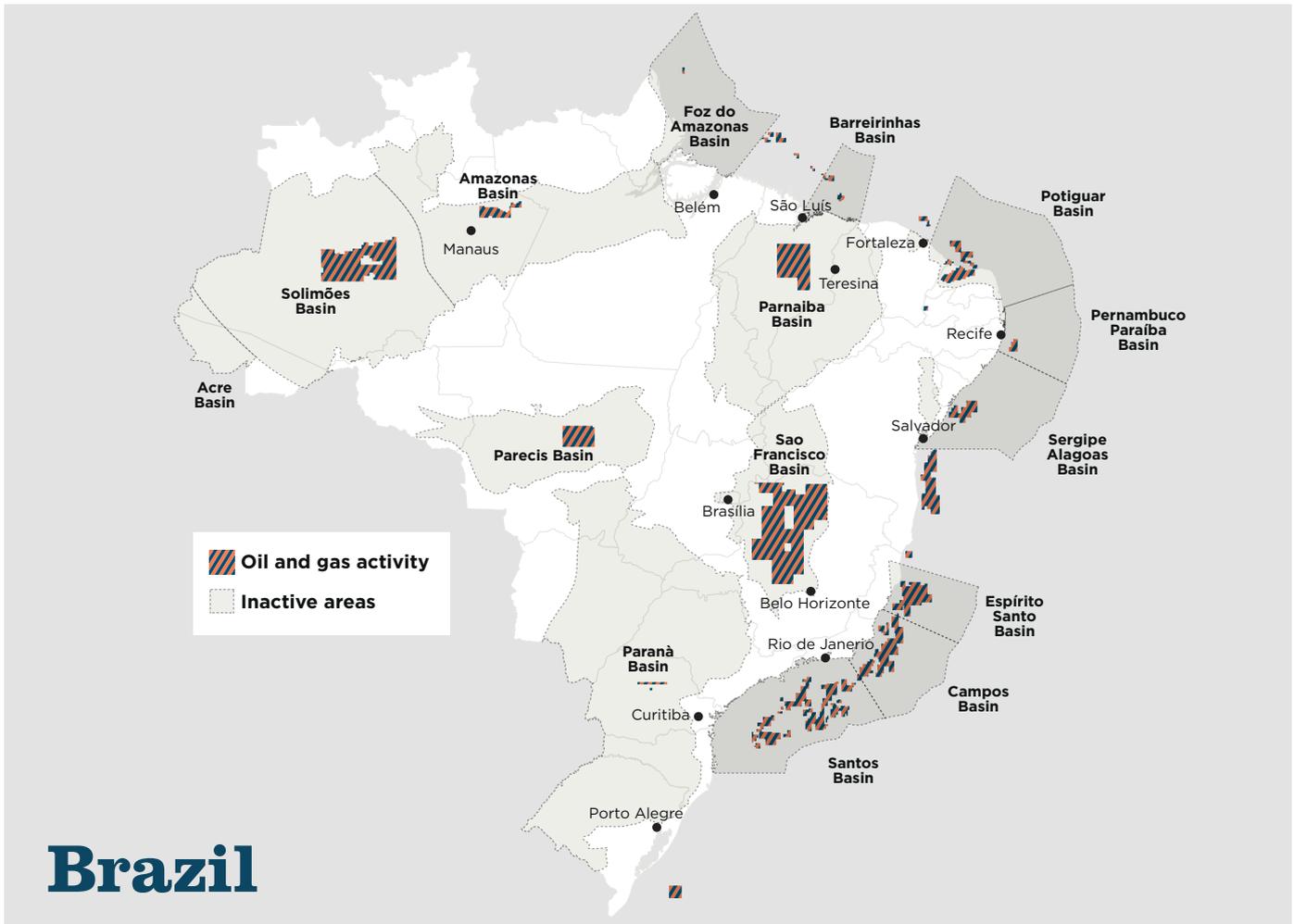




GOING GLOBAL PHASE 3





Brazil

OVERVIEW

In 2016, Brazil produced 2.98 million boe/d, 92 per cent of which came from very deep, offshore resources.

The development of deepwater resources, and especially ‘pre-salt’ resources, have driven dramatic increases in Brazil’s production in the last five years, with pre-salt production now making up about a quarter of overall production and expected to reach 52 per cent by 2018.

State-controlled Petróleo Brasileiro S.A. (Petrobras) is the dominant participant in Brazil’s oil sector, holding major positions in upstream, midstream and downstream activities. The company held a monopoly on oil-related activities in Brazil until 1997, when the government opened the sector to competition.

