Brazil’s Regulatory Framework

Challenges of a rapidly expanding petroleum industry

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Brazilian Petroleum Agency
Summary

• Brazil today
• Brazilian energy system
• Current scenario & pre-salt
• Local content
• R&D investments
• Onshore new frontiers
• E&P safety supervision
• Final comments
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Brazil

- Area: 8,502,728 km²
- Population: 196 million
- GDP: US$ 2.1 trillion
- World’s sixth largest economy
- Political, Economical and Regulatory stability
- Over US$ 352 billion in International Reserves
- Investment grade (Moody’s, Fitch and Standard and Poors)
- Oil, Natural Gas and Biofuels regulated under the same institutional environment (ANP)
- Brazil can double its proven reserves in a near future.
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## Regulatory Changes

### Upstream(*)

<table>
<thead>
<tr>
<th>Activity</th>
<th>Before 1997</th>
<th>After 1997</th>
</tr>
</thead>
<tbody>
<tr>
<td>E&amp;P</td>
<td>Petrobras</td>
<td>Competitive Market</td>
</tr>
<tr>
<td>Geological Survey</td>
<td>Petrobras</td>
<td>Proprietary surveys</td>
</tr>
<tr>
<td>Geological and Geophysical</td>
<td>Petrobras</td>
<td>ANP’s E&amp;P Shared National</td>
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<tr>
<td>Databank</td>
<td></td>
<td>Databank</td>
</tr>
</tbody>
</table>

### Midstream(**)

<table>
<thead>
<tr>
<th>Activity</th>
<th>Before 1997</th>
<th>After 1997</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Refining</td>
<td>Petrobras</td>
<td>Competitive Market under ANP</td>
<td>Authorization</td>
</tr>
<tr>
<td>Transportation</td>
<td>Petrobras</td>
<td>Unbundling</td>
<td>Open access</td>
</tr>
<tr>
<td>Imports and Exports</td>
<td>Petrobras</td>
<td>Free under ANP (petroleum)</td>
<td>MME (gas) approval</td>
</tr>
</tbody>
</table>

### Oil Products and CNG Downstream

<table>
<thead>
<tr>
<th>Activity</th>
<th>Before 1997</th>
<th>After 1997</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wholesale</td>
<td>208 distributors</td>
<td>315 distributors</td>
<td>under ANP authorization</td>
</tr>
<tr>
<td>Retail</td>
<td>“Brand fidelity” 23,900 service stations</td>
<td>“Independent retailers” under ANP authorization 85,390 service stations</td>
<td></td>
</tr>
</tbody>
</table>

*Union monopoly: concession and authorization granted by the State*
ANP`s role in the upstream

ANP implements oil and natural gas policy

- **REGULATING**: Establishing directives, ordinances, resolutions and normative statements
- **CONTRACTING**: Promoting bidding rounds and signing contracts with petroleum companies on behalf of the Federal Government
- **SUPERVISING**: Monitoring the activities of regulated industries, directly or through agreements with other public agencies
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Current Oil & Gas Scenario (2011)

Proven Reserves
Oil – ~15 billion bbl
Gas – ~459 billion m³

Imports/Exports Balance
Oil – 272.7 thousand bbl/day
Gas – 28.7 million m³/day

Production
Oil and NGL – 2.2 million bbl/day
Gas – 65.9 million m³/day

39 national companies
39 foreign companies
Billion barrels

More than 30 billion bbl

Perspectives
Recent discoveries in the pre-salt new layer change completely Brazilian position in the international petroleum industry.
Brazilian Opportunities:
Pre-Salt Campos & Santos Basins
(at least US$ 400 billion up to 2020 in goods & services)

Brazilian deepwater oil production is about 25% of the global oil production. Pre-salt new province shall increase this percentage significantly. According to O&G reserves forecast, Brazil will need to invest heavily in infrastructure (platforms, supply boats, pipelines, ports, shipyards, steel etc.).
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The Development of Oil & Gas Activities

- Self-Sufficiency
- Boost development
  Reduce social and regional inequalities
- Increase Local Content
- Best practice HSSE
- Improve Human Life and Environment Protection

What are we Looking for?

- Improve Human Life and Environment Protection
- Boost the Brazilian Industry

Research & Development as an important leading factor
Institutional Framework for the Local Content Policy

**Government**
- Policy
- Incentives (e.g. Brazilian Program for Increasing Nationalization - PNP)*

* Financing line for foreign industries coming to Brazil and reaching 60% of local content in products weight or value in three to five years.

**ANP**
- Regulating
- Supervising
- Auditing
- Accrediting

**NOC**
- Fulfill LC requirements and development of suppliers

**IOC**

**ONIP > suppliers list and suppliers identification**
Local Content Commitments in Concession Agreements

BID 1 to 4 & Marginal Fields – Exploratory
- 25 blocks audited (BID 1 to 4), no fines
- 8 blocks audited (MF), no fines

BID 5 & 6 – Exploratory
- Fines of US$ 18.9 millions were applied to 6 operators in 67 blocks
- 24 blocks still under auditing process
Business Opportunities for Foreign Companies >> niches!

There are few or none national supplies in ~ 80% of the equipment groups considered.

