

EMERGING

**SOUTH AMERICAN** competitiveness to

**U.S. SOYBEAN EXPORTS**



**WORLD TRADE CENTER®**  
**NEW ORLEANS**



**THE UNIVERSITY OF  
SOUTHERN  
MISSISSIPPI.**  
COLLEGE OF BUSINESS

by International Business Capstone Students  
at The University of Southern Mississippi

**November 15, 2014**



THE UNIVERSITY OF  
**SOUTHERN  
MISSISSIPPI.**  
COLLEGE OF BUSINESS

A REPORT COMPILED FOR THE:



**WORLD TRADE CENTER®**  
NEW ORLEANS





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## Foreword

The Mississippi River System and its viability as navigable trade routes are absolutely essential to the success of the United States economy. Accessibility to ports along the Mississippi River Corridor allows the U.S. to thrive economically in the face of an increasingly competitive global market.

With this in mind, the authors of this paper, with the support of the International Business Committee of the World Trade Center of New Orleans (WTCNO) and the Big River Coalition, bring deserving attention to issues that threaten the United States' position as a leader in the world soybean market. Namely, the critical need for infrastructure investments to improve the inland waterway infrastructure of the Mississippi River System in order to compete with South American markets, which are rapidly growing in sophistication and capacity.

As the opening of the new Panama Canal expansion approaches, the U.S. finds itself in a situation of both vulnerability and opportunity. The U.S. has the ability to improve port and waterway infrastructure before currently-held competitive advantages are lost. It is of utmost importance that our government and business leaders pay attention to the warning presented by this paper: the U.S. must improve its infrastructure with respect to the Mississippi's inland waterways, or get left behind in the world market.

The WTCNO and the Big River Coalition share a special concern for the viability of the Mississippi River Corridor, as much of their economic efforts are aimed at ensuring growth and trade in and out of the mouth of the Mississippi. In that regard, we commend the University of Southern Mississippi for highlighting the current state of port and trade infrastructure along the Mississippi River System within this report, as well as the collective opportunities to meet the challenges ahead.

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## ACKNOWLEDGEMENTS, RESEARCHERS, AND LIMITATIONS

### ACKNOWLEDGEMENTS

The researchers wish to acknowledge the support to this effort by the Port of New Orleans and by the Big River Coalition. The data and information supplied by these agencies provided the core data for this analysis and provided the basis to expand the search to other public sources both within the United States and abroad.

This project originated within the International Business Committee of the World Trade Center of New Orleans, Louisiana, out of concern for the continued competitiveness of Mississippi River corridor considering the numerous reports of the deterioration of its infrastructure maintenance. These concerns were amplified by the infrastructure modernization activities of foreign agricultural competitors.

Considering the foregoing, this report is submitted to:

**The International Business Committee of the World Trade Center of New Orleans**  
**The Port of New Orleans**  
**The Big River Coalition**

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### LIMITATIONS

This study is limited to the information and data to which the researchers had access. This information was limited to that which is accessible by the general public. This study is further limited by the time frame allowed for this study, which was the duration of the Spring 2014 semester at the University of Southern Mississippi. Subsequently, given these limitations, this report is the result of a pilot study; and suggests that additional research and greater access to industry data, port data, rail and highway data, and of commodity sales history would allow a report of more depth.

### CURRENCY CONVERSION CHART

Symbol	Currency	Value
US\$	United States Dollar	2.29 Brazilian Real
R\$	Brazilian Real	0.44 US Dollar

(Source: Bloomberg.com, visited Sept. 11<sup>th</sup>, 2014)

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# **SOUTH AMERICAN** competitiveness to **U.S. SOYBEAN EXPORTS**

## **EXECUTIVE SUMMARY**

The United States of America (U.S.) is failing to adequately fund infrastructure maintenance throughout the Mississippi River corridor. South American competitors are making significant investments in their transportation infrastructures. Brazil, for one, is engaged in significant modernization programs, while the U.S. lags behind. This imbalance compromises the U.S. strategic competitive advantage, particularly in the export of agricultural products.

It is critical to maintain the competitiveness and infrastructure of this vital corridor from the heartland of the U.S. to the sea. Failure to perform necessary maintenance along the inland waterway infrastructure, and failure to increase the maximum draft of the Lower Mississippi River, exposes the agricultural heartland of the U.S. to significant reduction in its ability to transport products to world markets. This is particularly troubling in the face of emerging modernization and increases in capabilities by our competitors.

The Mississippi River corridor provides the U.S. a competitive advantage in the exportation of agricultural products, but Brazil and Argentina are quickly becoming a threat to that advantage—to agricultural exports in general, and to soybean exports in particular. Brazil is expected to overtake the **U.S. as the main producer of soybeans by the end of 2014. Historically, Brazil's difficulties in** transporting products to their ports have been their competitive shortfall. In response, the Brazilian government announced an aggressive investment program totaling over US\$ 104 billion, including heavy investment in transportation infrastructure:

Highways/roads: R\$ 46 billion (US\$ 23 billion)

Ports: R\$ 54.6 billion (US\$27 billion)

Railroads: R\$ 99.6 billion (US\$ 49.8 billion)

Airports: R\$ 9.2 billion (US\$ 4.6 billion)

(LogisticaBrazil.gov.br, *last visited* September 11<sup>th</sup>, 2014)

With these advancements in its logistical capabilities and infrastructure, Brazil has increased its ability to compete with U.S. soybean exports, and agricultural exports in general through significant reduction to transportation cost.

**The Mississippi River Basin produces 92% of the nation's agricultural exports.** The ports of Baton Rouge, South Louisiana, New Orleans, St. Bernard, and Plaquemines facilitate nearly 70% of all of the **nation's grain exports. Soybeans account for 35 to 40% of the grain and oilseeds exported from the** center Gulf of Mexico region. Given the emerging competencies and modernization programs abroad, these exports and the future growth of our agricultural exports are facing increasing challenges to their **dominance. The world's demand for grain is expected to grow 47% by 2025.** Particularly troubling is

the depth, or lack thereof, of the Lower Mississippi River. The Panama Canal expansion, which is expected to be completed by early 2016, adds a heightened sense of urgency as the ports in the Lower Mississippi simply are not deep enough to accommodate Post or New Panamax vessels. These ships will increase cargo capacity from 5,000 twenty-foot equivalent units (TEUs) to 13,000 TEUs. The weight and size of these particular vessels require a deeper draft—50 feet, whereas the current depth is only 45 feet. A Capesize grain vessel with a draft of 45 feet can carry an additional 13,475 metric tons of cargo over the present maximum draft of the Panama Canal (39 Feet 6 inches). The same vessel at a draft of 50 feet can carry an additional 25,725 metric tons, an approximate 91% increase.

<b>Vessel Draft</b>	<b>Cargo Type</b>	<b>Metric Tons</b>	<b>Bushels</b>	<b>Value</b>
<b>45 Feet</b>	<b>Soybeans</b>	<b>13,475</b>	<b>500,000</b>	<b>\$8,000,000</b>
	<b>Corn</b>		<b>530,000</b>	<b>\$3,000,000</b>
	<b>Coal</b>			<b>\$1,000,000</b>
<b>47 Feet</b>	<b>Soybeans</b>	<b>18,375</b>	<b>675,000</b>	<b>\$11,000,000</b>
	<b>Corn</b>		<b>725,000</b>	<b>\$4,000,000</b>
	<b>Coal</b>			<b>\$1,500,000</b>
<b>50 Feet</b>	<b>Soybeans</b>	<b>25,725</b>	<b>950,000</b>	<b>\$15,000,000</b>
	<b>Corn</b>		<b>1,000,000</b>	<b>\$5,500,000</b>
	<b>Coal</b>			<b>\$2,000,000</b>

(Source: Big River Coalition and the Soy Transportation Coalition)

In order for the U.S. to remain the leader in soybean exports, investments in the Mississippi River corridor are crucial. Moreover, the Panama Canal expansion program (with expected completion by early 2016) and the growing global demand for soybeans are significant siren calls for the U.S. to improve the infrastructure of its ports along the Mississippi River corridor.

During a visit to the Port of New Orleans in November 2013, President Barack Obama touted US\$ 42 million in TIGER grant spending. Nevertheless, the U.S. is underfunding, by approximately US\$ 15.8 billion, its infrastructure investments both in the inland waterway and seaport sectors. In order to protect its US\$ 270 billion in exports, the U.S. would need to invest US\$ 30.2 billion through 2020. Current trends indicate that expected funding will reach only US\$ 14.4 billion.

