

The Construction Equipment Industry in **BRAZIL**



2015



YENGST ASSOCIATES

Machinery Market Research



CONSTRUCTION EQUIPMENT MARKETS IN BRAZIL

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THE CONSTRUCTION EQUIPMENT INDUSTRY IN BRAZIL

INTRODUCTION

This report is the sixth edition of our assessment of the construction equipment industry in Brazil, updating our last report from 2013.

Our analysis draws upon data acquired through many in-depth interviews with manufacturers and importing suppliers in the Brazilian heavy equipment industry. We have also examined various economic indicators and have conducted interviews with association representatives, distributors, and rental industry personnel.

This analysis focuses on the key construction machinery products being used in Brazil today. An overview of each machine type along with historical coverage of sales, production, manufacturers offering machines, market share analysis, field population assessments and our projections as to what we see happening in the years to come.

We focus on the most significant types of construction machinery products that are currently in operation in Brazil. For each type of machine, we provide an overview of the product, historical sales, production, and export data. We also provide market share analysis and an estimate of the field population of most of the different types the machinery covered in the report. We also discuss the leading manufacturers of each machine and list some of the machines' key specifications. A five-year forecast of sales and production is also included.



The report consists of five different topics, including:

- **THE BRAZILIAN ECONOMY**

We look at the key economic indicators, such as gross domestic product (GDP), inflation, interest rates, unemployment, and trade data for the last five years.

- **CONSTRUCTION MACHINERY MARKETS**

We provide historical sales and production (by unit) data for nearly 20 different types of construction machinery. The sales and production figures are broken down by the OEMs (Original Equipment Manufacturers) that are active in the Brazilian market. The types of machinery covered are used in construction, mining, agricultural, and material handling situations. In our last report, we began coverage of Aerial Work Platforms, and Telehandlers, equipment that is

also analyzed in this edition. We also provide a five-year forecast for sales and production of each type of machinery covered in the report.

■ MANUFACTURER PROFILES

The leading suppliers of construction equipment in Brazil are examined by analyzing their sales and production positions, changes in product lineups, manufacturing focus, exports, and overall outlook. We also briefly discuss new and/or non-dominant suppliers.

■ RENTAL EQUIPMENT MARKET

We track the latest changes in the Rental Equipment sector and analyze its continued growth in the Brazilian economy. The rental segment has become an integral component of the North American heavy machinery market and is continuing to making inroads in the Brazilian market.

■ FINANCING & IMPORT FEES

This section examines the costs incurred for importing equipment in Brazil. Imported machines are subjected to taxes and regulations, which are sometimes costly and confusing in the Brazilian economy.

GENERAL INFORMATION

Brazil, with a landmass slightly smaller than the United States, is the largest country in South America. It also has the largest population and GDP of all the continent's nations. The list below provides a snapshot of Brazil and its geography, people, and political and economic conditions.

Area: 8,515,770 sq km (3,287,957 sq miles)
almost the size of the USA

Population: 204,259,812 (July 2015)

Capital: Brasília

Government: Federal Republic | Head of State

and Government: President Dilma Rousseff since January 2011

Next Election: October 2018

Administrative Divisions: 26 states and one federal district

Independence: September 7, 1822 (from Portugal)

Time: Brazil spans four time zones

Language: Portuguese is the official language, with several regional accents in various states. Spanish is commonly spoken in border areas of some states.

Geography: Brazil encompasses almost half of the South American continent. It borders all of the South American nations with the exceptions of Chile and Ecuador. The Atlantic Ocean is on the east side of Brazil.

Climate: Mostly tropical, but temperate in the South

Labor Force: 100.9 million (2014)

Unemployment Rate: 7.6 percent (July, 2015)

Industrial production growth rate: -1.5 percent (2014)



Economic Overview: Brazil's economy is, by far, the leading economy in South America. Globally, it has the seventh largest GDP and well-developed manufacturing and agricultural sectors. As one of the leading emerging markets, Brazil made rapid strides during the 2000s, but recently, the economy has slowed and entered a recession in the second quarter of 2015.

Roadways: Total: 1,580,964 km; *paved*: 212,798 km; *unpaved*: 1,368,166 km (2014)

Ethnic/Racial Groups: White 47.7%, Mulatto (mixed White and Black) 43.1%, Black 7.6%, Asian 1.1 %, and Indigenous, 0.4% (2010 Census)

Life Expectancy: 73.53 years (Males 69.99 years, Females 77.25 years)

Literacy Percentage: 92.6% of the population over age 15 is literate

Currency: Brazilian Real

THE BRAZILIAN ECONOMY

With the world's seventh largest GDP, Brazil is the biggest market in Latin America and surpasses many other global economies, including Russia, Italy, Canada, and India. It has the second largest economy in the western hemisphere. Along with Russia, India, and China, Brazil is one of the key emerging markets collectively known as "BRIC" economies (also referred to as "BRICS" when South Africa is included). The country has well-developed economic sectors in manufacturing, mining, agriculture, and services. Brazil maintains a floating exchange rate and policy has focused on fighting inflation, improving its credit rating, and attracting more investment.

