



Canada's transportation infrastructure is vital to the economy and essential to the success of agriculture businesses. Here are some key considerations to help you understand the national transportation infrastructure and make decisions that will benefit your business.

By road

Almost everything destined for market starts its journey by truck. Over 900,000 kilometres of roads cover every corner of Canada, making trucks a staple of the transportation system. Shipping by truck accounts for some 75 per cent of the total annual spending on freight. In 2005, total exports shipped exclusively by truck were \$186 billion, while imports totalled \$216 billion.

Key considerations

There are competing interests between commuters and freight traffic on highways that travel through Canada's major cities. Trucks moving freight add to delays, especially during peak traffic times. Most agriculture products are hauled by trucks and highway traffic is heavier and more frequent as volumes increase. Our massive road system competes for tax dollars with health, education and social programs. One of the ways to improve highways without raising taxes is through toll roads and new technologies make this option more attractive to investors.

The Canadian and U.S. markets are deeply integrated. The Fraser Institute believes that the supply chains spanning the Canada-U.S. border are globally unique and rely heavily on land transportation travelling through a handful of key corridors. Anything that slows down deliveries or disrupts a complex supply chain, affects entire industries.

In the race to get in and out quickly, border issues and documentation are part of the equation. More

efficient loading facilities and faster trains at the destination point won't help if products can't get through customs swiftly. Having the paperwork in order is a good strategy.

Since 9-11, there has been a gradual thickening of the Canada-U.S. border. Under the U.S. Western Hemisphere Travel Initiative, as of January this year, Canadians travelling to the U.S. by air must present a passport or a valid NEXUS card. By June 2009, Canadian citizens will require a valid passport, enhanced provincial driver's license² or a valid trusted traveller program card to enter the U.S., whether travelling by air, land or sea. The Secure Border Initiative proposes electronic fences on the U.S. frontiers with Mexico and Canada and biometric identification through fingerprinting, face, iris, voice recognition or hand geometry and even DNA is being investigated.

Thousands of containers that pass through Canadian ports on their way to U.S. markets and the high volume of transcontinental passenger and freight traffic are also security concerns. The Security and Prosperity Partnership, signed by Canada, the U.S. and Mexico in 2004, is meant to offset the negative impact of security measures.

Now that the price of oil is over US\$100 per barrel, the rising cost of fuel is a significant challenge to freight movement.

² Enhanced driver's licenses include passport information. They are currently being tested in B.C.



By rail

Many agriculture exports travel to port by rail. The Canadian National and Canadian Pacific Railways account for the bulk of the traffic. Short-line rail companies use smaller branch lines to funnel cargo into the national system, taking some of the burden off our highways.

In 2006, 284 million tonnes of products, including 31.8 million tonnes of grain, 32 million tonnes of forestry products and about 26 million tonnes of fertilizer rode the rails. As an exporting nation, Canada relies heavily on the ability to move vast amounts of product to international markets. Healthy rail systems are a business imperative.

Key considerations

Under the Canada Transportation Act, rail companies must haul all producer cars, whether the shipment is large or small. Recent amendments to the Act under Bill C-8 address concerns about service and rates and provide regulatory stability for railways. Although standards have always been in place, legal costs often deterred shippers from dealing with issues. New regulations make this process less costly and less difficult.

Time delays caused by winter weather in mountain passes or through rugged terrain, labour issues, waiting for cars and infrastructure maintenance can be inherent disadvantages for rail transport.





Intermodal

Containers³ are used in increasing numbers to transport cargo around the world. Since the 1980s, container traffic has increased from 36 million to 266 million and is projected to reach a staggering 468 million by 2010!

In 2006, around 4.3 million containers travelled through Canada. The Port of Vancouver is ranked fifth in North America for container traffic. Volume grew by almost 25 per cent between 2005 and 2006. The Port of Montreal is ranked 13 overall and railway intermodal tonnage grew by an average of six per cent annually between 1996 and 2005, an increase of 12.7 million tonnes.

Key considerations

Many imports in containers are manufactured goods with more bulk than weight. Agriculture exports surpass weight limits and ships cannot return with the same number of containers when they are filled with heavier commodities. In 2005, at the Port of Montreal, just over 10 per cent of containers were empty⁴. For every three containers filled with imports arriving through the Port of Vancouver, one is filled for export, one is sent back empty and one is used to ship goods domestically. If we improve our logistical networks, could we find ways to balance heavy and light loads and fill empty containers with agriculture goods or products?

The price of all containers is high because shipping lines want to make money on the backhaul to Asia and Europe. It's more profitable to rush empty containers back to China, load them with high-value goods and send them

back to North America, than it is for them to wait empty for crops. Businesses and communities are looking for ways to get containers closer to the centre of their operations.

The use of containers will continue to grow and there is significant opportunity for businesses that can master the logistics. Some of the options being considered tip the economics in favour of agriculture. Ashcroft, Kamloops and Prince George, B.C., Grand Prairie, Alta, and Moose Jaw, Sask., are looking at building inland terminals to increase access and improve turn around time. The faster containers are loaded and shipped back to port, the more profitable using them becomes.