There are currently 120 exploration and development companies active in Brazil.

While Brazil’s most prolific petroleum basins lie offshore, the country has 18 mostly undeveloped and lightly explored sedimentary basins onshore. Petrobras is currently in the process of attempting to sell many of these assets to help manage its current financial difficulties, including an estimated \$120 billion in debt.

OIL & GAS RESERVES

12,688 (million boe)

RESERVE LIFE

13.6 years

OIL & GAS PRODUCTION

2,699 (thousand boe/d)

PRODUCTION FIVE-YEAR CAGR

3.97%

ACTIVE E&P COMPANIES/ACTIVE CANADIAN E&P COMPANIES

98/4

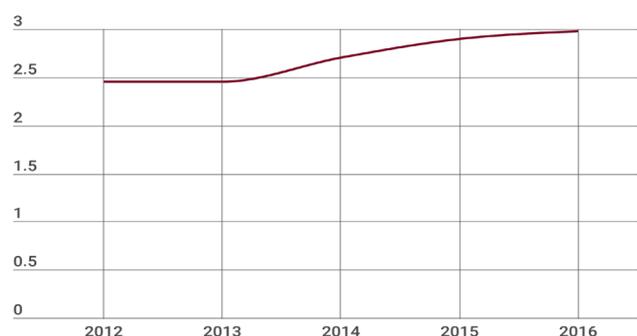
OIL PRODUCTION

87%

GAS PRODUCTION

13%

FIVE YEAR PRODUCTION (MILLION BOE/D)



BRAZIL

As of year-end 2016, Brazil had 13.6 trillion cubic feet of proved natural gas reserves, second in South America after Venezuela. About 85 per cent of Brazil's natural gas reserves are located offshore.

The country plans immense investments in both existing and new fields. According to the Brazilian Institute of Petroleum, long-term equipment and service procurement and operational expenses throughout the entire industry could exceed \$1 trillion by 2020.

OPPORTUNITIES

Brazil ranks as a high-risk/low-return export market in our analysis. It has opportunities in heavy oil production and enhanced oil recovery, and is beginning to explore its onshore unconventional resource endowment.

An estimated \$54 billion, or \$18.2 billion annually, will be spent on the country's upstream development leading to 2020.

The U.S. ITA expects Brazil to import around \$4.8 billion in equipment annually to 2020.

Offshore heavy oil

Brazil's offshore pre-salt resources are estimated at 50 billion barrels of oil in place, with around 50 per cent of that resource being heavy oil. The vast majority of this resource is in the exploration and early development phase.

An estimated \$6.2 billion will be spent on heavy oil development to 2020, according to GlobalData.

Enhanced oil recovery

There are a large number of mature onshore fields in Brazil that represent an interesting opportunity. Many of these fields are reaching their economic limit for a major operator and could benefit from a lower cost operator.

Petrobras is investing \$600 million in the Carmópolis Field, considered Brazil's largest onshore field, which is about to complete 54 years of activities. Petrobras announced in June that it is investing in the field in an effort to increase output.

The Carmópolis has a recovery factor of 22 per cent, and Petrobras is hoping to raise it to 32 per cent through the investment.

Carmópolis has reserves of 1.76 billion barrels of oil equivalent and has 1,056 oil wells with an accumulated production of 387 million barrels (bbl) of oil. It has 13 production units, 11 collection and treatment stations and a gas pole production unit.

For decades, different technical tests—such as in situ combustion, polymers injection and multilateral and horizontal wells—have been implemented in the field.

Over the last few years, Petrobras' investments in the onshore field have gone toward reformulation of oil and water treatment systems and water injection. At a lower scale, the Brazilian state-owned company has also invested in steam injection.

Currently, Brazil has 7,800 active onshore wells—of which 96 per cent are controlled by Petrobras—which together produce 143,000 bbl/d.

Unconventional resources

Brazil's government wants to start up a pilot project tapping unconventional oil and natural gas reservoirs in 2018, likely in the state of Bahia, as part of broader efforts to expand onshore output, a Mines and Energy Ministry official said.

Brazil could hold as much as 250 trillion cubic feet of gas and 5.4 billion barrels of oil in unconventional deposits, according to a study by the Energy Economics Institute at the Federal University of Rio de Janeiro.

Bahia is the home to Brazil's first producing oil well.

Infrastructure

Petrobras has plans to spend \$13.1 billion for refining and transport over the next five years. Around \$8.65 billion will be spent on new pipelines, with the remainder on refinery and gas plant construction.