The shift in emphasis toward an investment model of growth is a response to the most recent economic conditions that threaten to undermine the significant progress made throughout the 2000s. In the first decade of the twenty-first century, millions of Brazilians joined the ranks of the middle class. With easier access to credit, they helped fuel consumer demand. The discovery of potentially lucrative offshore oil and natural gas deposits, coupled with profitable exports from agriculture and mining, promised that the prosperous times would continue. By 2010, a time when most global economies were reeling from the global recession, Brazil was a notable exception, with 7.5 percent GDP growth for the year.

Soon, however, progress began to unravel. Slowing growth in many global economies, especially key trading partners, China and Argentina, reduced demand for Brazilian exports. From 2001-2012, Brazil had recorded trade surpluses, but in 2013, the nation experienced its first quarterly trade deficit in many years, followed by an annual trade deficit in 2014. Furthermore, price decreases in leading exports such as sugar, coffee, soybeans, and iron ore took a bite out of profits. While the recent fall in oil prices has received much attention, a drop in the price of iron ore—an important export for Brazil—is equally significant, plummeting to \$51.50 per dry metric ton in July, 2015, from \$187.18 in February, 2011. Compounding these trade-related issues has been drought, a problem that threatens Brazil's electrical supply, because the nation generates about 75 percent of its electricity from hydropower.

Brazil's change in fortune has been exacerbated by a scandal, named "car wash," involving state-run gas and oil company Petrobras—a scandal with potentially wide-

ranging ripple effects in the economy. Since at least 2006, Petrobras has been overpaying contractors inflated sums of money for their services. Some of the money was then funneled to corrupt business leaders and politicians—including members of President Dilma Rousseff’s Workers Party (although she has not been implicated in the scandal). Over 100 business and political leaders have been arrested, and investors have lost money on companies that are under investigation. The value of Petrobras’ stock declined by half, and Moody’s lowered its rating to “junk” status. The crisis is ongoing and will likely undercut the current administration’s efforts to attract more investment, since investors are afraid of being “burned” by sinking money into companies associated with Petrobras.

Other more deeply-rooted problems are also cause for concern. Although Brazil has the seventh largest GDP among world economies, its GDP per capita is ranked 95th. Compared to other emerging economies, investment is mediocre (18% of GDP compared to China’s 42%). Much of the economy has been shielded from global competition, resulting in low levels of labor productivity. High levels of taxation and excessive government regulations have damaged the business climate, thus contributing to the World Bank’s low ranking of Brazil among world economies for ease of conducting trade across borders. A deteriorating infrastructure, with about 85 percent of the nation’s roads unpaved and with heavily-congested ports, hinders economic development as farmers and manufacturers cannot get their products to market in a timely manner.

In an effort to reverse the tendencies mentioned above and to return Brazil to the high growth rates of the recent past, President Rousseff has appointed Joaquim Levy to Finance Minister. Levy has guided the Brazilian economy through trying economic circumstances under different administrations in the past and is known for a market-friendly approach to policy, a contrast to the more interventionist tendencies of President Rousseff. His primary concerns have been to restore a balanced budget and to stem inflation in order to attract more investment and maintain Brazil’s investment credit rating. Unfortunately, however, the economy’s continued slowing resulted in two successive quarters of negative growth in the first half of 2015, sinking the nation into a recession. When the government could not put forth a proposal for a balanced budget, Standard and Poor’s downgraded Brazil’s sovereign credit rating to “junk”—the nightmare that Levy feared might happen.

Brazil, with Levy’s urging, has implemented a number of various austerity measures in an effort to reduce government debt and achieve a balanced budget. The policies associated with Levy have not been popular with many Brazilians: For example, recent bills have capped pensions, limited sick leave and unemployment benefits, and increased import taxes. Other austerity efforts are still being contested and continue to generate controversy. Despite the political bickering, Levy’s supporters argue that these reforms are necessary to attract investment and to prevent the other credit agencies, Moody’s and Fitch, from also downgrading Brazil’s credit status.

Equally important for drawing investors to Brazil are reforms aimed at reducing regulatory burdens and making investments more lucrative. Many of the reforms are still under discussion. For example, proposals have been made for deregulating the energy,

mining, agriculture, and aviation sectors. Other reforms include easing local content requirements that mandate businesses to hire local companies for a certain percentage of service and equipment purchases. There is even talk of eliminating the requirement that Petrobras must have a stake in the “pre-salt” offshore oil and gas fields, a rich source of fossil fuels that was discovered in 2007 under a thick layer of rock and salt. More substantively, Brazil raised the rate of return on highway concessions from 7.2 percent to 9.2 percent. Ports, railways, and airports might see similar increases. Furthermore, various infrastructure projects are in the process of being privatized. A recent agreement for the privatization of four roads in 2015-2016 might be expanded to seven other roads. Other projects involving airports, railroads, and seaports will have less red tape, a lifting of caps on investment profits, and less involvement and financing from the state-run National Social and Economic Development Bank (BNDES). In sum, Brazil has launched a large public concessions project that hopes to attract \$64 billion for infrastructure development. It has also put forth a policy by which the central bank will create incentives for lenders to inject more cash into agriculture and mortgages.

