Brazil Institute – Wilson Center

# Oil and Gas E&P in Brazil

## Brazil Bidding Rounds 2018

anp
Agência Nacional do Petróleo, Gás Natural e Biocombustíveis

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Washington, DC
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# Notice

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- There is no guarantee of realization for the estimated values
- The data, information, opinions, estimates and projections presented in this document are subject to change without prior notice

# 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

# 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)

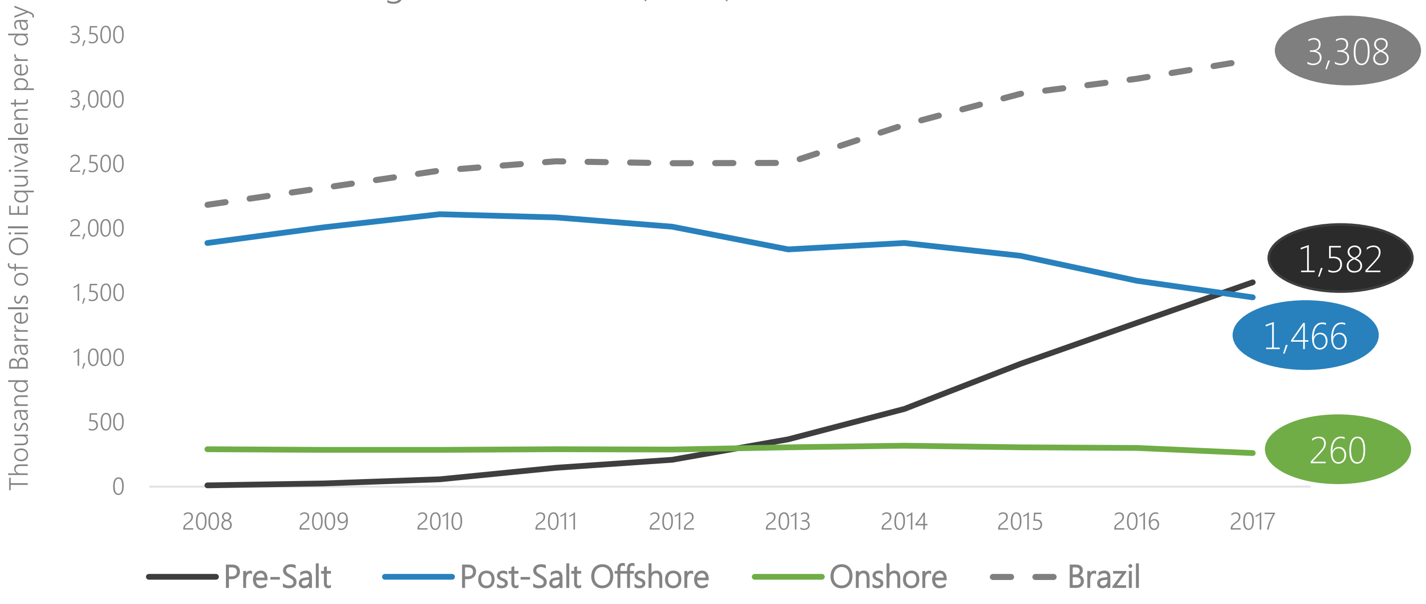
# Production

# 3.3 Million boe/d

September, 2017

| Oil | Gas |
|---|---|
| **2.65** | **114** |
| Million bbl/d | Million m³/d |

Average Production (up to September, 2017)




**Pre-Salt** 48%

**Conventional Offshore** 44%

**Onshore** 8%

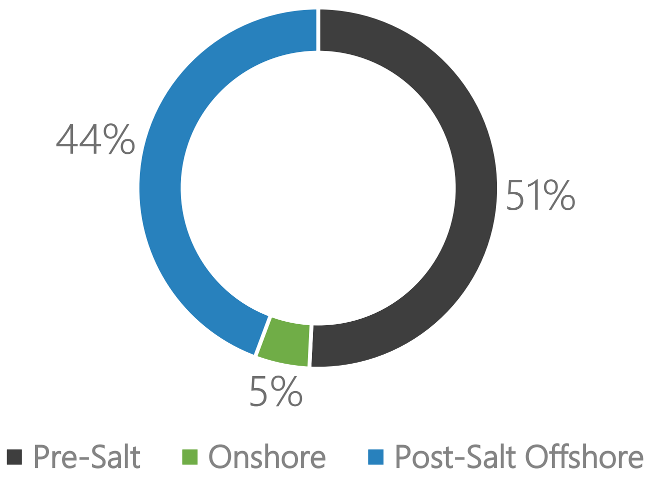
December, 2016

# Proven reserves

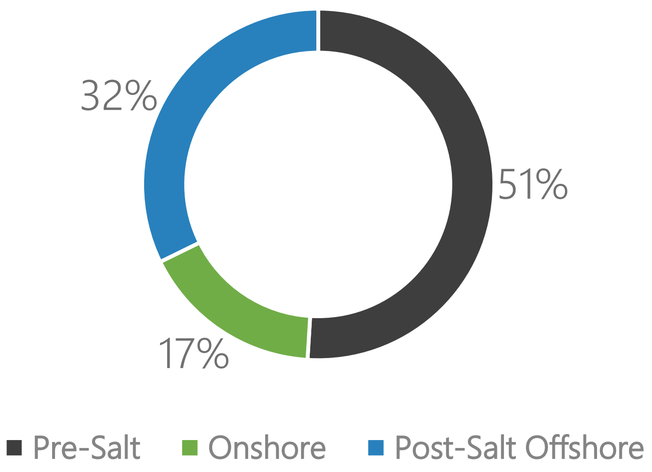
**15 Billion** boe

| Oil | Gas |
|---|---|
| **12.6** | **379** |
| Billion bbl | Billion m³ |

Oil Proven Reserves




Gas Proven Reserves




Pre-Salt 51%

Conventional Offshore 42%

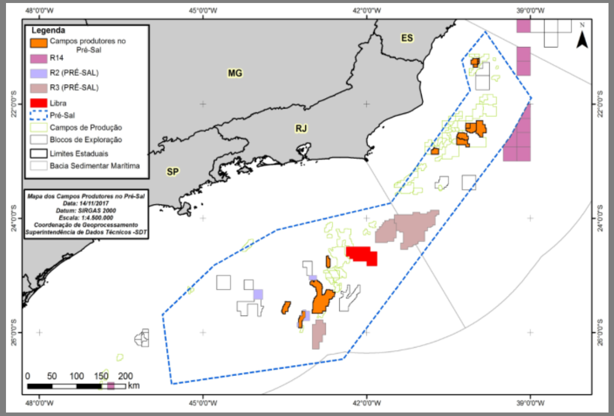
Onshore 7%

# Brazil's prospectivity

## Pre-Salt

~300 Wells

14 Fields in Production




High **Quality Carbonate Reservoirs** below the pre-salt layer

High **productiviity**: 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

# Goal: to attract the right players for each environment

"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&)

| Pre-salt | Conventional Offshore | Onshore |
|---|---|---|
|  |  |  |
| Supermajors<br>Major Operators | Major Operators<br>Exploration Specialists<br>Mature Fields Players | Small and Mid size Companies<br>Exploration Specialists<br>Mature Fields Players |

