

# The Oil and Gas Industry in Brazil - R, D & I Perspective -

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



# Agenda

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- 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** USD  
Trillion

GDP (2018)

**13%** Oil and Gas Industry



**9th**

largest oil producer, the largest of Latin America



**7th**

largest oil products consumer

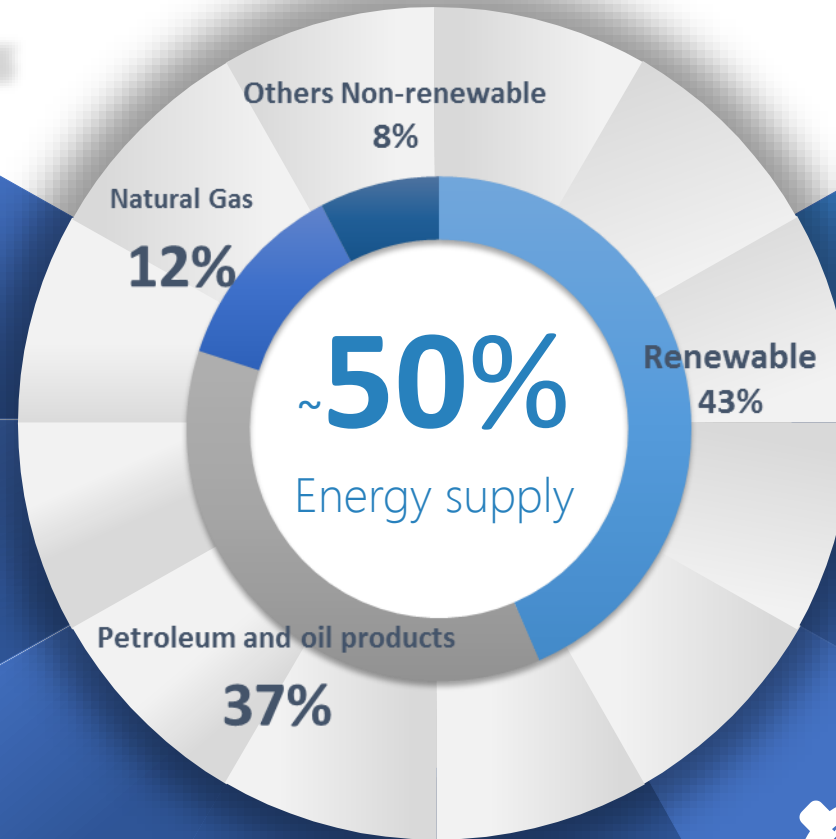


**7th**

Largest FDI destination

**9th**

Largest economy \$



**~ 210**

million

Population (2018)

**5th**

Largest country  
(8.5 million km<sup>2</sup>)



# Brazilian Proven Reserves



**15 Billion**  
boe

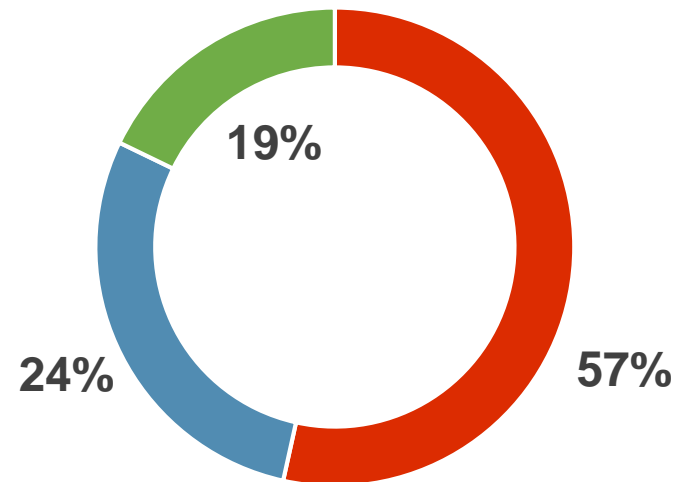
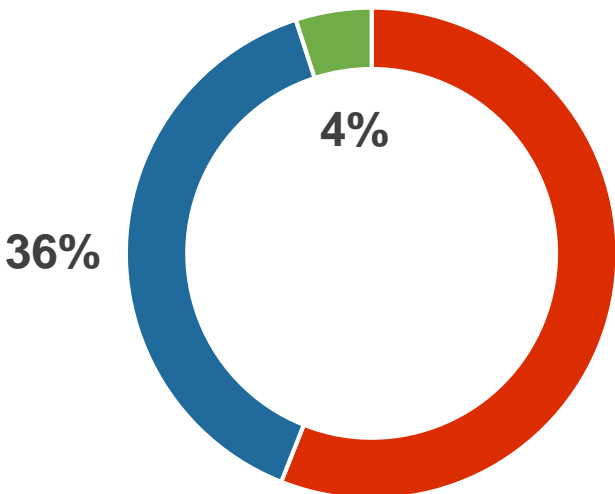
Oil  
**13.2**  
Billion bbl