From among 178 countries, Canada ranks among those who require the least number of documents for import or export and who export and import in the fewest number of days.

Container movement is particularly important for marketing identity-preserved (IP) products from farm to consumer. IP products and specialty grains command higher market value. Smaller amounts of specialized, high-value grains, soybeans and pulses can be moved in containers, protecting them from contamination and preserving their quality. As consumer needs increase, systems that support IP will become even more important.

Producers can increase profit by reducing inventory holds, decreasing transit times, marketing directly to the importer and charging premiums for a higher quality product.

Trading across borders

| Region | Export documents needed | Export time (days) | Cost ⁵ per container (\$US) | Import documents needed | Import time (days) | Cost per container (\$US) |
|---------------------------------|-------------------------|--------------------|--|-------------------------|--------------------|---------------------------|
| Canada | 3 | 7 | \$1,385 | 4 | 11 | \$1,425 |
| United States | 4 | 13 | \$960 | 5 | 5 | \$1,160 |
| Mexico | 5 | 17 | \$1,302 | 5 | 23 | \$2,411 |
| Brazil | 8 | 18 | \$1,090 | 7 | 22 | \$1,240 |
| Russia | 8 | 8 | \$2,050 | 13 | 36 | \$2,050 |
| India | 8 | 18 | \$820 | 9 | 21 | \$910 |
| China | 7 | 21 | \$390 | 6 | 24 | \$430 |
| Australia | 6 | 9 | \$930 | 6 | 12 | \$1,120 |
| New Zealand | 7 | 10 | \$725 | 5 | 9 | \$800 |
| Hong Kong | 4 | 6 | \$525 | 4 | 5 | \$525 |
| Malaysia | 7 | 18 | \$432 | 7 | 14 | \$385 |
| United Kingdom | 4 | 13 | \$940 | 4 | 13 | \$1,267 |
| Sweden | 4 | 8 | \$561 | 3 | 6 | \$619 |
| Eastern Europe and Central Asia | 7 | 29 | \$1,393 | 8 | 31 | \$1,551 |
| Iraq | 10 | 102 | \$3,400 | 10 | 101 | \$3,400 |
| Rwanda | 9 | 47 | \$2,975 | 9 | 69 | \$4,970 |
| Central African Republic | 8 | 57 | \$4,581 | 18 | 57 | \$4,534 |

Source: World Bank Doing Business project www.doingbusiness.org

³ A 20-foot equivalent (TEU) is defined as the volume equivalent to that occupied by one ISO 20-foot container.

⁴ MariNova, "The Use of Containers in Canada", December 2006.

⁵ Includes costs for documents, administrative fees terminal handling and inland transport charges.



By water

Canada's ports and harbours link road and rail networks to our waterways. Considering the emerging opportunities in Southeast Asia, India, Eastern Europe and South America, strong, efficient Canadian ports are increasingly important to international trade. In North America, our ports are an essential link to imports destined for Canadian consumers.

Cutting through the industrial heartland of North America, the Great Lakes – St. Lawrence Seaway is a unique inland waterway, serving 15 major international ports and some 50 regional ports on both sides of the Canada-U.S. border. The 300-kilometre Montreal–Lake Ontario section has five locks in Canada and two in the United States⁶.

In 2006, 47.1 million tonnes were transported through the Seaway, compared to the Port of Vancouver which shipped 76.5 million metric tons. Grain accounts for 11.5 million tonnes of Seaway traffic and is the number one commodity, by volume, moving through the system. About 95 per cent of all international traffic from the seaway is destined for Northern Europe and the Mediterranean.

The Port of Halifax is an ice-free port with minimal tides and no currents. Through the Suez Canal, it is one day closer to Southeast Asia than any other North American east coast container port. It is a deep-water port and the only east coast port that can handle fully laden post-Panamax container vessels.

On B.C.'s north coast, the Port of Prince Rupert has excellent road and rail transportation systems to western and eastern Canada and is close to major world markets. The port has a large, ice-free harbour sheltered by outer islands and several deep-sea berths. Work is underway to develop container handling abilities that will take advantage of the growing trade from China and excellent access to the midwest U.S. market.

Key considerations

Water is the most energy efficient way to move goods that are not time sensitive. Increases in ship size and the demands of increasing trade with Asia puts pressure on our west coast ports. Eastern ports are surrounded by growing demands from dense populations. These ports are increasingly important to Canada's competitive ability. Are we using our ports and inland waterways to their fullest potential?



⁶ Government of Canada, "Transportation in Canada, 2006".

⁷ Post-Panamax refers to ships larger than Panamax that do not fit through the Panama Canal.



By air

In 2005, some \$856 million in agriculture exports left Canada by air, while \$345 million entered the country. Unlike other modes of transportation, there has not been a substantial increase in air transport. However, it is an important option for some products. Products moving to international destinations by air include a variety of seafood, specifically Atlantic salmon, lobster, shrimp, prawns, tuna, sea urchins and geoducks, mushrooms, ginseng and high-value specialty crops like strawberries, blueberries and greenhouse products.



