# North American Gateway and Corridor Initiatives in a Changing World

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# NORTH AMERICAN GATEWAY AND CORRIDOR INITIATIVES IN A CHANGING WORLD[i]

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## Introduction

The explosive growth of the Asian economies and in particular, those of India and China, are transforming the global trade patterns and testing the capacity of transportation networks. The rising tide of economic activity with Asia is stimulating research interest in the impact on North American networks of ships, ports, railways, roads, planes, airports and their related multi-modal handling facilities. Central to the transformation of global trade logistics is the role of gateways and corridors in the economic development of regions and continents.

Canada's Asia Pacific Gateway and Corridor Research Initiative is a consortium of four western research agencies established to explore the role of gateways and corridors in the economic development process.[ii] The research consortium conducted three roundtables in the Prairies at Calgary, Regina and Winnipeg and a major conference at Vancouver during the spring of 2007.

This initiative recognizes that human and physical capital to support the movement of people and goods are concentrated in key geographic locations that are referred to as gateways and corridors. These encompass many different aspects of infrastructure, such as ports, borders and roadways, and include key elements of logistics and supply chain management.

In an era of expanding global supply chains (GSC), gateways and corridors are becoming sources of competitive advantage for many firms. Supply chain performance is increasingly linked to Canada's

ability to develop global trade and financial networks. What are the economic impacts of gateways in Canada? How are gateways and corridors enabling the integration of Canada in global trade and financial networks and how can we improve these?

This paper provides a brief introduction to some of the theory and concepts of gateways and corridors. This is followed by a discussion of issues surrounding the development of trade that identifies areas for further research and policy development to help Canada retain its competitive position in the global and North American economy.

## DEFINING GATEWAYS AND CORRIDORS

Gateways and corridors are a fact of history and an integral part of transportation economics. From earliest harbours like Alexandria and Marseilles, to today's Rotterdam or Shanghai, a port's success is dependent upon its role as an entrepôt to a surrounding hinterland and its location on a trading corridor. Trade routes also change over time, from the ancient Silk Road to China, to the more recent Orient Express railway between London and Istanbul, or now the emerging air freight and intermodal container trade corridors between Asia and North America.

Transport seeks the easiest, shortest and lowest cost routes, while land settlement patterns determine the location of transportation infrastructure. Transportation gateways and trade corridors exist within broader networks of links and nodes. The network is comprised of competing modes of road, rail, air or water transport that form the links which converge at hub and gateway cities that are the nodes. A trade corridor is any pathway that facilitates the movement of goods between two or more gateway cities.

Burghardt (1971) developed a model of a gateway city that provides a useful framework for the entry points of trade corridors. The Burghardt hypothesis rests on the location and role of cities in a hierarchy of different sizes and functions. Large cities have the economies of scale to provide higher level services like appellate courts and specialized education that smaller cities cannot. At the very pinnacle of the hierarchy are cities that host national and international financial services and entertainment industries. As the largest centres of distribution, these cities dominate commerce and

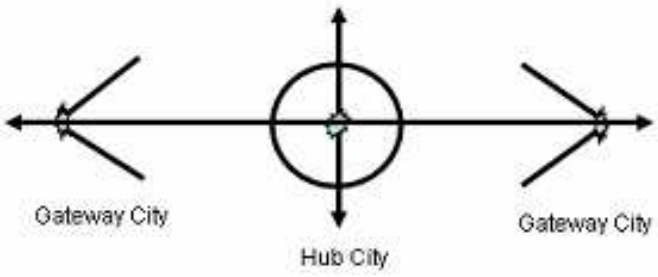
serve as hubs and gateways for transport to the lesser communities in their hinterland.

The hinterlands and economic roles of gateway cities are different than hub cities. Transportation infrastructure radiates out from a hub city to serve a circular-shaped interior hinterland. Burghardt observes that gateway cities lie at the extremes of their geographic regions and have cone-shaped hinterlands. The one-sided hinterland is caused by their location at a geographical shear zone or some barrier to trade.

The gateway city lies at the transition point with a "fertile" cone-shaped hinterland on the one side, and an "infertile" region on the other. The fertile side has a well developed multimodal network of transportation infrastructure. The infertile side is served by a narrow trade corridor with long haul transportation services that connect the gateway city to a distant gateway in another market.