Supported by oilfield service companies and investment funds

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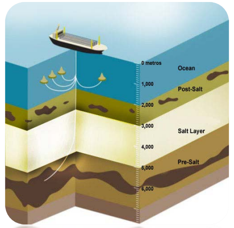
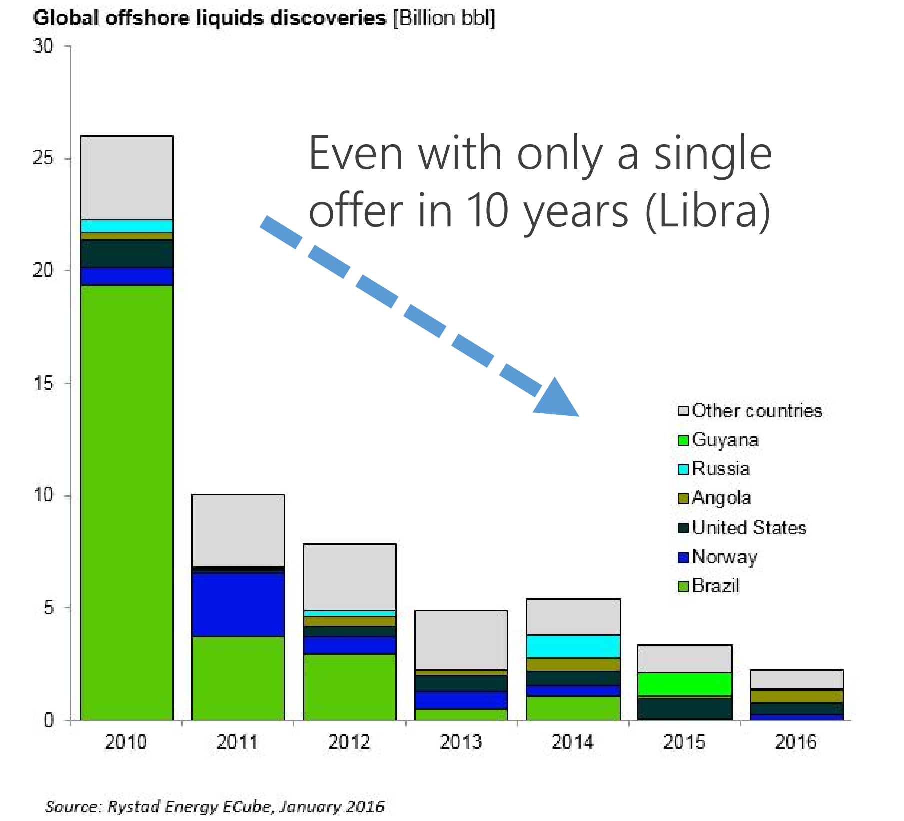
# Pre-Salt



## Home of the largest offshore oil discoveries in the last decade




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

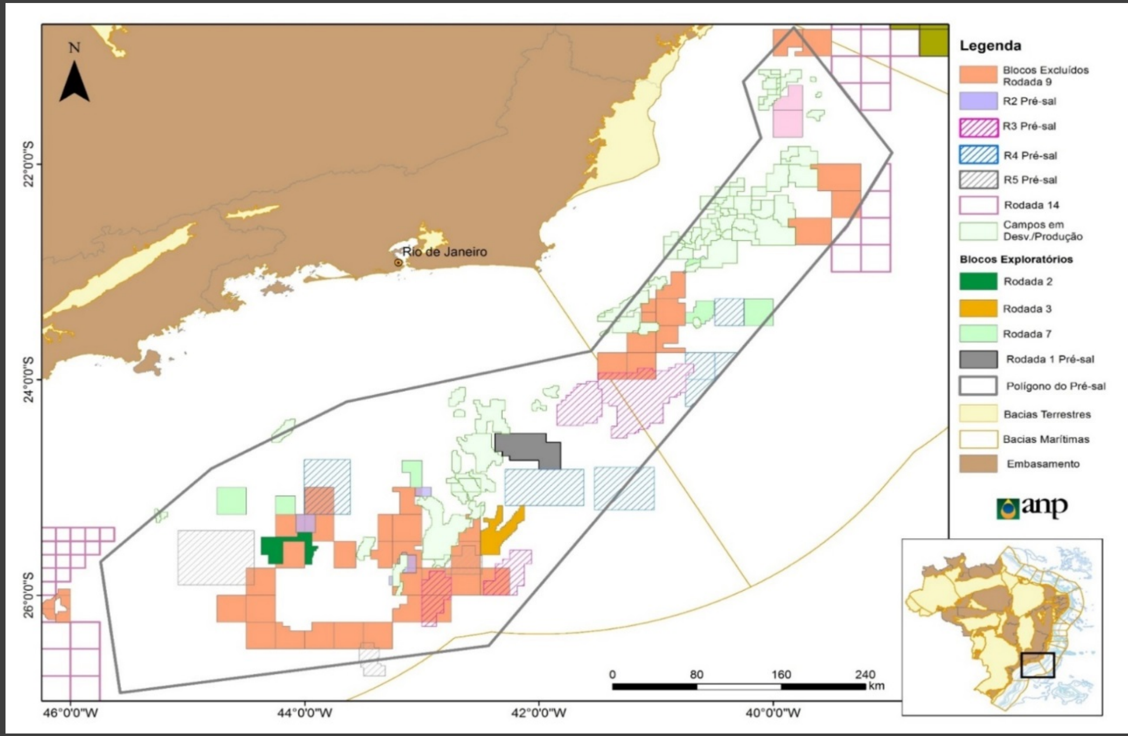
**63%**

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

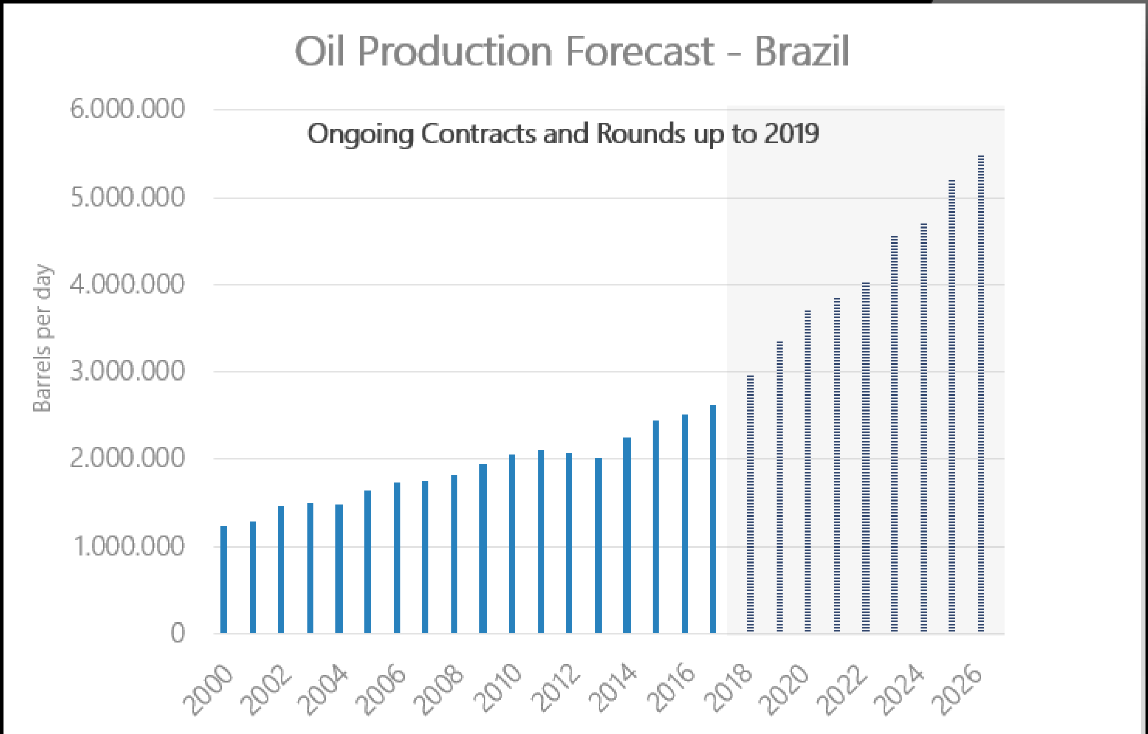
**4,3 MM bbl/d** would be in production by 2018

