Transportation Policy Brief #4

Rail and Logistics Hubs: Opportunities for Improvement


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September 2015

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FOREWORD

The Lyndon B. Johnson School of Public Affairs at The University of Texas at Austin has established interdisciplinary research on policy problems as the core of its educational program. A major part of this program is the nine-month policy research project (PRP), in the course of which two or more faculty members from different disciplines direct the research of 10 to 20 graduate students of diverse backgrounds on a policy issue of concern to a government or nonprofit agency.

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During the 2014–2015 academic year, the Texas Department of Transportation (TxDOT) supported a policy research project on manufacturing trends in Texas and Mexico, addressing six key policy issues. The project was a collaboration of the Center for Transportation Research (CTR) and the Lyndon B. Johnson School of Public Affairs at The University of Texas at Austin, and the Center for Economic Development and Research at the University of North Texas.

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The research team interacted with TxDOT officials throughout the course of the academic year. Overall direction and guidance was provided by Mr. Marc Williams, Director of Planning for TxDOT. Mr. Williams participated in an October 10, 2014, workshop to determine the scope of the study. As a consequence, the foll owing policy issues were selected for study:

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1. Texas Manufacturing Competitiveness;
2. Reshoring in Texas;
3. Nearshoring in Mexico;
4. Inland Ports and Logistics Hubs;
5. Intra-Industry Trade; and
6. Implications of the Trans-Pacific Partnership on Transportation in Texas.

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The findings of each policy issue are presented within the context of separate transportatio policy briefs. This particular policy brief, “Rail and Logistics Hubs: O p p o r t u n i t i e s f Improvement,” was researched and written by Victoria Wilson and Maria Monica Villarreal.

ACKNOWLEDGEMENTS

This policy research project would not have been possible without the generous contributions of numerous individuals and organizations. For Policy Brief #4, we are especially grateful to the following individuals:

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We are also very grateful and acknowledge the following TxDOT officials and transportation and border trade experts for participating in weekly class presentations or scheduled interviews:

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- Gonzalo Prida, Executive Vice-President, Association of Laredo Forwarding Agents
- Mario Maldonado, Bridge Manager, Laredo International Bridge Systems
- Mike Garza, U.S. Customs & Border Protection Officer, U.S. Customs & Border Protection - Free and Secure Trade Office

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EXECUTIVE SUMMARY

Texas's cross-border traffic with Mexico is a central issue in the planning of the state's freight transportation network. Mexico's recent reshoring activities create the potential for even greater congestion and travel delays. Given increasing cross-border traffic with Mexico, logistics and infrastructure are vital components and possible solutions to cross-border freight issues. This policy brief will examine the role of logistics hubs in cross-border trade, including the integration of rail intermodal transportation, value-added services, third-party logistics companies, and the role of Foreign Trade Zones in facilitating commerce and reducing truck traffic.

With 1,254 border miles and over 20 ports of entry, Texas is the United States' largest gateway for moving goods to and from Mexico. The majority of Mexico's trade with the United States occurs on four transportation corridors, which pass through Laredo, El Paso, Brownsville, and Eagle Pass, respectively. The highways that traverse these corridors are already congested, and reshoring activities will only increase the demand on these roads. Consequently, shippers are beginning to look to rail intermodal as an alternate mode of transportation that avoids congested highways and border crossings. Mexico's newly developed National Infrastructure Plan, which aims to develop the nation's rail network, will attempt to ease cross-border traffic by decreasing regulations and providing alternatives to truck transportation. Further, U.S. rail companies continue to make large investments in developing their network and increasing service to and from Mexico.

Increased rail usage may also enhance the role of logistics hubs in U.S.-Mexico trade as they continue to adjust to the challenges of globalized trade. Logistics hubs attract a number of services, including third-party logistics firms and manufacturers that seek alternate modes of transportation and the efficiencies of clusters. Logistics hubs are a significant component of the intermodal chain, as they offer rail terminals, truck services, and sometimes marine ports, allowing for intermodal transportation. Intermodal transportation takes advantage of the efficiency of rail, while using trucks to handle door-to-door deliveries. Further, manufacturing clusters around logistics hubs promote resource- and information-sharing, and attract suppliers and third-party logistics firms that provide value-added services—all of these features encourage relocation around hubs and facilitate access to intermodal rail service. Developing rail logistics hubs and interconnecting rail networks provides significant potential to further develop the efficiencies of rail and to remove trucks from the highway.

Given this information, TxDOT might consider the following options:

- Promote private-public partnerships for the planning and development of rail and logistics hubs in Texas;
- Promote binational cooperation for the construction of cross-border rail crossings; and
- Support regulatory uniformity for rail safety between the United States and Mexico.

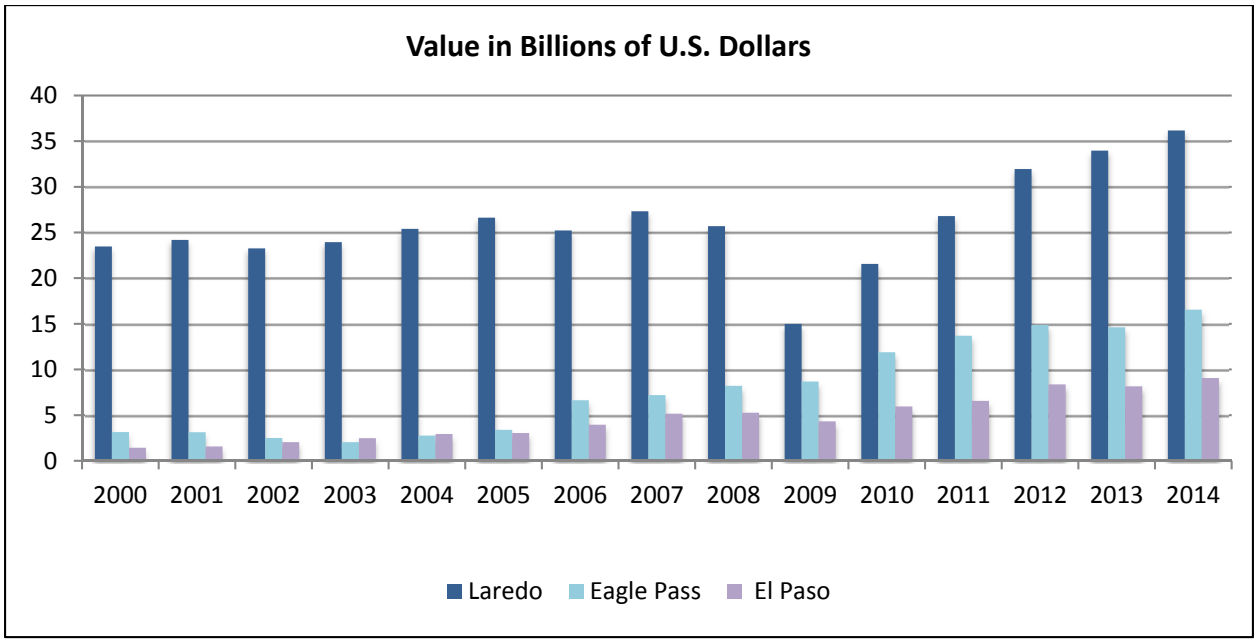
INTRODUCTION

The use of rail and logistics hubs for the transportation of freight between Mexico and the United States is growing rapidly. This policy brief will illustrate the operation of railroad companies in both countries, as well as the role of each in trade and transportation at the Texas-Mexico border. Further, the brief will focus on three logistics hubs operating in each country. In Texas, the focus will be on the Alliance Global Logistics Hub, the Port of San Antonio, and the Port of Laredo. In Mexico, the brief will focus on ports and logistics hubs from different regions of the country: the Port of Guanajuato in central Mexico, the Port of Monterrey in the north, and the Port of Lázaro Cárdenas on the west coast. Finally, the policy brief will discuss opportunities for improving and expanding the use of rail to move freight and as an alternative to truck transportation.