Gas  
**369**  
Billion m<sup>3</sup>

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

### Oil Proven Reserves

### Gas Proven Reserves



■ Pre-Salt   ■ Conventional Offshore   ■ Onshore



# 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)

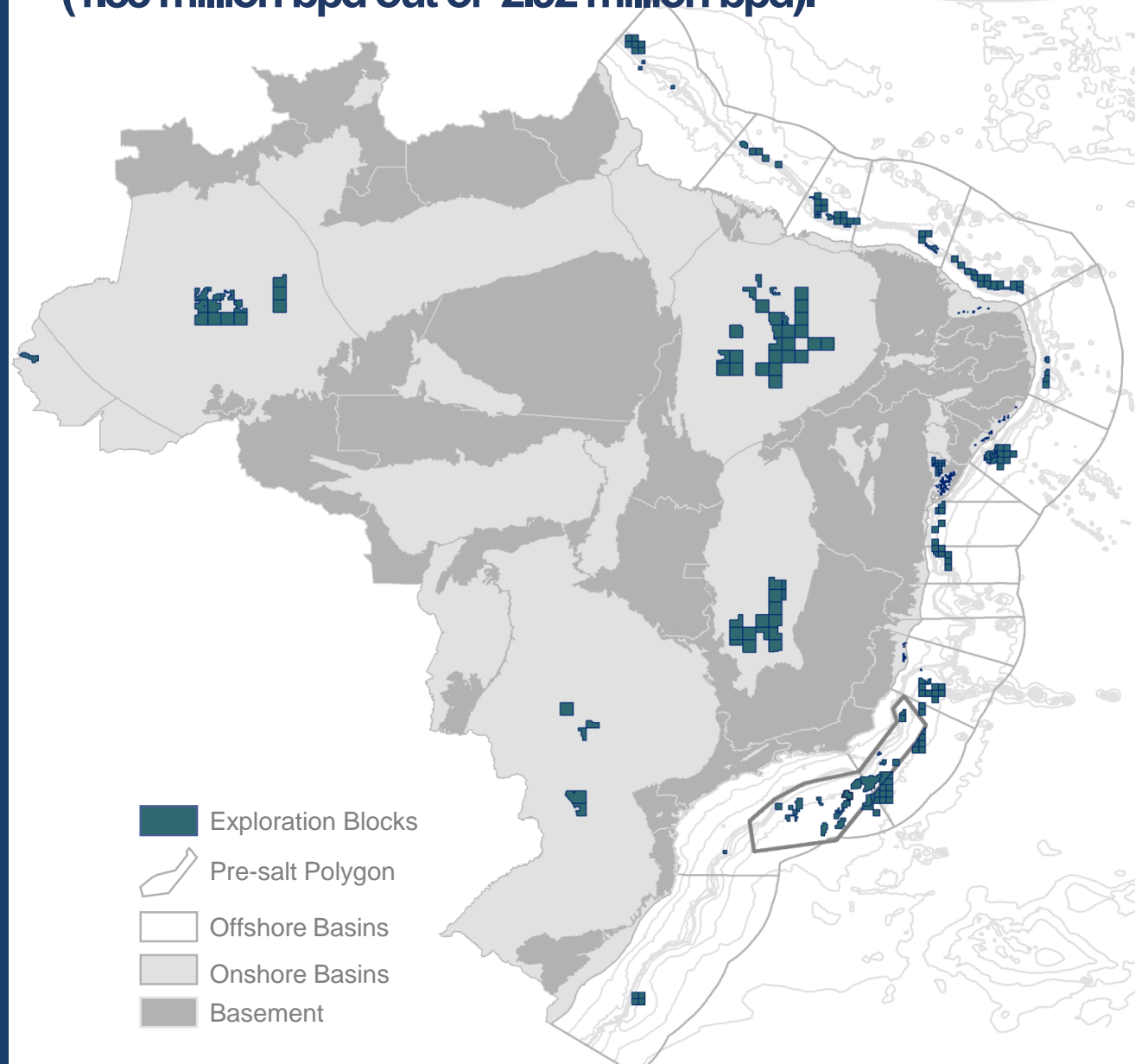


Only ~ **30,000** wells were drilled in Brazil YTD

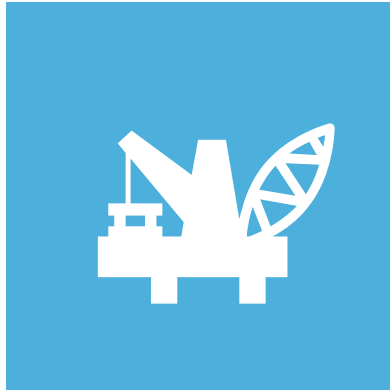
❖ **60,000** in Argentina

❖ **4 million** in USA

Pre-Salt Production accounts for over 62% of Total Production (1.83 million bpd out of 2.92 million bpd).