Service sector

Brazil has a mature offshore and onshore service sector with large, integrated multinationals having plants and service facilities in Brazil and holding a significant market share.

These companies will require equipment and services that include pipeline alloy coatings, turbo compressors, mooring cables and mooring systems, drilling pipe, well control systems, oil and gas metering systems, offshore drill rigs, drill bits, steam generators and electrical cabling.

Local content

Brazil has historically had strict local content requirements, which commit companies to source specific percentages of their workforce, equipment and services in Brazil. However, late in 2017 the country announced plans to reduce those requirements.

New global local content requirements (LCRs) for deepwater oil and gas exploration fell by half on average, to a minimum of 18 per cent – down from 37 per cent for previous auctions – and LCRs for deepwater production development will now follow macro-segments: 25% for oil/gas well construction; 40% for subsea production activities; and 25% for oil offshore production units. Previous LCR for the production/development phase was 55%. Onshore exploration and development LCRs, previously at 70% and 77%, respectively, were reduced to 50%.

Canadian export penetration

Despite a major multinational service company presence in Brazil, a number of Canadian companies have operated successfully in the country, with many calling it one of their best markets until the recent political and economic turmoil surrounding Petrobras.

DOING BUSINESS IN BRAZIL

Brazil has the largest economy in South America, with a 2015 GDP of US\$2.34 trillion.

Canada has no formalized free trade agreement with Brazil. In recognition of Brazil’s increasing economic importance to Canada, EDC has established representative offices in Rio de Janeiro and São Paulo.

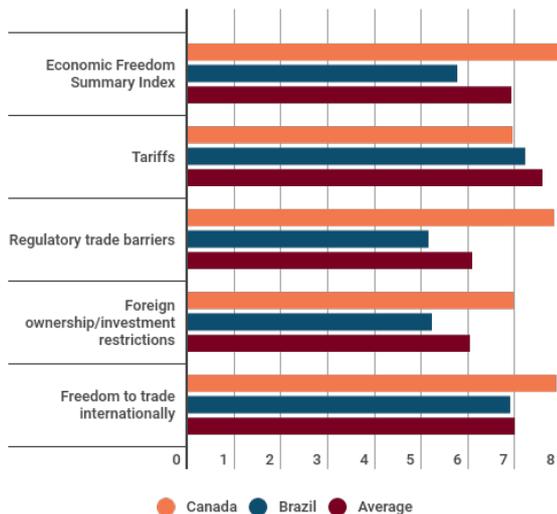
In the upstream and the midstream sector, Brazil’s Ministry of Mines and Energy sets policy. The principal government agency charged with regulating and monitoring the oil sector is the Agência Nacional do Petróleo, Gás Natural e Biocombustíveis (ANP), which is responsible for issuing exploration and production licenses and ensuring compliance with relevant regulations.

Brazil is the largest foreign direct investment (FDI) recipient in South America and has ambitious long-term plans to invest billions in its infrastructure and its oil, gas and power sectors. Its domestic financial resources, however, cannot meet the cost of achieving these goals, so the country will need to attract substantial FDI over the long term.

Brazil’s fiscal regime for the oil and gas industry consists of a combination of corporate income tax, government and some third party takes.

Brazil ranks in the last quartile of the Fraser Institute’s economic freedom index, with a score of 5.77 out of 10. However, for trade freedom, it scores slightly better at 6.88 out of 10.

FRASER INSTITUTE FREEDOM TO TRADE SCORES COMPARED TO CANADA AND GROUP AVERAGE (SCORE OUT OF 10)



SOURCE: FRASER INSTITUTE

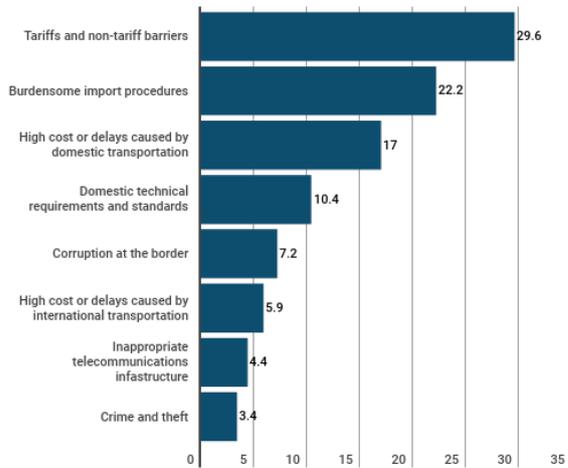
Brazil ranks 110th out of 136 countries on the World Economic Forum Enabling Trade Index. Brazil’s market remains fairly closed, with high tariffs on industrial products, and a fairly low share of imports enjoying duty free status. Its borders remain thick, with border and documentary compliance costs high

and requiring around six days for clearance. Brazil has improved its infrastructure, but port infrastructure and intra-modal systems remain a bottleneck.

