Oil and Gas E&P in Brazil
Brazil Bidding Rounds 2018

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Outline

01 Oil and Gas Scenario
02 E&P Environments
03 Improvements
04 Bidding Rounds
05 Final Remarks
Oil and Gas Industry in Brazil

The numbers still do not reflect the Brazilian potential

50% Energy supply

10th largest oil producer, the largest in Latin America

311 blocks

443 fields

105 companies

11% Industrial’s GDP (CNI, 2014)

R$295 billions in government revenues (2005-2016)

Billions annual investments

Millions of jobs

The numbers still do not reflect the Brazilian potential.
Three E&P environments

1. Pre-Salt region
   One of the hottest oil plays in the world, home of the largest offshore oil discoveries in the last decade

2. Conventional Offshore
   All the East Margin besides the pre-salt region and Equatorial Margin

3. Onshore
   Mature Basins and New Frontier Basins (mostly gas prone)
Production

3.3 Million boe/d

September, 2017

Oil

2.65 Million bbl/d

Gas

114 Million m³/d

Pre-Salt

48%

Conventional Offshore

44%

Onshore

8%

Average Production (up to September, 2017)
Proven reserves

15 Billion boe

December, 2016

Oil
12.6 Billion bbl

Gas
379 Billion m³

Oil Proven Reserves

- Pre-Salt: 44%
- Onshore: 5%
- Post-Salt Offshore: 51%

Gas Proven Reserves

- Pre-Salt: 32%
- Onshore: 17%
- Post-Salt Offshore: 51%

Pre-Salt
51%

Conventional Offshore
42%

Onshore
7%
Brazil’s prospectivity

Pre-Salt

- ~300 Wells
- 14 Fields in Production

High Quality Carbonate Reservoirs below the pre-salt layer

High productivity: 82 wells producing in average almost 30,000 bpd per well

Large structures: several billion barrels oil in place

Offshore

- 6,000 Wells
- 4% Contracted Area
- 128 Fields

East Margin: potential for oil discovery in turbidite reservoirs from the Upper Cretaceous to the Paleogene

Equatorial Margin: expectation of light oil discoveries in turbidite reservoirs of the Upper Cretaceous in new frontier basins.

Onshore

- 23,000 Wells
- 3% Contracted Area
- 315 Fields

Mature Basins (Remaining Potential)

New Frontier Basins

Solimões Basin: Potential for light oil
Other Basins: Potential for gas
The model of a single integrated company discovering and developing an oil or gas field, and operating it until it is depleted, is being replaced. This is illustrated by the emergence of exploration specialists and of mature production players.

(2017 Oil and Gas Trends – Strategy&)
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Home of the largest offshore oil discoveries in the last decade

Pre-Salt

Even with only a single offer in 10 years (Libra)

63%
of the world’s deepwater oil discoveries and 36% of the world’s oil discoveries (2010/2014)

The next bidding rounds will offer blocks with potential for giant discoveries in the pre-salt
Pre-salt production must be accelerated to recover the lost time

Blocks on offer in the next rounds contain 41 areas excluded from the 9th Bidding Round

The exclusion of the blocks caused the postponement/loss of billions of reais in government revenues

If the pre-salts blocks had continued to be offered since 2007:

- **R$ 520 Bi**
  - Royalties, windfall profit tax, income tax, signature bonus and investments in R&D

- **4.3 MM bbl/d** would be in production by 2018

- **R$ 600 Bi**
  - Investments up to 2017

A one generation lost opportunity
The pre-salt region shall be responsible for the largest contribution of non-OPEC production growth in the decade to come.

According to Rystad Energy / NORWEP, Brazil, in the next four years, shall be the largest offshore market in the world.

There is potential to contract more than 30 production units in the next ten years.

Blocks with huge potential that can be quickly developed shall be offered in the next PSC rounds.

Only a few fields (BID0 and BID2) are already in production.

Pre-Salt production will grow sharply in the short term.
Conventional Offshore

Area: ~ 2.5 million km²
Contracted Area: ~ 0.09 million km²

Exploratory perspective

Pernambuco/Paraiba Basin without a single well

New Frontier Basins

Exploratory opportunities in Mature Basins

Goal: to increase exploration activities in the East and Equatorial Margins
Goal: to increase the production and the recovery factor in the mature basins (specially in the Campos basin).
Mature fields revitalization

312 onshore fields

50% of the onshore fields produce for more than 25 years

Goal: to revitalize activities in the onshore fields, by attracting small and medium companies expert in mature fields.
Exploration in new frontier basins

- Solimões Basin: potential for light oil
- Other Basins: potential for natural gas

Goal 1: to increase exploration activities and the number of players in the new frontier basins, stimulating the natural gas exploration

Goal 2: to initiate the unconventional plays evaluation (potential for more than 200 TCF of natural gas resources)

Onshore Blocks Awarded

- Onshore Blocks Awarded:
  - Rod 1: 9
  - Rod 2: 7
  - Rod 3: 10
  - Rod 4: 20
  - Rod 5: 89
  - Rod 6: 210
  - Rod 7: 65
  - Rod 8: 54
  - Rod 9: 87
  - Rod 10: 72
  - Rod 11: 35
  - Rod 12: 24

- Area: ~5 million km²
- Contracted Area: 0.17 million km²
- Blocks: 194
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Main measures to stimulate exploration activities

1. End of Petrobras sole operatorship in the pre-sal play
2. Bidding Rounds Calendar
3. Open Acreage
4. Extension of exploratory phase (BID 11 and BID 12)
Main measures to revitalize mature fields in the short term