The government’s attempts to give a greater role to the private sector and implement changes in the sale of concessions are indicative of its efforts to create a business environment more attractive to investors. Likewise, the latest round of auctions for oil and gas deposits (not including pre-salt deposits), which opened in October 2015, were designed to be more investment-friendly. A concession model was used for the auctions, unlike the former production sharing model that specified Petrobras had to maintain at least a 30 percent stake in all projects. Opening bids in the auction, however, have been disappointing. As of this writing, only 17 of the 119 blocks offered on the opening round were sold, while some blocks received no bids. Investors and energy companies are hoping the Brazilian government will take a cue from Mexico. The response to Mexico’s initial auction of oil and gas blocks—after years of a nationalized oil policy—were disappointing, prompting the Mexican government to liberalize its local content rules. With the change in local content rules, Mexico was able to attract more offers and investment in the next round of auctions.

A change in local content rules could stimulate more interest in the Brazilian energy sector, a sector that offers other investment opportunities. State-run Petrobras, tarnished from the scandal and in need of cash, plans to cut its investments by 35-40 percent and will be divesting many of its assets. Although details will not be known until the sales are transacted, some of the assets that could be sold include thermoelectric power plants, gas distribution services, and downstream assets. The major oil companies have reportedly been invited to look at data, but there is nothing official at this point. In a separate deal involving oil companies, on April 8, 2015, Shell acquired BG Group for 70 billion dollars. Both companies operate in Brazil, but BG has more extensive drilling rights as well as drilling rights in Australia. For Shell, the acquisition will increase its gas and oil reserves by 25 percent, making it the world’s largest supplier of liquefied natural gas, and facilitate access to Brazil’s deep water fields.

Petrobras is not the only company seeking to divest assets in view of the “car wash” scandal. Businesses associated with the scandal that are involved in construction and infrastructure development are divesting rather than expanding. Furthermore,

Brazilian companies in oil, gas, shipbuilding and related industries, suffering from declining oil prices as well as problems associated with Petrobras, offer additional investment opportunities—opportunities that might look more attractive than a few years ago because of the currently-weakened Brazilian real.

Although these opportunities, combined with Brazil's natural resources and large middle-class, estimated at 100 million people, bode well for the nation's long-term picture, the more immediate situation, as outlined in the indicators section that follows, presents many challenges. The economy could contract by over two percent in 2015, and the fallout from the Petrobras scandal will be felt in many economic sectors. The political situation is also dire, with President Rousseff's approval rating in the single digits and many calling for her impeachment. Slowing growth in China, Brazil's leading trading partner, will reduce Brazil's level of exports, even though the weakened real could give a boost to exports.

These concerns form the backdrop to Brazil's hosting of the Olympics in 2016, an event that will stimulate construction spending for the sports infrastructure needed for the games. On the other hand, citizens protested Brazil's high levels of spending for the 2014 World Cup soccer matches, believing that the government placed the needs of the games over the needs of its own citizens. It would not be surprising if these protests resurfaced but with a focus on the Olympics, especially in view of the mid-August, 2015 demonstrations calling for the impeachment of President Rousseff. These political controversies compound the difficulties in achieving economic growth, a problem with no quick solutions, even though Brazil has much to offer in the long run.

The table below lists some of the basic economic indicators for the last five years. A brief explanation follows.

BRAZIL - KEY ECONOMIC INDICATORS

BRAZIL	2010	2011	2012	2013	2014	2015
GROSS DOMESTIC PRODUCT						
GDP IN 2015 (R\$ MILLIONS)	3,886,835	4,374,765	4,713,096	5,157,569	5,521,256	N/A
REAL GDP GROWTH	7.6%	3.9%	1.8%	2.7%	0.1%	-1.9%
INFLATION						
CPI (ANNUAL VAR. IN %)	5.9%	6.5%	5.8%	5.9%	6.4%	9.5%
UNEMPLOYMENT RATE						
BRAZILIAN UNEMPLOYMENT	7.0%	6.2%	5.5%	5.4%	4.8%	7.5%
EXCHANGE RATE						
REAL / \$US	1.84	1.74	2.04	2.25	2.45	3.91
INTERNATIONAL TRADE						
EXPORTS (\$US MILLIONS)	200,760	255,652	243,165	242,213	225,240	N/A
IMPORTS (\$US MILLIONS)	181,768	226,246	223,183	239,747	229,060	N/A