**R$ 600 Bi**
Investments

**30**
new platforms up to 2017

A one generation lost opportunity

# Pre-salt




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

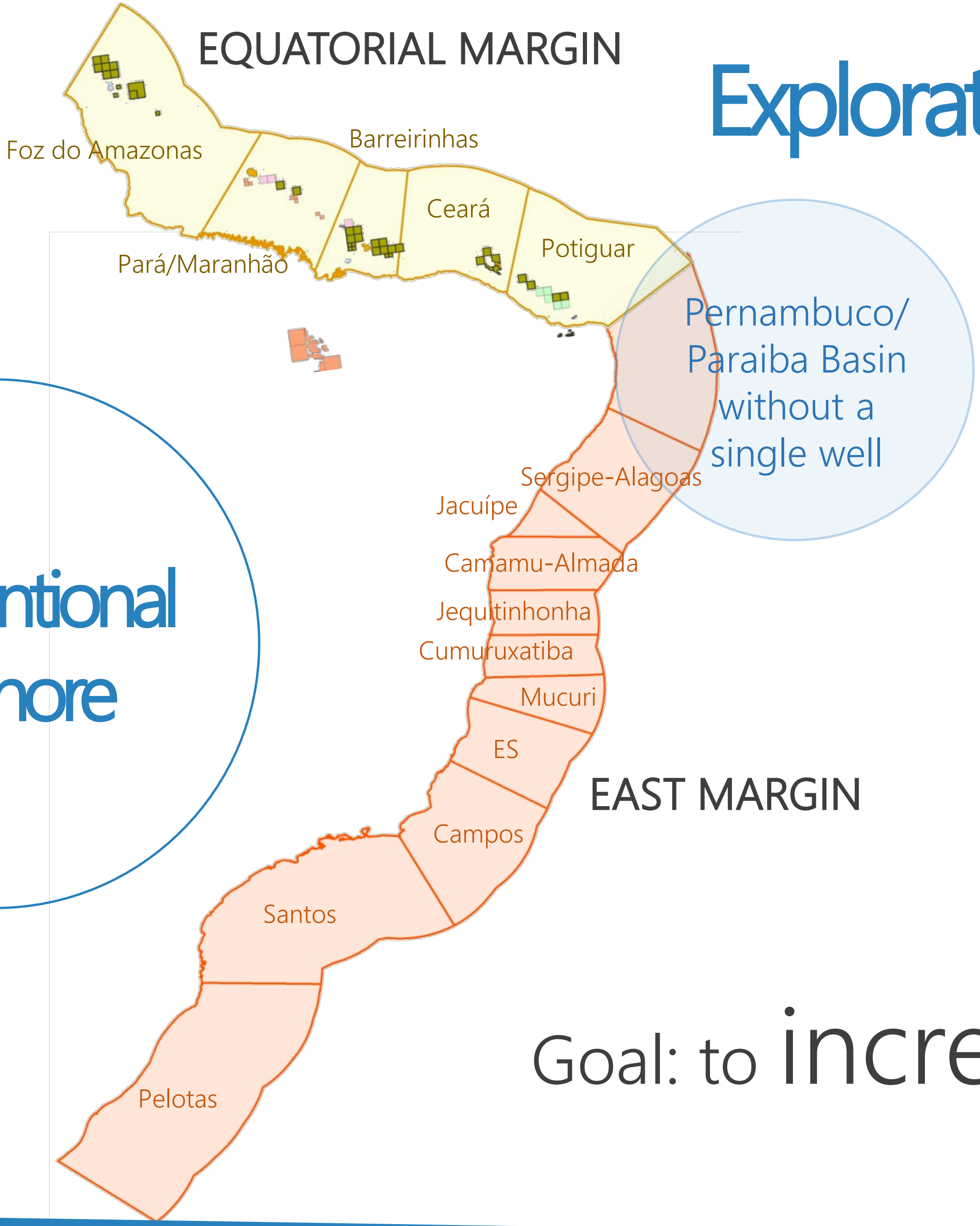
There is potential to contract more than 30 production units in the next ten years

