The E&P sector in Brazil

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An unprecedented transformation
We continue to make progress in opening the O&G sector

**E&P**

A completely diverse sector will emerge from Petrobras Divestment Plan. All onshore and shallow water fields are being sold, as well as some great offshore post-salt concessions.

With new investments in mature fields, development of pre-salt fields, offshore blocks in the exploratory phase, and a calendar of new auctions, Brazil is ready to grow production and take a leading position in the sector.

**Downstream**

Half of the Brazilian refining capacity (REFAP • RNEST • REPAR • RLAM • LUBNOR • REGAP • REMAN • SIX) is being sold by Petrobras, paving the way for a competitive and open refining and fuel market for the first time ever.

ANP is taking measures to deal with the transition to this new environment and to bring competitiveness to the distribution sector.

**Gas**

First-ever effective opening in the natural gas market with Petrobras leaving the transport and distribution sectors.

A new legal framework has just been put in place for the gas market (Law 14,134/2021 and Decree 10,712/2021) and a strong regulatory agenda is underway to create opportunities for suppliers and free consumers and distributors. An open season calendar is set for this year.
Resilience in 2020 and ready for recovery

Emergency flexibilization measures

Safety and health concerns – specific monitoring activity

5% of Production growth
Gas: 127 Mm³/d
Oil: 2.94 Mbd

Export records
Oil: 1.37 Mbd
Oil and fuel oil with low sulfur content

Pre-salt high performance

Assets acquisition
50 M&As Upstream deals approved by ANP

18 areas sold in the 2nd Cycle of Open Offer

More than 15 Offshore Prod. Units expected to start operation until 2025

IEA (Oil 2021): “Brazil is poised to be one of the key sources of growth over the medium term”

Right assets in the right hands
Ongoing huge Petrobras divestment plan: new investors in Brazil
+ Measures to increase competitiveness

Well positioned for growth

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Pre-salt high performance

COVID 19

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Well positioned for growth
Brazil is taking a leading role in the E&P sector

**2021**

- **10th Crude Oil producer** (BP Statistical Review 2020)
- **93 E&P company groups, 50% foreign** (May 2021)

**Production:**
- **3 M Bpd of oil production** (April 2021)
- **131 M M³ of gas production** (April 2021)

**Reserves:**
- **12 B Bbl in proved oil reserves** (Dec 2020)
- **337 B M³ in proved gas reserves** (Dec 2020)

**Forecast**

- Potential to reach more than **5 million oil bpd in 2030 (EPE)**
- Potential to be the **5th Largest crude oil exporter in 2030 (EPE)**
- **50 Billion dollars** (Investments Forecast 2021 – 2025)
E&P history in Brazil
From a monopoly towards an open market

1953: Petrobras monopoly
1997: Petroleum Law
2008: Auction break in exploration well drilling and in the number of new discoveries
2009: 1st oil in pre-salt
1999-2008: 10 Concession Rounds – new E&P companies in Brazil
2010: Production Sharing Law
Transfer of Rights Surplus Law
Petrobras: 93% of production in Brazil
2013: Rounds return
Oil price collapse and investment reduction
2015: Sharp reduction in onshore and post-salt offshore activities. Petrobras focus on the pre-salt
2016: Start of measures to resume activities at E&P
2017: New E&P Policies
Rounds acceleration
2019: Repositioning of Petrobras – first sales of the divestment plan
2021: Petrobras: 73% of Brazilian production
Many measures have already been taken to encourage E&P activities.

- **2016**: No longer mandatory for Petrobras to be the sole operator in the pre-salt (Law 13,365/2016)

- **2017**:
  - A bidding round (CNPE Resolution)
  - New Local Content Policies (CNPE Resolution nº 07/2017)
  - New E&P Policies (CNPE Resolution nº 17/2017)
  - Exploratory Phase Extension for 11th and 12th Rounds (ANP Resolution nº 708/2017)
  - REPETRO Extension (Law 13,586/2017)

- **2018**: (CNPE Resolution nº 825/2018)
  - RBL and M&A made easier
  - Royalty reduction on the incremental production
  - RBL and M&A made easier (ANP Resolution nº 749/2018)
  - REPETRO Extension (Law 13,586/2017)
  - Mandatory investment or M&A in onshore and shallow water fields; deadline for Petrobras divestment (RD nº 568/2018)

- **2019**: (ANP Resolution nº 817/2020)
  - Regulation of decommissioning
  - ANP Resolutions: Flexibility as a result of the pandemic

- **2020**: Bidding Rounds (from 2017 to 2020)
And the results came, mainly in the pre-salt area...