Figure 1 identifies the role that hubs and gateways play in trade corridors. Hub cities may rest on two or more major corridors that bisect its hinterland. Most gateway cities serve only one end of a major corridor that feeds traffic into and out of its region.

**Figure 1**
**Hubs and Gateways on a Trade Corridor**




Traffic is funneled through a gateway city because it sits at a strategic location where transportation costs can be minimized along a land corridor or a sea route. Ocean ports are obvious gateway cities. Vancouver serves as a gateway to the Asia Pacific trade routes and

links an inland corridor through the Prairies that divides at Winnipeg south to the U.S. mid-west and east to central Canada.

Internal gateway cities can emerge where continental features create the right conditions. For example, gateway cities can become located because of mountain ranges, deserts, rivers and inland seas. Calgary owes its location and size to the mountain pass that provides a relatively gentle access for the railway through the Rocky Mountains. Calgary emerged as the gateway to distribute goods from British Columbia to the fertile hinterland of the western prairies.

Winnipeg was founded as an eastern gateway to the prairies. With the barren Canadian Shield at its back Winnipeg funneled trade from across eastern prairies over a long corridor that linked to Montreal and Europe. The location of Winnipeg at the Red River occurred because traffic had to be transshipped at that point. Winnipeg's exact location became solidified when the railway bridge was built across the river and set the route of the trade corridor.

Whebell (1969) observes that trade corridor routes became fixed with the construction of rail lines. Although cars and trucks are more flexible, centres that were already served by rail were subsequently more desirable to connect with roads. In North America, the railway infrastructure is oriented with stronger and more direct east/west corridors than north/south corridors. Even in the case of air travel, which is not tied to fixed infrastructure routes, it is generally easier and faster to fly east/west in North America than to travel north/south. This reflects another source of gateway location - political boundaries.

Political boundaries create gateway opportunities because goods and carriers must stop for documentation, inspection and travel approval. Sovereign states also impose regulations that limit foreign competition (cabotage restrictions) and favour the transfer of goods to domestic transportation systems. Like seaports, sovereign borders within a trading bloc stimulate land settlement patterns and employment to serve international trade. It is not clear that either Calgary or Winnipeg would have grown into major cities if the U.S.-Canada border had not limited the reach of cities further south.

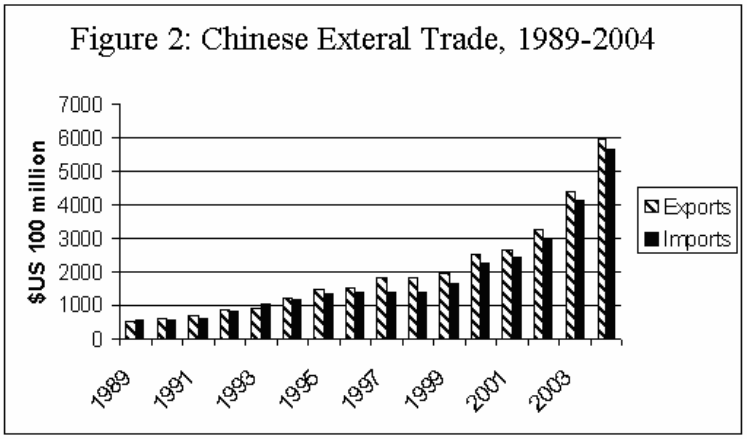
The size of the region and the range of available transportation services define the hierarchy of gateway cities and trade corridors. Ocean ports continuously compete with each other to attract shipping lines. Airport operators try to catch the attention of airline services. Cities work to provide road infrastructure that serves their ports, railway yards and intermodal facilities.

Once established, gateways and corridors may merge to create networks within which routing and development options multiply. As trade flows grow along any corridor, either infrastructure must adapt to accommodate the increased movement or the market will use alternative gateway-corridor combinations. Within the broader transportation network, this could affect development options, competitive frameworks and transportation costs.

**ASIAN GROWTH, TRADE AND TRANSPORTATION**

Much of the 20th Century saw great economic progress in the industrialize countries. As the 21st Century unfolds, the developing world is leading global economic growth with China and India at the vanguard. Figure 2 records China's remarkable growth of imports and exports. Many observers believe that China will be the largest economy in the World by 2050, followed by the United States.[iii]

Figure 2: Chinese Exteral Trade, 1989-2004



Increasingly the economies of Asia and North America are becoming linked. Expanding resource and energy exports from North America are being traded for growing imports of consumer goods from Asia. The World Trade Organisation reports that the value of exports to China from North America between 2000 and 2004 grew an annual average rate of 21%, while imports grew by 20% annually.[iv]

Canada is a part of this movement. Between 1995 and 2005, Canada's exports to China doubled from $3.5 billion to $7.1 billion and imports increased over five times from $5 billion to $30 billion. By 2020 China is expected to account for 60% of all Asian-North American trade.