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

# Exploratory perspective




Conventional Offshore

Area: ~ 2.5 million km²

Contracted Area: ~ 0.09 million km²

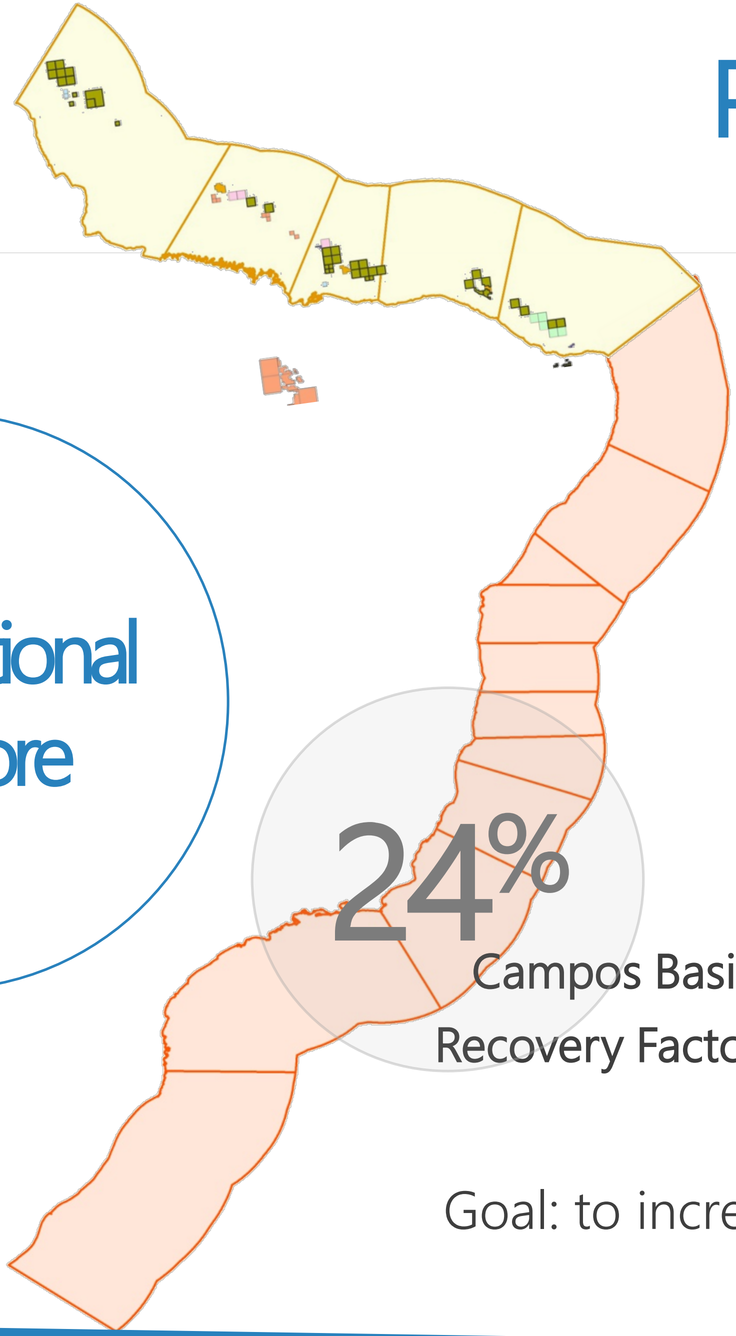
1 New Frontier Basins

2 Exploratory opportunities in Mature Basins

Goal: to increase exploration activities in the East and Equatorial Margins

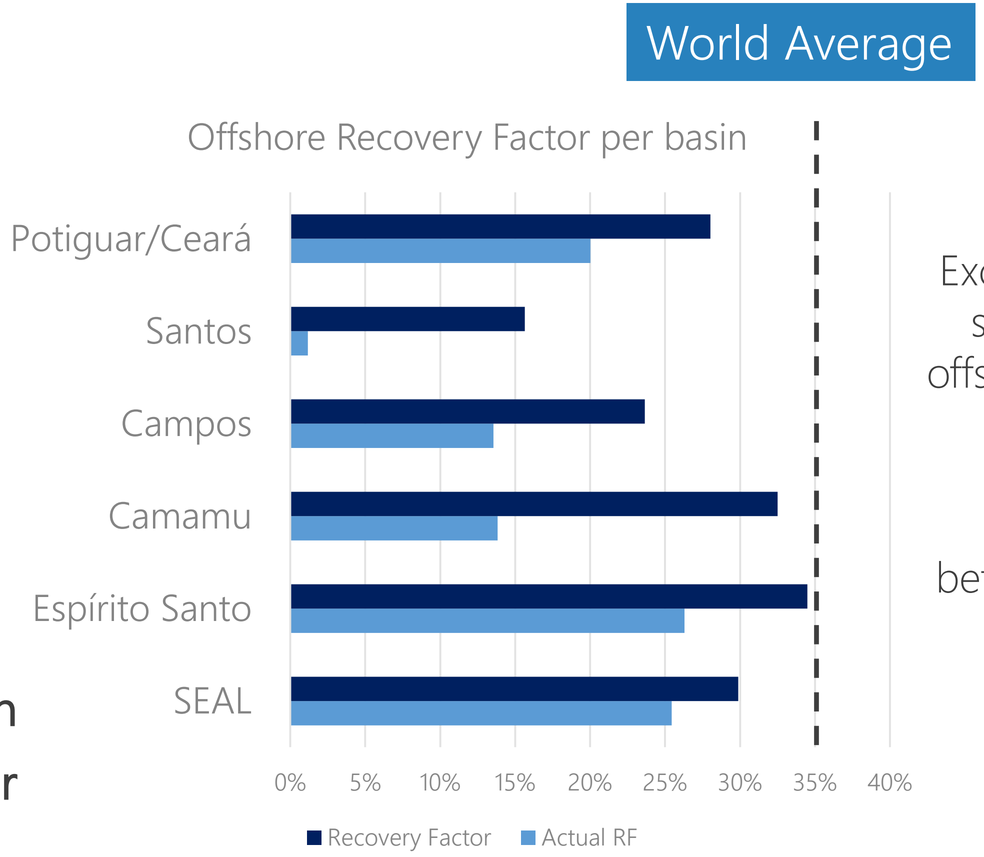
# Production perspective

## Conventional Offshore



24%

Campos Basin Recovery Factor




Excluding the pre-salt region, the offshore production has declined

**30%**

between 2010 and 2017

Goal: to increase the production and the **recovery factor** in the mature basins (specially in the Campos basin)

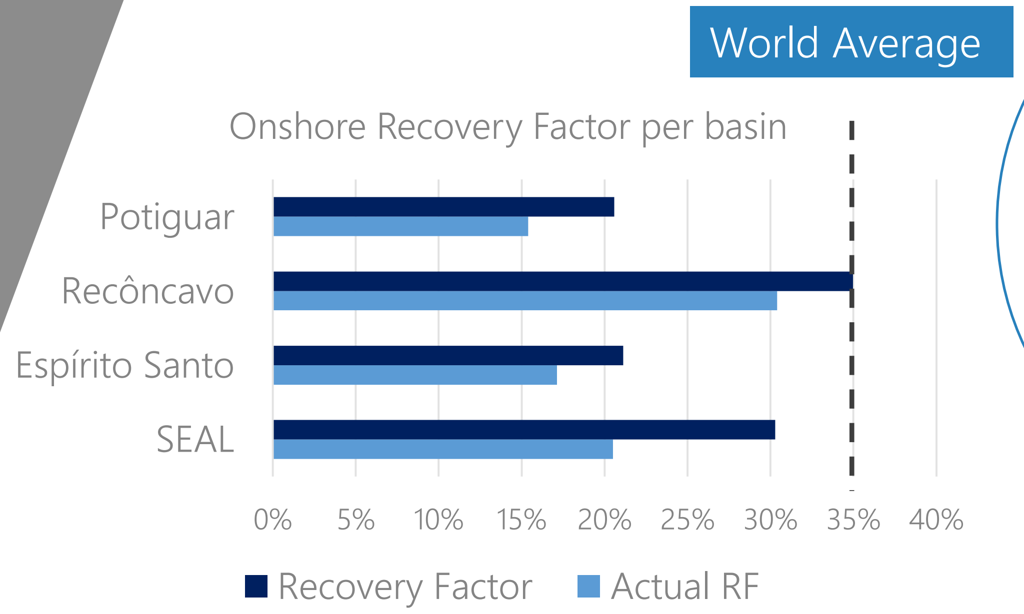
# Mature fields revitalization

312 onshore fields

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

## 2017/2010

- 30% oil production
- 80% number of development wells drilled
- 30% oil reserves




## Onshore

Goal: to revitalize activities in the onshore fields, by attracting **small and medium companies expert in mature fields**