1. Petrobras to speed up divestment plan
2. RBL (Reserve Based Lending) Regulation
3. Royalties reduction regulation
4. Contracts production phase’s extension
Others important measures to unlock investments in the short term

- **Transfer of Rights** negotiation with Petrobras
  
  + 6 to 15 Billion boe surplus

- **Local Content** Waiver Regulation
  
  To **accelerate** development of projects/reserves

  **R$ -2,6Bi**

  in government revenues for each year of delay

- **Improvements in the regulatory framework**

  Regulation, contracts and tender protocols adapted to each E&P environment
Potential investments in production development (2017/2027)

New offshore production

- 39 new production platforms
- R$344 billions of potential contracts in Brazil
- R$845 billions of potential investments in development

Mature fields recovery

- 1% additional in the recovery factor:
  - US$18 Bi new investments
  - US$11 Bi royalties
  - 2,2 Bboe additional reserves

2017-2017

R$100 Bi annual government revenues in 2030
Bidding rounds calendar

- 2017
  - 2nd, 3rd Pre-salt Round
  - 14th Round
    - 2017 09.27.17
  - 4th Marginal Fields Round
    - 2017 05.11.17

- 2018
  - 15th Round
    - 2018 (03.29.18)
  - 4th Pre-salt Round
    - 2018 (06.07.18)
  - Open Acreage
    - 2018 3rd Q

- 2019
  - 16th Round
    - 2019 5th Pre-Salt Round
  - Blocks under studies

- 2020/2021
  - Sectors to be defined
  - Open Acreage under development
  - 2 Rounds already approved and scheduled
2017 Bidding rounds results

The best results ever – Highest signature bonus

R$ 7.98M Signature Bonus
3 Basins
6 Companies
8 Fields Sold

R$ 3.84B Signature Bonus
10 Basins
17 Companies
37 Blocks

Offshore winners

ExxonMobil
2017 Pre-salt bidding rounds results

2 new operators in the pre-salt region

R$ 6.15B Signature Bonus
2 Basins
11 companies
6 Pre-Salt Blocks

The best results ever – highest profit oil share (+R$ 200 bi or +50% in expected government revenues)
15th Bidding round

- Public Consultation
  (Contract and Tender Protocol)
  2017 (12.07.17)

- Technical Seminar
  (all interested are invited)
  2017 (December)

- Tender Protocol and Contract Publication
  2018 (01.25.18)

- Deadline for enrolment
  2018 (02.05.18)

- Auction day
  2018 (03.29.18)
15th Bidding round

- **Offshore Areas**
  - Ceará
  - Potiguar
  - Sergipe-Alagoas
  - Campos
  - Santos
  - Parnaíba
  - Paraná

- **Onshore New Frontier Areas**

- **70 Blocks**
- **95,000 Km² Area**
- **8 Basins**

- **Block on Offer**
Ceará Basin
Potiguar Basin

15th Bidding round

Brazilian Equatorial Margin

Oil Producing Basins in Shallow Waters
New Frontier Basins

Geological evolution similar to the West African Margin

Potential for oil discoveries from Upper Cretaceous to Paleogene turbidite reservoirs similar to the ones existing in West Africa

Estimated unrisked oil in place volume

12 billion bbl
Traditional oil producing in onshore and shallow water
New discoveries in deep and ultra deep water
Outside the Pre-salt polygon.
Potential for oil discoveries in the Pre-salt play and in turbidite reservoirs

All basins have potential for oil discovery in turbidite reservoirs from the Upper Cretaceous to the Paleogene

Potential for huge oil discoveries in Santos Basin (Saturno and Titã prospects) in the Pre-Salt play
4th Pre-salt bidding round

- **Public Consultation** (Contract and Tender Protocol) - 2017 (02.01.17)
- **Technical Seminar** (all interested are invited) - 2018 (February)
- **Tender Protocol and Contract Publication** - 2018 (03.29.18)
- **Deadline for enrolment** - 2018 (04.13.18)
- **Auction day** - 2018 (06.07.18)
4th Pre-salt bidding round

Pre-Salt Play

- 17 Bbbl
- 5 Blocks

Estimated unrisked oil in place volume

Potential for huge oil discoveries

Lower Risk
Revitalizing onshore activity
Mainly for small and midsize companies

Example: Recôncavo and Tucano Sul basins

Blocks previously offered, except in the pre-salt polygon
Blocks/Fields relinquished

Areas nomination process under development
First round in 2018
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E&P sector in Brazil since the 50’s

Exploration and Production

1953

1975

1997

2010

2016

Petrobras

End of monopoly
(Oil Act)

Bidding Rounds
(Concession contracts)

New E&P policies
Petrobras’ repositioning
(focus on large offshore fields, mature fields divestment)

1953

Risk Contracts:
minimal impact

New pre-salt law
(Petrobras sole operatorship– PSC)
The greatest transformation in the Brazilian E&P sector, completing the opening started in 1997

O&G scenario in 2017

- Immediate reserves certification
- Fast production development
- Reserves and production growth

First ever effective opening in the natural gas business

Creation of a competitive, open, diverse and internationally referred refining and fuels market

Development of a diverse and competitive supply chain and services market

Bidding round schedule and open acreage

Need of renovated service and supply chain sectors

Improvements in the energy policy

Diverse and Competitive Market

Unique E&P opportunity:

- Petrobras divestment plan
- Brasil-Rounds Oil & Gas Bidding Rounds
- Petrobras

The greatest transformation in the Brazilian E&P sector, completing the opening started in 1997
National Agency of Petroleum, Natural Gas and Biofuels ANP

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