China is the largest importer of soybeans on earth, with Brazil, the U.S., and Argentina as their top three suppliers, respectively. Should Argentina drop its export taxes on soybeans, the U.S. is in danger of slipping to the number three spot behind Brazil and Argentina in the Chinese market, which could potentially devastate the U.S. soybean industry.

## INTRODUCTION TO THE PROJECT



*U.S. Geological Survey, February 6th, 2010*  
(Source: [http://en.wikipedia.org/wiki/File:Mississippi\\_watershed\\_map\\_1.jpg](http://en.wikipedia.org/wiki/File:Mississippi_watershed_map_1.jpg))

### Mississippi River and U.S. Agriculture

Agriculture is important to the U.S. economy and relied upon by many countries around the world. Most of the U.S. agricultural industry originates in and around the Mississippi River system. According to the National Park Service, "The agricultural products and the huge agribusiness industry that has developed in the Mississippi Basin produce 92% of the nation's agricultural exports, 78% of the world's exports in feed grains and soybeans" (National Park Service, April 15, 2014).

Both the Great Plains states and the Mid-West states have large tributary rivers flowing through them. The tributary rivers--Missouri, Arkansas, Illinois, Ohio, Tennessee, and Red--all lead to the Mississippi River, which runs through the heart of the U.S. From Montana and North Dakota to the north, from Texas and Oklahoma to the west, and from Illinois and Ohio to the east, agricultural products are shipped to the mouth of the Mississippi River and Tributaries (MRT) and dispersed to countries all over



the globe. At least 31 of 50 American states are part of the geography that makes up this expansive network of rivers.

The U.S. agriculture industry is a breadbasket to the world, feeding people in the U.S. as well as overseas. For many people all over the world, U.S. agricultural exports provide much of what appears **on the dinner table. This demand for U.S. agricultural products continues to expand. "...It is estimated that the world's demand for grain products is going to grow by 47% by 2025, with much of this growth being met by the agricultural products grown in the heartland of the U.S. and shipped down the Illinois and Mississippi rivers via barge to New Orleans for export"** (Wilson et al., 2005).

Grain, in particular, is an agricultural product that is essential to the economy of middle America. **According to the Waterways Council, Inc. (WCI), "the leading commodity moving on Louisiana's river systems is grain.** The states of Illinois, Mississippi, Indiana, Arkansas, Iowa, Minnesota, Oklahoma, and Tennessee, all ranked high on shipments of grains to Louisiana. Louisiana docks received approximately 58 million tons of grains in 2012. Grains made up 43% of all received cargo by barge in the state of Louisiana. New Orleans, Baton Rouge, and the Port of South Louisiana export nearly 70% **of the nation's grain exports"** (Waterways Council, Inc., 2012).

Soybeans are a significant agribusiness commodity in the Mississippi River Basin. There is evidence to support the usage of the river system versus rail and/or highway systems to transport soybeans from farms to final destinations more efficiently. According to the U.S. Soybean Export Council (USSEC), **"The variable costs of fuel, power, and labor, plus fixed asset costs of moving bulk commodities by barge via the inland waterway system, is less per ton mile than by rail.** For this reason, barge movement is the choice for moving soybeans from origin to destination when both are reasonably accessible by water. The total annual volume of U.S. grain and oilseed exports is usually in the range of 115 million to 120 million metric tons. On average, 60% of those exports are shipped from the Center Gulf each year. In a normal year, soybeans account for 35 to 40% of the grain and oilseeds exported **from the Center Gulf"** (US Soybean Export Council, 2012).

According to the Soy Transportation Coalition and based on current market conditions, over 90% of global soybean production occurs in the U.S., Brazil, and Argentina, causing data on transportation costs for other countries to be scarce. For the U.S., Brazil, and Argentina to a customer in Shanghai, the current transportation cost figures for export (per metric ton) are as follows:

- **U.S.**  
US\$ 78 - An example would be movement from Davenport, Iowa to southern Louisiana via the Mississippi River, then to Shanghai via the Panama Canal.
- **Brazil**  
US\$ 174 - An example would be movement from Mato Grosso to the Port of Santos via truck onto Shanghai.
- **Argentina**  
US\$ 85 - An example would be movement from Londrina to the Port of Paranagua to Shanghai. Note that the cost of transportation in Argentina is low given that much of their soybean production is located within close proximity to the ports and navigable waterways.

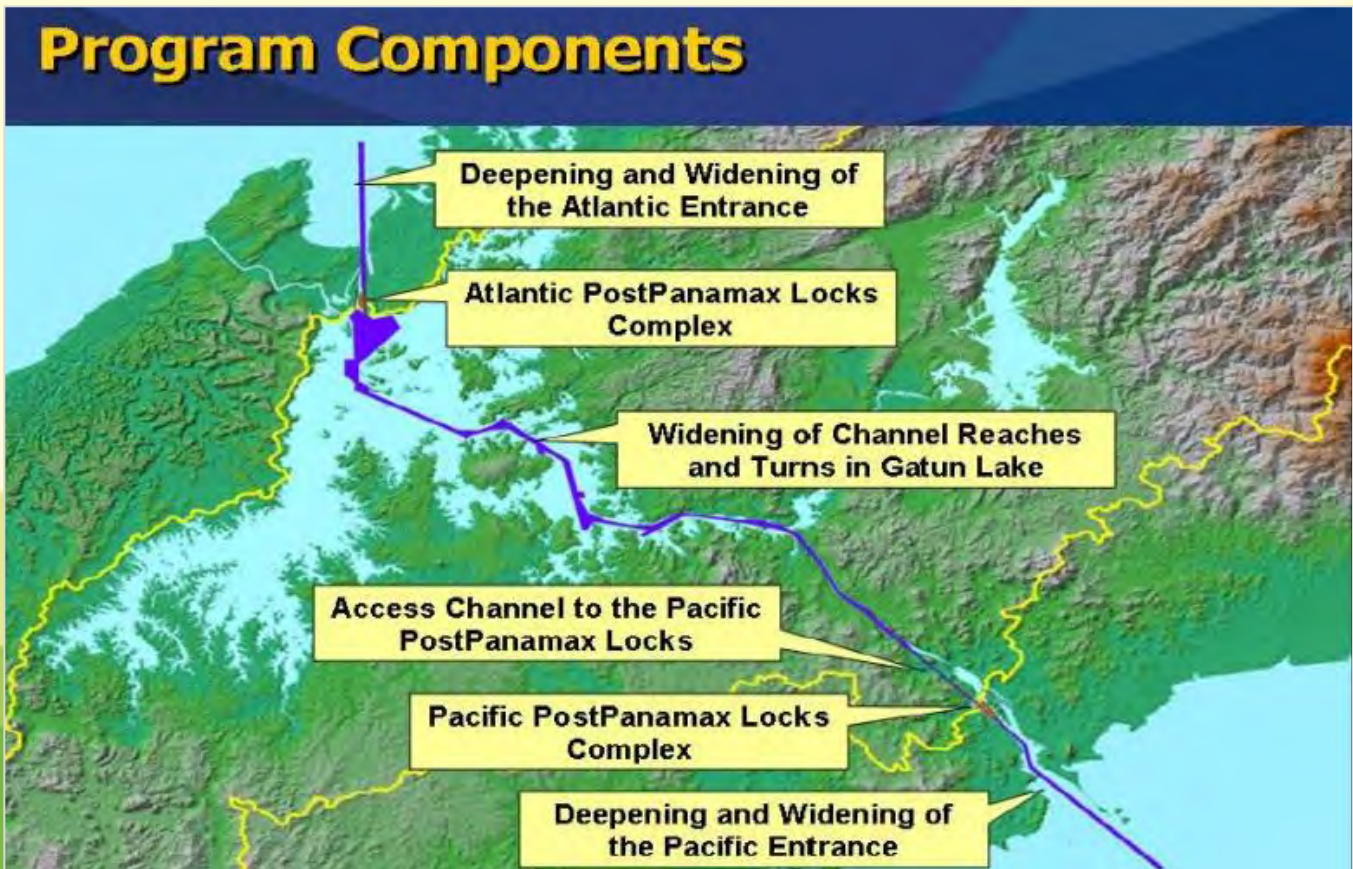
## PANAMA CANAL

The Panama Canal Expansion is the largest project undertaken at the canal since its original construction. One aspect of the project will consist of constructing a new set of locks which will provide a new lane of traffic along the canal, doubling capacity and allowing more traffic.