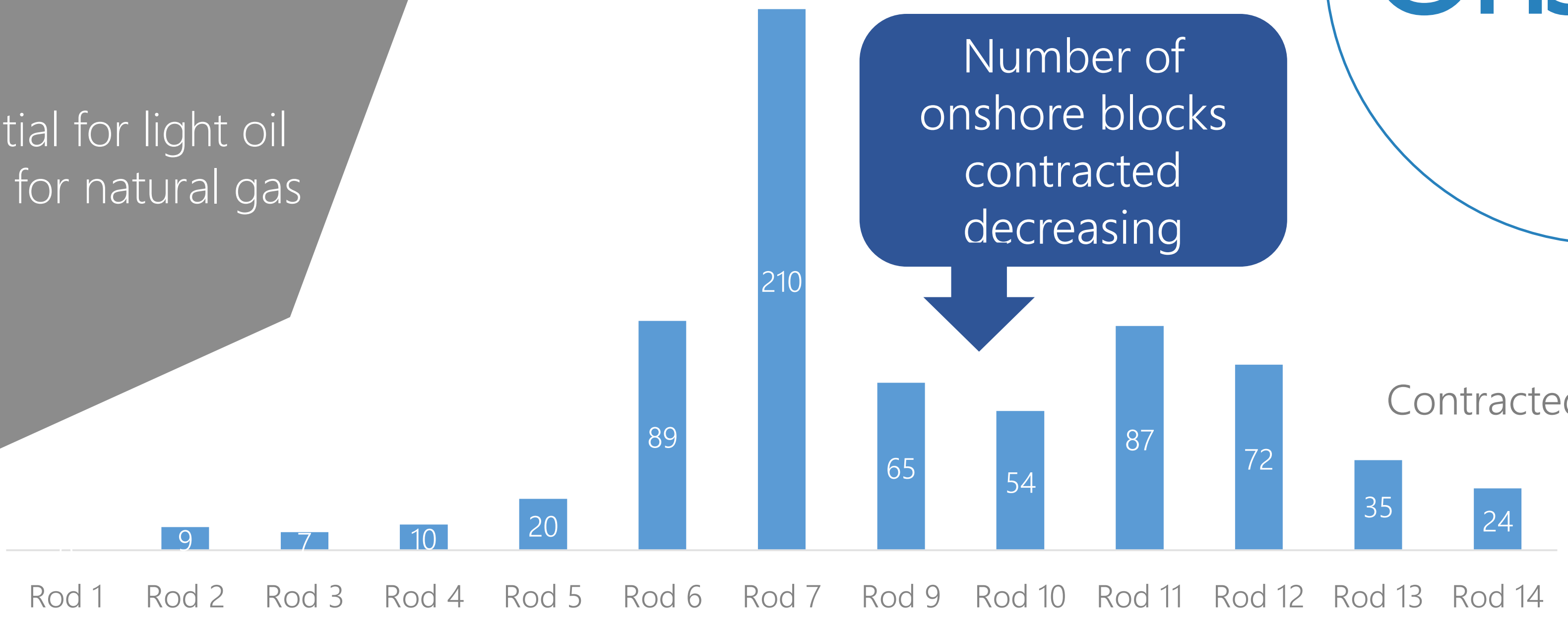
# Exploration in new frontier basins

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

Area: ~ 5 million km²

Contracted Area: 0.17 million km²

Blocks: 194

# Outline

# Main measures to stimulate exploration activities

| | |
|---|---|
| 01 | End of Petrobras sole operatorship in the pre-sal play |
| 02 | Bidding Rounds Calendar |
| 03 | Open Acreage |
| 04 | Extension of exploratory phase (BID 11 and BID 12) |

# Main measures to revitalize mature fields in the short term

Petrobras to speed up divestment plan

RBL (Reserve Based Lending) Regulation

Royalties reduction regulation

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$ **-2,6**Bi

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

2017-2017

R$100Bi annual government revenues in 2030

## Mature fields recovery

1% additional in the recovery factor:

US$18Bi
new investments

US$11Bi
royalties

2,2Bboe
additional reserves

# Outline

# Bidding rounds calendar

2nd, 3rd Pre-salt Round
2017
10.27.17

14th Round
2017
09.27.17

4th Marginal Fields Round
2017
05.11.17

15th Round
2018
(03.29.18)

4th Pre-salt Round
2018
(06.07.18)