Asian economic growth is contributing to the new economic pressures for energy investment and urban expansion now driving much of the Western Canadian economy. The International Energy Agency reports Asia-Australasia as the largest single energy consuming region in the world and larger than North America. Oilsands and other western Canadian energy developments are further expanding transportation demand.

Increased urbanization, directly related to the energy and trade boom, is creating expanded urban north-south corridors, particularly within Alberta from Fort McMurrary to Lethbridge and from the B.C. Lower Mainland south into U.S. Cascadia. Many traditional sectors of the western economy in rural areas, agriculture and manufacturing are finding their transportation services, resources and infrastructure capacities redirected towards the new and emerging transportation demands of the major energy projects and the megapolitan areas.

Elements of economics, geography and public administration associated with supply chains act upon gateways and corridors. Costs and benefits are manifest in terms of pressures ranging from frictions of border security and regulation, to local versus national economic interests and more. What seems clear is that gateways and corridors are not simply physical infrastructure. They are an integration of managed activities through which the distribution of significant incoming and outgoing transport flows take place by means of transfer and transshipment, and in which added value can be obtained by entering new regions/markets with the help of direct investments.

Rodrigue's (1996) review of Asian corridors and development identifies strong social, economic and transport relationships between gateways and corridors. He notes: that *"Conventional approaches to urbanization have tended to split the territorial functions of economic systems from the distribution functions of the transport system. We have proposed that corridors provide integration between those functions. They reinforce the convergence of transactions and spatial accumulation."*

The development of ever larger container ships and high speed port handling equipment cannot be separated from the economic growth of Asian trade. Levinson (2006) observes that the tide of Asian imports could not have occurred without the container revolution. Global container growth continues to reshape North American transportation. Nearly all container terminals are facing congestion, particularly at the west coast ports, and double-stacked container trains are the largest revenue source for the Class 1 railways.

Major new development opportunities are associated with the world wide containerization of ocean shipping. *International trade is no longer dominated by essential raw materials or finished products. Fewer than one-third of the containers imported through southern California in 1998 contained consumer goods. Most of the rest were links in global supply chains, carrying what economists call "intermediate goods," factory inputs that have been partially processed in one place and will be processed further someplace else.* (Levinson, 2006)

Northern Canadian routes have time and distance advantages for trade between Asia and the United States. Opportunities exist for value-added activities at inland ports along Canada's Asia-Pacific trade corridors. Some of the emerging trade corridor development opportunities that have been identified[v] include:

- Auto parts and competitive auto assembly plants
- Lumber for furniture assembly
- Aerospace mechanical systems
- Telecom equipment manufacturing
- Plastics
- Production technology

Improved transportation systems and infrastructure at gateways and along corridors are now, therefore, becoming critical foundations for the next round in Canada's economic growth requiring huge infrastructure investments to be compatible with the emerging scale of the trade flows and the offshore and ocean infrastructure.

## CANADA'S TRANSPORTATION SYSTEM AND POLICY FRAMEWORKS

In the 19th Century Western Canada was forged under the National policy that built the railway west and exported grains to Dominion and Empire. The rail network of mainline and branch lines united Canada, settled the Prairies and connected the West to Eastern Canada and the World. Western Canada's subsequent road, air and community infrastructure developed around this core east-west rail network.

Canadian national transportation policy, laws and regulations, including subsidies like the Crows Nest Freight Rates, were developed to meet contemporary national goals and objectives within the geographic confines of Canada's national boundaries. Subsequent National Transportation Acts fundamentally changed these approaches from making transportation a direct tool of national policy to one of encouraging transportation to be competitive and efficient and thereby provide a basis for the competitiveness of Canadian industry. The provinces implemented their own transportation policies within the national framework for movement within Canada.

