

# Unraveling the Strategies for the Brazilian Oil & Gas Industry and the Pathway for Energy Transition post COVID-19

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Director

Zoom Session  
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# Agenda

- Covid-19: Impact on Oil & Gas Industry
- Brazil Oil & Gas E&P Overview
- Next Brazilian Bid Rounds
- Energy Transition: New Gas Market
- Midstream and Downstream Sectors
- Final Remarks

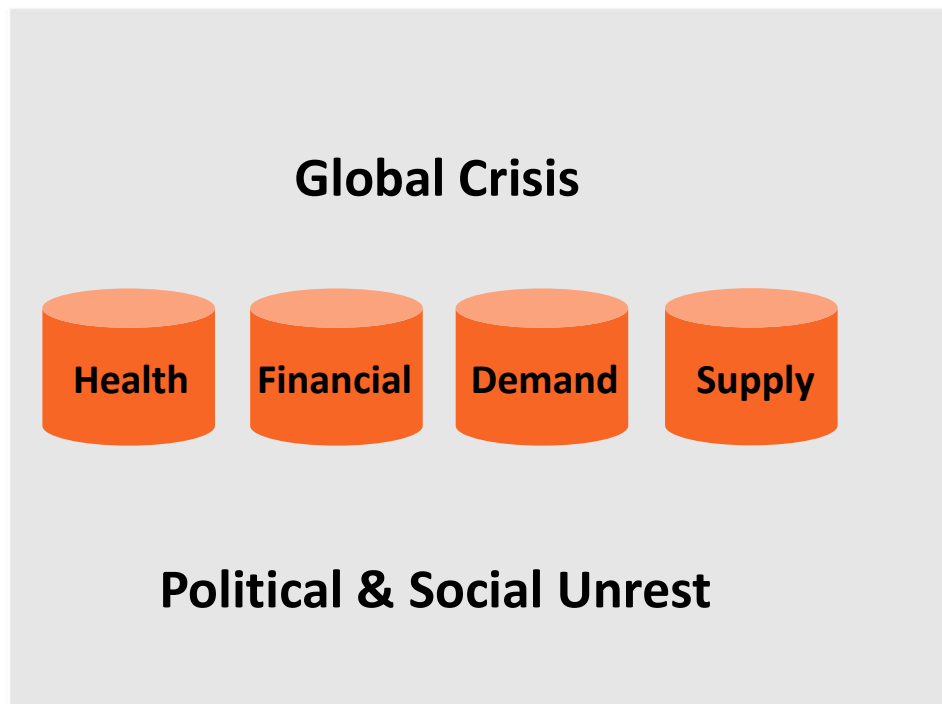


# Covid-19 Impact on Oil & Gas Industry





## Why is this “the mother of all crises”? **Global & Systemic**



- Containment Fails, Testing, Treatment, Vaccine and other problems
- Investors Panic, Forward-Looking, Asset Prices and Commodities Collapse, Capital Outflows
- Demand Crisis as Uncertainty Rises, Wealth Shock, Income Shock, Negative Expectations Future
- Supply Shock: Labor (Lockdowns) and Supply Chain Disruptions

The background features a dark blue field with glowing, interconnected molecular or network structures in red, orange, and yellow. A semi-transparent red banner is positioned horizontally across the middle of the image.

# The Length of the Crisis



# How long **will this last?**

The longer it takes, **the more likely we will Experience a Permanent Loss** in output

- Firm-employee connections are **Permanently Broken**
- Supply Chains **are Disrupted**
- Some Unemployed Pull **Out of the Labor Force** (discouraged, cannot invest in new skills)
- **Global Trade** / Industries Collapse

