

Oil and Gas Industry

Overview

(US\$ million)	2010 (estimated)	2011 (estimated)	2012 (estimated)
Total Market Size	\$ 50,285	\$ 55,335	\$ 60,620
Total Local Production	\$ 29,415	\$ 30,885	\$ 33,975
Total Exports	\$ 3,000	\$ 3,000	\$ 3,000
Total Imports	\$ 23,870	\$ 27,450	\$ 29,645
Imports from the U.S.	\$ 11,935	\$ 13,725	\$ 14,230

Exchange rate: R\$1.77 to US\$1.00

The 2012 estimate for purchases in Brazil's oil and gas equipment and services market is approximately USD\$60.6 billion. Of that amount, nearly US\$30 billion will likely be imported, with approximately US\$14.2 billion being imported from the United States.

These investment statistics are based on Petrobras' and other oil companies' planned investments and are contained in a Booz & Company August 2010 sector study. The Booz study predicts that total expenditures (investment and operation) in Brazil's oil and gas E&P subsector will reach US\$400 billion through 2020. The domestic industry will likely supply approximately 40 to 50 percent of this total demand, depending upon how competitive their products and services are compared with those of international suppliers. In this regard, the Brazilian Petroleum Institute (IBP) hired Bain Company to conduct a study about the domestic oil and gas industry's capacity to meet ongoing and upcoming demands of the oil companies. This study will be a key component regarding IBP's proposal to the Brazilian government regarding specific adjustments to Brazil's current local content policy.

Although Brazil ranks 15th globally in proven oil reserves and 11th in oil production, it is not a member of the Organization of Petroleum Exporting Countries (OPEC). However, that will likely change with the large offshore oil and gas discoveries that Petrobras made in late 2007. These large finds, called the *pre-salt fields*, are located 200 miles off Brazil's southern coast and lie approximately 7,000 feet below the ocean surface. As these logistically and technologically challenging discoveries are exploited, Brazil will likely become a major oil and gas exporter.

Brazil's 2011 proven oil reserves reached 15.7 billion barrels and proven gas reserves reached 423 billion cubic meters (14.9 trillion cubic feet). Industry sources estimate that Brazil has probable reserves of 50 billion barrels of oil and possible reserves of 100 billion barrels. From January to October 2011 (data available at the writing of this report), Brazil produced 2.11 million barrels of oil per day (bpd) and 66 million cubic meters of gas per day. About 90 percent of Brazil's oil production in 2011 came from offshore fields, mostly at extreme depths, but only 2% of production came from the pre-salt fields. By 2015, however, these fields are expected to account for 18% of Brazil's oil production. In 2011, Brazil's gas production came primarily from the offshore fields (74 percent) as well.

Petrobras' oil and gas production accounts for 91 percent of Brazil's total production. Petrobras' website shows its domestic and international proven oil and natural gas reserves at 16.4 billion barrels in 2011. From January to October 2011, Brazil exported 180,712,744 barrels of oil (approximately 602,236 bpd). About 40% of Brazil's oil exports went to the United States, the

largest consumer of Brazil's oil, with China coming in at second place with the consumption of 26.4% of Brazil's oil exports. During the same period, Brazil refined about 1.9 million bpd, with 356,391 bpd being light oil that was imported to mix with Brazil's predominantly heavy crude.

From the third quarter of 2010 to the third quarter of 2011, Petrobras' sales of gasoline in the domestic market grew by 28%, which forced Petrobras to import 10,310,699 barrels of gasoline from January to November 2011.

In July of 2011, the company announced that it would invest US\$224.7 billion (or approximately US\$44.8 billion/year) from 2011 through 2015, with 57% of this investment being destined for exploration and production (E&P). Additionally, because Petrobras will become the sole operator in future offshore pre-salt tenders, most business opportunities for U.S. firms lie in offering services or products to Petrobras.

According to the Brazilian Petroleum Institute's (IBP) calculations, other oil companies (e.g. Shell, Statoil, Anadarko, Repsol/Sinopec, OGX, etc) are expected to invest an additional US\$43 billion in Brazil from 2011 until 2015 (or about US\$9 billion a year). The E&P segment will receive about US\$ 30 billion of this investment amount.