In spite of Canada's growing dependence on trade, the transport infrastructure and policy framework retains its 20th Century foundations. Road infrastructure financing deficits remained large for many urban and freight routes. The railway network is increasingly testing capacity bottlenecks. Provincial barriers to internal trade remain in place. Truck weights and dimensions standards have yet to be harmonized across the country. Capital constraints remain in many ports and some airports. Open Skies policies are moving only slowly to create a North American and global air marketplace. An economy focused on global markets requires a likeminded transportation policy.

An important start has been made on transport policy reform for Asia Pacific Trade with federal and provincial commitments to strategic infrastructure. The federal Asia Pacific Gateway and Corridor Initiative investments are designed to reduce bottlenecks in the B.C. Lower Mainland, at Prince Rupert and to the east. In 2005, the Western Provincial Transportation Ministers council identified economic investments worth $15 billion need to expand or improve the strategic transport network in Western Canada (WPTMC, 2005).

These represent important starts at a new transportation policy framework for Canada in an era of rapidly growing Asia Pacific and continental North American trade. However, the magnitude of the transportation growth and its implications for gateway and corridor development in the context of global and continental transportation systems will not be resolved by investment alone. Much transport investment to date represents a recovery from the severe infrastructure deficits of the past two decades that too often left bottlenecks and barriers on the both public, private and multi-modal transportation networks.

The challenge for federal and provincial governments today is to move ahead of the emerging trade flows to create policies and commercial frameworks to provide Canada with a competitive transportation advantage for the development of Asian trade with North America. This may involve increased infrastructure investments, inland ports, gateway and corridor designations, improved border clearances, grade separations and new competitive, regulatory and information management frameworks and institutions.

Past practice is unlikely to meet the need. With massive infrastructure investment already underway in China and the United States, Canada will be challenged to keep pace. Indeed Canada's position calls for strategic initiatives to reduce the costs of transportation friction; the average exporter pays $9 in transportation costs for each $1 in tariffs and gravity models of international trade show that a common border, common language and belonging to a common regional trading bloc have a much larger effect (by a factor of 80 to 300 times) on facilitating trade than a reduction of physical distance by 1 percent.

## ISSUES AND THEMES FOR DISCUSSION RELATED TO CANADA'S ASIA PACIFIC GATEWAY AND CORRIDOR DEVELOPMENTS.

It is clear that trade gateways and corridors result from many social, historical, economic, commercial, institutional and regulatory forces that shape the geography of transport systems from time to time. As the world currently reshapes many of its global trading patterns, particularly with respect to Asia-Pacific and continental North America trade there are opportunities to shape Canada's future role in the movement of goods and services. All regions of Canada can benefit by strengthening the Asia Pacific trading framework through modernized transport networks of gateways and corridors. Nine main themes are identified for review and discussion.

### *Area 1: Theory of gateways and corridors in transportation and regional economics*

In building Canada's new transportation systems within continental and global trade flows a number of critical areas related to the development of new transportation networks and Gateway and Corridor components warrant further discussion, evaluation and research.

- How do gateways and their corrid*ors* evolve? What are the major forces that shape their geography?
- Will market forces alone self select the Canadian combinations of gateways and corridor?
- How important are strategic government interventions? What about the places left off the main corridors for moving goods and people?
- How can the hinterlands gain access to the gateway and corridor opportunities?

### *Area 2: Supply chains, gateways and corridors*

Gateways can be seen as hubs in supply chains. They create value by the efficient transfer of goods and information between modes and by

linking different geographical areas through corridors. They can exist at the coast or inland.

- How will the growing traffic flows between Asia and North America provide supply chain opportunities for Canada?
- How will domestic industries access capacity when an increasing share of infrastructure is being used on continental U.S. – Asian trade?
- Can Canada become an interim stop on the new continental trade corridors?

***Area 3: Gateways and corridors and competitiveness***

Distance is not quite dead yet, and neither is the competition for traffic between alternative routes. New gateway and corridor networks are changing the competitive frameworks for transportation in North America.

- What makes gateways competitive and how can competitive gateways support economic activities in Canada?
- Should transport competition be structured within the emerging continental network?
- Are there shipper and consumer benefits that would become available by encouraging the development of continental systems of movement and competition?

***Area 4: Institutional Frameworks for Governance***

Gateways and their networks of corridors cross provincial, national and even international boundaries raising major issues of governance, regulation and policy.

- How may policies and institutions have to change to support the development of efficient and competitive systems of gateways and corridors?
- How can national transport law, regulation and policy adapt to the new realities of movement while maintaining national coherence?

