Successful cargo hubs involve many stakeholders, from truckers, shippers, and freight forwarders to cargo handlers, airlines, airports, and customs officials. Each party has a specific and essential role in their ecosystem, and each can bring their unique perspective and expertise to bear on how to streamline and improve the sector.

Airports are ideally positioned to play a leadership role in this effort. They can bring together stakeholders to identify opportunities to grow the resilience of the local air cargo ecosystem, improve the flow of goods, create opportunities that benefit each stakeholder, and contribute to the economic prosperity of the wider community, region, and country. It's incumbent on all parties to bring an open mind to these conversations, as well as a willingness to collaborate in potentially new and unfamiliar ways. As discussion leads to more concrete actions, they must also be prepared to commit the resources needed and stay the course to support change and execute innovative strategies.



## 2. Harness automation and digitalize the value chain

Calls for advances in automation and technology continue across the sector in the face of struggles to meet pent-up travel demand and retain staff. The deployment of new technology will not only help stakeholders recover, but it can also bring in a new era of industry standards. Many still rely on paper-based documentation and manual processes, which can impede the flow of goods and create bottlenecks in supply chains. Digitalizing this documentation and automating processes offer a powerful way for stakeholders to overcome these challenges and accelerate cargo flows. Broader digital transformation initiatives include focusing on digitalizing document transfer, planning activities, and the deployment of mobile technology into cargo warehouses to facilitate and integrate multiple supply and demand stakeholders, both upstream and downstream from the warehouse.

Regulators are ready to help. The International Civil Aviation Organization and United Nations Economic Commission for Europe, for example, recently announced new digital air cargo technical specification guidance that will enable the

sector to move away from paper-based documentation. The new specifications apply to air waybills, dangerous goods declarations, and consignment security declarations. By eliminating the need for some forms of paperwork and promoting a contactless environment, the new guidance should accelerate the transition to safer, more resilient supply chains.<sup>38</sup>

Elsewhere, technology could be incorporated into existing ground equipment, unique to an airport environment, to set the stage for fully autonomous ground fleets and material-handling equipment; currently, a person must be present to operate any ground-service equipment.

There are other opportunities to capitalize on automation and digitalization. Real-time predictive analysis of airport camera footage can be used to help airlines identify why aircraft are running late and take preventive action; while the technology is currently used to assist passenger aircraft, there's no reason it couldn't also be deployed for air cargo.

Timely, integrated information flows are vital to improving supply chain efficiency and supporting the flow of goods.



### 3. Establish the foundations for a thriving community system

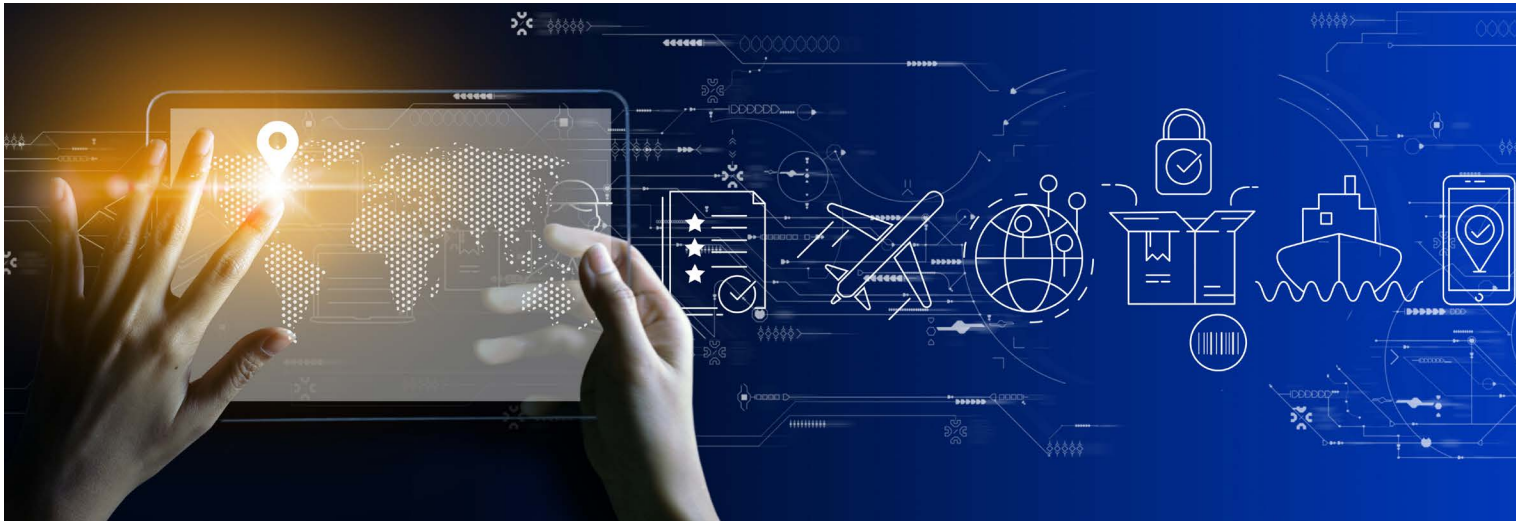
Airports, airlines, logistics companies, and other air cargo stakeholders can also take steps toward building a “cargo community system”—or, as we call it, a digital logistics community system (DLCS).