Open Acreage
2018

16th Round
5th Pre-Salt Round
2019
3rd Q

2020/2021

2018 | 2 Rounds already approved and scheduled
Open Acreage under development

2019 | Blocks under studies

2020/2021 | Sectors to be defined

# 2017 Bidding rounds results

4ª Rodada
Áreas com Acumulações Marginais

R$ 7.98M
Signature Bonus

3
Basins

6
Companies

8
Fields Sold

Brasil 14ª Rodada
Licitações de Petróleo e Gás

R$ 3.84B
Signature Bonus

10
Basins

17
Companies

37
Blocks

Offshore winners

ExxonMobil
PETROBRAS
queiroz galvão
CNOOC
Karoon
REPSOL
MURPHY OIL CORPORATION

The best results ever – Highest signature bonus

# 2017 Pre-salt bidding rounds results

PRÉ-SAL Brasil 2 & PRÉ-SAL Brasil 3
PARTILHA DA PRODUÇÃO PARTILHA DA PRODUÇÃO

**R$ 6.15B** Signature Bonus

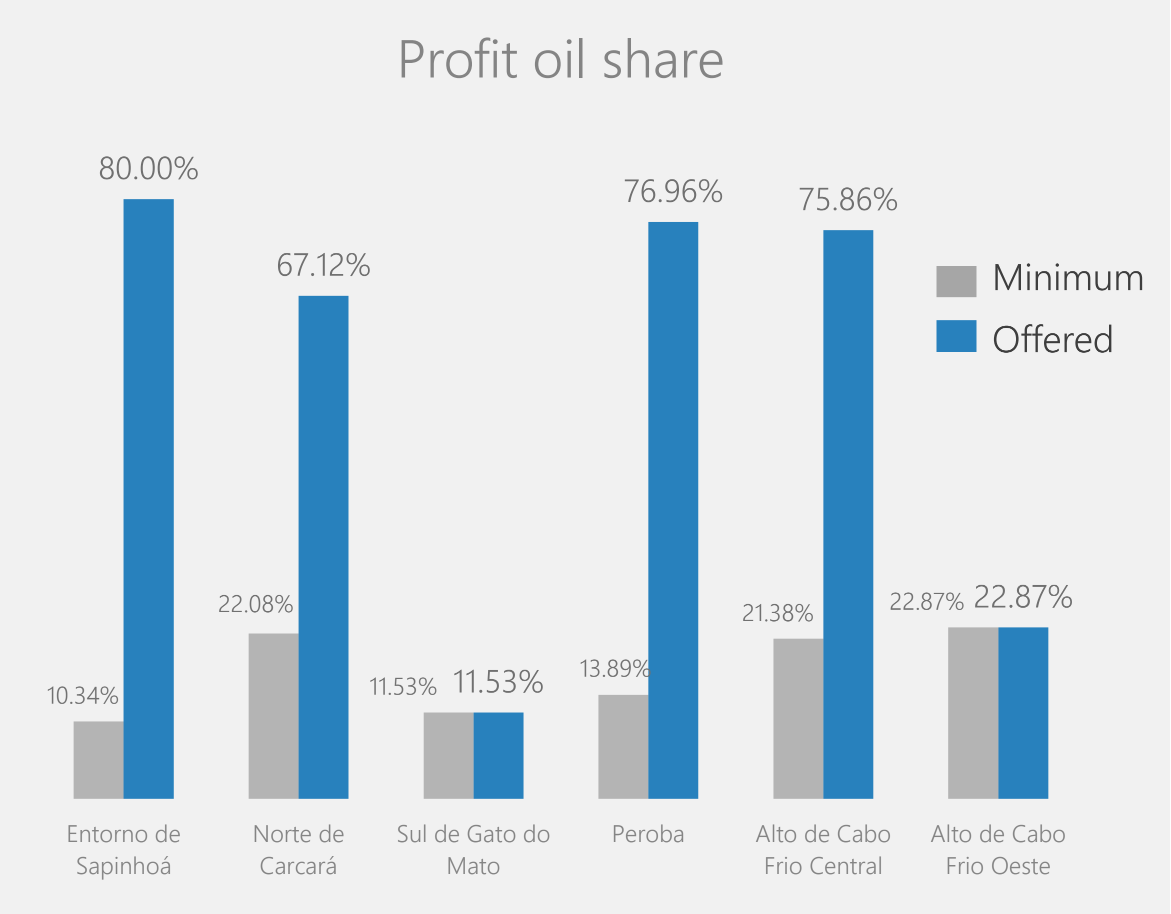
**2** Basins

**11** companies

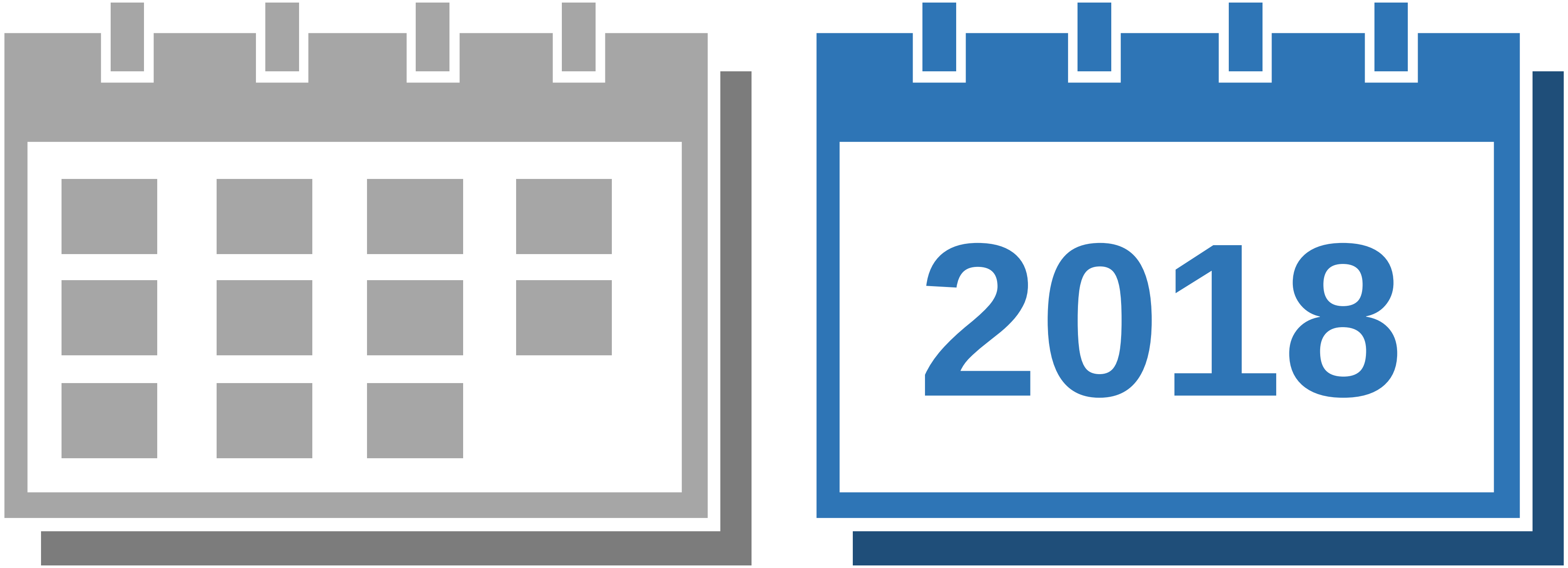
**6** Pre-Salt Blocks

2 new operators in the pre-salt region

Statoil




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


2018

# 15th Bidding round

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

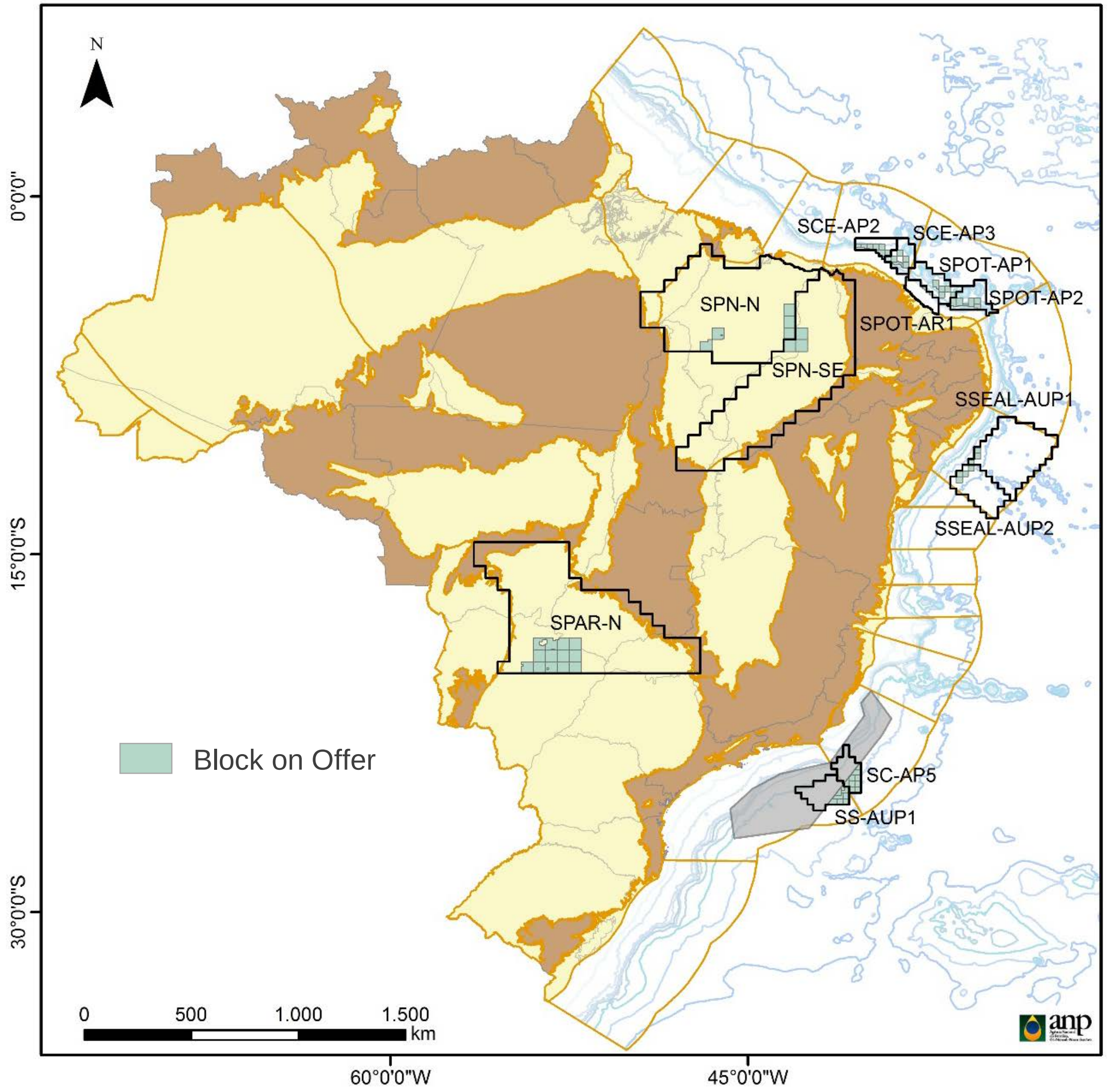
2017
(December)
Technical Seminar
(all interested are invited)

Tender Protocol and Contract Publication
2018
(01.25.18)

2018
(02.05.18)
Deadline for enrolment

Auction day
2018
(03.29.18)