...Therefore a Quick, Coordinated Policy **Reaction is Needed**

HBS, 2020

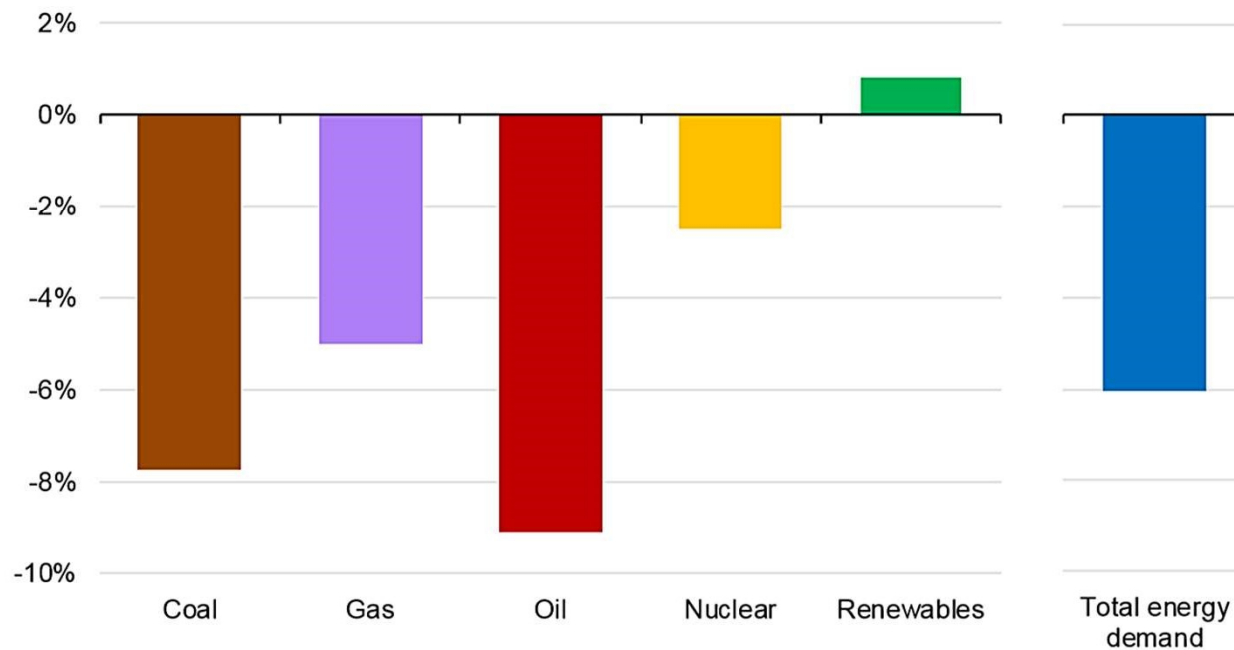
# The COVID-19 is Even More Difficult in Emerging

**“The IMF has projected that 170 countries will experience lower per capita income this year, after predicting that 160 would grow”**

- **Commodity Prices:** Prices of oil, gas and metals have collapsed, badly hurting many emerging markets.
- **Global Trade:** For emerging markets that rely on export-led growth, plummeting trade is disastrous. The WTO forecast trade will fall this year by 13%-32% (1930s figures).
- **Weakened Currencies:** Investors' race to safety has propelled the US Dollar to new heights and has caused emerging markets currencies to suffer extreme depreciation. ( ~25%)
- **Financial Markets Dislocations:** Equities have plummeted, and bond market yields have doubled