SOURCE: CENTRAL BANK DO BRASIL, CIA FACTBOOK | 2015 FIGURES BASED ON Q2

Brazil's **Gross Domestic Product** (GDP) took a sharp downward turn in the last quarter of 2014, contracting by 1.2 percent. For the year, GDP grew by just 0.1 percent after experiencing wide swings, including a contraction of 0.2 percent in 2009, followed by 7.6 percent growth in 2010. Thus far, 2015 is continuing the

downward slide of the previous year's last quarter, as the economy contracted in the first two quarters of 2015, placing Brazil into recession. The economic slowdown has been unevenly felt in the economy, as agriculture actually experienced record GDP in the first quarter of 2015 before declining in the second quarter. Unfortunately, agriculture accounts for only six percent of GDP. The service industry, the largest economic sector (69 percent of GDP) experienced big declines in 2015, as did industry, a sector that includes manufacturing, mining, and construction and accounts for 25 percent of GDP.

Inflation, reaching its highest level since November, 2003, increased to 9.56 percent in July, 2015. The inflation rate has risen for eight consecutive months and continues to put a straightjacket on consumer demand and spending. Government policy has specifically targeted lowering the inflation rate to 4.5 percent as a key objective, yet attempts to lower the rate (by increasing borrowing costs) have failed to arrest the steady upswing. In July, the **interest rate** was increased to 14.25 percent—the highest level since October, 2006—yet inflation has been on the rise since the last quarter of 2014, although it took a minor dip to 9.53 percent in August, 2015.

The increased borrowing costs have contributed to the economic slowdown—a slowdown that is reflected in the steadily increasing **unemployment rate**. As of August, 2015, unemployment reached 7.6 percent, a contrast to the steady progress it made when the economy rebounded from the global economic crisis. At the height of the crisis for Brazil, in 2009, unemployment surpassed eight percent, but beginning the following year, the rate consistently trended downward, reaching a low of 4.9 percent in 2014.

Brazil is a significant exporting country that regularly had favorable **trade balances** until 2013. Imports exceeded exports the following year, but by February, 2015, Brazilian exports surpassed imports. Rather than a surge in exports, however, the favorable balance of trade resulted from decreased imports, as the weakened real has made consumer goods more expensive. Brazil's chief imports are raw materials, capital goods, fuels and lubricants, and durable consumer goods, arriving from the European Union (21%), China (15%), the United States (15%), and Argentina (7%). Since 2011, Brazil has increased exports of soy beans, corn, beef, iron, copper, and cars, while decreasing exports of oil, coffee, and cotton. Other exported items include food products, fuels and lubricants, and mobile equipment. The leading destinations for Brazilian goods include China (18%), the United States (11%), and Argentina (8%).

Brazil has had the seventh largest economy since 2007. As mentioned above, the economy is divided into three major components: agriculture, industry, and services. The main agriculture products consist of coffee, soybeans, sugarcane, cocoa, rice, livestock, oranges, cotton, wheat, and tobacco. For industry, the key sectors include steel, commercial aircraft, chemicals, petrochemicals, footwear, machinery, motors, vehicles, auto parts, consumer durables, cement, and lumber. Leading services are mail, telecommunications, banking, energy, commerce, and computing.

Brazil is rich in natural resources, including 14 percent of the world's fresh water. Primary natural resources include: iron ore, manganese, bauxite, nickel, uranium, gemstones, oil, wood, and aluminum. Brazil generates about 75 percent of its electricity from hydropower and ranks second or third among nations for total hydroelectric output. It is also the second leading nation in ethanol production and twelfth leading producer of petroleum.

The abundance of Brazil's natural resources, along with well-developed agricultural and manufacturing sectors, will help the nation overcome the current turbulent times. Although the recent economic and political problems have disrupted the country's progress, Brazil has overcome more difficult problems in the past and emerged as the seventh largest economy in the world. There will undoubtedly be bumps along the road for the near future, but the longer term perspectives are more encouraging, for both the nation and the construction industry that will propel many of the developments that will spur economic growth.

MACHINERY MARKETS

Our report concentrates on trends within the Brazilian heavy equipment market with an emphasis on company sales and production levels of the machines that are frequently used in the construction, mining, and agricultural sectors. This section of the report is broken down into different types of equipment. For each piece of equipment, we analyze companies' market share, production output, sales history, and developments such as the opening of new facilities or discontinuation of a product that are relevant for construction markets. Each equipment type also has its own five-year forecast of sales and production. Our approach to sales estimates was to base them on retail sales to end customers rather than shipments to dealers or clearances through customs. We have also provided import and export information to analyze the sourcing of equipment as well as the destinations where the machines are shipped and sold.

The machinery market in Brazil had been strong up until very recently, when the economy went into a tailspin in the latter part of 2014 and entered a recession in the second quarter of 2015. As discussed in the earlier section on the economy, Brazil is experiencing economic and political problems that defy easy solutions. From a longer-term perspective, however, the outlook for construction equipment is on more solid footing. Demand for equipment remains strong, as the nation has to develop infrastructure for the economy to grow at respectable levels. Although commodity prices are in general decline, Brazil's rich natural resources will provide opportunities for growth when commodity prices rebound.