The Program consists of several components/projects:

- The construction of two lock complexes, in order to create a third lane of traffic;
- Pacific Access Channel, also known as PAC4, which is the excavation of a 6.1 kilometer long access channel for the new Pacific locks to bypass Miraflores Lake;
- Dredging of the navigational channels along the waterway;
- Improvements to water supply by raising Gatun Lake maximum operational level by 45 centimeters to improve the canal's water supply and draft.

### Panama Canal Expansion Program Components



Panama Canal Expansion - Third Locks 2006-2015, (Source: GlobalSecurity.org)

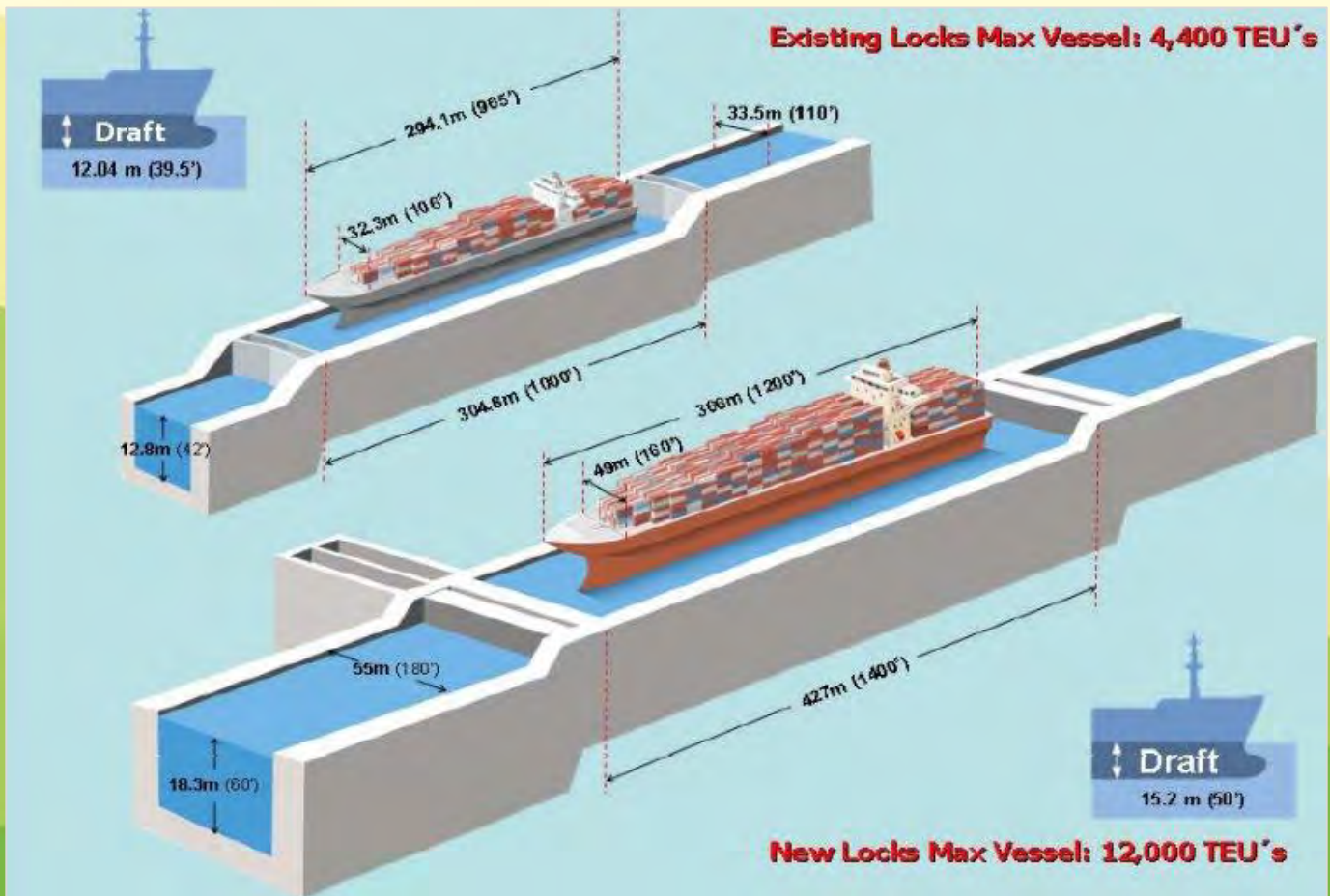
## Capacity of the Expanded Panama Canal

The existing locks allow the passage of vessels that can carry up to 5,000 TEUs. After the expansion, the Post-Panamax vessels, carrying up to 13,000 TEUs, will be able to travel through the Canal. In addition to the increase in cargo per ship, the installation of a third set of locks will help eliminate backlogs and add as many as 15 ships per day, bringing the Canal's daily passage capacity to around 50 ships. (Fountain, NYTimes, available at <http://www.nytimes.com/2011/08/17/science/17canal.html>)

## Objective of the Expansion Program

The main objective of the Expansion Program is to increase capacity to meet demand growth with enhanced customer service. The expansion will double the canal's capacity, having a direct impact on economies of scale and international maritime trade. It will help maintain the canal's competitiveness and the value of the maritime route through Panama.

## Panama Canal; Old Locks vs. New Locks



(Source: <http://solir.blog.is/users/ff/solir/img/panama-canal-expansion-image3.jpg>)

## Expansion Cost

The full Panama Canal Expansion originally cost an estimated US\$ 5.25 billion. However, since the beginning of the project, cost overruns have potentially added another US\$ 1.6 billion, ballooning the

total cost to around US\$ 7 billion. (Reuters, *available at* <http://www.reuters.com/article/2014/07/14/us-usa-panamacanal-arbitration-idUSKBN0FJ1PA20140714>).

### **Post-Panamax Locks**

Construction of the new locks complexes will take place on the Pacific and Atlantic sides. Each one of the locks complexes will feature three chambers with three water-saving basins per chamber, a lateral filling and emptying system, and rolling gates.

### **Pacific Access Channels**

The project entails the excavation of some 50 million cubic meters of material along a 6.1-kilometer span. It is executed in four phases (PACs 1-4).

### **Improvements to Navigation Channels**

There will be dredging of canal entrances on the Atlantic and Pacific Oceans, as well as the existing navigation channels in Culebra Cut and Gatun Lake.

### **Improvements to Water Supply**

Rising Gatun Lake's maximum operating level by 45 centimeters will be done to improve the canal's water supply and draft dependability.

### **Progress on the Panama Canal Expansion Program**

Overall, progress under the Panama Canal Expansion Program registered at 78% as of August 1<sup>st</sup>, 2014.



(Source: <http://micanaldepanama.com/expansion/faq/> Retrieved April 30, 2014)

## **Current Status of Infrastructure on the Mississippi River and Improvement Plans**

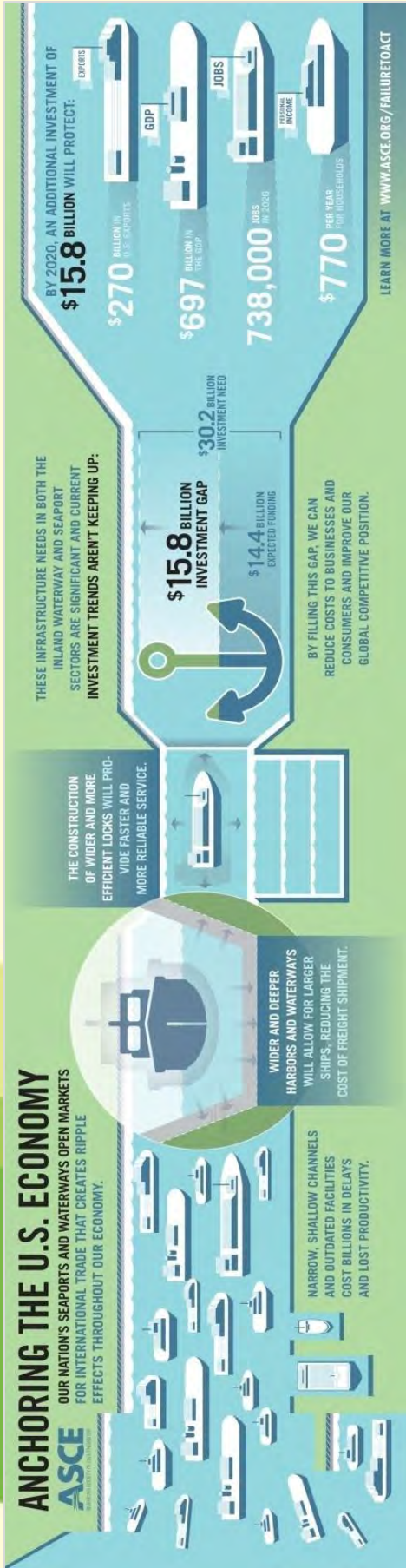
Every four years, the American Society of Civil Engineers (ASCE) assigns grades to the condition and performance of certain aspects of the infrastructure of the U.S. For inland waterways, the ASCE has calculated a grade of D+, or lower, every four years since 2001. Using the same criteria, the ASCE **assigned a grade of C for the port system of the U.S. (ASCE, 2013). The ASCE has determined that “at current funding levels it will take 77 years to complete 22 previously planned major projects. On the other hand, every US\$ 1 invested in our inland waterways returns US\$ 10 to our nation’s economy”** (Waterways Council, Inc., 2013).