Market Challenges

On August 31, 2009, the Brazilian government unveiled the pre-salt regulatory regime, which was approved by former President Lula on December 22, 2010. Future pre-salt fields and areas judged strategic for the Brazilian government will be ruled through production sharing agreements (PSAs). The new regulatory regime establishes that all future-tendered pre-salt reserves will belong to the Brazilian government. The exploration of the fields will be done through consortia, where Petrobras will hold at least 30 percent equity in each oil block. Additionally, Petrobras will be the operator in all future oil fields. In specific cases, as decided by the Brazilian National Energy Council, Petrobras may be called upon to explore selected pre-salt oil fields without a tender process. To date, 29 percent of the pre-salt area has been auctioned off through the previous concession regime. The new PSA legislation will regulate the remaining 71 percent of the pre-salt fields. The consortia will share the produced oil with the Brazilian government and will pay royalties. The division of the oil royalties among the 26 Brazilian States and the Federal District (formed by Brasilia, the capital of Brazil, and surrounding cities) is yet to be determined by the Federal Government, as political debate continues.

Sub-Sector Best Prospects

According to the IBP, longer-term equipment and service procurement and operational expenses from all oil companies (Petrobras and others) could reach one trillion dollars to develop and operate all of the wells in the Brazilian pre-salt fields. As an example, a field like "Lula", with estimated reserves of eight billion barrels of oil, will require an approximate investment of US\$50 billion through the lifecycle of that field.

Petrobras' critical needs in the E&P sector can be broken down into the following supplies and services. The products and services were announced by Petrobras as critical areas where international companies would be able to supply Petrobras' needs.

Petrobras E&P Critical Equipment: Opportunities for Foreign Suppliers

<ul style="list-style-type: none"> • Production pipelines alloy coatings (13 Cr, Super 13 Cr) • Turbo compressors (6-10 Mw) • Polyester mooring cables • Mooring systems • Drilling pipelines • Fiberglass pipelines • Electrical cables for CSP 	<ul style="list-style-type: none"> • Control systems for well control, oil and gas metering systems, drilling activities • Offshore drilling rigs • Gravel packing • Drilling bits • Steam generators (25-50 x 10⁶ BTU/d) • Special submarine valves
Petrobras E&P Critical Services: Opportunities for Foreign Suppliers	
<ul style="list-style-type: none"> • Drilling • Work over services • Flexible lines and umbilical laying service • Support to diving 	<ul style="list-style-type: none"> • Support to ROV • Support to mooring activities • Special vessels • Submarine interconnection services
*Source: Petrobras Presentation: Gas & Energy Business Segment, Paulo Sergio Rodrigues Alonso	

Petrobras Future Vessel and Equipment Demand				
Critical Resources	As of Dec 2010	Delivery Plans (to be contracted) (accumulated amounts)		
		2013	2015	2020
Drilling Rigs Water Depth Above 2,000 m	15	39	37 ¹	65 ²
Supply and Special Vessels	287	423	479	568
Production Platforms SS & FPSO	44	54	61	94
Others (Jacket and TLWP)	78	80	81	83
SOURCE- Petrobras 2020 Strategic Plan	1- The contracts for 2 rigs reallocated from international operations expire in 2015 2- L-T demand to be adjusted as of new assessments			

More detailed information on the amounts of equipment and materials that Petrobras will require between 2011 and 2016 can be seen in several presentations by Petrobras, available at Commercial Service Brazil's energy webpage:

http://export.gov/brazil/industryhighlights/energy/eg_br_023986.asp

In the downstream segment (refineries, etc) the following types of equipment and services are also considered critical by Petrobras:

- HCC Reactors
- Boiler works with special alloys (reactors, towers, pressure vessels)
- Boilers

- Heat exchangers working with H2S traces (ASTM A 387 degree 11)
- API pumps
- Basic design services
- Thermal power project design

By measuring equipment demand against the competitiveness and production capacity of local suppliers, four areas pose a significant challenge for the local suppliers to meet Petrobras' demand. Hence, Petrobras is calling for foreign firms to install production capacity in Brazil and is promoting technology transfer. These four areas for potential investment are:

Areas of Significant Need For Supply by Foreign Firms	
<ul style="list-style-type: none"> • Instrumentation and Measurement • Gas Turbines 	<ul style="list-style-type: none"> • Centrifugal Compressors • Electrical Motors

Opportunities

Petrobras' Importance Petrobras is Brazil's largest company. In January 2011, PFC Energy, a U.S. energy research firm, ranked Petrobras as the third largest energy company in the world. In 2011, Petrobras recorded a net income of R\$33.3 billion (or US\$20.1 billion). Net revenue in 2011 reached a total of R\$242.2 billion (or US\$145.9 billion), 21% above 2010 primarily due to the increase in oil and gas production in Brazil (2%), the increase in international oil price, higher domestic diesel price, and higher sales volume. . Petrobras' investments in 2011 reached R\$84.7 billion, which represents 10.7% increase in spending from the same period in 2010. Petrobras ended 2011 with nearly 80,942 full-time employees, and is expected to reach 103,030 by the end of 2015.