Fresh ideas grown here

Every day, dozens of flights touch down at Kenya's Nairobi Airport, unloading hundreds of tourists. When the passenger planes are ready to make the late-night trip home, they're loaded with more than passengers. They carry 60 tonnes of fresh vegetables destined for markets in London, Paris and other European cities.

Vegpro Kenya operates seven farms within a two-hour drive of the airport. Every morning, trucks filled with 30 different varieties of vegetables, arrive at the airport, are washed, sorted, sliced, diced and wrapped by 1,000 workers inside an air-conditioned cargo bay. They arrive at their European destinations the next day.

Using passenger flights to transport fresh produce is part of Vegpro's innovative supply chain management. In addition to the obvious efficiency, Vegpro is cashing in on the growing consumer demand for fresh produce. By purchasing fresh produce from Kenya, consumers support the livelihoods of about one million African people.

Stir fries sell for \$3.50 or more in London and sales are growing by 35 per cent annually.

Key considerations

Although only a small amount of agriculture products move by air, planes carry fresh, high-value products. Air transport requires more energy than any other mode of transportation. The cost and environmental footprint suggests that we look for alternatives to our current air transport technology.



Key considerations for all modes of transportation

Agriculture is big business that has a significant impact on Canada's economy. In 2006, the value of goods traded domestically topped \$620 billion. Agriculture exports to our top 10 customers tallied \$23.2 billion and imports some \$18.2 billion.

Timing is everything where transportation is concerned. The time that it takes to get goods to market can be affected by a number of factors such as the availability of trucks, railcars, containers or ships, bureaucracy, paperwork, delays in loading cargo and even inclement weather.

In an unpredictable market, every delay could mean additional costs or narrow your profit margins. Awareness is an important first step. Planning ahead and hedging your risks can help avoid unpleasant surprises.

The volume of cargo moving across all modes of transport increases every year and ships are sailing at full capacity. Some transportation consultants such as Transystems Inc., are predicting a wide spread shortage of space across North American ports by 2010.

Cargo ships are outgrowing the transportation infrastructure. Vessels that carry between 8,000 and 10,000 containers already sail the major trade routes and bigger vessels are on the horizon. Emma, the largest container ship ever built and pride of the A.E Moeller-Maersk line, can carry between 11,000 and 14,500 containers. Few ports have the water depth, terminal facilities and inter-modal connections to handle a vessel of that size. Emma is a prototype for what lies ahead in the shipping industry.

Service ratings

The Canadian Industrial Transportation Association (CITA) conducts a survey of shippers each year. The following chart shows how different modes compare. Service ratings are based on percentage of on time delivery as reported by members of the CITA.

| | 2007 | 2006 | 2005 |
|------------|-------------------------------|----------------------------------|--------------------------------------|
| Excellent | Air freight | | Air freight, smaller than truck load |
| Good | Courier, marine | Air freight, truck load | Courier, truck load |
| Acceptable | Truck load, intermodal | Smaller than truck load, courier | Marine |
| Poor | Smaller than truck load, rail | Intermodal, marine, rail | Intermodal, rail |

Source: Dr. Alan Saipe of Supply Chain Surveys Inc.



We deliver 58 per cent of our agriculture exports across the border, accounting for US\$16.3 billion in revenue. The volume and value of some Canadian commodities, like fertilizer, has grown dramatically. Between 2000 and 2007, exports of fertilizer to the U.S. grew by 17 per cent in volume and more than doubled in value, from US\$1.3 billion to US\$2.9 billion. Canada has a lot riding on its transportation system!

Governments on both sides of the border recognize the economic importance of moving goods efficiently. Canada and the U.S. are partners in NEXUS certification for low-risk, pre-approved individuals frequently crossing the border and the Free and Secure Trade certification (FAST) program, designed to expedite the movement of low-risk goods and truck drivers. FAST certification:

- reduces the information needed for border and customs clearance
- eliminates the need for importers to transmit data for each transaction
- provides dedicated lanes for FAST clearances at border crossings
- reduces the rate of border examinations

Moving goods to and from the U.S.

In the previous edition of Knowledge Insider, we pointed out that U.S. trade significantly impacts Canada’s participation in the global economy and will remain a very important trading partner. We share 130 land border points. Based on volume, 52 per cent of Canada-U.S. trade moves through the Queenston, Fort Erie, Sarnia and Windsor corridors.

Food for thought

If you are doing business in the United States, consider locating a FAST certified shipper. If you regularly cross the border to do business, investigate these certification options.

Top Canadian agrifood imports/exports to the United States

| Export commodity | 2006 value (millions) | Import commodity | 2006 value (millions) |
|----------------------------------|-----------------------|----------------------------------|-----------------------|
| Live cattle | \$1,188 | Food preparations | \$753 |
| Fresh boneless beef | \$896 | Bread, pastry, cakes and bisuits | \$464 |
| Frozen fries | \$653 | Dog or cat food | \$421 |
| Bread, pastry, cakes and bisuits | \$646 | Soybean oilcake | \$302 |
| Food preparations | \$579 | Fresh boneless beef | \$281 |

Source: <http://atn-riae.agr.ca/stats/unitedstates.pdf>