In November 2013, President Obama spoke to a crowd of about 500 people at the Port of New Orleans. He addressed the importance of the U.S. investing in its infrastructure, in order to maintain an edge over increasing threats from foreign competitors that are making tremendous investments in their own transportation infrastructures. He also indicated that the European Union, China, and Brazil are all spending billions of dollars to improve infrastructures. He mentioned that the federal government has provided US\$ 42 million in TIGER grants to the Port of New Orleans to rebuild a terminal and realign rail tracks. The CEO of the port, Gary LaGrange, followed up that it would take an estimated US\$ 523 million to complete the job. President Obama also spoke to the argument that the depth of the Lower Mississippi River should be dredged to supply a draft of 50 feet from its current draft level of 45 feet to **accommodate larger ships that are built in anticipation of the Panama Canal. “And consider that just a couple of years from now we’re going to have new supertankers that are going to start coming through the Panama Canal, and these tankers can hold three times as much cargo as today’s. If a port can’t handle those supertankers, they’ll go load and unload cargo somewhere else. So there’s work we can start doing in terms of dredging and making the passageways deeper”** (Workboat staff, November 12, 2013).

**According to the White House, “as much as US\$ 230 million was spent to provide dredging for flooding and drought support across the Mississippi River Valley”** (Office of the Press Secretary, November 8th, 2013). However, these types of investments fall short of what the ASCE has demonstrated will be necessary to keep pace. As stated by studies completed by the ASCE, we are far behind. The current US\$ 14.4 billion in expected funding for maintenance and upgrades to seaports and waterways infrastructure simply is not enough. A minimum of US\$ 15.8 billion more funds by 2020 are required to protect an estimated US\$ 270 billion in U.S. exports.

**The U.S. Army Corps of Engineers concurs with the ASCE, indicating that “obligations for navigable waterways have decreased from over US\$ 3 billion in fiscal year 2009 to about US\$ 1.8 billion in fiscal year 2011”** (U.S. Government Accountability Office, November 12, 2012).

The Mississippi River port system is made up of a complement of 41 ports, with an additional 59 ports **dotting the Mississippi River’s network of tributaries. Areas of the Lower Mississippi River are deteriorating and in disrepair with many of the locks approaching 100 years of service. Aging locks that do not function properly cause delays. The more time that passes before repairs are accomplished, the higher the cost to repair. “[A]t current funding levels, replacement of the Inner Harbor Navigation Canal lock (Industrial Canal), a vital link that connects the Mississippi River to the Gulf Intracoastal Waterway System in New Orleans, may not occur until 2030. Moreover, according to the Corps, the current lock, which was completed in 1921, is too small to accommodate modern day vessels, and project costs have also increased considerably over time, with current construction costs estimated at US\$ 1.5 billion”** (U.S. Government of Accountability, November 2012).



(American Society of Civil Engineers, 2013)



(Source: U.S. Army Corps of Engineers)

## **BRAZIL**

Brazil has the most vibrant of the South American economies, and the country is expanding its presence in world markets. Exports are a major driver of Brazil's economy. The Central Intelligence Agency (CIA) World Factbook ranks Brazil's economy as number eight in the world, and number two in the Americas (after the United States).

### **The CIA World Factbook describes Brazil's economy:**

Characterized by large and well-developed agricultural, mining, manufacturing, and service sectors, and a rapidly expanding middle class, Brazil's economy outweighs that of all other South American countries, and Brazil is expanding its presence in world markets. Since 2003, Brazil has steadily improved its macroeconomic stability, building up foreign reserves, and reducing its debt profile by shifting its debt burden toward real denominated and domestically held instruments. In 2008, Brazil became a net external creditor and two ratings agencies awarded investment grade status to its debt. After strong growth in 2007 and 2008, the onset of the global financial crisis hit Brazil in 2008. Brazil experienced two quarters of recession, as global demand for Brazil's commodity-based exports dwindled and external credit dried up. However, Brazil was one of the first emerging markets to begin a recovery. In 2010, consumer and investor confidence revived and GDP growth reached 7.5%, the highest growth rate in the past 25 years. Rising inflation led the authorities to take measures to cool the economy; these actions and the deteriorating international economic situation slowed growth in 2011-13. Unemployment is at historic lows and Brazil's traditionally high level of income inequality has declined for each of the last 14 years. Brazil's historically high interest rates have made it an attractive destination for foreign investors. Large capital inflows over the past several years have contributed to the appreciation of the currency, hurting the competitiveness of Brazilian manufacturing and leading the government to intervene in foreign exchange markets and raise taxes on some foreign capital inflows. President Dilma Rousseff has retained the previous administration's commitment to inflation targeting by the central bank, a floating exchange rate, and fiscal restraint.

### **Agriculture in Brazil**

One of the reasons agriculture is such an important industry in Brazil is because it creates jobs for many of the people living in the country. Brazil's main agricultural exports are soybeans, coffee, wheat, rice, corn, sugar cane, citrus and beef. The most significant exports overall are coffee, soybeans, beef, sugar cane, ethanol and frozen chickens. Cattle-farming remains one of this country's key industries—Brazil produces millions of tons of beef every year. It is important to note that Brazil is the second largest producer of soybeans in the world, and this product and its byproducts are sold globally.

### **Brazil's Exports**

According to the CIA World Factbook, Brazil's exports for 2012 were equivalent to US\$ 242.6 billion. Exports from Brazil increased to US\$ 17.6 billion in March of 2014, from US\$ 15.9 billion in February of 2014. The main five exports of Brazil are iron ore, crude oil, soybeans, sugar and poultry. Brazil is the world's largest exporter of soybeans (41% of world's exports) and of orange juice (55% of world's exports) and accounts for 35% of global exports of raw cane and refined sugar. Main export partners are China and the U.S. Others include Argentina, the Netherlands, Japan, Germany, and India.