The World Bank Group’s Doing Business series currently ranks Brazil at 125th in the world.

WEF EXECUTIVES’ RANKING OF THE MOST PROBLEMATIC FACTORS FOR IMPORTING TO BRAZIL

% OF RESPONDERS RANKING AS # 1 ISSUE



Note: From a list of factors, respondents were asked to select the five most problematic factors in their country and rank them. The scores correspond to the responses weighted according to their rankings

WORLD BANK DOING BUSINESS RANKING COMPARED TO CANADA



This distance to frontier score helps assess the absolute level of regulatory performance over time. An economy’s distance to frontier is reflected on a scale from 0 to 100, where 0 represents the lowest performance and 100 represents the best performance across all economies and across time.

SOURCE: 2018 WORLD BANK DOING BUSINESS REPORT

PESTEL ANALYSIS

Category	Analysis
POLITICAL	Despite recent elections and the conviction of its former president, Brazil's political structure remains unstable with the new government facing its own scandals.
ECONOMIC	After enduring a deep recession, Brazil's economy recovered somewhat in 2017 and is expected to continue growing for the next two years.
SOCIAL	There is little public opposition to offshore development. But there is growing opposition to industrial development in general in Latin America that could affect unconventional resource exploration onshore.
TECHNOLOGICAL	According to the Global Innovation Index, Brazil ranks 69th in innovation and R&D. However, in the oil and gas industry \$4 billion has been spent on R&D in the last 20 years. In 2015 alone, Petrobras invested \$600 million testing new technologies.
ENVIRONMENT	While Brazil is not known for stringent environmental rules, a growing public concern about fracturing could change this.
LEGAL	Brazil has a functioning legal system and follows the rule of law. Exploration of Brazil's onshore unconventional resources have been blocked by a series of lawsuits.

RECOMMENDATIONS

- Brazil features a diversified economy and export base, along with a solid, strongly regulated banking system. Although foreign trade only represents about 20 per cent of its GDP, Brazil is the second largest exporter in Latin America. Brazil presents many opportunities for Canadian companies in a number of sectors.
- With financially stressed Petrobras, new opportunities are on the horizon for foreign private companies. Petrobras has already announced divestment programs to help it meet its debt.
- With large producers and Petrobras focused mainly on offshore assets, it opens up opportunities for smaller operators and service providers to exploit the existing onshore underdeveloped fields and potential unconventional oil and gas assets.

WORKING IN BRAZIL

Work visa

To work in Brazil, an employee will need both a residence permit and a work visa.

The type of work visa required depends on the type of activity the employee will be doing in Brazil. Different jobs and qualifications will require different work visas.

Usually, foreign employees will obtain a temporary work visa lasting for two years. An extension for another two years can be requested. After this four-year period, the company can apply for a permanent work visa. An expatriate holding a temporary visa is not allowed to change employers in Brazil without permission.

Work visas and work permits are usually only issued to foreigners whose future employer is a registered Brazilian company. However, there are exclusions and separate treatments to this, e.g. for technical assistance or professional cases.

A permanent work visa will usually be issued to foreigners who are entitled to permanent residence in Brazil. Normally, this applies to professional researchers or scientists (for activities exceeding a period of two years), investors (provided the investment sum exceeds US\$50,000 for natural persons or US\$200,000 for companies) and managers or directors.

Taxes

The income taxation for foreigners is based on the foreigner's residence status. Foreigners who enter Brazil on a permanent or a temporary visa in combination with a work permit are subject to income tax without restrictions. This means that all their income, regardless of where in the world it has been achieved, is taxable in Brazil. The assessment period starts with the first day of entry in Brazil and ends with the registered day of definite departure.

All other foreigners are subject to income tax with the restriction that only the income achieved in Brazil is taxable.

INSIGHTS

- Bureaucracy is seen as one of the main obstacles for companies that want to invest in Brazil
- There is a need for start-ups, with an innovation oriented approach
- There is a tremendous opportunity in Brazil. However, many things you take for granted in Canada, you don't have there, including road access and security
- There are huge opportunities on onshore fields in Brazil
- There is a perception of violence in all of Latin America. It is problematic to discern the stereotypes and the reality