RAIL

Increasing trade between the United States and Mexico has meant more trucks on already congested roads on both sides of the border. To respond to growing levels of roadway congestion, shippers are more seriously considering the use of rail as an alternative to truck transportation. Rail has the capability to transport large volumes of goods in a single trip—enough commodities that, in some cases, a single train could remove around 300 trucks from the highway. If the use of rail could be expanded to additional industries, it could not only diminish future congestion, but also potentially alleviate the current traffic levels. Currently four main rail bridges are used for U.S.-Mexico trade. Figure 1 shows the value of trade moved by rail through each of these Texas customs ports. Rail already transports billions of dollars of goods, and could continue to expand its role in trade to further reduce cross-border truck traffic.

Figure 1. Texas Trade with Mexico by Rail Ports, 2000–2014



Source: Federal Railroad Association, "U.S. Rail-Carried Trade with Canada and Mexico," U.S. Department of Transportation, March 20, 2013.

Rail has the additional advantage of being four times more fuel-efficient than trucks, meaning a train can carry a ton of cargo farther than a truck consuming the same amount of fuel. On a similar note, this fuel efficiency also means that trains produce four times fewer CO^2 emissions than trucks on a ton-mile basis. Since 2000, significant improvements have been made to the energy consumption of trains, leading to a 17 percent fuel efficiency improvement—the equivalent of 20 million metric tons of greenhouses gasses emissions. If 10 percent of total U.S. freight were transported by rail, instead of truck, one billion gallons of fuel would be saved annually.[1]

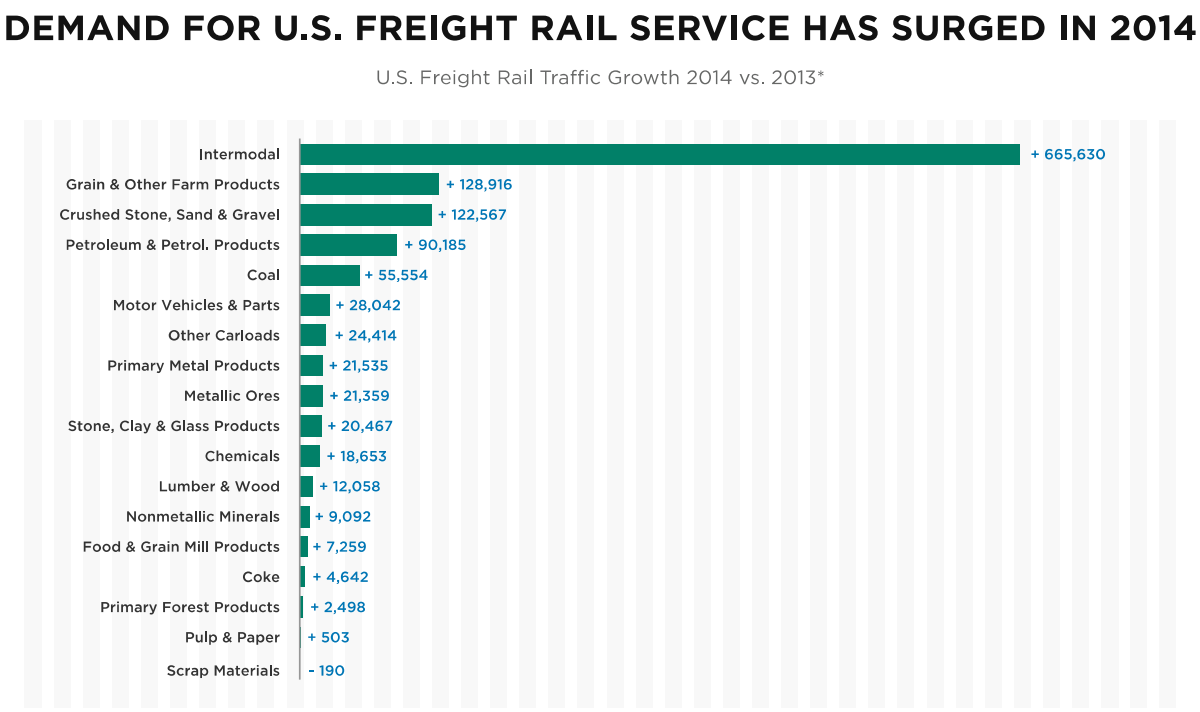
It is also noteworthy that expanding the railway network would be cheaper than building more highways. The cost of building one mile of highway is approximately $15 million, while the cost of building one mile of rail is $2 to $3 million. Further, these investments have largely come from the private sector up to now.

There are, however, some disadvantages to using rail as a freight transportation mode. While rail is more cost-efficient than trucks when moving large volumes of freight, this is not the case with low-volume shipments. In these instances, trucks are still the most cost-efficient mode. Rail also cannot transport just-in-time shipments or other urgently needed goods in a practical manner. Trucks have the advantage of being able to load or unload their freight anywhere there is a road. Lastly, rail is more efficient over longer distances, typically farther than 500 miles.

[1] Union Pacific, "Indirect Economic Impacts."

These disadvantages do not necessarily mean that rail is not a viable option for shorter trips or low-volume shippers, since third-party logistics companies combine cargoes to make rail transportation more efficient. An increase in future railway capacity could also mitigate constraints on time-sensitive freight. Such an increase would diminish the possibility of congestion, as well as offer the ability to transport freight closer to its final destination. Other data show that the use of rail is expanding across commodities, as shown in Figure 2.

Figure 2. Demand for Rail



Source: Association of American Railroads, "Demand for U.S. Freight Rail Services Has Surged in 2014," Weekly Railroad Traffic, 2014.

The largest growth has occurred in the number of intermodal carloads. This growth is due in part to a recovering economy and an increasing demand for container shipping. Third-party logistics firms have facilitated the growth of intermodal transportation by consolidating shipments in containers. In 2013, an increase in crop yields and demand for coal to generate electricity lead to a surge in carloads of coal, grains, and other farm products. The transportation of motor vehicles and parts also continues to grow, as this industry expands its use of cross-border supply chains. The expanded use of rail shown in Figure 2 is likely to continue as the economy grows, fuel prices remain high, and congestion affects mobility, due to continued investment in rail infrastructure. Current investments in Texas's rail infrastructure include major improvements to Tower 55, which is a busy rail intersection in Fort Worth. This intersection will be undergoing significant improvements

to decrease congestion and wait times for freight trains. Among these improvements are an additional north-south line through Tower 55, a redesigned Centralized Traffic Control system, and improvements to bridges. It is estimated that these changes will increase volume through the intersection by 34 percent and prevent $900 million in supply chain costs.[2]

INTERMODAL OPTION

Rail intermodal can replace long-haul truck trips, as the trains are able to transport either van trailers or intermodal containers, which can then be transferred to trucks or ships (or even barges) for the last stretch to the destination. The volume of rail intermodal reached 13.5 million containers and trailers in 2014, surpassing the 2006 record of 12.3 million.[3] Intermodal shipping containers can transport a variety of goods, including electronics, automobile parts, frozen foods, and grains. Most of the domestic market increase is attributed to freight that was previously carried by trucks but has been converted to rail intermodal.[4] (See Figure 3 for map of intermodal terminals.)

The efficiency and cost-effectiveness of the intermodal option have been maintained through a series in investments in infrastructure and functionality. Rail infrastructure investments have built and expanded inland intermodal terminals, built near-dock terminals to simplify the transfers between trains and ships, added signal systems to allow for faster trains, and increased clearances to allow for double-stacked trains. These changes are meant to keep pace with growing freight shipments—estimated to be 28.5 billion tons by 2040.[5]