Lastly, equipment suppliers continue to enter the market and see much potential in Brazil. Perhaps most tellingly, companies that have recently opened, or plan to open, new facilities obviously have positive expectations of Brazil's potential. Within the past few years, JCB, Deere, Hyundai, Doosan Infracore, Manitowoc Cranes, XCMG, Tadano, Zoomlion, Cifa, Raimondi, and Hitachi (in partnership with Deere) have opened production facilities in Brazil. Caterpillar also expanded its manufacturing capacity during the past two years, adding a new facility in Campo Largo, Parana

state, which is now in operation. In 2015, LiuGong opened a plant for wheel loader production and Deere, later in the year, will expand an existing facility for tractor production. For 2016, Sany will open a new facility in Jacarei, Sao Paulo, with the goal in the future of manufacturing in Brazil the company's entire line of excavators.

The following is our analysis of the products offered in the Brazilian heavy equipment market.

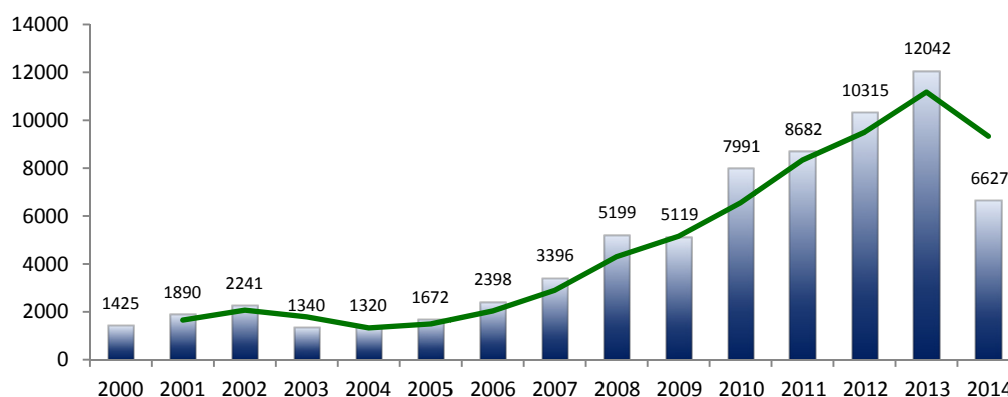
BACKHOE LOADERS RETROESCAVADEIRAS



Sales and Trends: The backhoe loader, essentially a modified farm tractor with a loader in the front and backhoe in the rear, is one of the most popular types of construction equipment. It can be outfitted with various attachments, thus making it a versatile machine used in numerous types of agricultural and construction projects. Demand for these popular machines in Brazil grew rapidly throughout the 2000s and resulted in an expansion of the number of suppliers. Since 2010, new entrants to the backhoe market include Deere, Hyundai, Terex, and Volvo, as well as several lesser-known Chinese suppliers. Currently, there are eight companies with a significant market presence in Brazil and another eight with a more limited footprint.

Despite the popularity of the backhoe loader, the recent economic crisis has decimated sales. Before the current downturn, however, sales had been robust, increasing from 1,672 units in 2005 to 12,042 units in 2013. The downward spiral, however, was rapid, as sales plummeted to 6,627 units in 2014. The graph below provides sales figures from 2000-2014.

BACKHOE LOADER SALES | BRAZIL 2000-2014

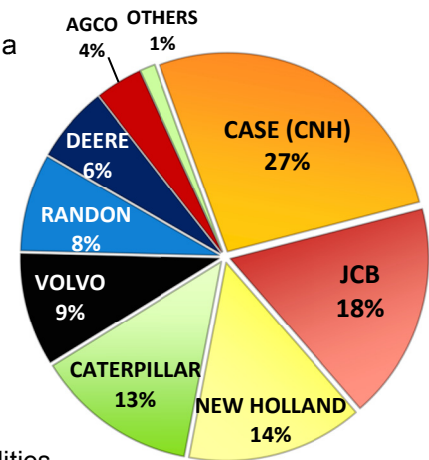


The most popular types of backhoe loaders fall into the 75-85 hp category, although various models have a more extensive range, from 50-125 hp. The machine's versatility allows it to be used in a wide array of applications, with contractors accounting for the largest share—about 55 percent—of all sales. Within the last few years, the Brazilian government has implemented buying programs to increase municipal equipment fleets, resulting in approximately 25-30 percent of sales. With roughly 1-2 percent of sales, the rental industry remains a limited purchaser of

backhoes. The remainder of sales goes to agricultural, industrial, and other diverse applications.