# 15th Bidding round




**70** Blocks

**95,000** Km² Area

**8** Basins

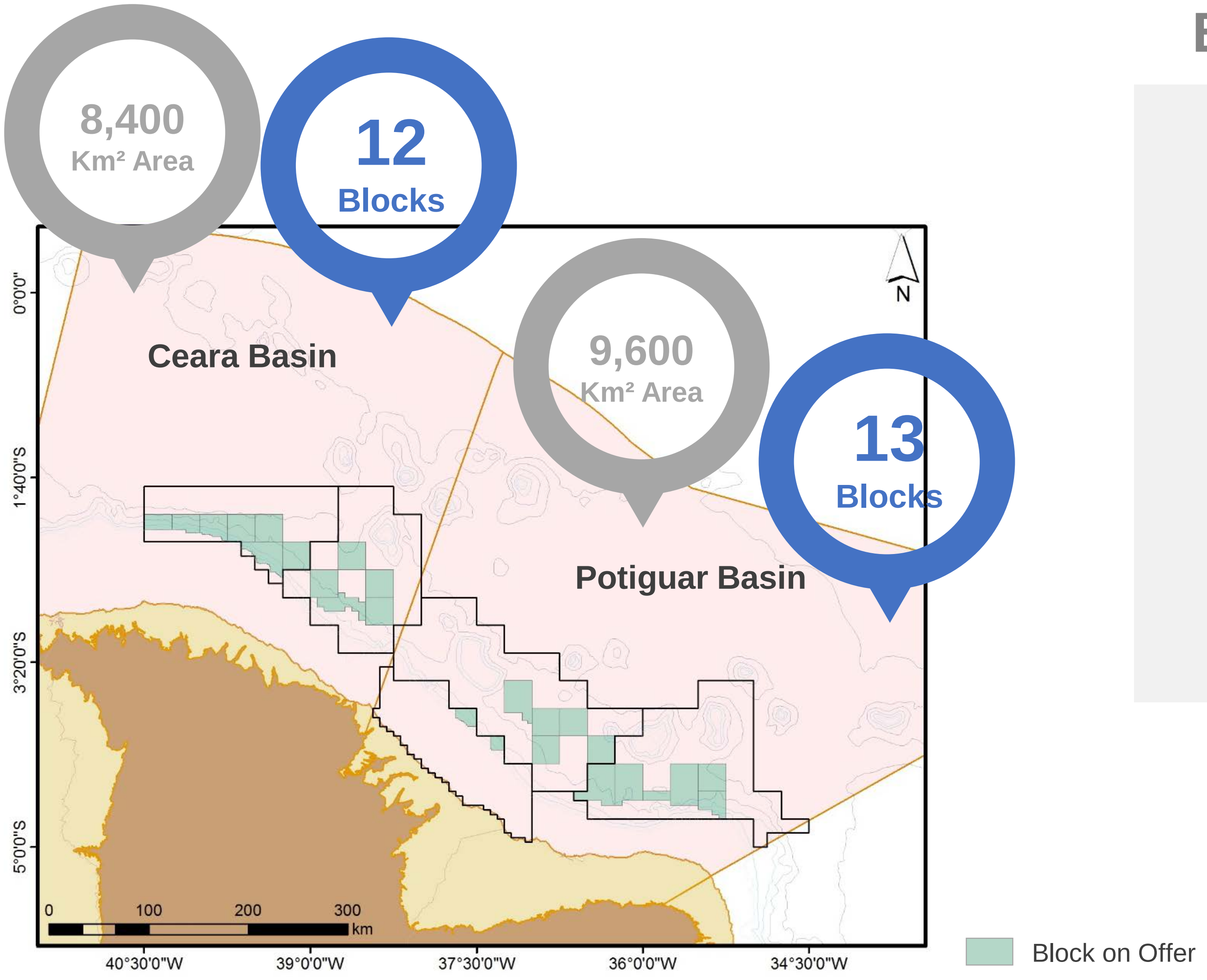
Ceará
Potiguar
Sergipe-Alagoas
Campos
Santos

**Offshore Areas**

Parnaíba
Paraná

**Onshore New Frontier Areas**

# 15th Bidding round




## Brazilian Equatorial Margin

Oil Producing Basins in Shallow Waters
New Frontier Basins

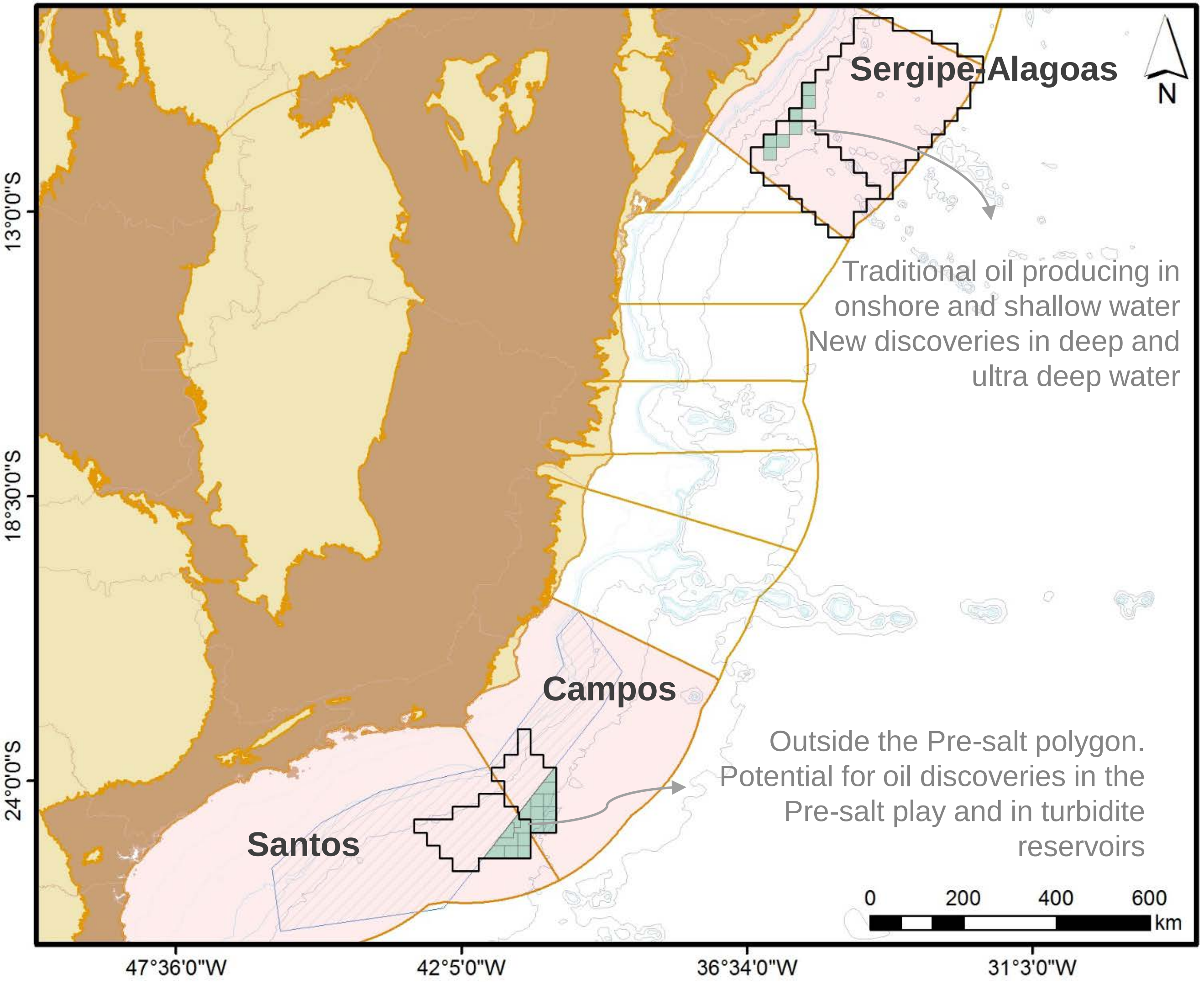
Geological evolution similar to the West African Margin

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

# 15th Bidding round




## East Margin

| 7 Blocks | 9 Blocks | 8 Blocks |
|---|---|---|
| Sergipe-Alagoas | Campos | Santos |

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

2017
(02.01.17)
Public Consultation
(Contract and Tender Protocol)

