• The ANP’s institutional presentation is based on current and reliable information, but no representation or warranty is made as to its accurateness and completeness, and it should not be relied upon as such.

• Projections and estimated values are included without any guarantee as to their future realization.

• Forward-looking data, information, projections and opinions expressed during the presentation are subject to change without prior notice.
Agenda

- Brazil Oil & Gas Industry Overview
- Improvements in E&P Regulation
- R, D & I - New Perspective
- Final Remarks
Brazil Oil & Gas Overview
Brazil at a Glance

The Relevance of Oil and Gas Industry

- **~1.9 Trillion USD GDP (2018)**
- **13% Oil and Gas Industry**
- **~210 million Population (2018)**
- **5th Largest country (8.5 million km²)**
- **9th Largest economy $**
- **9th largest oil producer, the largest of Latin America**
- **7th largest oil products consumer**
- **7th Largest FDI destination**
Brazilian Proven Reserves

15 Billion boe

13.2 Billion bbl

369 Billion m³

“Figures do not include recoverable resources from some Pre-Salt fields under evaluation nor the areas included in the Transfer of Rights (ToR) surplus.”

Pre-Salt (Offshore) 60%

Conventional Offshore 34%

Onshore 6%

Oil Proven Reserves

Gas Proven Reserves
Brazil is a Country with Continental Dimension with Unrealized Potential...

Less than **5%** of the sedimentary areas are contracted

**2** Basins without a single well  
(Madre de Dios & Pernambuco – Paraíba)

Only ~**30,000** wells were drilled in Brazil YTD

❖ **60,000** in Argentina  
❖ **4 million** in USA

Pre-Salt Production accounts for over 62% of Total Production  
(1.83 million bpd out of 2.92 million bpd).
E&P Strategic Initiatives - Maximizing Oil & Gas Production

- Accelerate the Pre-Salt Development
- Unlock the Conventional/Unconventional Oil & Gas Potential
- Improve Recovery Factor in Mature Fields & Advance to New Frontiers
- Improve Environmental Permit & Emergency Response Processes

Pre-Salt
Conventional Offshore
Onshore
Environment
Recent Legal and Regulatory Enhancements

2016
- Petrobras No Longer Sole Operator for the Pre-Salt Play (Law 13,365/2016)

2017
- Bidding Rounds Schedule until 2019 (CNPE Resolution 10/2017)
- New Local Content Policy – future rounds (CNPE Resolution 07/2017)
- New E&P Policies (CNPE Resolution 17/2017)
- Exploratory Phase Extension (BID 11 and BID 12) (CNPE Resolution 708/2017)
- REPETRO Extension – fiscal regime (Law 13,586/2017)

2018
- Local Content waiver for contracts up to the 13th bidding round
- Royalties reduction for the incremental production in mature fields
- Farm-in, Farm-out and Reserve-Based Lending (RBL)

2019
- Guidelines for Transfer of Rights Surplus Bidding Round (CNPE Resolution 02/2019)
- Open Acreage – 1st Bidding Round
- R,D&I New Regulation
- Decommissioning New Regulation under public consultation and public hearing
### 2017-2018 Rounds: Diversified & Intense Competition