A DLCS is a web-based shared platform that enables participants to communicate, exchange data, and seamlessly link key operations, processes, and decision frameworks all along the value chain. This integration is facilitated by open application programming interfaces (APIs) and common electronic data interchange (EDI) formats. Mumbai International Airport, for example, processes nearly 1.5 million tonnes of cargo each year, a volume that involves more than 2,000 agents, more than 200 airlines, and thousands of paper documents each day. Moving to a cargo community platform has improved communication among ground handlers, freight forwarders, customs brokers, the airport authority, and airlines; sped up cargo flows and reduced truck-waiting times; facilitated better operations planning; provided advanced shipment visibility; and eliminated millions of paper documents.<sup>39</sup>

Timely, integrated information flows are vital to improving supply chain efficiency and supporting the flow of goods. Airlines and airports want real-time information on inbound and outbound cargo, demand levels, and available capacity to optimize operations and offer just-in-time performance, while shippers and customs agents are among those who want to be able to share relevant documentation in a simple, integrated way to ease trade and reduce lead times for end customers. All stakeholders want to improve communication and integration between airside and non-airside air cargo operations. Establishing a DLCS can deliver this—by providing a neutral, trustworthy platform, guided by a common governance model that covers technology, data, and other standards—and benefits all participants.

Building an ecosystem-spanning DLCS takes time. Stakeholders should act now to establish the foundation so the community platform may deliver long-term benefits as it expands to include more members.





Air cargo stakeholders should pay close attention to airside and non-airside infrastructure needs and look for opportunities to offset costs and risks and to enhance potential synergies between ecosystem participants.

#### 4. Invest now

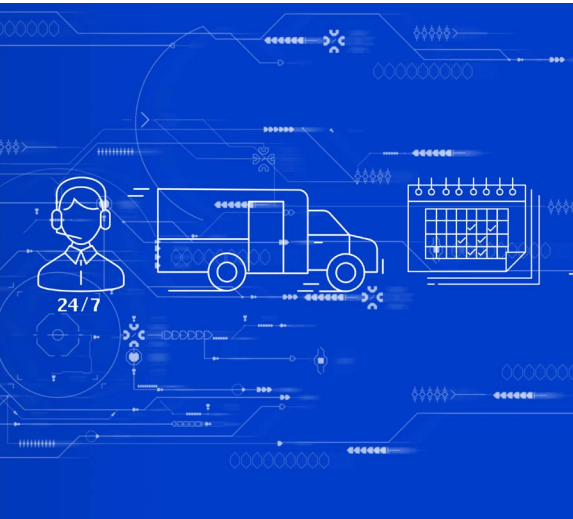
Airports and their ecosystem partners should work together to understand how existing air cargo infrastructure is being used and what new infrastructure will be needed to support growth in the years to come.