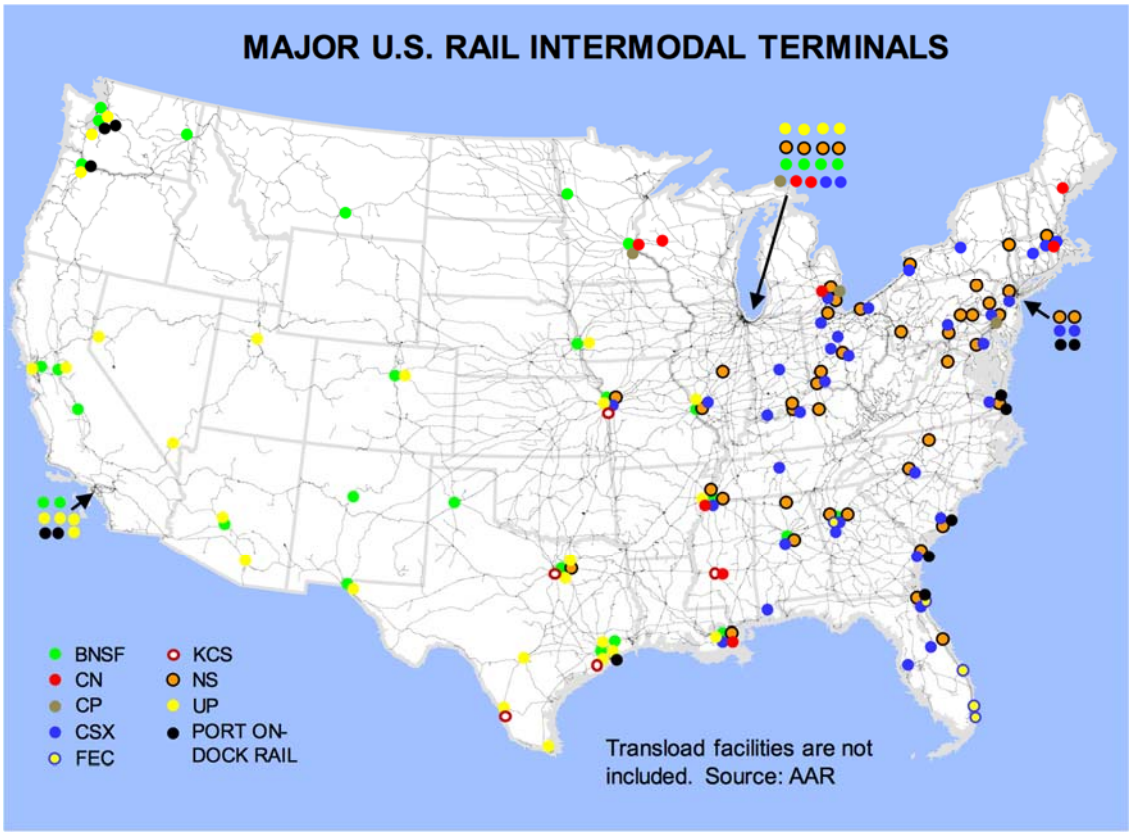
THIRD-PARTY LOGISTICS

Third-party logistics companies, or 3PLs, have become increasingly involved in the international movement of goods. Shippers have found that outsourcing their transportation management to 3PLs offers them greater efficiency in meeting their transportation needs. This efficiency stems, in part, from 3PLs' multi-faceted approach—one that often includes technology, brokerage, and supply-chain consulting services.[6] 3PLs have also introduced efficiency through cooperation modes—the utilization of their own resources to provide better service to customers. For companies such as Ryder and UPS logistics, this means using multi-customer distribution centers with shared equipment and workforce. For other companies, such as Exel, this means maintaining separate warehouses for individual customers and shifting the workforce from warehouse to warehouse as demand dictates. In fact, in spite of being competitors, logistics companies will also collaborate with one another. Due to the variable nature of their need for labor, staffing

[2] Corridors of Commerce, "Tower 55."
[3] Association of American Railroads, "Rail Intermodal Keeps America Moving."
[4] Ibid., 2.
[5] Ibid., 7.
[6] Beach,"3PLs Today and Tomorrow."

companies often work with 3PLs to locate, recruit, and move workers. In this sense, 3PLs share suppliers.[7]

Figure 3. U.S. Rail Intermodal Terminals



Source: Association of American Railroads, "Rail Intermodal Keeps America Moving," U.S. Department of Transportation, January 2015.

When it comes to moving goods between Mexico and the United States, regulations and processes are especially complex and cumbersome, and 3PLs have been helpful in offering their expertise with logistics and dealing with customs. Recent trends in reshoring have served to augment the role of 3PLs; so much so, that some estimate an industry growth rate of 6.5% in North America.[8]

In spite of the projected growth, 3PLs still face obstacles. One of these obstacles is capacity, which results in difficulties keeping schedules.[9] Managing the capacity problem will likely result in a need to expand relationships with carriers, as well as deepen the involvement in carrier networks. This issue, combined with a shortage of truck drivers, may boost the use of rail in cross-border logistics.

[7] Sheffi, "Logistics-Intensive Clusters: Global Competitiveness and Regional Growth," 29.
[8] Beach, "3PLs Today and Tomorrow," Heavy Duty Trucking, January 1, 2015.
[9] Ibid.

Three Class I railroads are operating in Texas: BNSF, Union Pacific (UP), and Kansas City Southern (KCS). Since all railroads operate in the competitive market, they offer comparable services, including rail intermodal, expedited border crossing, and security measures. Among these railroads, KCS and UP have gateways to Mexico in Texas. The sections below will describe the railroads in further detail, including recent capital investments and service offerings.

BNSF Railway Company

BNSF serves 28 states with 32,500 route miles and approximately 30 intermodal facilities, and serves 40 ports. Among the products the railway transports are consumer goods, followed by industrial products and coal. In 2013, BNSF transported 10 million carloads and 5 million intermodal shipments.[10] Intermodal shipments led growth for BNSF that year.

Like its competitors, BNSF continues to invest in its railways. In 2013 BNSF invested $4 billion to improve its network, and in 2014 it invested $5 billion.[11] BNSF has a $6 billion capital plan for 2015—$800 million of which is destined to BNSF's South Region alone, which includes Arizona, Arkansas, California, Kansas, Louisiana, Mississippi, New Mexico, Oklahoma, and Texas. Currently, the region sees most of its traffic arrive from the West Coast ports. The investment is meant for maintenance, implementation of Positive Train Control, and expansion.[12]

BNSF is also investing in logistics hubs. The company already has a presence in Fort Worth, at the Alliance Intermodal Logistical Hub, and recently built a new Logistics Park in Kansas City. These logistics parks, according to BNSF, are important to promoting supply chain efficiency. For example, they can ensure that passage through a logistics park will allow shippers to return containers filled with goods instead of being shipped empty.[13]

Kansas City Southern

Kansas City Southern (KCS) has 6,000 miles of rail track and serves 20 ports in the United States and Mexico. In Texas, it serves Port Arthur, Brownsville, Houston, and Corpus Christi. In Mexico it serves the ports of Lázaro Cárdenas, Tampico, Veracruz, and Altamira.[14] KCS boasts one of the most extensive rail routes between the United States and Mexico. Figure 4 displays a map of its rail routes along with its U.S.-Mexico border crossing locations.

[10] BNSF Railway, "2013 Annual Review."
[11] Ibid.
[12] BNSF Railways, "News Release: BNSF Invests Across Its Regions to Expand Capacity and Maintain Vast Network."
[13] BNSF Railway, "2013 Annual Review."
[14] Kansas City Southern, "Ports Served."

Figure 4. Kansas City Southern Routes

Source: Kansas City Southern, "Cross Border Shipping," 2015.

KCS advertises its low rate of theft, vandalism, and accidents as one of the primary benefits to using its service. During 2010, the number of claims was just 0.02 percent of shipments. The company attributes the safety of its transportation to a series of internal checks and balances, the support of law enforcement, and constant train velocity. KCS also promotes intermodal transportation as a more efficient way of transporting freight. It claims 2.6 million truckloads end or originate in KCS's cross-border market. KCS's utility lies in its ability to offer a capacity option with U.S. Customs pre-clearance to expedite border-crossings.[15]

Union Pacific

Union Pacific Railroad (UP) has 32,000 miles of track and its capital spending for 2014 totaled $4.1 billion.[16] UP serves six U.S. gateways to Mexico: Brownsville, Laredo, Eagle

[15] Kansas City Southern, "Cross Border Shipping."
[16] Union Pacific, "Company Overview."

Pass, El Paso, Nogales, and Calexico. The primary commodities that its railcars transport include motor vehicles, containerized cargoes, grains, and liquid bulk products of many varieties. The mix of cargo by volume that UP carried in 2014 is shown in Table 1.