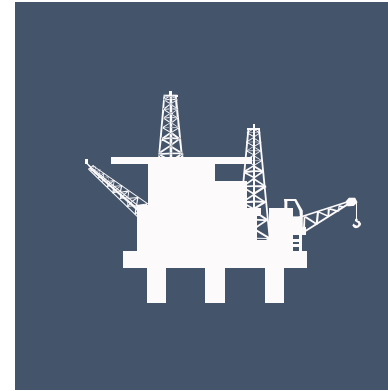


# E&P Strategic Initiatives - Maximizing Oil & Gas Production



**Accelerate the Pre-Salt Development**

**Pre-Salt**



**Improve Recovery Factor in Mature Fields & Advance to New Frontiers**

**Conventional Offshore**



**Unlock the Conventional/Unconventional Oil & Gas Potential**

**Onshore**



**Improve Environmental Permit & Emergency Response Processes**

**Environment**



# Improvements in E&P Regulations





# 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 – 1<sup>st</sup> Bidding Round**

**R,D&I New Regulation**

**Decommissioning New Regulation under public consultation and public hearing**



**Bidding Rounds (2017-2021)**



# 2017-2018 Rounds: Diversified & Intense Competition



Bidding Round	Acquired Blocks	Signing Bonus (USD billion)	Registered Companies	Winner Companies	Premium
Brasil 14 <sup>th</sup> Round Oil & Gas Bidding Rounds	<b>37</b> (24 onshore and 13 offshore)	<b>1.035</b>	<b>32</b>	<b>17</b>	<b>1,556%</b>
PRE-SALT Brazil 2 PRODUCTION SHARE	<b>3</b>	<b>0.889</b>	<b>10</b>	<b>7</b>	<b>261%</b>
PRE-SALT Brazil 3 PRODUCTION SHARE	<b>3</b>	<b>0.768</b>	<b>14</b>	<b>6</b>	<b>202%</b>
PRE-SALT Brazil 4 PRODUCTION SHARE	<b>3</b>	<b>0.849</b>	<b>16</b>	<b>7</b>	<b>202%</b>
ROUND Brazil 15 OIL AND GAS CONCESSIONS	<b>22</b>	<b>2.159</b>	<b>17</b>	<b>12</b>	<b>622%</b>
PRÉ-SAL Brasil 5 PARTILHA DA PRODUÇÃO	<b>4</b>	<b>1.838</b>	<b>12</b>	<b>8</b>	<b>170%</b>
<b>Total</b>	<b>72</b>	<b>7.5</b> R\$/US\$ = 3.71	<b>Significant Increase in Premiums</b>		



# 2019 – YTD



Bidding Round	Acquired Blocks	Signing Bonus (US\$ billion)	Registered Companies	Winner Companies	Premium
 OPEN ACREAGE Brazil <small>OIL AND GAS CONCESSIONS</small>	<b>33</b> (+ 12 marginal fields)	<b>0.601</b>	<b>47</b>	<b>14</b>	<b>61,48%</b> (2.221,78% marginal fields)
 ROUND 16 Brazil <small>OIL AND GAS CONCESSIONS</small>	<b>12</b>	<b>2.403</b>	<b>17</b>	<b>10</b>	<b>322%</b>
 TRANSFER OF RIGHTS SURPLUS Brazil <small>PRODUCTION SHARE</small>	<b>02</b>	<b>18.857</b>	<b>14</b>	<b>03</b>	<b>NA</b>
 PRE-SALT 6 Brazil <small>PRODUCTION SHARE</small>	<b>01</b>	<b>1.347</b>	<b>17</b>	<b>02</b>	<b>NA</b>
<b>Total</b>	<b>48</b>	<b>22.6</b>			<b>R\$/US\$ = 3.71</b>