Between 2011 and 2015, Petrobras will spend US\$224.7 billion (or approximately US\$44.8 billion/year). About 95 percent (US\$213.5 billion) of that total spending will be invested in projects in Brazil. The company's oil production is projected to reach 3.9 million bpd by 2015, and 4.9 million bpd by 2020. The E&P segment will command the highest level of spending with approximately US\$127.5 billion to be invested through 2015.

Furthermore, investments in the refining, transportation (pipelines, oil and gas terminals, etc), and oil byproducts are estimated at US\$70.6 billion. The plan is to increase refining capacity in line with the expected demand for oil products in the domestic market, which is projected to grow at an annual rate of between 3.8% and 4.5% per year through 2020. As a result, US\$35.4 billion (50.1%) will be invested in expanding and modernizing refining capacity. Operational improvements, fleet expansion and logistics will receive US\$17.6 billion in investments during that 5-year period. Oil product quality (lower sulfur content in order to meet local legislation) is budgeted at US\$16.9 billion.

The petrochemical segment will receive investments of US\$3.8 billion, and the biofuels segment will absorb US\$4.1 billion of investments, with US\$1.9 billion of that total invested in ethanol production.

The company also plans to devote US\$13.2 billion in the gas & power segment. Most investment in this division (around US\$9 billion), are intended for expansion of gas-fired thermal plants and plants that chemically convert natural gas into fertilizers. The remaining amount will

mostly be directed at the construction of LNG re-gasification and natural gas liquefaction/processing terminals.

Finally, US\$4.2 billion will be invested in health, safety, energy efficiency and environmental concerns where new corporate goals are to minimize the potential environmental impacts of the company's activities). Six new environmental indicators were added as goals, the most important being the carbon emission index.

Market Entry

Since state-owned Petrobras' monopoly ended in 1998, 72 firms - half of which are foreign companies - started doing business in Brazil and competed for the 819 oil blocks awarded through ten annual oil-concession licensing rounds. The last auction occurred in December 2008 (next auction is expected for 2012 and yet to be confirmed). With Petrobras winning the majority of these concessions, interested suppliers need to register at www.petrobras.com.br - "Suppliers Channel Guide" in order to sell to Petrobras.

In 2009, China extended a US\$10 billion credit line to Petrobras to develop off-shore oil resources that will be repaid through the export of oil, effectively making China Brazil's first client for its pre-salt oil. Additionally, Chinese companies such as Sinopec and Sinochem have recently expanded their market share into Brazil by acquiring significant participations in Repsol's and Galp's oil fields.

In 2009, the U.S. Ex-Im Bank issued a US\$2 billion preliminary commitment to Petrobras that will facilitate exporting U.S. oil and gas equipment and services to Brazil. U.S. companies interested in learning more about the various financial supports offered by Ex-Im Bank should visit their website at: <http://www.exim.gov/>.

Key Suppliers

Multinationals such as FMC Energy, Cameron, Marine/Oceanering, National Oilwell Varco (NOV), Weatherford, GE Vetco Grey, the Swedish/Swiss ABB, the Norwegian Aker Kvaerner and the British Rolls Royce, among others, have plants and service facilities in Brazil and hold a significant market share in their respective sub sectors. A good listing of such international companies, as well as of Brazilian oil and gas manufacturers, can be found in the Oil and Gas Directory published by *Brasil Energia* magazine. The translated listing can be found at this website <http://www.guiapetroleo.com.br/>. The Brazilian National Organization Industry (ONIP) also has an extensive databank of local suppliers at <http://www.onip.org.br/index.php>

Web Resources

- Petrobras: www.petrobras.com.br
- Petrobras slide presentations: www.slideshare.net/petrobrasri.
- Ministry of Mines and Energy (MME): www.mme.gov.br
- ANP – National Petroleum Agency: www.anp.gov.br
- The Brazilian Petroleum Institute: www.ibp.org.br/main.asp

- For more market research reports, please visit: <http://export.gov/mrktresearch/index.asp>

- For more information about export opportunities in this sector, please contact US Commercial Service Industry Specialist Regina.Cunha@trade.gov