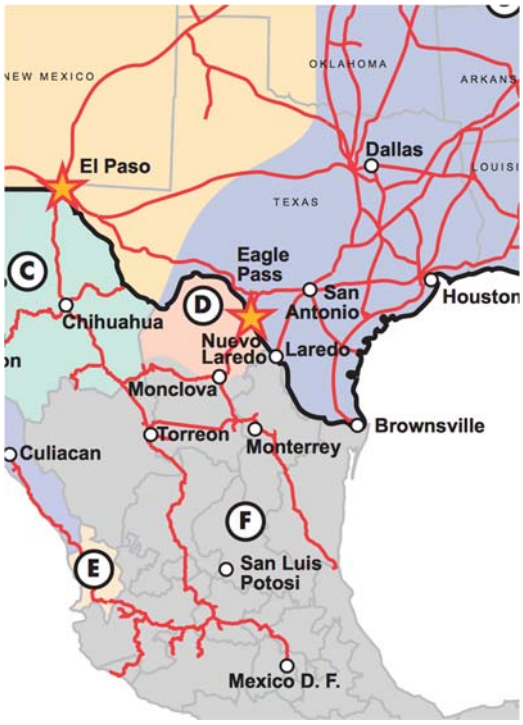
Table 1. Union Pacific Railroad's 2014 Business Mix

Commodity	Share of Total
Auto	45%
Intermodal	24%
Agriculture	14%
Industrial	10%
Chemicals	7%

Source: Tyson O. Moeller, Director of Gulf Ports, Union Pacific Railroad, email to author, February 20, 2015.

UP also owns a 26 percent stake in the Mexican railroad Ferromex and partners with KCS to haul carloads to U.S. locations not served by KCS. Business to and from Mexico represents 10 percent of UP's total revenue and it is expected to grow. For this reason, UP has invested in rail lines to the border to better transport shipments to and from Mexico. Furthermore, UP continues to vest its interest in Mexico with a team of sales representatives that help to support the railroad's growth in Mexico. Figure 5 illustrates UP connections with Ferromex.

Figure 5. Union Pacific-Ferromex Routes



Source: Union Pacific, "UP-FXE Routing Agreement," 2015.

In 2002, UP became the first U.S. railroad recognized as a partner of the U.S. Customs Service's Partnership against Terrorism (C-TPAT). This partnership helps ensure security across all areas of the global supply chain, including documentation, equipment, information systems, and employee identification.[17] More importantly, it means fewer inspections and faster border-crossing times. Additionally, UP offers a "Despacho Previo" process that clears southbound rail into Mexico, reducing interchange delays at the border.[18] These procedures allow UP to offer the Eagle Premium Service, a seamless intermodal transport from Chicago to Monterrey and from Monterrey to Los Angeles and St. Louis, and Third-Morning Service between Port Laredo and Memphis, which is also a seamless intermodal transport. Both of these services offer truck-competitive transit times.[19] UP offers these services in response to growing trade opportunities between the U.S. and Mexico.

MEXICO'S RAILROADS

Collectively, Mexican logistics platforms have become functional for an international market. According to ALG (a third-party Spanish evaluation firm), Mexican transportation infrastructure for logistics platforms is currently doing well. However, if the system continues to grow without infrastructure expansion or modernization, it will not be able to sustain the nation's economic growth and will diminish Mexico's role in international commerce.[20] Truck transportation has been the preferred mode for moving freight; however, the use of rail has gained popularity, especially as the automobile industry is rapidly expanding. Rail has become the preferred mode of transportation for finished vehicles from Mexico to the United States.

Mexico is currently connected to Texas by six international rail bridges that accommodate commercial import and export traffic with U.S. Customs services.[21]

MEXICAN RAIL PLATFORM

During its 60th Legislative Session (2006–2009), the Mexican Congress developed a rail infrastructure plan. The plan presented a series of rail construction and improvement projects around the country. Currently the feasible projects for commercial use include the following locations:[22]

- Railway Bypass in Monterrey;
- Connection Aguascalientes – Guadalajara;
- Connection Camarón – Colombia;
- Connection Mazatlán – Durango;

[17] Union Pacific Railroads, "U.S. Customs Trade Partnership."
[18] Union Pacific Railways, "Southbound Process – Despacho Previo."
[19] Union Pacific Railways, "Eagle Premium Service."
[20] Banco Interamericano de Desarollo, "Definición de un Sistema Nacional de Plataformas Logísticas y Plan de Implementación."
[21] Office of the Governor, "Texas, Logistics Hubs of the Americas."
[22] Camara de Diputados LX, "Plataforma Ferroviaria."

- Connection Mexicali – Tecate – Tijuana;
- Access of KCSM to the Port of Veracruz;
- Access of KCSM to Port of Altamira;
- Aguascalientes Bypass; and
- Access and Bypass to the International Bridge in Ciudad Juarez.

After Mexico privatized its railroads in 1995, the use of rail grew 100 percent through 2005. With that fast growth came an unprecedented increase in transportation productivity. Additionally, this expansion of activity brought a significant flow of security and investment, totaling more than $2 billion in further infrastructure development. As the use of freight rail continues to grow in Mexico, the federal government is promoting the use of cutting-edge technology and financial stability as a foundation for the further development of railway systems.[23] (See Figure 6.)

Despite rail's rapid growth in Mexico, the country's rail system still faces challenges. For example, there are currently no mechanisms in place that would allow for the development of infrastructure, an increase in investment, or an update of existing rules and regulations that would increase the competitiveness of railroads that would meet the current demand.[24] A second challenge for railway growth is ensuring that its development is conducted in a manner that respects rail's impacts on the natural and human environment. To address this challenge, the Mexican government intends to consider the safety and security of the population and the environment when there are rail takings.[25]

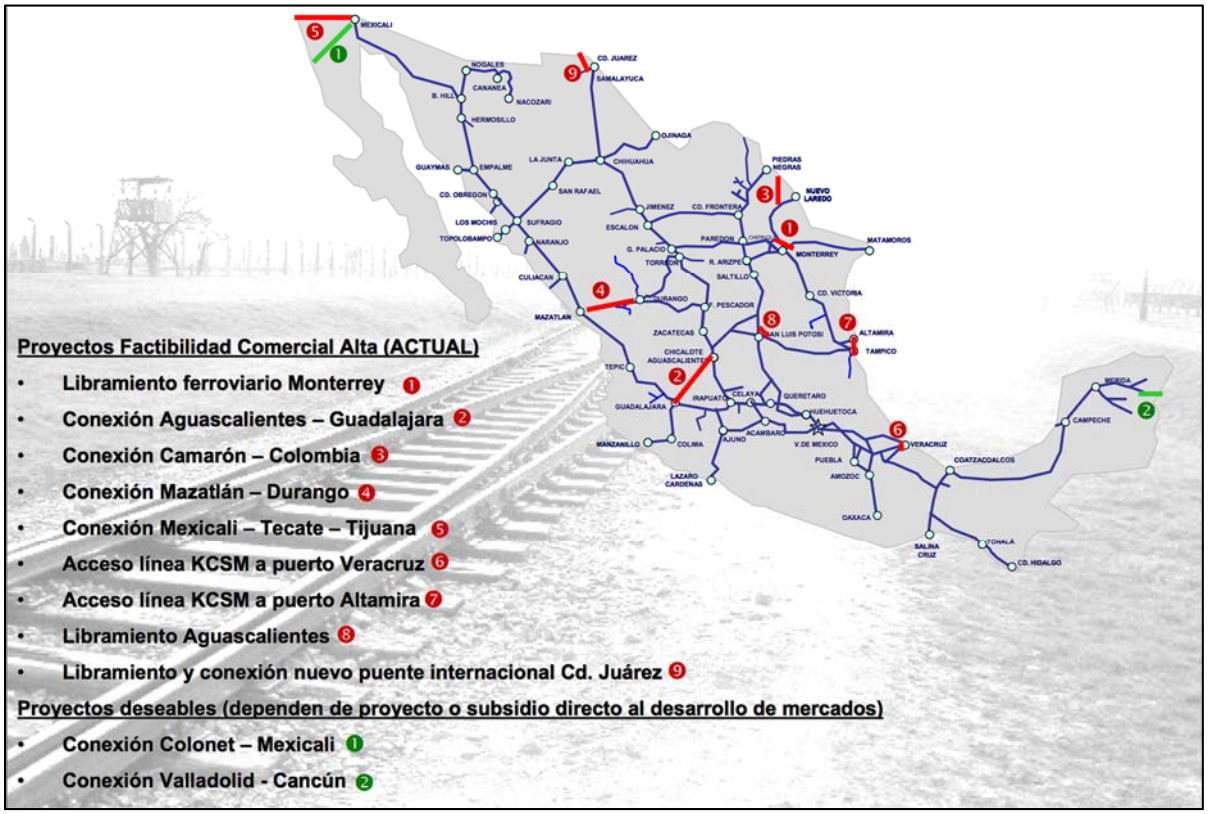
Mexico's railway plan is intended to improve the nation's infrastructure while acknowledging that the current rate of growth will not be enough. There is an initiative to improve connectivity between ports, international bridges, and border terminals. Additionally, there are efforts underway to resolve saturation within the transportation network, prevent bottlenecks, and improve safety within urban areas. Furthermore, the Mexican government is pushing for the collaboration of all actors in the supply chain to ensure greater transportation efficiency. Lastly, the Mexican administration plans to implement new and updated laws and regulations.[26]