# Pre-Salt Exploration has Dramatically Increased!



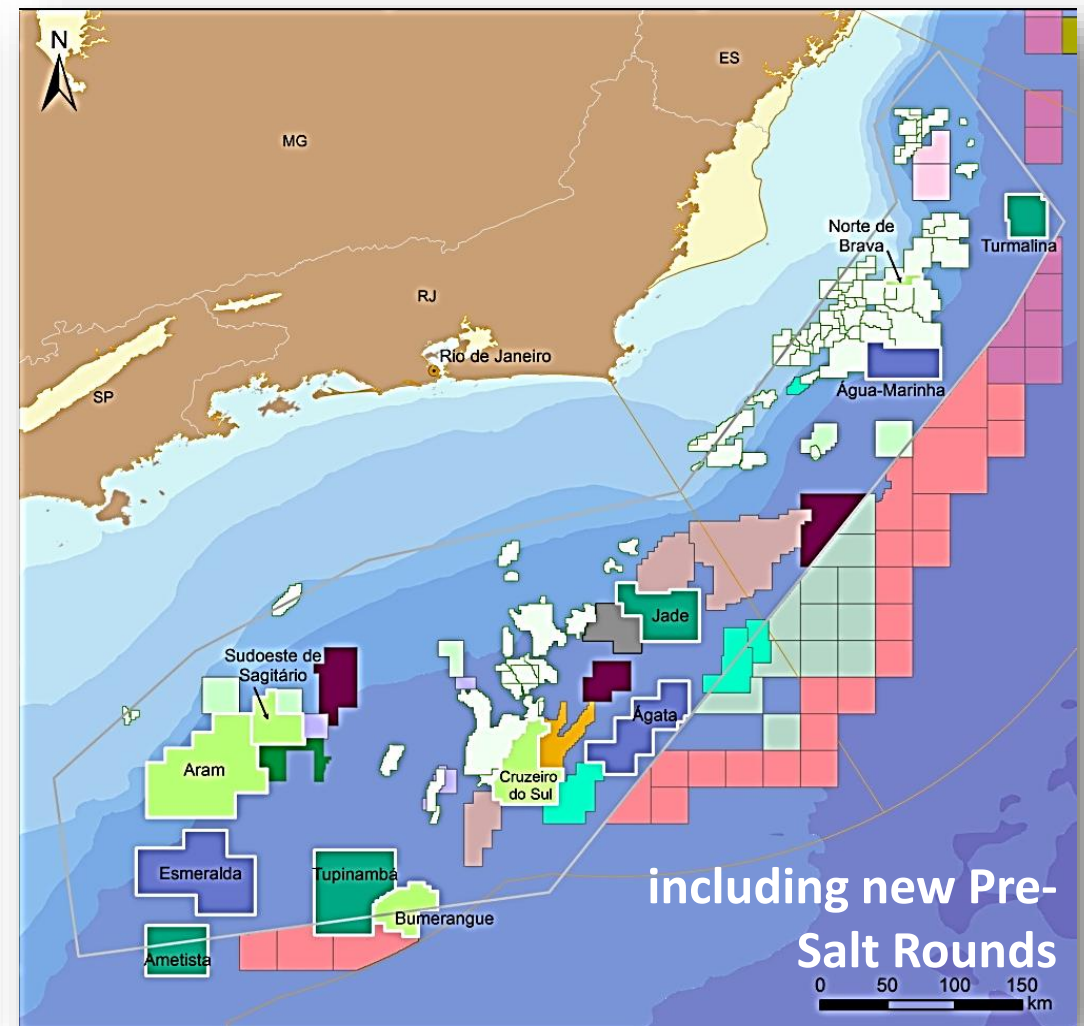
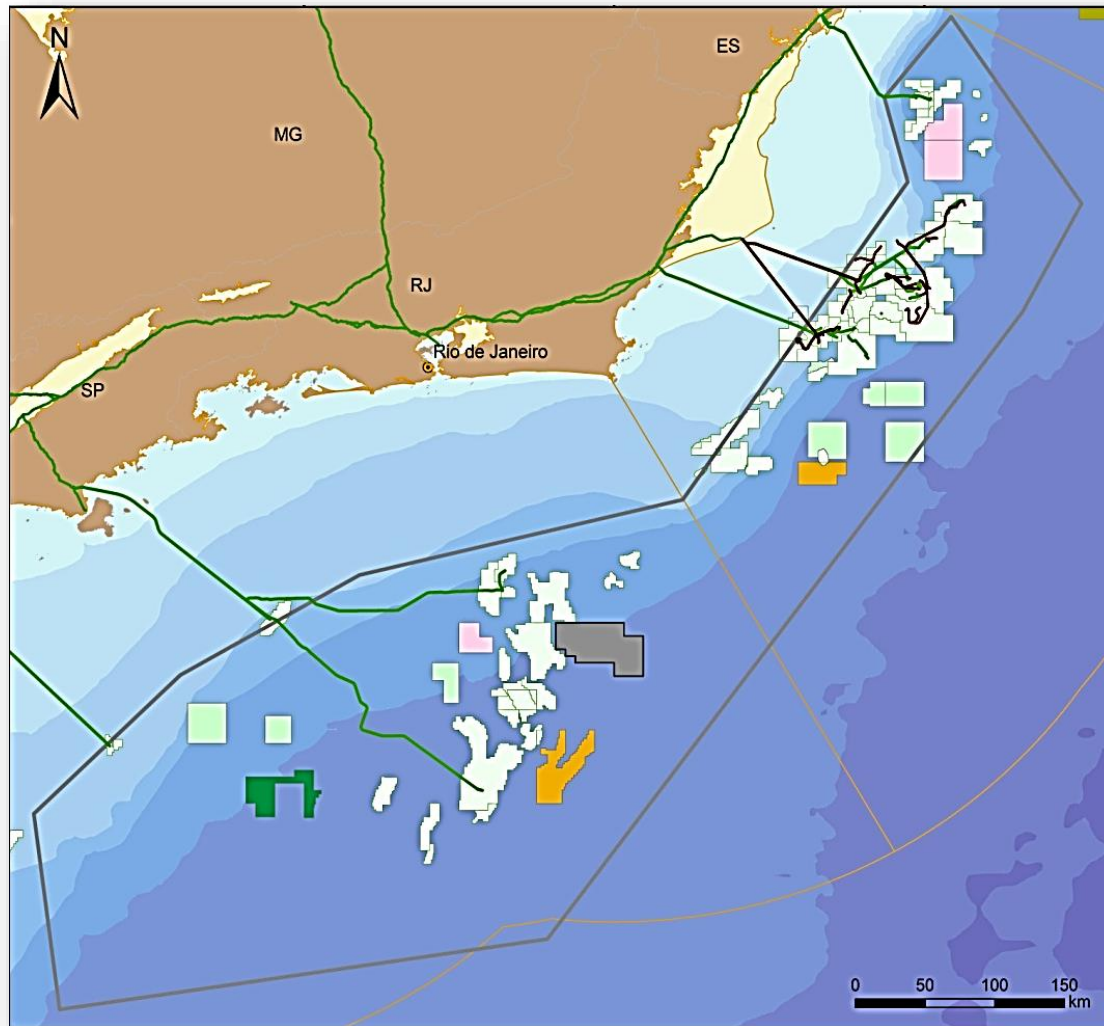
Before 2017