Assessing the use of current infrastructure can provide insights into gaps and inefficiencies that can be addressed through upgrades, reconfigurations, and other modernization work that can improve cargo flow overall and maximize the use of existing space. New infrastructure should be planned and built in consultation with partners across the air cargo ecosystem, based on projections and ambitions for future cargo volumes and the storage and handling capacity that would be required. An example of such an approach is Brussels Airport, which is spending €70 million to modernize its cargo zone between now and 2025 to meet growing demand for storage and handling space, improve and secure cargo traffic streams, and optimize operations. The airport is building three modern, sustainable buildings—totalling

nearly 900,000-square-feet of space—in the heart of BRUcargo Central, the airport’s cargo zone.<sup>40</sup>

Investments in physical infrastructure should take into account more than warehousing and storage facilities alone, of course. Mobility on and off the tarmac, for example, will play a key role in streamlining the flow of goods and optimizing operations, while advances in aircraft fuel sources will require airports to ensure proper facilities are in place.

In addition, air cargo stakeholders should pay close attention to airside and non-airside infrastructure needs and look for opportunities to offset costs and risks and to enhance potential synergies between ecosystem participants. One of the reasons we’re seeing logistics giants open facilities near airports rather than on airport grounds is that it enables these companies to keep cargo processing and inventory storage off-site, reserving costly, limited airport space for more tactical functions. Furthermore, these non-airside facilities enable logistics companies to more easily pursue first-mile/last-mile and third-party fulfillment prospects.



Investing in sustainability is also likely to impact the ability of stakeholders to access the funding they need to grow in the years to come.

## 5. Prioritize sustainability and decarbonization

As for many other industries, sustainability and carbon-emission reductions are both a priority and, in many cases, a legal obligation for the air cargo sector. There are many ways for organizations in the sector to do this, including using carbon offsets, reducing overall energy consumption, upgrading to greener vehicles, and backing the use of sustainable aviation fuel (SAF) and other fossil-free sources of energy.

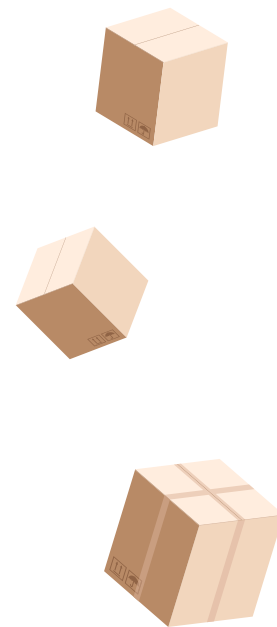
Many of the investments air cargo stakeholders are making to improve and streamline the flow of goods also have important sustainability benefits. Optimizing airside operations, for example, can result in the more efficient use of runways and taxiways, thereby reducing emissions, resource usage, and costs. Airports and other stakeholders can pursue alliances and partnerships to reduce, reuse, and reprocess water, waste, and other materials to reduce their overall environmental footprint. Electrifying airside ground assets such as tugs, trucks, and loaders offers an outstanding way to improve air quality and reduce emissions

and exposure to rising fossil-fuel costs, while solar panels can be installed on many buildings to generate emission-free electricity.<sup>41</sup>

SAF also offers a way for the air cargo sector (and aviation more widely) to reduce emissions and, eventually, reach net-zero. Significant challenges remain in the short term, however: globally, SAF makes up less than 0.1% of aviation fuel, and costs about four times as much as kerosene. Yet an increasing number of companies are investing in producing SAF from a variety of feedstocks, and an increasing number of airlines are adopting it. In the report *Reaching cruising altitude: A plan for scaling sustainable aviation fuel*, we explore the actions that governments and industry must take together to accelerate the production and adoption of SAF.<sup>42</sup>

Investing in sustainability is also likely to impact the ability of stakeholders to access the funding they need to grow in the years to come. Environmental, social, and governance (ESG) factors are increasingly used as part of investors' evaluation and decision-making processes. Airports, airlines, and other

air cargo stakeholders that have a strong sustainability strategy will be better positioned to attract future investment capital.<sup>43</sup>



## Conclusion

While the air cargo sector faces headwinds now, we believe its long-term growth prospects are strong—and airlines, airports, cargo handlers, and logistics companies throughout the ecosystem should capitalize on these opportunities now. By working together and forging new connections and collaborations, stakeholders can encourage the growth of traffic, speed the flow of goods, achieve operational efficiencies, reduce emissions, and make the supply chains we depend on more resilient in a fast-changing, uncertain world. And the success of Canada's air cargo ecosystem will ripple outward from its airports, bringing economic benefits to businesses and communities across the country.



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