Ultimately, the *Plan Ferroviario* (proposed during the Mexican Congress) looks to establish collaboration between the SCT (Secretaría de Comunicación y Transporte—the Ministry of Communication and Transportation), private sector investment, and the nation's industrial chambers to build a rail infrastructure network. (Industrial chambers are groups of businesses from around the country that come together to jointly protect their rights and interests.) Without sufficient public funds to pay for these improvements, Mexico is seeking significant private sector investment as a means of building a competitive railway system. The proposed infrastructure plan has a specific focus on infrastructure that includes intermodal services. The plan also discusses the implementation of a regulatory framework

[23] Ibid.
[24] Ibid.
[25] Ibid.
[26] Ibid.

that involves cooperation with other administrations, institutions, and social agents, with a greater emphasis on international trade and improvements to rail infrastructure along Mexico's border with the United States.[27]

Figure 6. Growth Opportunities for Rail Infrastructure in Mexico



Source: Camara de Diputados LX, "Plataforma Ferroviaria," 2009.

Ferromex

Ferromex operates Mexico's largest railroad network, with 6,000 miles of rail line covering the main industrial and consumption regions of Mexico. Ferromex connects with eight ports and four border crossings, connecting the country to an international market. The vision of Ferromex is for rail to be the best freight transportation option in Mexico. This is reflected in the railroad's mission to provide a safe, efficient, and reliable transportation service that will contribute to the strengthening of the nation's connectivity and competitiveness in a global market.[28]

The railroad provides general freight and intermodal services, as well as other support services that include passenger transport, intra-terminal pulling, and automotive terminal services. This company has the largest coverage on the Mexican railroad system. Ferromex also operates the largest fleet in the country with 582 locomotives and 12,419 cars of

[27] Ibid.
[28] Ferromex, "Mision, vision y filosofia."

different types. The company owns some cars and locomotives and others are leased from third parties.[29]

In 2014 Ferromex transported 4.4 million tons of goods in 282,000 containers of domestic and international freight. In 2013, the railroad opened intermodal operations on the "Eagle Premium" service, connecting the city of Monterrey with the city of Chicago, and serving the U.S. Midwest and the city of Los Angeles through the U.S. gateway at Piedras Negras. Ferromex currently has three intermodal corridors: one connecting the ports of Manzanillo, Altamira, and Veracruz; one connecting the Valle de Mexico with the Pacific coast; and one connecting Mexico with the U.S. and Canada through the Piedras Negras and Ciudad Juarez gateways. In 2014, the company expanded its service to a corridor connecting the area of the Mexican Bajio region to the U.S. Midwest region.[30]

Kansas City Southern de Mexico

The Mexican transport firm Kansas City Southern de Mexico (KCSM) is a subsidiary of the U.S. KCS Railway. The company operates a rail system of 2,641 miles, serving northeastern and central Mexico and the port cities of Lázaro Cárdenas and Tampico, among others. A primary Mexican rail line, KCSM provides a direct connection between the United States and Mexico's industrial regions.[31]

KCS owns a fleet of railcars and locomotives and the right to operate and maintain its own rail system through KCSM's concession from the Mexican government. KCSM moves freight into the United States though the Laredo gateway. It connects goods coming from the Gulf of Mexico and the Pacific Ocean to markets in the United States.

KCSM moves about 40 percent of the total cargo in the country with a presence in 15 states. The international intermodal corridor for KCSM begins in the Port of Lázaro Cárdenas, then crosses and serves the industrial heartland of Mexico. The vision and strategy of KCS has been to grow its services on both sides of the U.S.-Mexico border, with the purpose of strengthening the supply and location of services. It is for this reason that KCSM has a firm commitment to the development of the transportation sector for the industrial and commercial growth of Mexico.[32]

INLAND PORTS AND LOGISTICS HUBS IN TEXAS

The increasing usage of rail for shipping purposes has led manufacturers to cluster around logistics hubs. Logistics clusters not only tend to offer multiple modes of transportation, but also provide many advantages in terms of efficiency, innovation, and productivity. Like other clusters of industries—Silicon Valley and Wall Street, for example—logistics clusters benefit from shared resources, a larger availability of suppliers, knowledge-sharing, face-

[29] Grupo Mexico, "Ferromex."
[30] Ferromex, "Intermodal."
[31] KCSM, "KCSM (Kansas City Southern de Mexico SA de CV)."
[32] Camara Nacional de la Industria del Hierro y del Acero, "Kansas City Southern de Mexico."

to-face communication, trust between companies in the cluster, a specialized labor supply, and educational resources.[33]

The general objective for developing a logistics hub is to offer facilities for the fulfillment of logistic activities that will generate a domestic network for optimizing transportation.[34] In order to meet their objectives, logistic platforms have delineated areas with discrete functions to meet the needs of both users of the platforms and the freight. The primary functioning zones are the logistics area, the modal exchange zone, customs services, and areas for support services. It is in the area of logistics and modal exchange zone that the main technical functions take place, which include the management of freight units, management of modal exchange transfers, the management of transportation units, inventory storage, and the management of operations for products of added value.[35]

Logistics hubs make it possible for shippers to lower customs and transportation costs, and possibly provide value-added services, before they move to the next destination—in short, logistics hubs bring logistics companies, shippers, and manufacturers together to improve the supply chain. The next sections provide an overview of Texas's three largest logistics hubs on the IH-35 corridor: Alliance Global Logistics Hub, Port San Antonio, and the Port of Laredo.

ALLIANCE GLOBAL LOGISTICS HUB

Alliance Global Logistics Hub is an 18,000-acre community located in Fort Worth, which contains a global logistics hub, a corporate center, and residential areas. Within Alliance Global Logistics Hub lies the Fort Worth Alliance Airport, which opened in 1989 and is the world's first purely industrial airport.[36] Its features include:

- U.S. Foreign Trade Zone (FTZ) designation with U.S. Customs on site;
- BNSF Railway's Alliance Intermodal Facility;
- Direct access to UP and BNSF rail lines;
- Access to IH-35W and SH 170; and
- Proximity to the Dallas/Fort Worth International Airport.[37]

In addition to the features described above, the Alliance Global Logistics Hub has other advantages. Due to its proximity to the Dallas-Fort Worth region, it has access to a population of 6.3 million to support its labor needs.

Alliance is a "Triple Freeport," meaning that all three taxing entities—city, county, and school district—have imposed a tax exemption on inventory. Consequently, inventory that arrives at Alliance can remain there for 175 days without paying taxes. During this time,

[33] Sheffi, "Logistics-Intensive Clusters: Global Competitiveness and Regional Growth," 29.
[34] Banco Interamericano de Desarollo, "Definición de un Sistema Nacional de Plataformas Logísticas y Plan de Implementación."
[35] Ibid.
[36] Alliance, "Alliance Texas Global Logistics Hub – Fort Worth, Texas."
[37] Office of the Governor, "Texas Logistics Hub of the Americas."

the inventory may be processed, stored, or manufactured before being transported out of the hub.[38] The Alliance Logistics Hub is also designated as an FTZ, currently ranked #1 among general purpose FTZs. The benefits of FTZs range from the elimination of export, labor, and profit duties, to reductions in customs paperwork and the length of the supply-chain.[39] The economic benefits inherent to a FTZ, combined with the infrastructure support that Alliance offers, facilitates the supply-chain process. The results are in the numbers: in 2010, Alliance received more than $4 billion in foreign products, a 36 percent increase from 2009.[40] Most of these products arrive from China on BNSF trains at the Alliance Intermodal Facility.[41] Given recent infrastructure and industry developments in Mexico, products coming from Mexican ports and hubs further from the border, such as Lázaro Cárdenas, could make a similar trajectory arriving via rail instead of by truck.