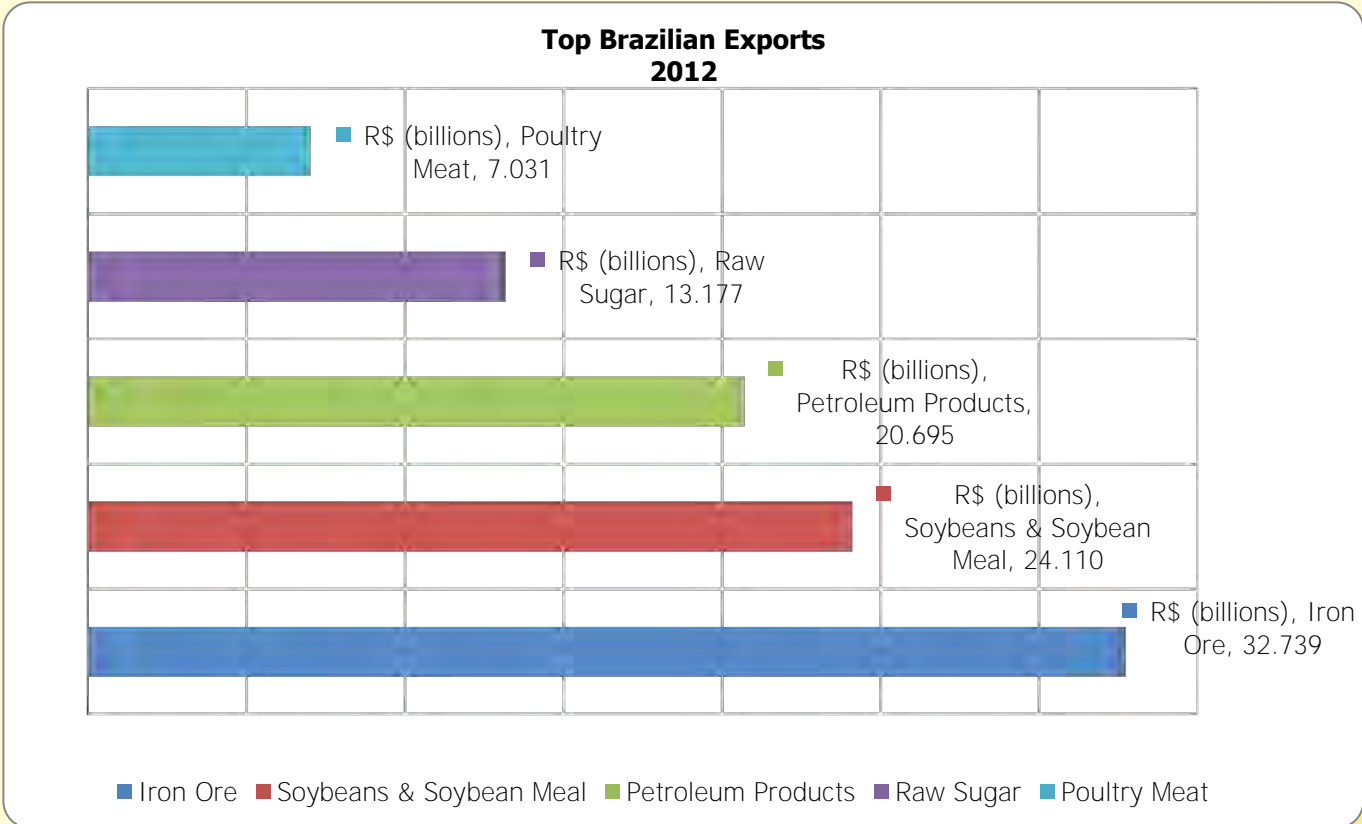


Figure 1: Graph data courtesy of MIT's Observatory of Economic Complexity

### Brazil's Transportation Infrastructure

Brazil's infrastructure consists of roads, rails, waterways, and ports (Logistics in Brazil, 2012). The CIA World Factbook states that Brazil has a total of 1,580,963 kilometers (982,365 miles) of total roadways, with 212,798 kilometers (132, 227 miles) of these roadways being paved (CIA World Factbook, 2014). The roadways of Brazil make up 58% of the national transport/transit system. However, the National Confederation of Transportation warns that 69% of Brazilian roads remain in poor condition" (Logistics in Brazil, 2012).

On the other hand, 19% of Brazil's roads are in good condition. This 19% of good roadways make up the transportation route for the nation's soybeans. There are upcoming plans to improve the conditions of some of Brazil's crucial roadways. According to World Highways, Brazil has invested R\$ 3.22 billion on road improvement projects since 2011 as part of a program aimed at improving Brazil's infrastructure (World Highways, 2013).

Brazil's railway extends 30,051 kilometers (18,672 miles) long. The railways in the southeast region of Brazil make up 50% of the railway system in the country (Fliehr, 2013, p.25). The north and center-west region of the country holds 8% of the rail system (Logistics in Brazil, 2012). The main railways located in the center-west region are called Malha Norte (ALLMN) and Malha Paulista (ALLMP). These two railways transport about 50-80% of soybeans produced in the Mato Grosso region to the Port of Santos (Fliehr, 2013, p.25, 26). Additionally, there have been investments in the Brazilian railway system recently. The International Transport Journal states that Brazil invested the equivalent of R\$ 2.4 billion in its railway system last year (International Transport Journal, 2013). Bueno and Neto



state that Brazil can extend its current rail network by an additional 40,000 kilometers (24,854 miles). The investment for this rail extension will be the equivalent of R\$ 22 billion (Bueno, Neto, 2010).

Brazil has a total of 50,000 kilometers (31,068 miles) of waterways (The World Factbook, 2014). Even with the large amount of inland waterways, Brazil is only using 13% of its waterway system (Raso, n.d). Included in these waterway systems are 163 ports which have 34 public ports and 129 private terminals (Network Expansion to Brazil: Work to Date and the Road Ahead, n.d). Most of these ports are mainly located on the northeast and southeast side of the coastal area in Brazil (Network Expansion to Brazil: Work to Date and the Road Ahead, n.d). Out of the 163 ports, four major seaports ship a large amount of soybeans. These are Tubarao, Rio Grande do Sul, Paranagua, and Santos (Fliehr, 2013, a-10). Brazil exports 66% of its soybeans through these four ports alone.

Furthermore, Brazil is planning to invest R\$ 26 billion to modernize their ports within four years (InfraPortos, 2012). **Additionally, the Brazilian government plans to spend R\$ 15 billion "in port leasing projects by 2015" says Rhodes, Smith and Oliver (2012), and during 2016 and 2017, Brazil will spend an additional US\$ 11.15 billion on seaport leasing projects (Rhodes, Smith, & Oliver, 2012).**

## **Brazilian Port Threats**

### **HIGH:**

#### **Port of Rio Grande do Sul, Brazil**

The Port of Rio Grande do Sul, by virtue of the geographic features of its location, has consolidated its position as the major port of the Southern Cone of South America. The port is administered by the Rio Grande do Sul's state government. **Port of Rio Grande do Sul's** major export commodities are soybeans, soybean meal, wheat, and rice. The main export destinations are China, Spain, Holland, Japan, and France. Port of Rio Grande do Sul is one of the most developed ports in Brazil, because of its inland logistics infrastructure and ongoing projects for expansion. The port is also one of the few in the country that has room for expansion. Due to its infrastructure and capabilities, importers and exporters prefer to use Port of Rio Grande do Sul instead of Paranaguá. With ongoing investments of R\$135 million for the expansion of bay breakwaters, improvement of terminals and other works; and planned investments of R\$ 160 million (PAC-PND) for dredging and deepening of port draft from 14 to 18 meters (46 to 59 feet), Port of Rio Grande do Sul is the single biggest threat for the U.S. soy exports.

There are four terminals at the Port of Rio Grande do Sul. The most efficient terminal, Tergrasa, has reduced turnaround times to 18 hours from 24-28 hours for a vessel with an average deadweight tonnage of 64,000 tons. The other three terminals are also expected to undergo similar modernization and upgrade in capacity. On average, vessels wait 10 to 12 days to load at the Port of Rio Grande do Sul, and at critical times, as long as two weeks or more; but this represents half the length of the delays for vessels calling Paranagua. The Port of Paranagua has tried to reduce the wait times by **creating an "express line" for vessels that will only load from a limited number of terminals** in order to speed the process.

### **Port of Santos, Brazil**

Located in the city of Santos-SP and currently serving 26 Brazilian states, Port of Santos is the largest in Brazil and one of the busiest in Latin America. The Port of Santos is especially important for the **São Paulo state's economy; around 90% of its industrial base is located in a radius of 200 kilometers** (124 miles) from the port. The port is also responsible for 28% of the Brazilian foreign trade. Even though Santos is the largest port in the country, it also has the most problems, especially pertaining to its workforce. Among the issues, labor work schedules are often incorrect; and this disrupts the lives of the workers. Subsequently, because of this and other labor issues, port workers often go on strike. Among the most popular products of this port are sugar, soy, containerized cargo, coffee, corn, wheat, salt, citrus pulp, orange juice, paper, automobiles, and alcohol.

The Port of Santos is currently administrated by the Companhia Docas of Estado de São Paulo (Codesp). With ongoing investments of R\$ 2 billion from private funds for dredging, construction of access roads, new quays and terminals, other improvements; as well as planned investments of R\$ 9 billion to increase capacity expansion from 110 to 230 million tons per year; the port of Santos is a big threat for the U.S. exports of soybeans.

### **Port of Paranagua**

According to the CIA World Factbook, the Port of Paranagua is one of the leading ports in Brazil. The port of Paranagua is located in Paranagua, Brazil, and is the largest exporter of soybeans in Latin **America; but it can handle other types of cargo. It is Brazil's largest port for shipment of grains and its second biggest maritime terminal.** Rail and road networks lead to inner Paranagua, giving the port good transportation infrastructure support. Searates.com reports that channel maximum draft at the Port of Parangua is 45 feet; anchorage depth is at 55 feet.

## **MEDIUM:**

### **Port of Rio de Janeiro, Brazil**

Located in the west coast of the famous Baía de Guanabara, the Port of Rio de Janeiro is administrated by the Companhia Docas of Rio de Janeiro. The Port of Rio de Janeiro is plagued by problematic access caused by poor road maintenance, lack of secondary access channels, bad distribution of railroads, **lack of investment in infrastructure, and "lack of political will" to institute projects that address logistics bottlenecks** that are commonplace with the Port of Rio de Janeiro. Despite all the mentioned problems, Rio de Janeiro is one of the busiest ports in Brazil in terms of dollar value of goods and tonnage. Iron ore, manganese, coal, wheat, oil, and gas are the main exports. Although the port has a current depth of almost 45 feet, it has ongoing investments of R\$ 140 million for dredging of the access channel, port security system, protection systems, and planned investments of R\$ 150 million (PAC-PND) for the dredging to deepen the draft and improve access. The Port of Rio de Janeiro would represent a major threat if its main export were soybeans; however, it is currently a mid-level threat.