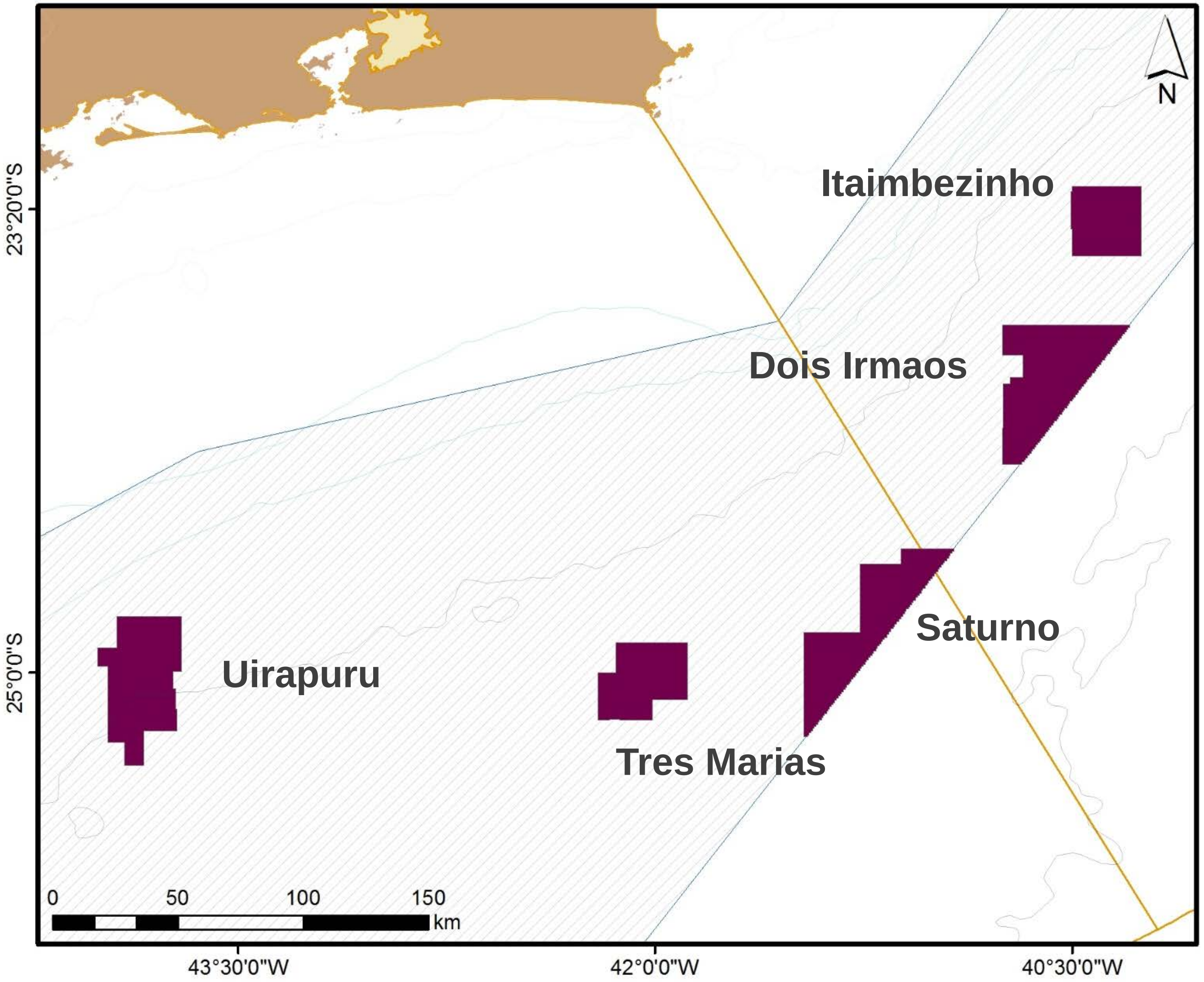
2018
(February)
Technical Seminar
(all interested are invited)

Tender Protocol and Contract Publication
2018
(03.29.18)

2018
(04.13.18)
Deadline for enrolment

Auction day
2018
(06.07.18)

# 4th Pre-salt bidding round




## Pre-Salt Play

**17 Bbbl**

Estimated unrisked oil in place volume

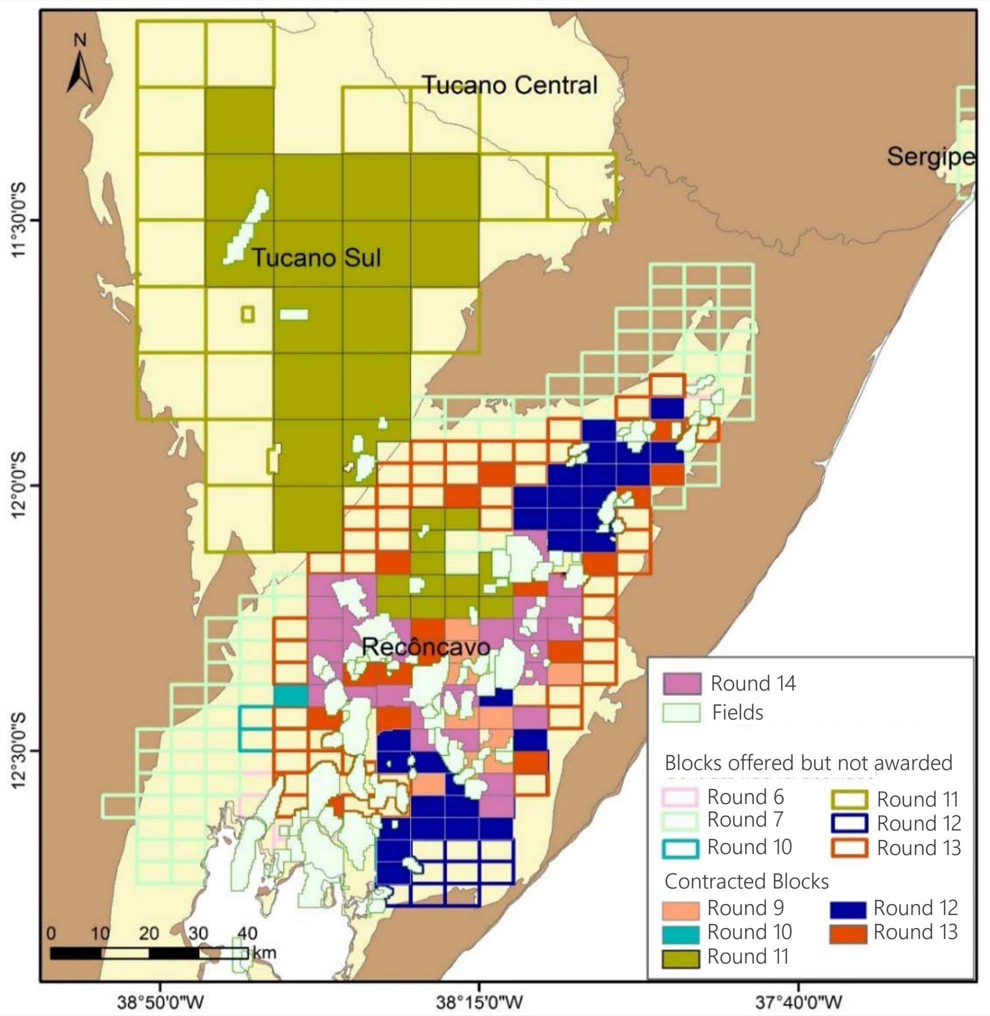
**5 Blocks**

Potential for huge oil discoveries

Lower Risk

# Open acreage

Example: Recôncavo and Tucano Sul basins




Revitalizing onshore activity

Mainly for small and midsize companies

Blocks previously offered, except in the pre-salt polygon

Blocks/Fields relinquished

Areas nomination process under development

First round in 2018

# Outline



anp Agência Nacional do Petróleo, Gás Natural e Biocombustíveis

# E&P sector in Brazil since the 50's

## Exploration and Production

1953

Petrobras

1975

Risk Contracts:
minimal impact

End of monopoly
(Oil Act)
Bidding Rounds
(Concession contracts)

1997

2010

New pre-salt
law
(Petrobras sole
operatorship– PSC)

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

2016

# O&G scenario in 2017

Unique E&P opportunity:
- 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

**Diverse and Competitive Market**

- Bidding round schedule and open acreage (Brasil-Rounds — Oil & Gas Bidding Rounds)
- Need of renovated service and supply chain sectors
- Petrobras divestment plan
- Improvements in the energy policy

The greatest transformation in the Brazilian E&P sector, completing the opening started in 1997

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