2019

PRE-SALT  
Brazil 6  
PRODUCTION SHARE

PRE-SALT  
Brazil 7  
PRODUCTION SHARE

PRE-SALT  
Brazil 8  
PRODUCTION SHARE





# Expected Impact from Recent Bidding Rounds...10 yrs+

2017 - 2019



Brasil  
14<sup>th</sup> Round  
Oil & Gas Bidding Rounds

ROUND  
Brazil 15  
OIL AND GAS CONCESSIONS

PRE-SALT  
Brazil 2  
PRODUCTION SHARE

PRE-SALT  
Brazil 3  
PRODUCTION SHARE

PRE-SALT  
Brazil 4  
PRODUCTION SHARE

PRÉ-SAL  
Brasil 5  
PARTILHA DA PRODUÇÃO

ROUND  
Brazil 16  
OIL AND GAS CONCESSIONS

TRANSFER OF  
RIGHTS SURPLUS  
Brazil  
PRODUCTION SHARE

PRE-SALT  
Brazil 6  
PRODUCTION SHARE

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**



100% Adobe After Effects, No 3rd Party Plugins

jan-hamernik.com AAE HUD Factory

## Research Institutions

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

*Critical role in Human Resources Development and Knowledge Sharing*

## Companies

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

**Foster Greater Collaboration**



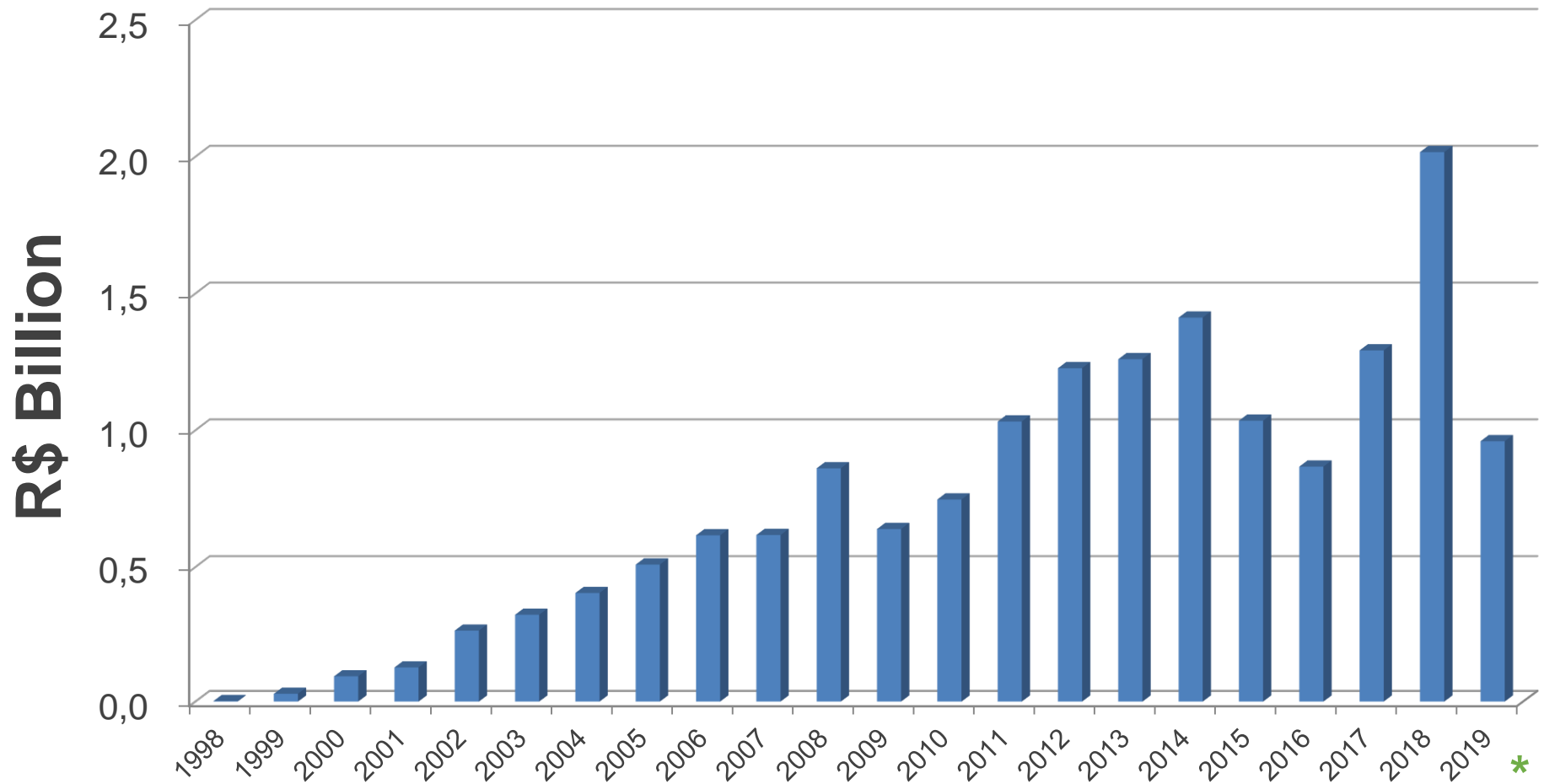
# ANP Proposed Principles to New R, D & I Regulation