### **Port of Belém, Brazil**

The Port of Belém, located in Para, Brazil, is one of the major ports listed in the CIA World Factbook. Belém is the main commercial center of northern Brazil and the entrepôt for the Amazon Basin. The most valuable products now exported from the Amazon by way of Belém are aluminum, iron ore and other metals, nuts (chiefly Brazilian nuts), pineapples, cassava, jute, wood veneers, and hardwoods. The water depth at the port ranges from 16 feet in the channels to 30 feet at the anchorage.

### **Port of Tubarão, Brazil**

The Brazilian Port of Tubarão is a port managed by Vale. Vale is a mining company that has invested in the port to make it the largest iron ore embarking port in the world. Vale utilized cutting-edge technologies to complete a 22 month-long dredging project that increased the shipping channel depth from 22.5 meters (73.8 feet) to 25.3 (83 feet) meters. This new depth will accommodate fully loaded Valemax ships, which are the largest mineral transporters in the world. The Port of Tubarão has three terminals; one is an iron ore terminal, and the other two terminals accommodate a larger diversity of goods such as grain and soybean meal.

The port is connected to a 10,000-kilometer (6,213.71 miles) network of modern railroads. The railroads, while mainly used by and connected to mines, are multiple-use railroads. (Vale, 2014)

Vale announced in 2008 that it planned to invest a total of R\$ 4 billion through 2012 to expand its six ports and terminals in Brazil. Tubarão is receiving R\$ 680 million of the modernization efforts. Tubarão is Brazil's biggest port in terms of tonnage. (Rodrigues, Neto, Lopes, November 2008)

Since the vast majority of Tubarão's exports are iron ore, there is no immediate threat to the U.S. competitive advantage with agricultural exports. However, since the port's facilities and railroads are multi-use, these systems may accommodate the growing Brazilian agricultural export industry in the future.

### **LOW:**

### **Port of Salvador, Brazil**

Located in 'Bahia de Todos os Santos', the Port of Salvador is one of the largest exporters of fruit from Brazil, and represents a significant portion of foreign trade. Having been the first port in Brazil and, for decades, the only shipping channel for inbound and outbound freight in the country, its significance and historical importance are unquestionable. Beyond its ideal location, the port demonstrates excellence in container handling and has excellent natural conditions for port activities. The final stage in the dredging and deepening of the port is expected to be completed in December 2014. The work will increase the port's capacity to receive larger ships, providing greater operational agility to meet the needs of foreign trade, thus contributing to the country's economic growth. Although it has a well-known container management, the port of Salvador does not represent a significant threat to the US agricultural export market, because it does not export soybean.

### **Port of Manaus, Brazil**

Manaus is the only major port city on the Amazon. This means that all the commodities being traded along the Amazon transit through this port before reaching the rest of Brazil. The Manaus Free Trade Zone has a significant workforce, with 100,000 jobs. AgroInvest Brazil has R\$ 200 million ready to invest in the infrastructure of Manaus. The region has high agricultural potential, but it does not currently export a high number of grains. Currently, the infrastructure is weak because of unplanned city growth, but the port plans to refurbish and modernize to meet demands. The terminal depth is around 30 feet and the channel depth is 26 feet. The cargo pier offers nearly 80 feet of depth. This port does not yet pose a serious threat to U.S. agricultural exports. The port does not export enough grain and soy, but the area does have high agricultural potential.

### **Port of São Sebastião, Brazil**

The Port of São Sebastião is planning an expansion of its workforce from 450 to 4500. This is in conjunction with adding in six more berths, as well as planning to increase depth capacities. Currently the terminal depth is around 45 feet and the cargo pier is at 30 feet. The channel depth is 36 feet. Current funding requests exceed R\$ 1.36 billion. It has a unique strategic advantage in being located close to the major population center of São Paulo, Brazil. Current drive time from the port to São Paulo is approximately three hours, but planned highway improvements could cut that time in half. This port does have an advantage over the Port of São Paulo, because loading and unloading times are quicker. Planned improvements in the port would make it a regional port. In late 2013, Ibama approved the investment to expand the port. This will allow the port to expand to a five million tonnage handling capacity. This port is barely a medium threat to U.S. agricultural exports, and is expected to remain so for the immediate future because it is not a major exporter of grain and soy.

# ARGENTINA

## Agriculture in Argentina

In the 1990s, Argentina reformed its agricultural economic policies (“Soy Bean, Agriculture, and Policy in Argentina”, A, 2001). The government began to boost investments in agribusiness and increased the production and exports. Today, Argentina is focused upon the growth of its export agribusiness sector. **Agriculture exports is a component of Argentina’s economic success.** The CIA World Factbook lists the Gross Domestic Product for the Argentine agriculture segment as 9.3% (CIA.gov, 2014).

Much of Argentina’s agricultural production area lies within 300 kilometers (186.4 miles) of the Parana-Paraguay waterway, and is typically close to other ports. It is well known that agricultural proximity to commercially viable waterways is advantageous to the exporting of crops (Simoes, 2001).

## Argentina’s Exports

Argentina’s agribusiness produces crops as well as livestock. The soybean is Argentina’s most important export crop, and they also produce corn, wheat, rice, cotton, and beef (A, 2001); however their most profitable crop is the soybean. According to Bloomberg Business’s (2011) article “Will Argentina Humble the Grain Giants,” **Argentina is the world’s third largest soybean exporter, following the U.S. and Brazil.** Argentina also boasts being the largest of soybean product exporters, which are soybean meal and soybean oil (Bloomberg, 2011). Neal Richardson (2008) explains that the Argentines are exporting large amounts of soy to meet the international demand. Soy products are for a variety of purposes, from feeding livestock in China, to being integral to German biodiesel refineries. The Argentines themselves do not typically consume soy. Between the years of 1989 and 2006, 94% of Argentine soy oil and 99% of Argentine soymeal was exported. In 2008, soy made up 20% of the export revenue within Argentina (Richardson, 2008).

## Argentina’s Infrastructure

Argentina has a prime geographic location for trading with leading markets in Latin America and around the globe. One factor that influences their success in the trade market is their infrastructure. Argentina has 6,804 miles of navigable waterways with most of the major ports located on the Atlantic coast (World Bank, 2000). The country has a good infrastructure system when compared to other Latin American countries. Argentina has 133,870 miles of roads, including 456 miles of expressways (World Bank, 2000). There is an extensive railroad system that transports freight and passengers with a total of 23,816 miles of track (Advertising Inc., 2014).

According to HSBC (2013), Argentina has an impressive communications infrastructure and rail system; and it is making improvements to its roads and its industrial production. The investment in inland and port infrastructure will aid their quest to expand their market shares. Lucrative target markets for Argentine products include China, India, and sub-Sahara Africa. These will provide the greatest **demands for Argentina’s exports in the next five years.**

The Inter-American Development Bank approved a US\$ 300 million loan last year to finance the Norte Grande III Infrastructure Program, which is to rehabilitate and improve road corridors connecting production facilities with both domestic and foreign markets (Inter-American Development Bank, 2014).

Bertels (1998) explained that Argentina completed a R\$ 650 million dredging project on the Parana River that enables larger vessels to access their export grain elevators, decreasing the cost of Argentine grain in world markets. Several other dredging projects are underway that will deepen the **Parana's primary navigation** channel to 34 feet, allowing for Capesize vessels, also known as large-sized bulk carriers, to transport heavier and larger loads. Argentina is also investing millions of dollars to improve the inland river system for transporting agriculture and various commodities. Grain companies are constructing and expanding facilities in Argentina, which will noticeably impact the soybean crushing industry because the companies will bring soybeans from Argentina, process them, and export the meal and oil. Subsequently, infrastructure investment in Argentina will reduce the competitive advantage the U.S. has had in the global agribusiness marketplace (Paul Berels, Agricultural Transportation Challenges for the 21st Century, July, 1998).

## **Argentine Port Threats**

### **HIGH:**

#### **Port of San Lorenzo, Argentina**

The San Lorenzo-San Martin Port, otherwise referred to as either Puerto General San Martin or simply San Lorenzo, is located along the River Paraná between the Argentine cities of San Martin and San Lorenzo. The nearest railway is in Rosario, and roads link the Rosario and San Lorenzo. According to **Seafarer's Life, the port ships approximately 36 million tons of cargo each year, including several products that compete with the Mississippi River system such as soybeans, grains, cereals, and vegetable oil.** Other major cargoes include petroleum products and chemicals.