<table>
<thead>
<tr>
<th>Bidding Round</th>
<th>Acquired Blocks</th>
<th>Signing Bonus (USD billion)</th>
<th>Registered Companies</th>
<th>Winner Companies</th>
<th>Premium</th>
</tr>
</thead>
<tbody>
<tr>
<td>Brasil Round</td>
<td><strong>37</strong>&lt;br&gt;(24 onshore and 13 offshore)</td>
<td><strong>1.035</strong></td>
<td><strong>32</strong></td>
<td><strong>17</strong></td>
<td><strong>1,556%</strong></td>
</tr>
<tr>
<td>PRE-SALT Brazil 2</td>
<td><strong>3</strong></td>
<td><strong>0.889</strong></td>
<td><strong>10</strong></td>
<td><strong>7</strong></td>
<td><strong>261%</strong></td>
</tr>
<tr>
<td>PRE-SALT Brazil 3</td>
<td><strong>3</strong></td>
<td><strong>0.768</strong></td>
<td><strong>14</strong></td>
<td><strong>6</strong></td>
<td><strong>202%</strong></td>
</tr>
<tr>
<td>PRE-SALT Brazil 4</td>
<td><strong>3</strong></td>
<td><strong>0.849</strong></td>
<td><strong>16</strong></td>
<td><strong>7</strong></td>
<td><strong>202%</strong></td>
</tr>
<tr>
<td>Round Brazil 15</td>
<td><strong>22</strong></td>
<td><strong>2.159</strong></td>
<td><strong>17</strong></td>
<td><strong>12</strong></td>
<td><strong>622%</strong></td>
</tr>
<tr>
<td>Pré-Sal Brasil 5</td>
<td><strong>4</strong></td>
<td><strong>1.838</strong></td>
<td><strong>12</strong></td>
<td><strong>8</strong></td>
<td><strong>170%</strong></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>72</strong></td>
<td><strong>7.5</strong></td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>

\[ R\$/US$ = 3.71 \]

*Significant Increase in Premiums*
## 2019 – YTD

<table>
<thead>
<tr>
<th>Bidding Round</th>
<th>Acquired Blocks</th>
<th>Signing Bonus (US$ billion)</th>
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<th>Winner Companies</th>
<th>Premium</th>
</tr>
</thead>
<tbody>
<tr>
<td>Open Acreage Brazil 2019</td>
<td>33 (+ 12 marginal fields)</td>
<td>0.601</td>
<td>47</td>
<td>14</td>
<td>61,48% (2.221,78% marginal fields)</td>
</tr>
<tr>
<td>Round 16 Brazil</td>
<td>12</td>
<td>2.403</td>
<td>17</td>
<td>10</td>
<td>322%</td>
</tr>
<tr>
<td>Transfer 02 Brazil</td>
<td>02</td>
<td>18.857</td>
<td>14</td>
<td>03</td>
<td>NA</td>
</tr>
<tr>
<td>Pre-Salt 01 Brazil 6</td>
<td>01</td>
<td>1.347</td>
<td>17</td>
<td>02</td>
<td>NA</td>
</tr>
<tr>
<td>Total</td>
<td>48</td>
<td>22.6</td>
<td></td>
<td></td>
<td>R$/US$ = 3.71</td>
</tr>
</tbody>
</table>
Pre-Salt Exploration has Dramatically Increased!

Before 2017

2019

including new Pre-Salt Rounds
Expected Impact from Recent Bidding Rounds...10 yrs+

2017 - 2019

New Investments
USD 215B

Tax Revenues
USD 700B

4.2 Million bpd
(added peak production)

~33 New Platforms

Hundreds of Wells!

R$/US$ = 3.71 / Brent = US$ 70
Research, Development and Innovation – New Perspective
R&D & I Environment

- Brazil is well positioned in the International Academic & Research Production Ranking

- Not well positioned in the International Ranking of Introducing Innovation

- Significant Public Resources available but very limited Private Resources for R,D&I Activities
Promote Alignment and Collaboration of Key Stakeholders

- **Research Institutions**
  - Expertise in Research activities
  - Strong Performance in Basic Research
  - Concepts/Knowledge not yet applied to solve real problems

- **Companies**
  - Focus on the use of new technologies/innovation
  - Understanding of the technological needs and industry demands
  - Driven by Problem Solving and Value Creation

*Critical role in Human Resources Development and Knowledge Sharing*
### ANP Proposed Principles to New R, D & I Regulation

- The decision of where to invest and apply the resources is a responsibility of the oil companies themselves.
- Two basic and **non-negotiable principles** for the development of any project:
  - It must be an R,D&I Activity
  - The R,D&I activity must be developed in Brazil
- The oil companies should seek the projects they consider the best for their strategy
- Promote projects with services companies & universities → emphasis on "I" (innovation).