- ❑ 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)



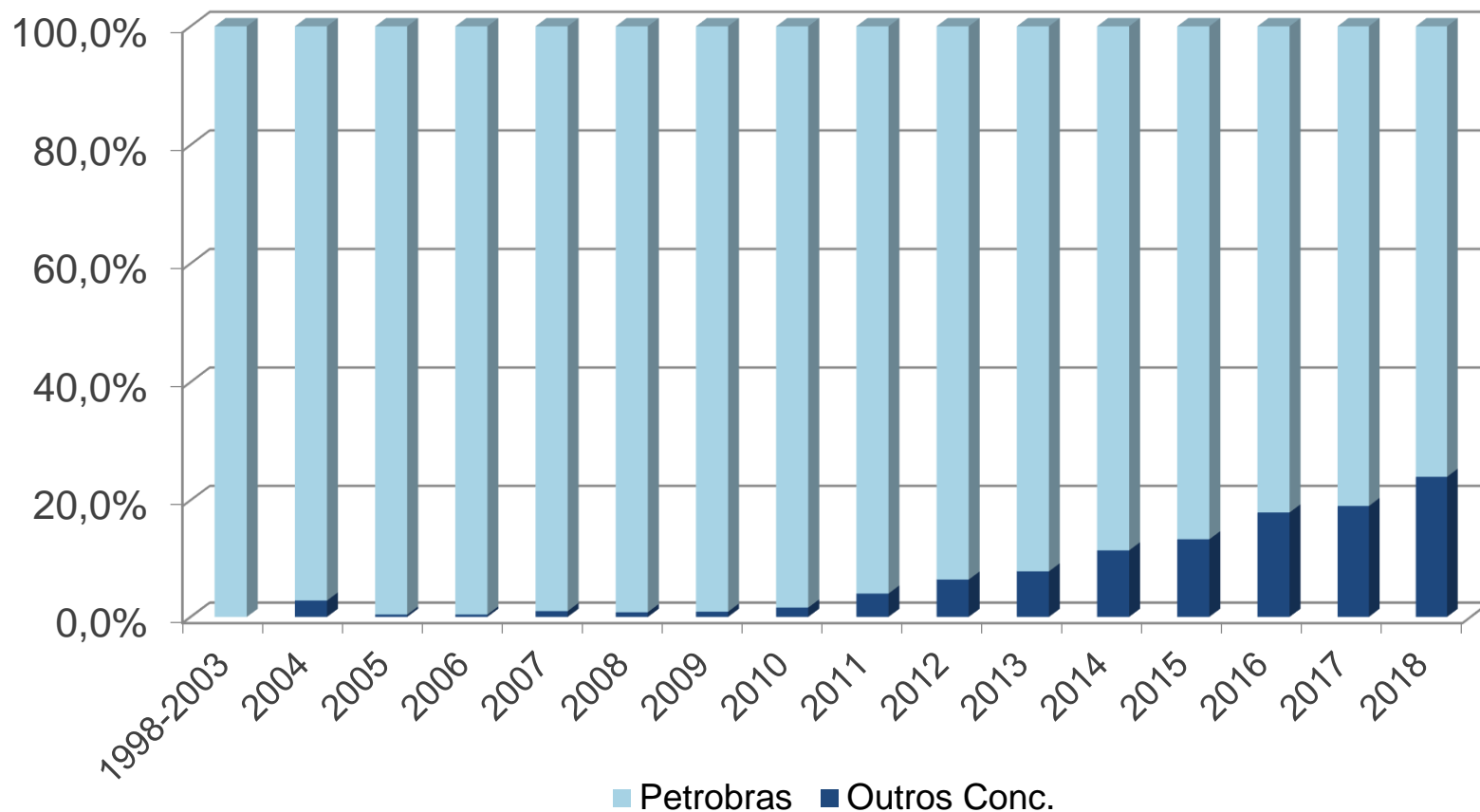
~ R\$ **16,3** Billion  
 (~ US\$ 4 billion)  
 in 20 years