Most berths in the port have a depth ranging from 30 to 40 feet. The channel depth, however, is maintained at a minimum of 34 feet, allowing for a draft of 32 feet ("**San Lorenzo-San Martin**"). Improvement projects are being considered that would deepen the river to 45 feet, add two mobile cranes, and create a yard for bulk cargo and container cargo. Currently, berths one and two are being repaired as a result of the **damage incurred from a 2007 earthquake ("General San Martin Port Terminal")**.

The Port of San Lorenzo-San Martin is a potential threat to the Lower Mississippi River when combined with other Argentine ports and when the expected port improvements are completed.

### **MEDIUM:**

#### **Port of Buenos Aires**

The Argentine port of Buenos Aires is on the Atlantic. The port exports a total of about 4.7 million tons every year, mainly general manufactured goods. Other major exports include meat, leather, fruits, wool, cotton, and automobiles parts. The maximum draft at the port is 32 feet. However, the General Ports Administration in Argentina plans to spend US\$ 700 million to dredge the port to the parameters of the new Panama Canal locks.

The Port of Buenos Aires currently does not export much soy or other grains. Therefore, the port does not pose an immediate threat to the U.S. agricultural industry. However, it should be noted that

exports at a port could change over time. Since the Port of Buenos Aires will soon be dredged to the depth of the Panama Canal, their competitiveness in the global soy marketplace may increase.

### **Port of Rosario**

The Port of Rosario-Argentina, the main port in the Parana River, which includes several ports and when combined, transported over 55 million tons in cargo last year. Soy and sunflower grains and vegetable oils represent the largest portion of exports from Port of Rosario.

This region of Argentina is one of the highest soy production areas in the world. Taking advantage of the expanding markets for soybeans, especially in China, the Argentinean government has started a 10-year investment project of US\$ 300 million, which will deepen the river canal from 33 feet to 36 feet. The surrounding highways and railroads will also be improved in order to fasten the load of the product.

Due to the limitations of the canal, post-Panamax type vessels will not be able to navigate in the river. However, smaller ships can transport the soy cargo towards deeper water ports such as Buenos Aires, and from there, export the soy to the world. For this reason, the Port of Rosario represents at the moment a minimal to medium threat to the Mississippi River ports.

## **LOW:**

### **Port of La Plata**

**"The CIA World Factbook" states that the port of La Plata is one of Argentina's major ports; however, the port is considered a low threat to the U.S. (CIA World Factbook, 2014). Several reasons that the Port of La Plata is considered a low threat to the U.S. is due to the limited channel depth available. According to SeaRates.com, the Port of La Plata has a depth of twenty-six feet to thirty feet, which is incompatible with post-Panamax depth of fifty feet (Port of La Plata [Argentina], 2005-2014). The port of La Plata's main imports are raw materials in the form of coils, and their major exports are steel sheets and wires (Terekhin, 2011). Considering the foregoing, the port of La Plata presents a low threat to Mississippi River agribusiness.**

### **Punta Colorada**

**According to The CIA World Factbook, the port of Punta Colorada is one of Argentina's major ports (2014). The port of Punta Colorada is considered a "very small, pier, jetty, or wharf" type of port (Punta Colorada, 2014). The port of Punta Colorada has a depth of 45 feet (13.72m) "at the eastern dolphins" and 35 feet (10.67m) "at the northern dolphins" (Terekhin, 2011). The port of Punta Colorada has facilities for dry bulk and general cargo bulk (Punta Colorada Port, 2014). Additionally, the port of Punta Colorada is considered an iron ore terminal and their main export is iron ore pellets (Terekhin, 2011). Due to these facts, the port of Punta Colorada is a low threat to the U.S. competitive advantage in the export of agricultural products (Terekhin, 2011).**

### **Port of Ushuaia**

The Argentine Port of Ushuaia contains one commercial pier, an oil jetty, and a naval base. In 1999, the port implemented an extension that provided a berthing front of 640 meters (2,099.74 feet) on the south side and 517 meters (1,696.19 feet) on the north. A mooring dolphin that is 28 meters (91.8 feet) beyond the pier was broadened to a width of 28 meters (91.8 feet).

The principal uses of this port are tourism, general cargoes related to the electrical industry, and the fishing industry. The port is heavily trafficked by cruise ships between December and March. **Electric-industry products are typically containerized, and the port's fishing activity is limited to 11 locally based vessels.** There is one mobile crane at the Port of Ushuaia, and is described **as being in "poor condition"** on [ssa-shipping.com](http://ssa-shipping.com) (SSA Shipping, 2014).

There appears to be no immediate plans for significant upgrades or improvements to the Port of Ushuaia in the immediate future. The port is mainly a cruise ship destination. It is at this time no threat to the U.S. agricultural exports.



## **OTHER COUNTRIES**

### **Threats**

#### **Paraguay**

According to Markley (2013), soybeans are Paraguay's top commodity, and they export soy as whole soybeans, soybean oil, meal, and crush. Exports for soybeans in 2012-13 were slightly lower than previous years at 5.2 million tons and are expected to reach 4.3 million tons in 2013-14. This decrease is being seen across soybean oil and meal exports as well due to the dramatic increase in the soybean crush market. However, this decrease in exports does not equate to a decrease in production, as 2014 should present **record numbers for Paraguay's soybean production at 8.4 million tons.**

Due to their large production rate, Paraguay is an emerging threat to the U.S. soybean market. The primary factor retarding expansion in the Paraguay soybean market is a lack of quality transportation infrastructure. However, there are currently plans for investing US\$ 700 million towards 19 highway projects and constructing 28 bridges throughout the country (Paraguay Plans, 2014). If completed, **Paraguay's agricultural sector will have much easier access to port areas. The bulk of soybeans that go to Paraguay's ports are transshipped through ports in Argentina and Uruguay, going to markets in the European Union, Turkey, Russia, Israel, and Mexico (Markley, 2013).**

#### **Ukraine**

Ukraine is considered a minor threat to the U.S. competitive advantage in soy products because they primarily export corn. According to Chanjaroen, Ruitenbergh, and Durisin, in 2012-2013, Ukraine was ranked fourth for exporting corn (2014). Additionally, Ukraine is expected to export 18.3 million tons of corn through June 2014, exceeding the amount that was shipped last year, which was 13.6 million tons (Chanjaroen, Ruitenbergh, & Durisin, 2014). Ukraine is able to produce this much corn because Ukrainian corn farmers **have been importing "high quality hybrid corn seeds and are becoming more knowledgeable about corn seed choices" (GAIN Report, 2013).** Additionally, instability with Russia has interrupted exports from Ukraine. However, as the country is known for its agricultural prowess, it could one day emerge as a soy exporter.

### **Not currently threats; Emerging capabilities**

#### **Venezuela**

In 2012, Venezuela exports were equivalent to US\$ 97.34 billion dollars. Major export commodities in Venezuela, besides petroleum and gas, are aluminum and bauxite, steel, chemicals, and agricultural products.

Major import commodities in Venezuela are machinery and equipment, construction materials and other raw materials, to support its domestic industries and increase exports (Source for Venezuela export and import data).

At this time, Venezuela does not pose a threat to U.S. agribusiness.

## **Canada**

Canada exported over 868,000 metric tons of soybeans in the first three months of the 2012-2013 seasons, doubling the rate of the previous year in which they exported over 1.9 million tons. Of the 868,000 metric tons exported, about 538,000 metric tons, or nearly two-thirds, were shipped to China. This is a significant increase from the 166,000 metric tons shipped to China in the 2011-12 season (Nickel, 2012).

**According to Canada Grain Exports, wheat is by far Canada's leading export; about 13.340 million metric tons were shipped globally in the 2011-12 season. The five largest importers of Canadian wheat include Mexico, Japan, Iraq, United States, and Colombia. Canada's climate makes it a marginal competitor to the U.S. agricultural soybean sector.**

## **Colombia**

Colombia has a growing export capability. The top five products exported by Colombia are crude petroleum, charcoal briquettes, refined petroleum, gold, and coffee. These export products make up over 70% of total Colombian exports annually (Alexander Simoes, 2011).