The average rate of return to the public sector was 11 percent in 2008—meaning that companies located at Alliance paid taxes at an amount exceeding the investments of local governments by 11 percent. If the rate of return continues to grow at this pace, it will reach 19 percent within the next decade.[42] In addition to the taxes that Alliance's companies pay, the hub estimates that its regional economic impact from 1990 to 2008 was $36.4 billion. The development also created 28,000 direct jobs, 63,388 indirect jobs, and 7,154 homes.[43]

PORT SAN ANTONIO

Port San Antonio is a 1,900-acre logistics platform and industrial complex that houses an international logistics center, industrial complex, and an airport (Kelly Field).[44] Other features of the Port of San Antonio include:

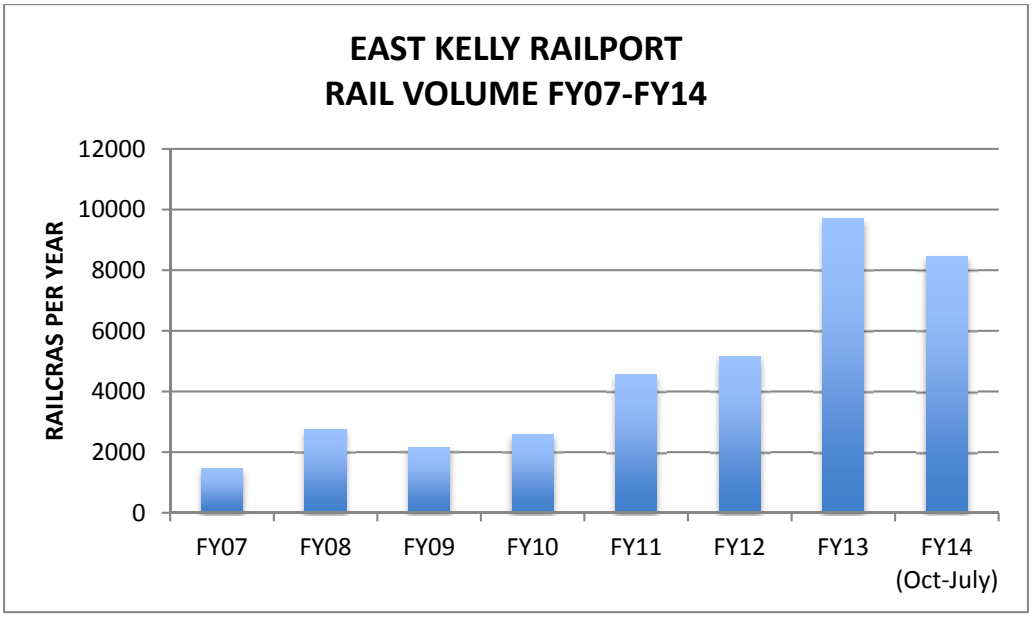
- U.S. FTZ designation with U.S. Customs on site;
- Access to three interstate highways (IH-35, IH-10, and IH-37);
- 235 acres of rail-served warehouses and sites with rail access; and
- Access to BNSF and UP rail lines.[45]

Port San Antonio's East Kelly Railport offers access to UP and BNSF rail lines that connect to seaports in Houston, Corpus Christi, Long Beach, and Los Angeles; Mexican ports of Manzanillo, Lázaro Cárdenas, Veracruz, Tampico, and Altamira; and inland ports in Kansas City, Chicago, and Detroit.[46] A significant expansion of rail capabilities is being planned for the East Kelly Railport, including 20,000 feet of new track that could quadruple current rail volume. A partnership created with Watco in 2012 resulted in the addition of four miles of rail used to transport cargo from the BNSF and UP rail lines into East Kelly. Watco also

[38] Alliance Texas, "Triple Freeport."
[39] Alliance Texas, "Triple Freeport Inventory Tax Exemption."
[40] Joyce, "Alliance Ranked Top Foreign-trade Zone."
[41] Weeks and Meyer, "Alliance Foreign-Trade Zone Ranks as Top General Purpose Foreign-Trade Zone in the U.S."
[42] Sheffi, "Logistics-Intensive Clusters: Global Competitiveness and Regional Growth." 34.
[43] Ibid., 34.
[44] San Antonio Economic Development Foundation "Port San Antonio."
[45] Office of the Governor, "Texas Logistics Hub of the Americas."
[46] San Antonio Economic Development Foundation, "Port San Antonio."

offers an inventory system that provides shippers with delivery and release data, which, when combined with East Kelly's full-time crew and switch engine, results in a fast and efficient system.[47] Rail has seen steady growth at East Kelly since 2007 (Figure 7), leading up to 100,000 railcars served in 2014.[48]

Figure 7. Port San Antonio



Source: "East Kelly Railport," Port San Antonio, Accessed February 13, 2015.

Port San Antonio also operates an FTZ offering the same deferred or eliminated payment of duties as Alliance in Fort Worth. OpTech Group operates within the FTZ and further facilitates shipping by consolidating clearances and releases to optimize customs transactions. The company also offers packing, shipping, and supplier development and management services.[49]

PORT OF LAREDO

The Port of Laredo is the principal port of entry along the U.S.-Mexico border in terms of total trade value and volume.[50] Unlike Alliance and Port San Antonio, the Port of Laredo does not occupy a specially designated area nor does it have an overarching management. Instead, it occupies a broad area and has a combination of public and private facilities and services. In 2013, U.S. Customs and Border Protection in Laredo processed 2,630,441 truck shipments, 534,811 rail shipments, and 398.8 million pounds of air shipments.[51] A few of Laredo's freight transportation features are the following:

[47] Port San Antonio, "Infrastructure."
[48] South Texas Alliance for Regional Trade, "East Kelly Railport Continues Strong Performance in FY2014."
[49] Port San Antonio, "Foreign Trade Zone #80-10."
[50] Office of the Governor, "Texas Logistics Hub of the Americas."
[51] Laredo Development Foundation, "Transportation."

- NAFTA's gateway for air cargo;
- Service by two Class I railroads—UP and KCS;
- Over 40 million square feet of logistical/distribution space;
- 10,000+ daily commercial truck crossings; and
- 1,000+ daily railcar crossings.[52]

Laredo has four vehicular bridges and one rail-bridge owned by KCS. KCS interchanges with UP and BNSF railroads and KCSM. KCSM, in turn, serves the Ports of Veracruz, Tampico, Lázaro Cárdenas, Monterrey, and Toluca.[53] The number of northbound and southbound loaded railcars has increased steadily since 2004, and as of 2013, there were 265,040 and 269,771 railcar crossings, respectively.[54]

Laredo's trade with Mexico grew by $13 billion in 2013, which meant that 48 percent of all U.S.-Mexico trade crossed the border in Laredo.[55] Like other logistics hubs, the Laredo region also has an FTZ and a bridge expansion project.

LOGISTICS TRENDS AND BEST PRACTICES

Logistics clusters promote advantageous conditions for cost-effective transportation via their ability to improve the symmetry of transportation—that is, to increase shipment consolidation and avoid transporting empty carloads. Moving full carloads promotes economies of scale, as the cost of moving freight remains virtually the same no matter how much cargo is transported in one haul. On a similar note, as the volume of shipments going in and out of logistic clusters grows, shippers can move increasingly larger loads. The increase in load size translates to the use of larger ships, trucks, and double-stacking and longer trains. The cost of moving larger vehicles is less per unit capacity than moving smaller vehicles.[56]

An additional consequence to shipment consolidation is the possibility of increased rail usage and decreased truck usage. The ability to transport larger volumes of freight at once makes rail a cost-effective option. Furthermore, once the shipments arrive at the destination terminal and are ready to be broken up, trucks are responsible for much shorter distances and can transport a variety of goods destined to the same final consignee.[57]

Logistics clusters also prove efficient in the number and frequency of shipments they can send and receive. This aspect is especially important for maritime containers. Shippers will leave partially filled containers at their facility and wait to fill them up before sending them out. The increased frequency of arriving shipments means that the containers are filled

[52] Laredo Development Foundation, "Economic Indicators."
[53] Laredo Development Foundation, "International Trade."
[54] Laredo Development Foundation, "Rail 2015."
[55] City of Laredo, "2014 Laredo Trade Numbers."
[56] Sheffi, "Logistics-Intensive Clusters: Global Competitiveness and Regional Growth."
[57] Ibid.

more quickly, without any added cost, while also not incurring the loss of shipping a partially filled container.[58]

Logistic clusters also promote job growth. As discussed, there are advantages to placing industries together, as they can concentrate infrastructure improvements and other resources to one area. The result can be more frequent service to more locations. Logistics hubs are also promoting green innovation and enforcing regulations on old, outdated equipment in marine ports. PortTech LA, for example, is a commercialization center that funds alternate fuel technologies and environmental sustainability around the ports.