That will support E&P activities in the future.

The auctions held since 2017 have awarded 90,000 km² and yielded R$ 112 billion in signature bonuses.
Also, a new onshore market is being set up

A new onshore market with small and medium companies is being established with Petrobras Divestment Plan, supported by foreign and national investors (highlight for 2 IPOs). All onshore fields are being sold by Petrobras – huge investment opportunities in mature fields.
The exploratory environment is increasingly diverse

234 exploratory blocks, 70% operated by non-Petrobras companies
173 thousand km² in exploratory areas: 61% offshore

### Onshore

<table>
<thead>
<tr>
<th>Operator</th>
<th>Exploratory blocks</th>
<th>Active blocks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Petrobras</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Others</td>
<td>87</td>
<td>69</td>
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<tr>
<td><strong>Total</strong></td>
<td><strong>90</strong></td>
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97% of onshore blocks operated by independent companies

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<td><strong>Total</strong></td>
<td><strong>144</strong></td>
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Offshore active blocks by operator

- 234 exploratory blocks, 70% operated by non-Petrobras companies
- 173 thousand km² in exploratory areas: 61% offshore
Natural gas: a big opportunity

**Offshore gas potential**

Relevant gas potential in the pre-salt. Natural gas production in Brazil should reach 276 million m³/day in 2030 (EPE)

All efforts are being made so that this gas can be monetized

**Onshore gas potential**

4 paleozoic basins with potential for natural gas: Parnaíba, Solimões, Amazonas, Paraná basins

Most of the onshore exploration in new frontier basins is to produce gas. Relevant reservoir-to-wire projects in Parnaíba and Amazonas Basins

**New gas market**

The new Gas Law (Law 14,134 / 2021) is a decisive step towards an open, liquid and competitive market

A robust regulatory agenda is underway to build the new natural gas market, which is creating big opportunities in Brazil
We need to increase exploration in Brazil

The COVID-19 pandemic impacted exploratory activities in Brazil, accelerated energy transition discussions and reinforced the sense of urgency in exploring our resources.

01 Only 5% of the sedimentary area is contracted and just 30 thousand wells have been drilled to date.

02 Net zero scenarios imply a drastic drop in oil demand. As less capital will be available for investments in O&G the least competitive countries will quickly be highly impacted.

03 Brazil has seen a sharp decrease in exploration activities in offshore new frontiers. Focus is basically on the pre-salt due to its high potential and smaller carbon footprint.

Brazil has a fantastic geological potential still unexplored with great opportunities.
A print screen of exploratory activities and results

Exploratory Wells Drilled

Declarations of Commerciality

2021 forecast: 45 wells in exploratory blocks (26 onshore/19 offshore) and investments of R$ 6.5 billion
Measures to increase exploration activities

1. **KEEP OFFERING AREAS**
   - Open Acreage and 2 auctions planned for this year. Petrobras Divestment Plan in progress also encourages new companies to enter the market and seek new areas.

2. **ONSHORE DATA FOR FREE**
   - Available on the internet (well data, seismic post-stack, non-seismic data and other studies)
   - Download: Reate.cprm.gov.br/anp

3. **BidSIM**
   - Governmental program to improve environmental licensing and fiscal regime

4. **IMPROVEMENT OF THE REGULATORY ENVIRONMENT**
   - Red tape reduction, rules simplification, new Gas Law etc.
Brazil has great opportunities in 2021 auctions

92 blocks on offer

Campos, Pelotas, Potiguar and Santos Basins

Pre-salt opportunities beyond 200 nautical miles with 3D seismic recently acquired

October 7th

Atapu and Sépia (pre-salt fields)

12b bbl (OOIP)

Atapu Prod: 91k boe/d in May 2021

Sépia: first oil expected this year

Technical and economical parameters approved by CNPE

December 17th
Opportunities in the Open Acreage

The Open Acreage allows the market to decide when bidding rounds will take place and what areas will be offered. In addition to the 691 blocks already available, 377 new blocks will be added to the menu.