Market Shares: CNH, with its Case and New Holland brands, has dominated the Brazilian backhoe market for a good number of years. In 2014, the two companies collectively accounted for 41 percent of the market, a modest improvement since 2012, when they captured 36 percent of sales. Of the two CNH brands, Case consistently accounts for a larger share of the market than New Holland. In 2014, Case sold 1,757 units (27%), while New Holland sold 950 machines (14%).

BACKHOE LOADER MARKET SHARES



JCB was the second leading supplier in 2014, selling 1,172 backhoes and capturing nearly 18 percent of the market. The company has had extraordinary success in Brazil: In 2000, it sold only 20 units, but it steadily increased its sales, peaking with 3,040 sales in 2013. Within the last few years, the company has benefited from government contracts that have helped municipalities augment their fleets, including a 2013 contract for 1,000 backhoe loaders.

In 2014, Caterpillar was the third or fourth (if sales for Case and New Holland are counted separately) leading supplier. It sold 875 units for 13 percent of industry sales. The company has held more dominant positions in the past, topping all suppliers in 2010 (27%) and 2013 (26%). However, as mentioned above, with several new entrants in the market, it was not surprising that some of the more well-established companies lost a bit of market share to the newcomers.

Volvo, one of the relative “newcomers” to the Brazilian market, sold 610 units for nine percent of the market last year. The company relocated backhoe production from Tultitlan, Mexico, to Pederneiras, Brazil, in 2013. In late 2014, however, the company announced more changes for backhoe production. The company will discontinue production of backhoe loaders (as well as motor graders), transferring the manufacturing of those two products to SDLG, Volvo’s Chinese-based subsidiary. Backhoe loaders have had several different manufacturing locations in recent years including Poland, Mexico, and Brazil. Graders have generally been produced in the U.S. and Brazil. The U.S. manufacturing of graders will continue.

Randon entered the Brazilian market in 2002 and made steady progress, increasing sales from 29 units in its initial year to 1,242 in 2013. However, like sales of most companies operating in Brazil, Randon’s sales plummeted to 526 units in 2014 for eight percent of the market, after selling 1,242 backhoes in 2013 for 10 percent of the market.

Backhoe sales, covering the years 2010-2014, are listed in the following table.

BACKHOE LOADERS IN BRAZIL
BRAZILIAN SALES DATA | 2010 TO 2014

MANUFACTURER	2010	2011	2012	2013	2014	% of 2014
CASE (CNH)	2,120	2,227	2,325	2,405	1,757	27
JCB	1,200	1,865	2,520	3,040	1,172	18
NEW HOLLAND (CNH)	1,120	1,172	1,371	1,144	950	14
CATERPILLAR	2,156	2,021	2,200	3,189	875	13
VOLVO	255	240	341	393	610	9
RANDON	840	704	995	1,242	526	8
DEERE	-	-	6	216	404	6
AGCO	225	250	250	275	250	4
HYUNDAI	-	-	16	118	73	1
LIUGONG	30	43	11	-	-	-
XCMG	45	16	15	10	-	-
TEREX	-	45	50	-	-	-
OTHER SUPPLIERS	0	99	215	10	10	<1
TOTAL:	7,991	8,682	10,315	12,042	6,627	100

SOURCE: YENGST ASSOCIATES OTHERS – FOTON, CHANGLIN, XGMA, DIG, YTO, YANMAR, AND CUKUROVA

Unlike most other companies, Deere, the next leading supplier, saw its sales jump in 2014, going from 216 units in 2013 to 404 machines for six percent of the market. One of the “newcomers” to the Brazilian backhoe market, Deere first recorded sales in 2012. In 2014, the company completed two new facilities in Brazil, one of them in partnership with Hitachi (for excavators). The plant that is exclusive to Deere will manufacture backhoe model 310K as well as wheel loaders.

In contrast to Deere, Agco has had a long-standing presence in Brazil, but it is no longer one of the dominant companies as it was 10-20 years ago. Nonetheless, it has consistently averaged over 200 annual sales since 2006, selling 250 units in 2014 for almost four percent of the market.

Other new suppliers that have entered the market include Terex, LiuGong, Hyundai, XCMG, XGMA, Yanmar, Cukurova (Turkey), and YTO (China). Sany has expressed interest in entering the Brazilian backhoe market and has announced that it plans to develop a backhoe loader specifically designed for the Brazilian market, but the company has not followed up with any real hardware yet. These companies account for just over one percent of the market, mostly captured by Hyundai’s 73 units sold. Most of the companies have yet to record sales, and current market conditions are not favorable for all suppliers, let alone new entrants. Compounding the difficulties are the high tariffs for importers, as well as sales, federal, state, and local taxes for all companies. The combination of disadvantageous market conditions and a burdensome operating environment will likely cause some companies to exit the market.