High demand for advanced logistics services in the automobile and retail industries make it likely that logistics clusters will continue to prove valuable in their ability to "add market value through industrial activity generation."[59]

FTZs remain essential to encouraging cross-border trade. Companies that relocate in FTZs often receive tax and customs exemptions and experience less red tape. Therefore, FTZs are important not only to the growth of logistics clusters, but also in promoting the clusters' role in international trade. Given the United States' increasing trade with Mexico, logistics hubs with FTZs are ideal for processing and distributing imported goods. Similarly, Mexico would also see benefits in FTZs, as they increase foreign direct investment and foster economic development and industrialization in emerging markets.[60]

INLAND PORTS AND LOGISTICS HUBS IN MEXICO

MEXICAN LOGISTICS PLATFORM

The current Mexican infrastructure plan for logistics platforms indicates 13 logistic clusters are identified for improvement and development. Additionally, the plan details three logistic platforms that will be developed exclusively for international commerce, as well as seven to be established in the border region to provide greater support for transportation.[61] (See Figure 8.)

The Sistema Nacional de Platformas Logísticas (SNPL) published in 2014 will be guiding planning and transportation infrastructure, including logistics services. The plan establishes the following as its principle objectives:

- Promote the connectivity of Mexico's logistics infrastructure;
- Innovate the connectivity of supply chains in the country, linking both internal and external commerce;

[58] Ibid.
[59] Natalia, "Logistics Clusters: The Next Hub of Environmental Innovation."
[60] PriceWaterhouseCoopers, "Transportation & Logistics 2030, Volume 3: Emerging Markets – New Hubs, New Spokes, New Industry Leaders?"
[61] Secretaría de Comunicación y Transporte y Secretaría de Economía, "Sistema Nacional de Plataformas Logísticas de México."

- Establish a competitive logistics system within Mexico; and
- Promote the development of infrastructure and logistic services needed to facilitate industrial and commercial activities in a domestic framework, as well as for international trade.[62]

Figure 8. Mexican Logistics Corridors

Source: Banco Interamericano de Desarollo, "Definición de un Sistema Nacional de Plataformas Logísticas y Plan de Implementación," ALG, 2013.

With the purpose of developing a system of logistics infrastructure in Mexico, the federal government, through the SCT and the SE (Secretaría de Economía, or Ministry of the Economy), with the collaboration of the Inter-American Development Bank, will use the SNPL to boost Mexico's trade competitiveness. The SNPL goal is to improve the connectivity of supply chains by modernizing and promoting multimodal and intermodal logistics platforms. With this plan, Mexico aims to promote an improved system of transportation of trade across the Texas border.[63]

[62] Banco Interamericano de Desarollo, "Definición de un Sistema Nacional de Plataformas Logísticas y Plan de Implementación."
[63] Inbound Logistics, "Sistema Nacional de Plataformas Logísticas."

With the implementation of the SNPL, a series of measures will be undertaken to make logistics in Mexico more agile. Improvements to the connectivity between seaports, airports, rail, and highways will make commercial transportation a more efficient and effective process.[64] The current economic relationship between Mexico, the United States, and Canada generates approximately $500 billion, growing at an annual rate of approximately 10 percent.

Port of Guanajuato

On March 28, 2006, the Guanajuato Inland Port Corporation was formed to begin the transformation of Guanajuato into a logistic platform. Under the leadership of the current state administration and the federal government, it was decided to take a chance on this business infrastructure project without precedent in Latin America. This initiative serves as a catalyst for the industrial parks and corridors of the state of Guanajuato, as well as a trigger for attracting investment to Mexico.[65]

The Port of Guanajuato has exceeded its commitment of developing 2,965 acres in only seven years. Today 76 companies have located in this port, ensuring a record investment of more than $2.6 billion and creating more than 15,000 direct jobs for the state of Guanajuato.[66]

The Port includes a railroad industrial park and was developed to serve companies that handle heavy loads of freight and must ship cargo long distances using a multimodal rail facility. Although the Port of Guanajuato serves the transportation of goods within Mexico, it connects the established companies to the national railroad networks including the most important cities, seaports, and border crossings. The Port of Guanajuato is built to handle up to 10,000 container import and export operations per day. The Guanajuato Inland Port claims to have the most modern and best-planned customs facility in the country. With cutting-edge infrastructure, it is one of the most efficient ports in the nation and is becoming attractive for international business.[67]

Port of Monterrey

Interpuerto Monterrey was built to meet the need of a logistics and manufacturing junction in the northeast region of Mexico, as part of the infrastructure platform of the state of Nuevo Leon. Interpuerto Monterrey is a private development with focus on providing clients with the best available infrastructure. The Port connects with Lázaro Cárdenas, Manzanillo, Veracruz, and Altamira as well as ports in the United States.[68]

Interpuerto Monterrey consists of 3,334 acres of land with the authority to provide Mexican customs services. The port is strategically located at the crossing between the two

[64] Secretaría de Comunicación y Transporte y Secretaría de Economía, "Sistema Nacional de Plataformas Logísticas de México."
[65] GTO Puerto Interior, "Guanajuato Inland Port."
[66] Ibid.
[67] Ibid.
[68] Interpuerto Monterrey, "Nosotros."

major Mexican railroad systems to serve for intermodal transportation. The proximity to the United States allows for a fast and efficient connection between the two countries, making the facility an attractive location for investment and international commerce.

Port of Lázaro Cárdenas

An important factor in the growth of Mexican rail is the emergence of the Port of Lázaro Cárdenas on the Pacific Coast. The port was first opened for operations in 2007 and has become one of the fastest-growing ports in North America. The port can currently handle one million 20-foot equivalents (TEUs), and this figure is expected to grow to 2.2 million and 2.5 million TEUs over the long term. The Mexican government is considering additions to the port's capacity by opening another bulk handling facility that will be able to take in heavy containers of material such as coal and ore.[69]

The Port of Lázaro Cárdenas provides intermodal transportation, making it more efficient to handle goods that will cross the U.S.-Mexico border. Intermodal capabilities are vital for freight transportation in Mexico because a large percentage of cargoes are still moved by truck, and in this way both services are offered in a competitive manner. The improvements of the Mexican railroads and infrastructure has allowed for shipping through the country to be cheaper and more reliable.[70]

Lázaro Cárdenas is the port on the Mexican Pacific coast closest to the central region of the country. The port serves a market area of 60 million people, with a concentration in the most important economic zone at the national level. The port of Lázaro Cárdenas is connected to the Ports of Tampico and Altamira through railroad operated by KCSM. Due to its rapid growth, there is increasing interest in developing a corridor connecting Asia – Lázaro Cárdenas – Altamira – Europe with value added to freight in Mexico. In addition, the Port of Lázaro Cárdenas connects the Pacific coast to ports in the cities of Monterrey, Guadalajara, and San Luis Potosi, where intermodal trade and rail terminals include internal customs services, improving the efficiency of transportation between Mexico and the United States.[71]

THE FUTURE OF MEXICO'S LOGISTICS MARKET

Multinational businesses dominate logistics demand in Mexico and they are becoming the primary drivers of growth in the country. The market for these services will continue to expand in coming years, as Mexico is recognized as one of the most advanced emerging countries in hosting international logistics companies. In fact, there is a strong level of interest in Mexico from corporations around the world, across industry sectors.[72]

[69] Douglas Merrill, "In Mexico, Rail on a Roll."

[70] Ibid.

[71] Administracion Portuaria Integral de Lazaro Cardenas, "Acerca del Puerto," Secretaria de Communicacion y Transporte."

[72] Von dar Gracht, "Center for Future Studies and Knowledge Management."