- **Only Foreign Companies**: 38% with a value of 42-46%
  - Turbo generators; Centrifugal Compressors; Flare; Sulfate Removal Unit; Gas Motors; Gas Reciprocal Compressors

- **Predominance of Foreign Companies**: 37% with a value of 48-52%
  - Centrifugal Air Compressors; Control Valves; Diesel Motors; Flow Instruments; Positioning Systems (POS); Synchronized Motors and Generators

- **Predominance of National Companies**: 18% with a value of 3-5%
  - Automation and Control systems; Centrifugal Pumps; VAC equipment

- **Only National Companies**: 7% with a value of 1-2%
  - Heat Exchangers; Screw Type Air Compressors; Rotary Pumps

Recent platform
Booz & Company Analysis 2010
Finding the Way for Investments in Brazilian O&G Sector

Brazil: Political stability and reliable rules

Huge demand for goods and services

Technological challenges

The gain of scale from the Pre-salt

Well-settled local content policy

R&D investments policy
Local Content Results

P-52 (BrasFels Shipyard - RJ)  |  P-50 (Mauá Shipyard - RJ)
Atlântico Sul Shipyard - PE  |  Rio Grande Shipyard - RS
Policies for Competitiveness

• REPETRO: Tax Incentive for Temporary Admissions
  o To boost the building of drilling rigs, vessels and oil platforms in Brazilian shipyards;
  o One of the biggest federal tax incentives of Brazil;
  o US$ 26 billion in tax exemption from 2001 to 2010;
  o Federal Government is willing to expand REPETRO benefits to other levels of local oil & gas supply chain;

• REPORTO: Tax Incentive for Ports Infrastructure (MP 353/2012)
  o To boost the modernization and expansion of ports and railways;
  o Tax exemption of US$103.5 million (2012) and US$136.7 million (2013);

• Update of Local Content Regulation: (July/2012)
  o Resolution ANP nº 36/2007 – update the methodology of measurement LC;
  o Resolution ANP nº 39/2007 – deeply detailing the activities that fit on each line of the Investment Reports;
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1% (one percent) of the gross revenues from fields with extraordinary production ~ US$ 3.5 billion
R&D Resources (2011)

Investments in Laboratorial Infrastructure and Human Resources Qualification

- Laboratorial Infrastructure: 25%
- Human Resources: 5%
- Others: 70%

R&D investment obligation

- Petrobras: 96.0%
- Chevron: 4.0%
- Frade Japão: 2.2%
- Others: 0.8%
- Repsol: 0.4%
R&D Resources
Transforming knowledge into technology

Laboratorial infrastructure

Regional Research Center
Rio Grande do Norte Federal University

Operational Safety innovations

A.U.R.I. – Autonomous Underwater Riser Inspection Tool

Management of riser integrity - Onboard sensors: four cameras, pressure transducer, odometers, digital compass, inclinometer and thermometers

Corrosion and fatigue essays in the presence of CO₂ and H₂S in flexible risers

Monflex – Monitoring of Flexible Oil Lines

Early detection of failure
• Already installed in four platforms and considered efficient
R&D Resources (2011 – 2020)

Cumulative investment forecast ~ US$ 8.9 billion
R&D Results

**Infrastructure**

- Environmental Sciences Laboratory

- Gas and Energy Laboratory

**Human Resources**

- Espírito Santo Federal University

- Navy
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Brazil is Much More than Pre-salt

- 38 sedimentary basins
- 29 main basins
- ~ 7.5 million km²
- 4.5% contracted

- Pre-Salt areas under Production Sharing Contracts
  (~ 2.3% sedimentary area)
  - 7 blocks
  - Onerous Assignment

- Other areas under Concession Contracts
  (> 97% sedimentary area)
An Agency with an Operational Branch
ANP G&G Plan

Total Investment: ~ US$ 1 billion
An Agency with an Operational Branch
ANP G&G Plan

Concluded projects

Ongoing projects
Projects in bidding stage
- Geochemistry survey in Amazon Delta and Pará-Maranhão basins

Projects under consideration - 2012
- Seismic assessment (2D) in Parecis and Paraná basins
- Exploratory well in São Francisco basin
New data acquisition
~ 2,100 km 2D seismic

Declaration of commerciality
Gavião Azul and Gavião Real
(1st gas in 2012)

New areas for next bidding rounds

1,500 km 2D seismic
5,000 geochemical samples
750,000 km² aero survey

1-OGX-16-MA 1-OGX-22-MA

Located in Piauí, Maranhão and Tocantins states

Declaration of commerciality
Gavião Azul and Gavião Real
(1st gas in 2012)

New areas for next bidding rounds
Parecis Basin

Located in Mato Grosso state

ANP

1,500 km 2D seismic
2,400 geochemical samples

New data acquisition
~ 2,200 km 2D seismic

Seep in Teles Pires River
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Offshore Experience

Drilling deeper

Source: Petrobras, 2011
Offshore Regulatory Framework

Non prescriptive regulation - 17 *management practices* concerning:
- Leadership
- **Personnel and Management**
- Installations and Technology
- **Risk Analysis**
- Operational Practices

**Verification methodology**

Safety Documentation Analysis (Solution Acceptance)
Onboard Audits (Safety System Verification)
Injunction Actions (Enforcement)
Very Strict onboard auditing process (2010/2011)

- 130 audits
- 910 non-conformity reports
- US$ 23 million in fines
- 14 cautionary measures (operation halt)
What is working well...

- **Empowerment by the State** – Brazilian Government fully support, encourage and claim for severe actions;

- **Qualification** improvement of ANP staff;

- **Hot line with Workers Union** – *spread regulators’ eyes*;

- **Onboard presence** is necessary to “feel” safety environment and culture; and

- **Precautionary measures** (operation halt) are working much better than fines...

*Improvements needed*

- Enhance “**safety culture**”;

- Improve **risk acceptance criteria**, including drilling activity.
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• Brazil does realize its special moment in the petroleum sector and intends to take advantage of it to boost its development;
• LC and R&D investments are very useful instruments;
• LC is an important business niche for suppliers;
• Brazil is much more than the pre-salt;
• Brazil goes forward safely and respecting human life and environment;
• In Brazil, foreign investments are welcome, if in compliance with Brazilian rules.