Production: Four companies—Caterpillar, Case, New Holland, and JCB—dominate backhoe loader production in Brazil. Randon is a fifth supplier that has carved a niche in the market with its product line. Deere, Volvo, and Agco are also producing machines in Brazil, although two of the companies are newcomers and Agco is a very small participant dating back many years. (Volvo is transferring its backhoe loader production to China, which we will discuss later.) Caterpillar has been the consistent leader since 2010 and has made great strides since 2000, when it

manufactured only 25 units. In 2014, it produced 2,419 machines for 31 percent of production. Since beginning production in Brazil, Caterpillar has exported machines to other Latin American countries. Production figures for the major producers of backhoes in Brazil are listed in the table below.

**BACKHOE LOADERS IN BRAZIL
BRAZILIAN PRODUCTION DATA | 2010 TO 2014**

MANUFACTURER	2010	2011	2012	2013	2014	% OF 2014
CATERPILLAR	2,420	2,477	3,745	3,857	2,419	31
CASE (CNH)	2,103	2,337	2,266	2,811	1,489	19
JCB	1,400	2,044	2,429	3,113	1,086	14
NEW HOLLAND (CNH)	1,140	1,222	821	1,367	1,058	14
RANDON	845	705	997	1,270	530	7
DEERE	-	-	-	-	453	6
VOLVO	-	-	-	-	450	6
AGCO	225	300	300	325	250	3
TOTAL:	8,133	9,085	10,558	12,743	7,735	100

SOURCE: YENGST ASSOCIATES | ABIMAQ

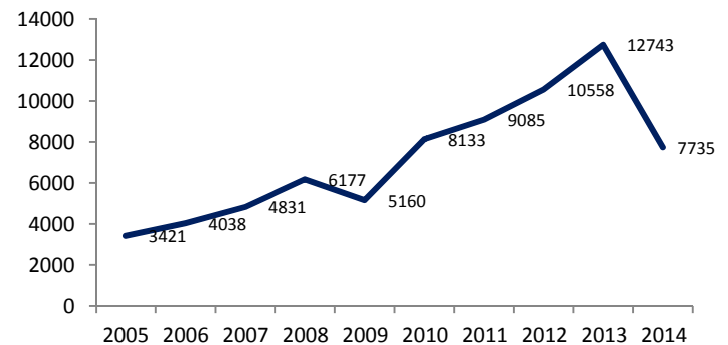
CNH's two companies combined for 2,547 units, or 33 percent of the industry output in 2014. Case is the stronger of the two and had been the leading producer before Caterpillar emerged as the leading manufacturer. In 2014, Case forged 1,489 units, the second

highest total, and accounted for 19 percent of production. CNH's other company, New Holland, manufactured 1,058 machines, the fourth highest total, and accounted for 14 percent of output. Both CNH companies have a strong presence in Brazil, but neither company has been a major exporter from the South American country.

JCB is the only other OEM to manufacture over 1,000 units in 2014, producing the third highest total, 1,086 units, for 14 percent of production. Similar to its sales growth, JCB's production development has been equally noteworthy, beginning with 65 units in 2001 and reaching 3,113 units in 2013. The company benefits from a strong global reputation for backhoe loaders, partly the result of JCB's founder, who first developed the backhoe in 1953.

Randon, a company that is also known for its commercial truck manufacturing, had steadily increased its production, going from 45 units in 2002 and peaking with 1,200 machines in 2013. Production dropped significantly in 2014, falling to 530 units for seven percent of production. Volvo, on the other hand, began production in 2014, manufacturing 450 machines for six percent of output. However, as mentioned

BRAZILIAN BACKHOE LOADER PRODUCTION | 10 YRS



above, Volvo subsidiary SDLG is slated to take over production of Volvo backhoe loaders. Rounding out the producers is Agco, producing 250 units for three percent of production in 2014.

Imports and Exports: Imports, despite the high tariffs, are an important part of the backhoe loader market in Brazil. The companies that manufacture machines in Brazil do not necessarily manufacture their complete product lines there, thus making it necessary to import some of their offerings. Most companies in Brazil import some of their machines, and sales of imported machines are included with sales of units made within the nation. Volvo had been the leading importer before opening a facility in 2014, but, as noted earlier, SDLG will take over Volvo's production of backhoes. Not all of the imported machines are always sold within any given year, as they become part of company inventory and are sent out to distribution networks according to demand.

Most of the companies producing machines in Brazil also export them, usually to other Latin American nations. Generally, the OEMs that have high production totals also have some exports. Caterpillar has been the consistent leading exporter from Brazil, followed by Case and JCB, but exports overall have not exceeded 100 – 150 units most years historically. Today, exports of backhoes are quite small.