According to a survey conducted by the United Nations, Mexico is the sixth most attractive location worldwide for multinational corporations. The country has observed a steady inflow of foreign direct investment (FDI) and has grown its investment in logistics. It is expected that FDI will increase from the current 20 percent to 25 percent of GDP by 2020. This important investment growth has been reflected in the country's logistics markets.[73]

The Mexican logistics sector is divided between two sectors: the export economy that relies on cross-border logistics for 95 percent of its traffic and the domestic economy. Ongoing consolidation of suppliers in the Mexican export market has allowed for this logistics market to service its multinational commerce. Cross-border logistics in Mexico have achieved efficiency as a result of private-sector investors like UPS, FedEx, and DHL. The use of technology and global best practices has been key to improving the country's competitiveness.[74]

Mexican custom regulations have also undergone changes in recent years, expanding programs similar to FTZs. In 2003, the Strategic Bonded Warehouse program began providing the northern region of the country with tax policies similar to those provided by U.S. FTZs and European Union Processing under Customs Control. Some level of reductions and exemptions from certain taxes has made the region significantly more attractive to multinational corporations.[75]

Mexico's logistics industry must invest heavily in technology and high-tech expertise in order to stay competitive in the global market. The country has a number of competitive advantages related to logistics. U.S. companies are paying lower prices for moving their imports from manufacturing plants and industrial parks in Mexico than they are in other parts of the world. Mexico's overall investment flows are still set to increase over a ten-year forecast period.[76]

Mexico must push the process of reforming its regulatory policies and institutions in the logistics industry in order to launch its economy properly into international markets.[77] Many plans and infrastructure initiatives have been put forth by many different administrations of the Mexican government. The main issue that continues to be an obstacle for cross-border trade logistics is that these initiatives are only valid during the current president's term. Presidential terms in Mexico last six years and many infrastructure projects set to improve logistics and transportation across the border also last for six years. Some aspects of the plans do remain in effect across administrations. Typically, however, new features must start again under a different leadership.

[73] Ibid.
[74] Ibid.
[75] Ibid.
[76] Ibid.
[77] Ibid.

OPPORTUNITIES FOR IMPROVEMENT

The following policy issues represent opportunities to improve the connectivity between railroads and logistics hubs, and therefore reduce truck traffic. The opportunities lie mainly in the development of infrastructure, improvement of regulatory uniformity across the border, and public-private partnerships in financing and planning.

REGULATORY UNIFORMITY

There is currently no agency or commission that regulates or coordinates North American rail operations. While deregulation in the United States and Mexico has meant that rail companies operate internationally on similar market-based philosophies, some regulatory discrepancies between the countries remain. These discrepancies are especially evident at the border, where concerns of smuggling, illegal immigration, and cargo inspections are salient.[78]

Currently train crew changes are required at the border crossings. These crew changes cause delays of 15 or 20 minutes in each direction. UP proposed a solution to the delay that involved Mexican/U.S. crews being allowed to interchange trains at FTZs. Such a change would require that the crew receive laser visas (border crossing cards that allow for temporary passage through the border for business or pleasure) and special access through immigration checkpoints. However, these changes have not been implemented due to the Mexican railroads' lack of standard training procedures, as determined by the U.S. Federal Railroad Association.[79]

Air brake inspections cause additional delays at the border. Due to the absence of compatible inspection standards with Mexico, Mexican air brake inspections are not recognized. Allowing for reciprocal inspections would also diminish border-crossing times.[80] However, U.S. safety concerns inhibit moving in the direction of reciprocity.

PUBLIC-PRIVATE PARTNERSHIP FOR THE DEVELOPMENT OF RAIL

The benefits of rail extend to the public and private spheres. In the public sector, an increased rail capacity could alleviate congested highways by removing trucks from the road. The private sector sees benefits in projects that enable faster freight trains and promote business. Cooperation between the two sectors could make these projects possible.[81] There already exist many examples of successful public-private partnerships (PPPs), such as the Chicago Region Environmental and Transportation Efficiency (CREATE) Program and the National Gateway Project, which enabled trains to carry double-stacked

[78] Cramer, "North American freight rail: Regulatory evolution, strategic rejuvenation, and the revival of an ailing industry," 357.
[79] Federal Railroad Administration, "UP Decision Letter," 2.
[80] Federal Railroad Administration, "Union Pacific Mexican Cross Border Operations."
[81] Association of American Railroads, "Public-Private Partnerships."

containers and strengthened the Crescent Corridor, which spans 11 states and connects the southeastern United States to the northeast.[82]

As a business organization created in 1986, the Mexican Association of Industrial Parks (AMPIP) represents the interest of its members and promotes best practices in infrastructure, logistics, and sustainability.[83] In order to fulfill this mission, AMPIP has been participating in the planning and implementation of the National System of Logistics Platforms of Mexico (SNPL-Mex) under the leadership of the SCT and the Secretary of Economy (SE). The task group seeks to identify strategic logistics nodes and recommend different types of logistics platforms and management models for each of them.[84] This collaboration between the Mexican government and the AMPIP represents a successful example of a planning-oriented PPP that aims to create the best possible environment for the development of trade and transportation.

BINATIONAL COOPERATION: MATAMOROS-BROWNSVILLE RAILWAY BRIDGE

Mexican authorities announced at the end of January 2015 that the rail bridge between Matamoros and Brownsville would be inaugurated on March 15 of the same year. This facility is the first rail bridge built between the two countries in over a century. The project sets the stage for expanded commercial transportation capacity between the two nations.[85]

In 2004, both sides of the border joined forces to build a rail bridge that would connect both countries for the first time since the 1900s. Although this project has taken over ten years to complete, the Brownsville West Rail Bypass International Bridge will traverse eight miles through rural Cameron County in Texas and Matamoros in Mexico. Local officials have said that the project will make the growing trade between Texas and Mexico more efficient. The bridge was designed to help alleviate border congestion.[86]

Currently, rail traffic accounts for 6 percent of the goods that cross the U.S.-Mexico border. The Mexican government predicts that in the next five years the amount of rail traffic will increase to 35 percent.[87] During the first half of 2012, commerce between the two countries totaled about $287 billion, representing an increase of 10 percent since 2011.[88]

Skeptics frequently dismiss the possibility of coordination at the Texas-Mexico border; however, the Brownsville West Rail Bypass is an example of long-term collaboration. Though Mexican transportation infrastructure and investment plans can be left incomplete or end after the president's term, this project managed to survive three administrations. Additional projects following this example would facilitate more efficient freight transportation from Mexico into Texas.

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[82] Ibid., 2.
[83] AMPIP, "Who We Are."
[84] AMPIP, "Logistics."
[85] Fernandez, "Abrirán Puente ferroviario en Matamoros."
[86] Aguilar, "Readying a Rail Bridge over the Rio Grande."
[87] Ibid.
[88] Ibid.

CONCLUSION

Logistics hubs are significant drivers of increased efficiency in U.S.-Mexico trade. Their ability to attract manufacturers, logistics firms, and multiple modes of transportation make them a promising target for investment. Most importantly, logistics hubs compensate for the deficiencies of rail, making it an attractive option for manufacturers and other shippers. The growth of logistics services that can consolidate shipments, and the use of intermodal terminals means that shippers need to rely on trucks only for short-distance deliveries. For TxDOT, these developments are important in their potential to remove trucks from Texas highways, thus decreasing congestion, border crossing times, and the deterioration of roads.

On the other side of the border, logistics hubs are seeing similar growth. Mexico has identified logistics hubs and corridors as necessary developments in promoting economic growth. To this end, Mexico has been developing its railway infrastructure as well, ensuing that rail usage is a viable transportation option into the future. Further, in spite of Mexico's historically unreliable implementation of past infrastructure plans, projects like the Matamoros-Brownsville rail bridge have been recently completed, demonstrating Mexico's commitment to developing cross-border infrastructure.

TxDOT should consider supporting the future development of logistics hubs and rail to diversify transportation options for trade with Mexico. PPPs have worked in the past and could be beneficial in improving the flow of cross-border traffic. Mexico has also proved that its PPPs are possible as a planning tool—a route that could be adopted in the United States. Additionally, pushing for greater regulatory uniformity between the U.S. and Mexico would improve the flow of rail border crossings, improving its ability to deliver shipments within time windows that are competitive with trucks.

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