(\*) 1<sup>st</sup> halfyear



# 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%**

# Final Remarks



# Bidding Rounds Schedule

OPEN  
ACREAGE  
Brazil  
OIL AND GAS CONCESSIONS

1<sup>st</sup> Wave

November

2018

OPEN  
ACREAGE  
Brazil  
OIL AND GAS CONCESSIONS

2<sup>nd</sup> Wave

2<sup>nd</sup> Semester

2019

ROUND  
Brazil 16  
OIL AND GAS CONCESSIONS

PRE-SALT  
Brazil 6  
PRODUCTION SHARE

3<sup>rd</sup> Quarter

2020

PRE-SALT  
Brazil 7  
PRODUCTION SHARE

ROUND  
Brazil 17  
OIL AND GAS CONCESSIONS

To be  
defined

2021

PRE-SALT  
Brazil 8  
PRODUCTION SHARE

ROUND  
Brazil 18  
OIL AND GAS CONCESSIONS

To be  
defined

TRANSFER OF  
RIGHTS SURPLUS  
Brazil  
PRODUCTION SHARE



# Next Pre-Salt Licensing Rounds



**2020**

Esmeralda

Agata

Água Marinha

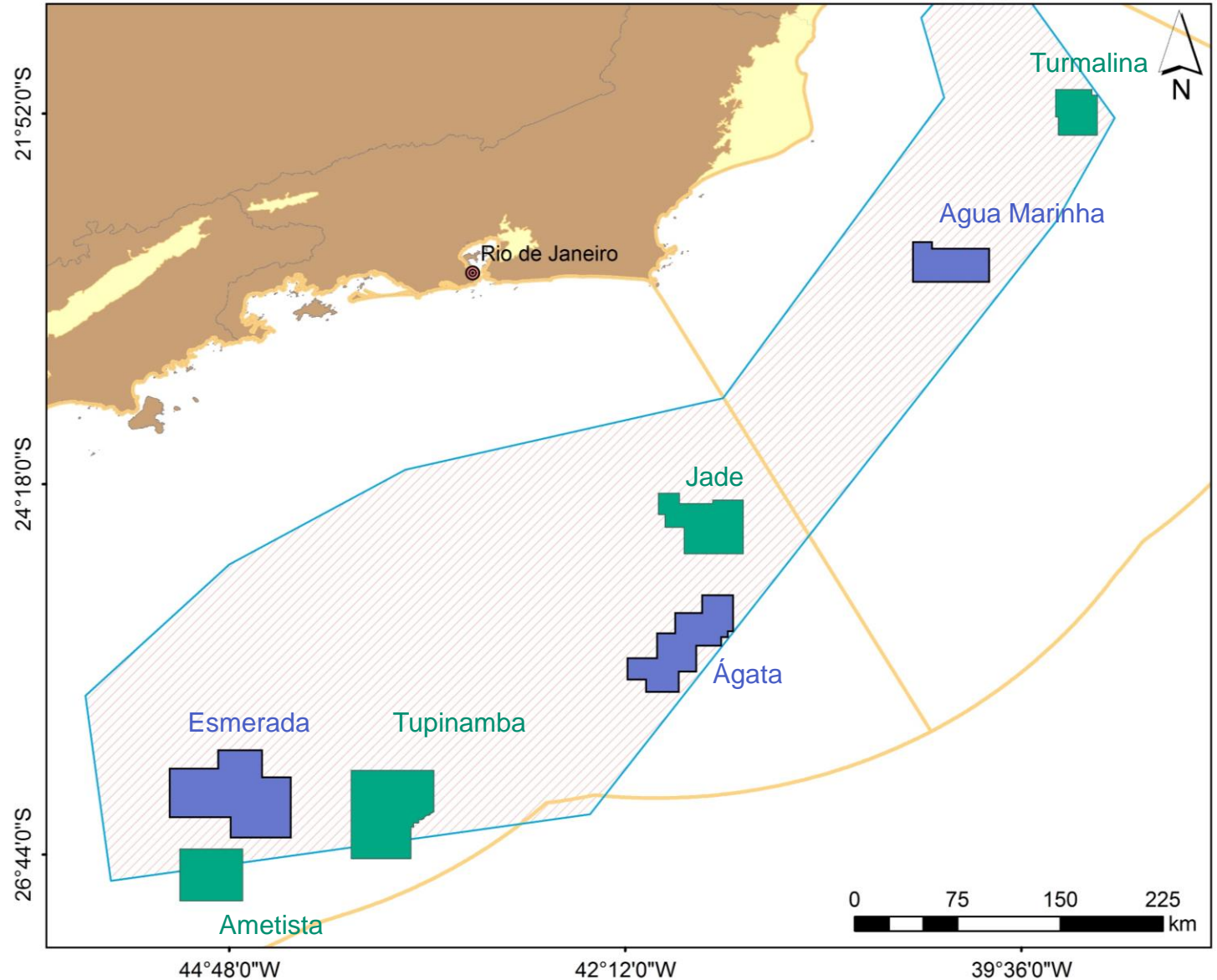
**2021**

Amethysta

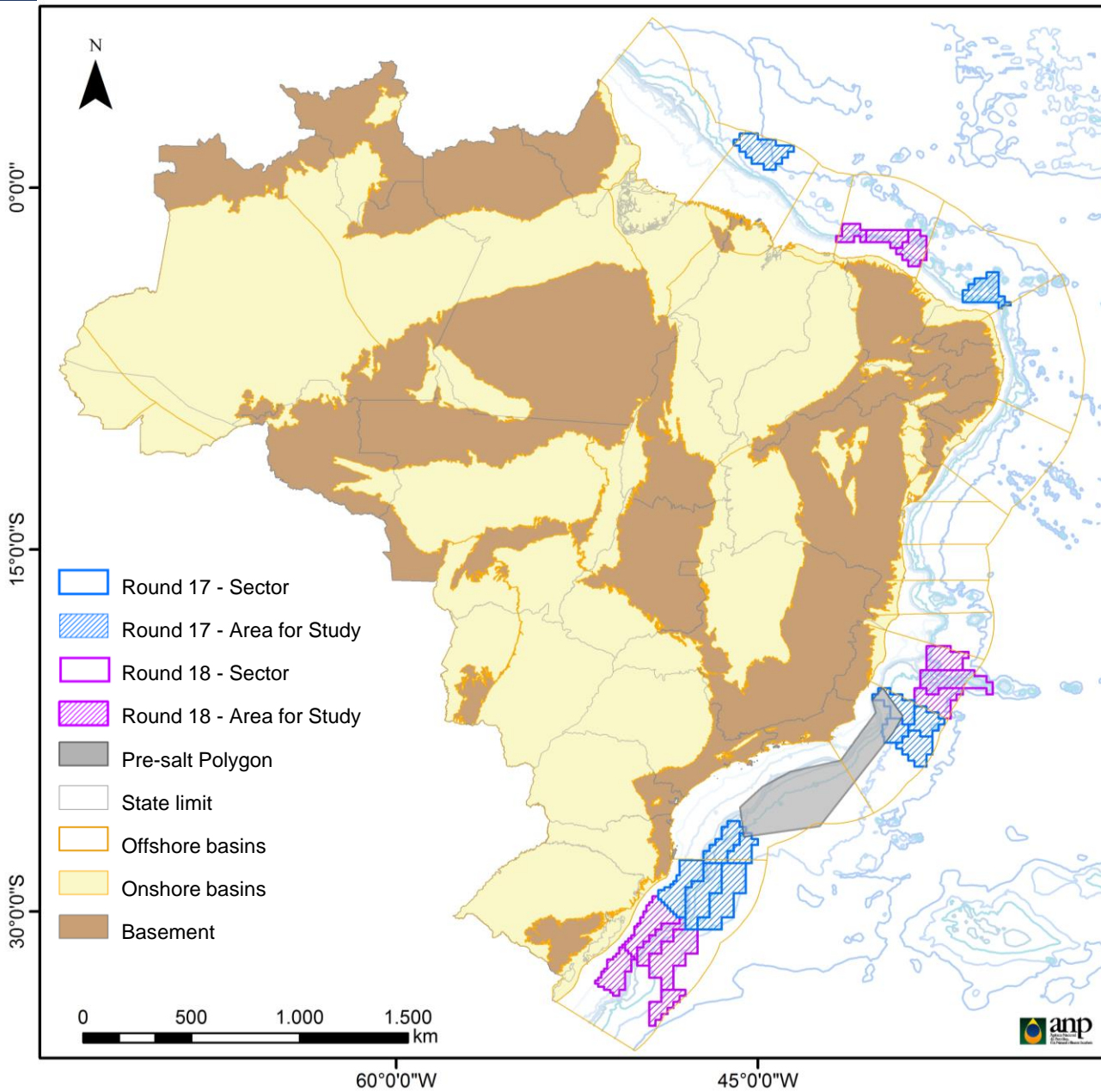
Tupinamba

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