### Key Areas of Improvements in the New R,D&I Regulation

- Overall Process Simplification
- More flexibility for the Oil Companies as related to their R,D&I activities
- Promote investments in R,D&I in Services Companies and Supply Chain
- Introduced the idea of Programs focused on Small companies and Start-ups
- Enable partnerships between University and Companies (any size)
Amount of Resources for R,D&I - Regulatory & Legal Obligations (1% Clause)

~ R$ 16,3 Billion
(~ US$ 4 billion) in 20 years

(* 1st half-year)
Companies’ Participation vs. Petrobras – R, D & I Resources (1% Clause) Utilization

In 2018 →
~ US$ 500 MM
(~R$ 2 billion)

Other Companies Participation has Increased in 2018:

Petrobras: 75%
Other companies: 25%
Bidding Rounds Schedule

- 1st Wave: November 2018
- 2nd Wave: 2nd Semester 2019
- 3rd Quarter: 2020
- To be defined: 2021
Next Pre-Salt Licensing Rounds

2020
Esmeralda
Agata
Agua Marinha

2021
Ametista
Tupinamba
Jade
Turmalina
Sectors Under Consideration for Future Bidding Rounds

Near Future Opportunities

Exploration beyond the Exclusive Economic Zone (EEZ)

Ensure execution of exploration Investments in New Frontiers Basins

Infrastructure to Support New Frontiers Exploration
Brazil E&P Potential

- **Mature Fields/ Basins**: 7.5 M bpd
- **>50 New FPSOs**
- **New Frontier Basins**

**Forecast (next 10 years)**
Transfer Rights Upside ~ + 2.0 M bpd

**The Most Prominent Deepwater Environment**

**Improve Recovery Factor**
1% improvement means:
- 2.2 Bboe reserves
- US$ 18 B investments

**We barely Know our Potential**
Unconventional resources under discussion

**Contracted / In Progress**
**Need to be unlocked**
ANP E&P MISSION

Promote a Predictable and Stable Regulatory Framework, that Attracts New Investments and Accelerates the Development of the Pre-Salt, Conventional Offshore and Onshore E&P Environment

Attract the Right Players
❖ Giant Fields
❖ New Frontiers
❖ Mature Fields
❖ Onshore

Create Public Value through a Developed, Diverse and Competitive Market!

Increase E&P Activities
❖ Accelerate Pre-Salt Development
❖ Improve Mature Fields Production
❖ Improve Recovery Factor
❖ Enhance Onshore Incentives
❖ Support Environmental Licensing

Maximize Production
❖ Diversity of Players
❖ EOR/IOR initiatives
❖ New R,D & I focus
❖ Financing Opportunities

Create a Secondary Market
❖ Attract mid/small-sized companies
❖ Strength Service Companies
❖ Develop the Supply Chain
Digital Transformation has Fundamentally Challenged Business Models....In fact Reshaped!

Video – Digital Transformation
Data Driven Companies...

“In less than a decade, these companies became the most valuable companies in the world”

<table>
<thead>
<tr>
<th>Ranking</th>
<th>2011</th>
<th>2019</th>
<th>…Future ?</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>ExxonMobil $406 bi</td>
<td>Apple $1.1 Tri</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Apple $376 bi</td>
<td>Microsoft $1.1 Tri</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>PetroChina 277 bi $</td>
<td>Alphabet $896 bi</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Shell 237 bi $</td>
<td>Amazon $879 bi</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>ICBC $228 bi</td>
<td>Facebook $539 bi</td>
<td></td>
</tr>
</tbody>
</table>
Brazilian National Agency of Petroleum, Natural Gas and Biofuels
ANP

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Additional Information

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