## Projected Change in Primary Energy Demand by Fuel in 2020 Relative to 2019

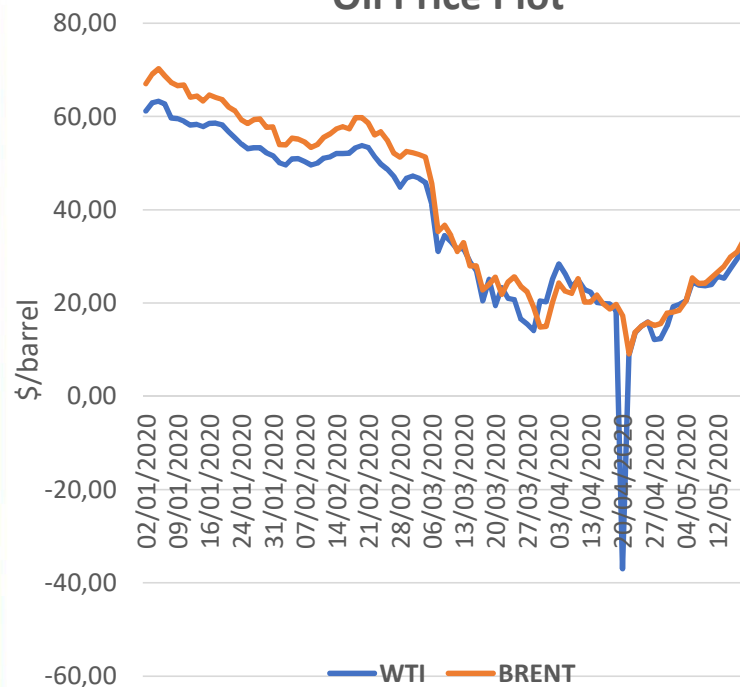


Oil demand could drop by 9%, or 9 mb/d on average across the year, returning oil consumption to 2012 levels