The 3rd cycle will start when any company declares interest in at least one area.
The Production Phase

437 fields, of which 133 offshore and 304 onshore
264 fields produced in April 2021

2021:
Production Maintenance Forecast

2025:
Production growth sustained by the first oil of at least 15 new production units, mostly in the pre-salt

Investment Forecast 2021-2025: BRL 262 billion

Decommissioning opportunities:
BRL 28 billion until 2025

Huge transformation with new operators jumping in mature fields already in production due to the Petrobras Divestment Plan.

For instance (on shallow water):
Three environments in production

73% of total production

Pre-Salt

- 122 wells
- 22,636 boe/d
- One of the best plays in the world. Some wells produce more than 50,000 boe/d

22% of total production

Post-Salt Offshore

- 343 wells
- 2,443 boe/d
- Offshore beyond the pre-salt; new frontiers and mature fields

5% of total production

Onshore

- 5,947 wells
- 33 boe/d
- Mature and New Frontier Basins

Pre-salt prioritization accelerated the decline in onshore and post-salt offshore production.
E&P strategic goals

Strategic goals for the three environments

**Accelerate** the pre-salt exploration and development

**Increase mature fields RF** and fasten exploratory activities in the **new frontier basins**

**Revitalize** the onshore, increase the mature fields RF, support small and medium producers, intensify **exploratory activities**, quantify the oil potential

**Attract the right players** for each environment (assets in right hands)
What we have already produced and our potential

Brazil has produced only 10% of the volumes discovered in fields
World average RF: 35%

Brazil

Produced 10%
Total Reserves 10%
Remaining Volume 80%
FR=20%

Onshore

Produced 20%
Total Reserves 6%
Remaining Volume 74%
FR=26%

Brazil 1% more in the RF
Campos Basin

2.4Bboe
1Bboe
200Mboe

Increasing the RF is an energy policy goal and must be pursued by all agents as per best practices

Source: Annual Reserves Bulletin 12/31/2020 (Oil and Gas)
Ongoing measures to attract investment to fields in production

1. OPEN ACREAGE AND PETROBRAS DIVESTMENT PLAN
   - Petrobras Divestment Plan in progress: new companies in the onshore and post-salt offshore

2. ROYALTIES REDUCTION FOR SMALL AND MEDIUM COMPANIES
   - New ANP Resolution to be approved by July 2021

3. MARGINAL FIELD DEFINITION
   - Draft in preparation. Expected public consultation in July 2021. Specific incentives should be discussed afterwards

4. OTHERS REGULATORY MEASURES
   - Access to essential infrastructure, measures under Reate, Promar and BidSIM programs, contract extension, royalty reduction on incremental production, etc.
## Final Remarks: E&P Business Environment in Brazil

<table>
<thead>
<tr>
<th><strong>Our Strengths</strong></th>
<th><strong>What we need to improve</strong></th>
<th><strong>Opportunities</strong></th>
<th><strong>Threats</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Brazil has never breached an E&amp;P contract</td>
<td>Country risk</td>
<td>In the short term: oil prices trending up</td>
<td>Global competition (Middle East, shale oil/gas, Guyana/Suriname, Africa, countries with more progressive tax regimes etc)</td>
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<tr>
<td>Geological potential</td>
<td>Environmental licensing in new frontier basins</td>
<td>Last window of opportunity to explore less competitive assets</td>
<td>Companies becoming more selective as there is less capital available for investment in E&amp;P</td>
</tr>
<tr>
<td>Pre-salt: world-class low carbon intensity assets</td>
<td>Regressive tax regime</td>
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<td>Energy transition will lower demand for oil and gas</td>
</tr>
<tr>
<td>Past and future bidding rounds (including open acreage)</td>
<td>Red tape and the pace of reforms</td>
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<tr>
<td>Market opening (Petrobras Divestment Plan)</td>
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http://rodadas.anp.gov.br/pt/
www.gov.br/anp/pt-br

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