**Colombia's export product profile is not a significant threat to the competitive advantage of the U.S. agriculture business. The majority of Colombian exports are energy related and the agricultural commodities (such as bananas and plantains) are not considered a substitute to the grains that make up the bulk of U.S. agricultural exports.**

## **Chile**

**According to The CIA World Factbook, Chile's agriculture sector is only about 3.6% of its Gross Domestic Product. It also states that copper contributes to 19% of their exports. Chile is a major exporter of copper and exports minimal amounts of wheat. While at present Chile is not a threat to the [Mississippi River Corridor's] soy exports, there is news that the Chilean Port of Iquique plans to partner with Bolivia to export soy to take advantage of their port. The partnership would increase soy exports from this port to 20,000 tons.**

## **POSSIBLE MARKET EROSION: CHINA**

With a population in excess of 1.3 billion, China is the world's most populous country and has one of the world's fastest growing economies. Although China is the ancestral home to the soybean, the country has become by far the world's largest importer and consumer of soybeans. The expansion of China's swine, poultry, and farm-raised aquaculture sector has been the driving force behind China's imports of soybeans. China imports unprocessed soybeans, which are then processed into soybean meal and soybean oil. The soybean meal is used as a protein supplement mainly for swine, poultry, and aquaculture feeds. The soybean oil is used almost exclusively for human food, and China is the world's largest consumer. In fact, the soybean oil produced from domestic soybeans is not sufficient to meet domestic demand. To supplement the domestic shortage production, China imports soybean oil, and is now the world's largest importer.

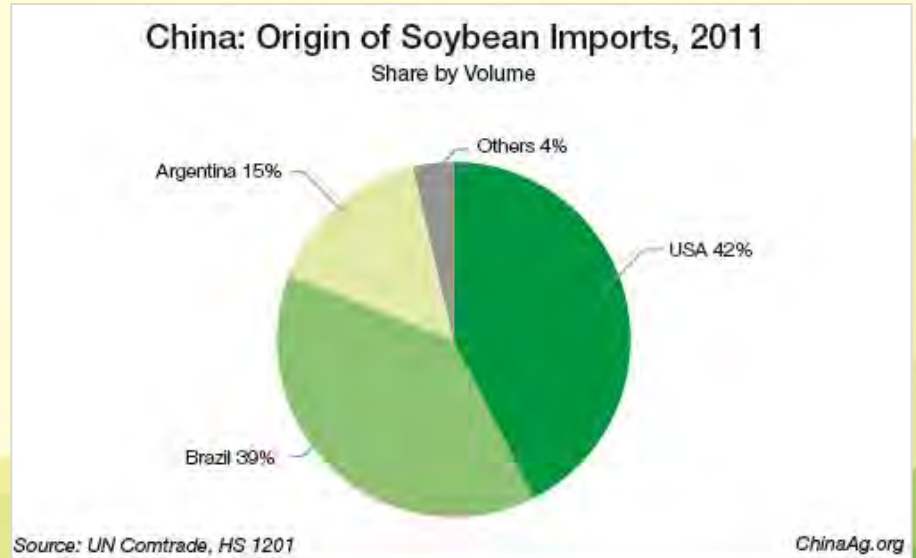
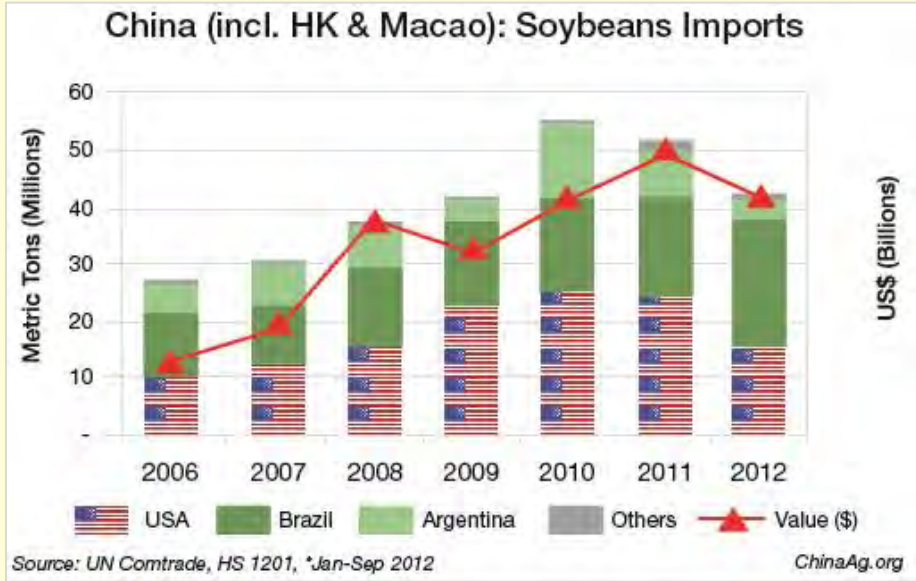
Based on the U.S. Department of Agriculture 2010 database, the average market price of U.S. soybeans arriving at Chinese ports is US\$ 470 per ton, and another US\$ 30 may be deducted if the soybeans contain lower water content and high protein. Thus, the final average price of U.S. soybeans in any Chinese port is only US\$ 440 per ton, giving domestic soybeans no advantage when compared with imports. This relatively low cost for imported goods is why the majority of crushing factories in China choose to process imported soybeans (USDA, 2011).

Because China is the most important market for the U.S., Brazil, and Argentina, these three soybean exporters compete with each other in the Chinese soybean import market to expand their soybean market shares. In 2011, by volume, the U.S. exported 25% of all their soybeans to China. Imports from Brazil and Argentina are also noteworthy, as soybeans and soybean oil account for the majority of agricultural trade between China and the two South American countries.

**Currently, Brazilian soy export costs to China are the lowest, and U.S. costs second, with Argentina's** export prices of soy the highest of the three. However, there is consideration in Argentina of eliminating the export tax on soybeans. If this is accomplished it could move them from the third position in cost to the number one position, bumping the U.S. to the highest or number three position. If this shift occurs, coupled with improved transportation infrastructures in Brazil and Argentina, U.S. soy exports to China may sharply decline.

If U.S. soybean production continues to grow, other soybean markets will have to be developed, or a way to decrease costs for U.S. soybeans will have to be found. More efficient shipping, such as increasing the depth of the Lower Mississippi River, can help the U.S. soy exports from the Mississippi River Corridor remain competitive. The increasing demand for corn land use largely squeezed out acreage previously used for soybean production. Traditional soybean producers along the Mississippi River started to seek new land where rents were lower. Considering the natural transportation advantage created by the Mississippi River, re-location of the soybean production base means a partial loss of comparative advantage.

This can partly explain why the U.S. has gradually lost its dominant status in the global soybean export market. Given these facts, from January through October 2012, China imported 16.4 million MTs of soybeans from the United States, 22.2 million MTs from Brazil, 4.2 million MTs from Argentina, and 1.3 million MTs from other countries.



## CONCLUSION

Although limited by time and resources, this report reveals the emerging and increasing competitiveness of ports in Brazil and Argentina. Continued investment in infrastructure in those countries provides a real, present and future threat to the continued market-share enjoyed by soybean exporters in the Mississippi River corridor. The share of the Chinese import market for soybeans has witnessed the slippage of the US into second position behind Brazil.

While Brazil and Argentina are rapidly expanding their competitive capabilities, their strategic advantages, and their ability to simply move product from the fields to the grain ships, the United States is lethargic in its funding of repairs to aging inland waterway facilities, and in funding channel maintenance. Massive investment in Brazil and Argentina land-transportation will reduce or eliminate delays that have hampered the movement of agricultural products from the countryside to the docks and their ultimate conveyance to portside bulk carriers. With the reduction of wait time, transportation costs are also reduced. When we consider the depth of some of their ports, we see the capacity to handle ever-larger ships, which have the very real advantage in the further reduction of grain transportation costs.

This report shows that the US is in danger of slipping to the no. 3 spot in the export of soybeans to China. The impact of such a slippage would prove devastating to the agricultural economy of the US if China was to reduce its imports. Soybeans are just one commodity, and China is just one market. As technology and transportation capabilities emerge and refine in other areas of the planet, US agricultural exports can expect to compete with products from even more areas of the world; Ukraine being just one of these. If emerging agricultural competencies in regions of the world closer to China emerge and become competitive, competitive pressures upon US agricultural exports become even stronger.

Thus, it is imperative that the United States maintain its infrastructure, not only to the benefit of those immediately along the Mississippi River corridor, but to the economy of the nation as a whole. If the competitiveness and competencies of the US ability to maintain its status in the global soybean marketplace slips further, the impact will ripple throughout the US economy. Increased awareness of and investment in the US inland waterway system is imperative if we are to maintain our competitive standing.

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