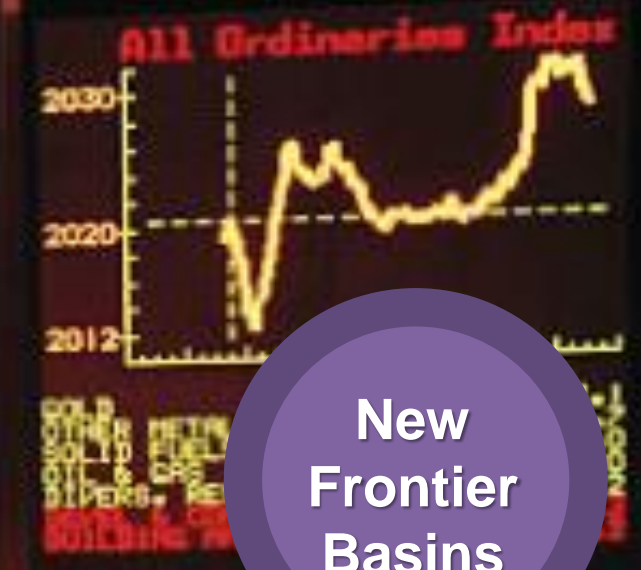
# Brazil E&P Potential

7.5  
M bpd

>50  
New  
FPSOs

Mature  
Fields/  
Basins

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



*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

## **Maximize Production**

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

***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

## **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”*

Ranking	2011	2019	...Future ?
1	<b>ExxonMobil</b> \$ 406 bi	\$ 1.1 Tri	
2	\$ 376 bi	<b>Microsoft</b> \$ 1.1 Tri	
3	<b>PetroChina</b> 277 bi \$	<b>Alphabet</b> \$896 bi	
4	237 bi \$	<b>amazon</b> \$ 879 bi	
5	<b>ICBC</b> \$ 228 bi	\$ 539 bi	



Market Cap in USD



# Brazilian National Agency of Petroleum, Natural Gas and Biofuels

## ANP

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### **Additional Information**

<http://rodadas.anp.gov.br/en/>

[www.anp.gov.br](http://www.anp.gov.br)