- Is it time to make the domestic Agreement on Internal Trade effective to remove inter provincial barriers to trade and transportation?
- Are new transnational institutional frameworks required to manage Gateway and Corridor networks?

***Area 5: Land Use/Urban Planning/Environment***

Gateways have national importance and local facilities that lead to differences of views between local priorities and national considerations. Nowhere is this more obvious than in land use planning where land is at a premium such as a major sea port. Gateways and their freight corridors geographically concentrate traffic, creating potential local disturbances (noise, congestion, etc.) and environmental pollution.

- How should these dimensions be taken into account in investment decisions?
- How can the long term commercial and economic interests of the country adapt to the local concerns of citizens and long term vested interests?

***Area 6: Smart Gateways and Corridors -- Borders & Security***

The new global trading networks cross many jurisdictions creating security risks at border crossing points. Secure infrastructure, internationally recognized security standards or best practices can be used as an enabler to increase competitive advantage for Canada's ports through the Pacific Gateway initiative vis-à-vis other North American ports.

- How can supply chains remain secure and which security risk management systems are priorities?

***Area 7: Information Management***

A gateway requires that goods move seamlessly across modes and geographic boundaries. It also needs the transfer of vast amount of information between parties to ensure that the title of goods is clear and the shipment is routed effectively across and between modes and across jurisdictions. When gateways and corridors stretch across the

continent from east to west and north to south there are few institutional or information bases on this scale.

- How can information be best restructured to meet the realities of continental and global movement?
- Can improved data management support increased competition, productivity and logistics?

***Area 8: Public and private investments in Gateways and Corridors***

Gateway investment might require new management arrangements between various private and public parties. The allocation of risk could involve consideration of public investments in facilities or access to facilities of commercialized or private entities.

- What are the policy principles that should guide such actions given the various governance regimes and public policies applying to transportation infrastructure providers.
- Are financial incentives in either the public or private sectors adequate to provide for infrastructure investments of a quality and scale to meet competitive transportation alternatives?
- Can Canada mobilize its resources to catch up to the global investments already underway in Europe, Asia and the United States?
- Is Canada ready for innovative infrastructure financing of its transportation system?
- What is the scope of infrastructure financing required to meet the needs of the North American Asian trade flows, the expanding energy markets and the continued growth of Canadian cities and the national economy?

**STAYING AHEAD IN GLOBAL TRANSPORTATION**

Gateway and Corridor strategies are emerging throughout the world as an important new component of economic strategies designed to improve regional competition and productivity. Asia has long dominated the regional coastal movements of containers and is now rapidly becoming a world leader in the intercontinental trade. The

European Economic Union has developed a single transport policy for harmonisation and improved logistics within its expanded union. North America, traditionally, the world leader in many areas of transport logistics, now finds itself with emerging issues of competitive transportation.

North American transportation systems and logistics are becoming both global and continental with goods moving across internal borders and around the world. Further integration and harmonisation of continental transportation will require major changes to the policy and regulatory frameworks facing all modes across the continent. Development of transportation capacity to serve global trade will involve substantial public and private infrastructure commitments.

If the Gateway and Corridor strategy is to succeed, it will take more than simply investing in infrastructure at ports, airports and roads. In our view the gateway and corridor strategy should not simply be about facilitating transshipment in moving goods through the region, it should also be about creating value added services and the development of a significant logistics industry that among other things reduces the cost of the border to shippers. The strategy must work to harmonize the large number of federal, state, provincial and municipal jurisdictions in three countries to simplify the regulatory logistics of movement.

Gateways and Corridors are central to the concentration of economic activity into a few megapolitan economies across the continent. These often represent corridors of employment and opportunity, yet leave a vast hinterland with fewer transport connections that Goetz has referred to as "pockets of pain"[vi]. At the non-economic and human scale there is a growing political opposition to the density of development for environmental and social reasons. The interests of the global competitive economy and livable neighbourhoods are not always seen as one, particularly along corridors and gateways.

The movement from national to continental transportation infrastructure and networks in North America will challenge shippers, carriers and governments to increase their levels of cooperation, research and management in the years ahead. The structural transformations of the world container trade now underway warrants

a sustained research and policy response for Canada and North America to retain its competitive position in coming years. Central to the success of that initiative in North America will be new approaches to managing the continent's gateways and corridors.

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