We have estimated the **population** of backhoe loaders for Brazil to be about 64,700 units as shown in the nearby table. We base our estimate on retail sales over the past 15 – 20 years and the expected life of the machines, which typically ranges from 15 – 20 years depending on the care and use of the machines. We have considered scrappage as well as sales outside of Brazil whereby a machine might no longer be in the country after years of use. While not perfect, we believe our estimates are reasonable,

**BACKHOE LOADERS (2014)
FIELD POPULATION BY OEM**

MANUFACTURER	FIELD POPULATION (%)
CASE (CNH)	27%
NEW HOLLAND (CNH)	14%
CATERPILLAR	22%
JCB	19%
AGCO	4%
RANDON	9%
VOLVO	3%
OTHERS	2%
TOTAL FIELD POPULATION (UNITS)	64,700

SOURCE: YENGST ASSOCIATES

Forecast: The unfolding of the economy that began in 2014 has continued through 2015 with few signs of relief on the immediate horizon. Thus, we expect this downward trend to hold through the rest of 2015 and into 2016 followed by four years of modest growth. Sales will bottom out at 3,800 units in 2016 and rebound to 5,000 units by 2019, 25 percent below the 2014 level of demand, but far below the more robust years of 2012 and 2013, when sales topped the 10,000 mark for both years.

Production will follow a similar trajectory, hitting a low point in 2016 followed by four years of slow growth. We anticipate that there will be only 4,300 units produced in 2015 and 3,800 units in 2016. The next year, production will see a minor uptick, followed by three years of increasing slow growth. The gains, however, will still fall short of the more vigorous 2012 - 2013 period. By 2019, production will reach 5,100 units, a 34 percent decline from the 2014 production level.

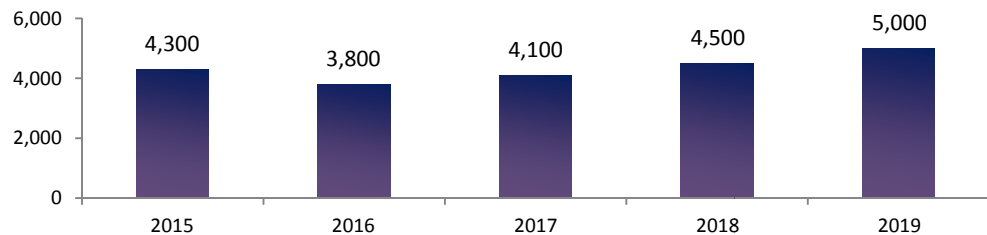
Our five-year forecast for backhoe sales and production is provided below.

**BACKHOE LOADERS IN BRAZIL
BRAZILIAN SALES AND PRODUCTION FORECAST THROUGH 2019**

	2014	2015	2016	2017	2018	2019	% CHG '14-'15	% CHG '14-'19
SALES	6,627	4,300	3,800	4,100	4,500	5,000	-35	-25
PRODUCTION	7,735	4,300	3,800	4,100	4,600	5,100	-44	-34

SOURCE: YENGST ASSOCIATES

BACKHOE LOADER SALES OUTLOOK | BRAZIL 2015 TO 2019



Products Available: OEMs offer 24 different backhoe loader models in Brazil. Standard models have a digging depth of around 14 feet (4.3 meters) and most could be modified to allow digging depths up to 17 feet. Backhoes can be outfitted with a variety of attachments that enhance the machine's versatility. In the Brazilian market, backhoes come equipped with power shuttle type transmissions and are generally powered by diesel engines that are Tier-2 or Tier-3 compliant. Machines are either two-wheel or four-wheel drive. Company websites for all suppliers provide detailed information of the [equipment made available by each of the suppliers](#). The table below provides basic specifications of the major suppliers' backhoes that are produced in Brazil.

BACKHOE LOADERS MANUFACTURED IN BRAZIL

MANUFACTURERS	MODEL NO.	ENGINE SUPPLIERS	ENGINE POWER (KW) / HP
CASE (CNH)	580N	CASE	56/75
	580N TURBO	CUMMINS	63/85
NEW HOLLAND (CNH)	B110B	CUMMINS	100/75
CATERPILLAR	416F2	CATERPILLAR	55/74
	420F2	CATERPILLAR	70/95
AGCO	MF86 HS	MWM	56/75
	MF96 HS	MWM	63/85
JCB	3C	JCB	63/85
	3C PLUS	JCB	69/92
JOHN DEERE	310L	DEERE	69/93
RANDON	RD 406/RD 406ADV	MWM	62/85 AND 84/110
VOLVO*	BL60B	VOLVO	68/91

SOURCE: COMPANY INFORMATION *VOLVO STOPPED PRODUCING BACKHOE LOADERS IN BRAZIL DURING 2015 AND HAS TRANSFERRED THE PRODUCT LINE TO CHINA WHERE IT WILL BE MANUFACTURED BY SDLG, ITS CHINESE SUBSIDIARY.

**CRAWLER DOZERS
TRATORES DE ESTEIRAS**



Sales and Trends: Throughout the 2000s, the crawler dozer market in Brazil has been dominated by three companies, Caterpillar, New Holland, and Komatsu. Each of these companies manufactures the bulk of its products sold in Brazil, although

BRAZIL

THE CONSTRUCTION EQUIPMENT INDUSTRY IN BRAZIL

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