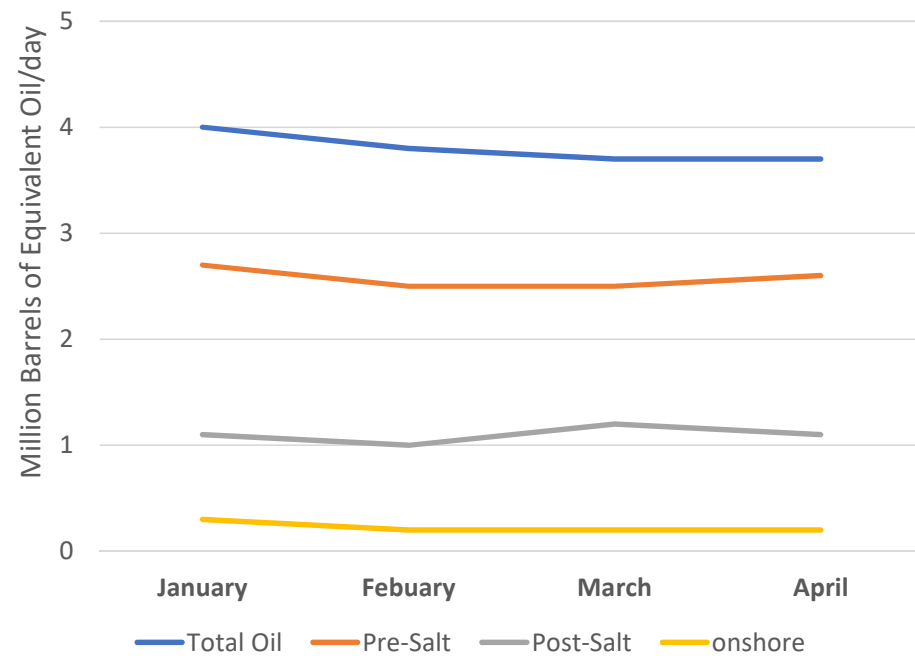
IEA, 2020

# COVID-19 Impact on Brazilian Oil Production

## Oil Price Plot



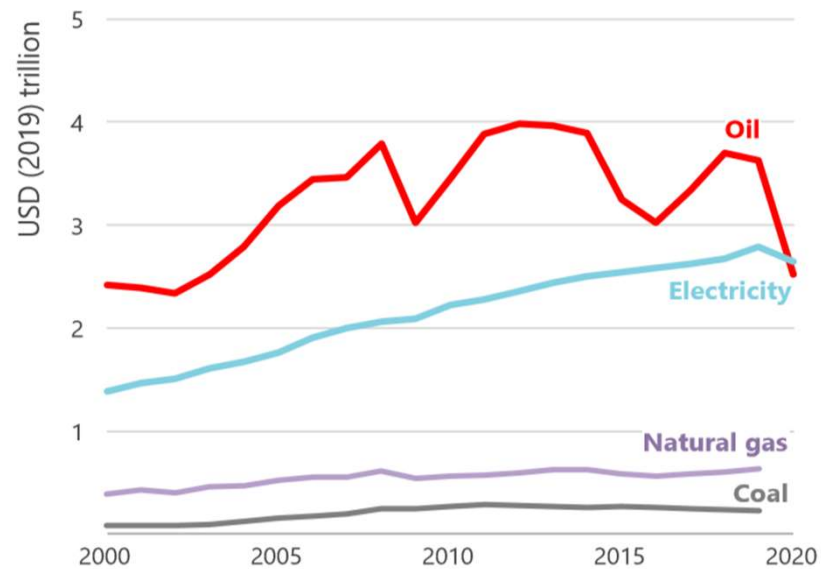
## Brazilian Oil Production



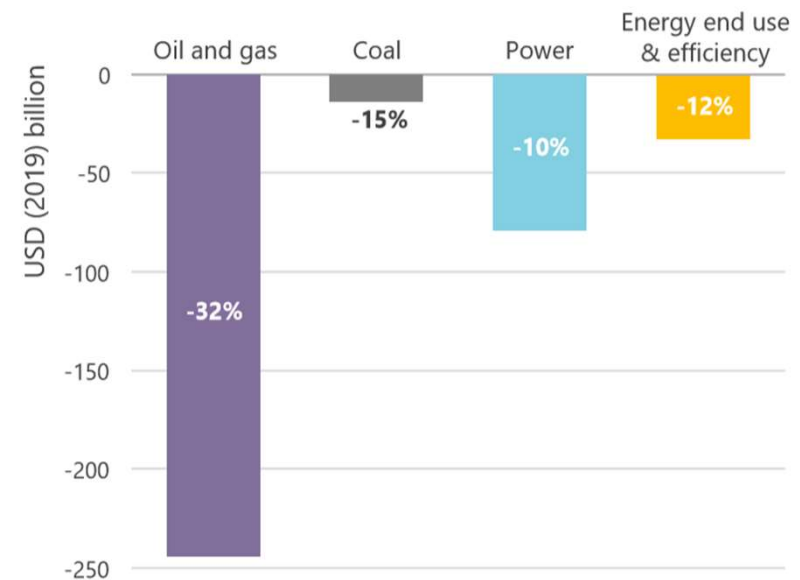
IEA & ANP, 2020

## Investment is hit by Lockdowns, and by Demand & Revenues Uncertainties

Global end-use spending on energy



Change in estimated 2020 investments versus 2019, by sector

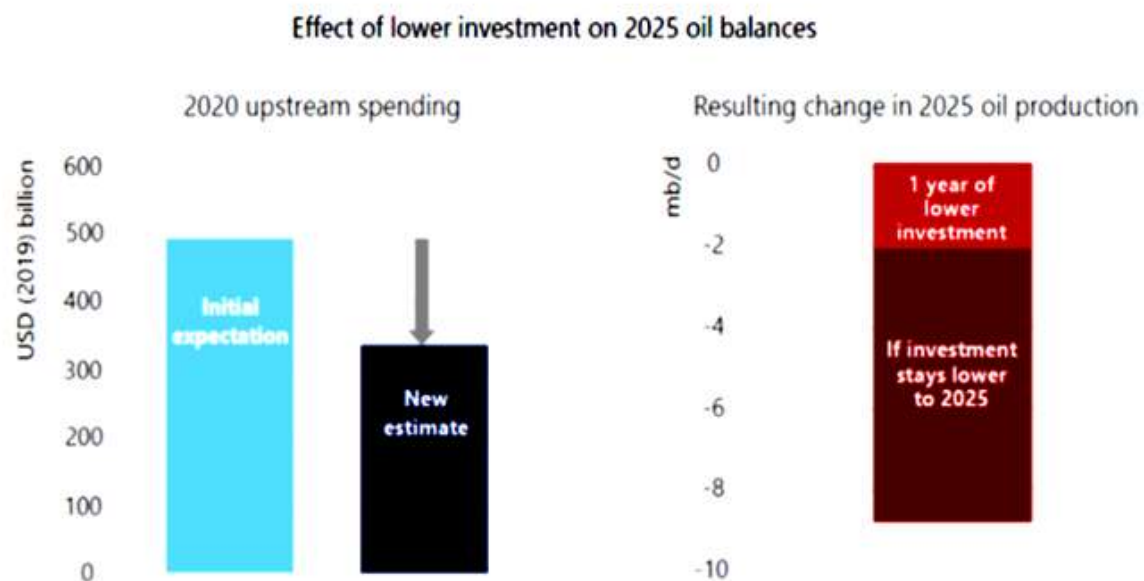


IEA, 2020



## COVID-19 Impact on Oil Industry Investments (1/2)

### A new boom-and-bust cycle for oil markets?



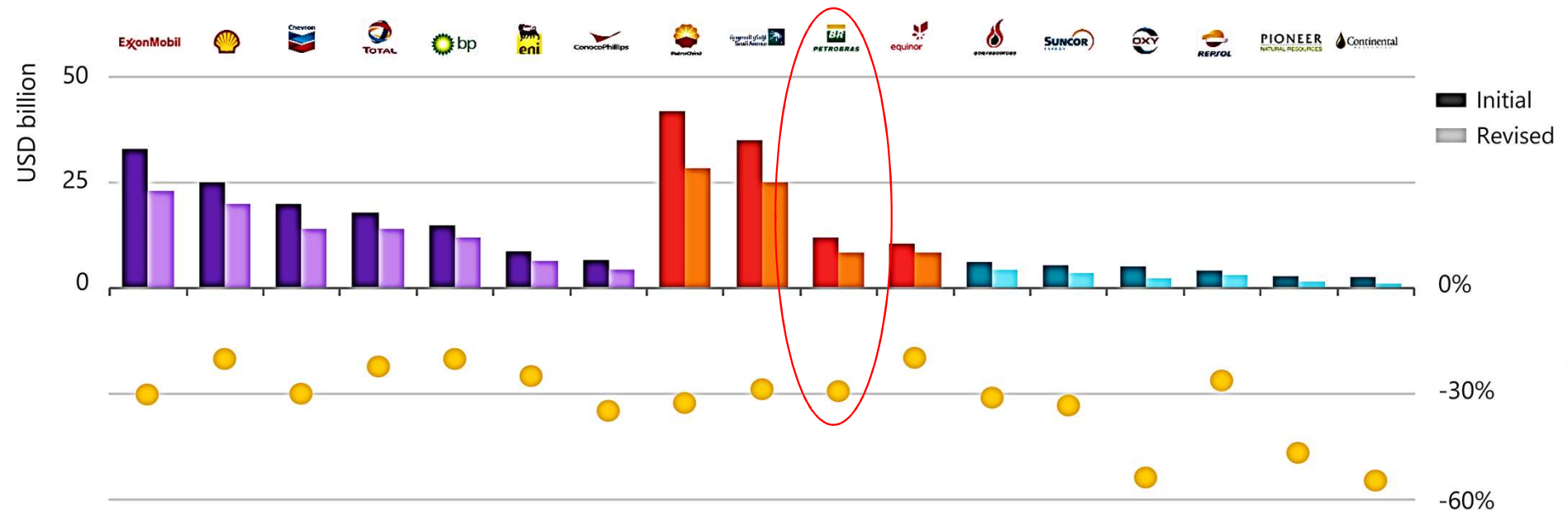
Reduced investment in 2020 already brings down 2025 oil output by more 2mb/d, if investment stays at 2020 levels, this will reduce the previously-expected level of supply in 2025 by almost 9 mb/d.

IEA, 2020



## COVID-19 Impact on Oil Industry Investments (2/2)

Changes announced oil and gas company spending for 2020  
versus initial guidance for the year







# Brazilian Government Focus on the Recovery



## Main Strategic Initiatives



**Improve Bid Rounds Attractiveness  
(Gov. Decree 10,320/2020)**



**New Market Gas – Development of  
an Open, Competitive and Dynamic  
Natural Gas Market**



**Dramatically Improve Onshore Oil &  
Gas Exploration and Production  
(Conventional/Non-Conventional)**



**Support Petrobras Divestment Plan –  
Onshore/Shallow Waters, Refineries  
and Other non-Strategic Assets**



An aerial photograph of a large offshore oil and gas platform, likely a FPSO (Floating Production Storage and Offloading) vessel, situated in the deep blue ocean. The platform is a complex of white and grey structures with numerous pipes, cranes, and storage tanks. A prominent yellow crane is visible on the left side. On the right, there is a green helipad with a white 'H' marking. The platform is surrounded by dark blue water with white foam from the ship's wake. A semi-transparent grey oval is overlaid on the center of the image, containing the title text in yellow.

# Brazil Oil & Gas E&P Overview



# Brazil at a Glance

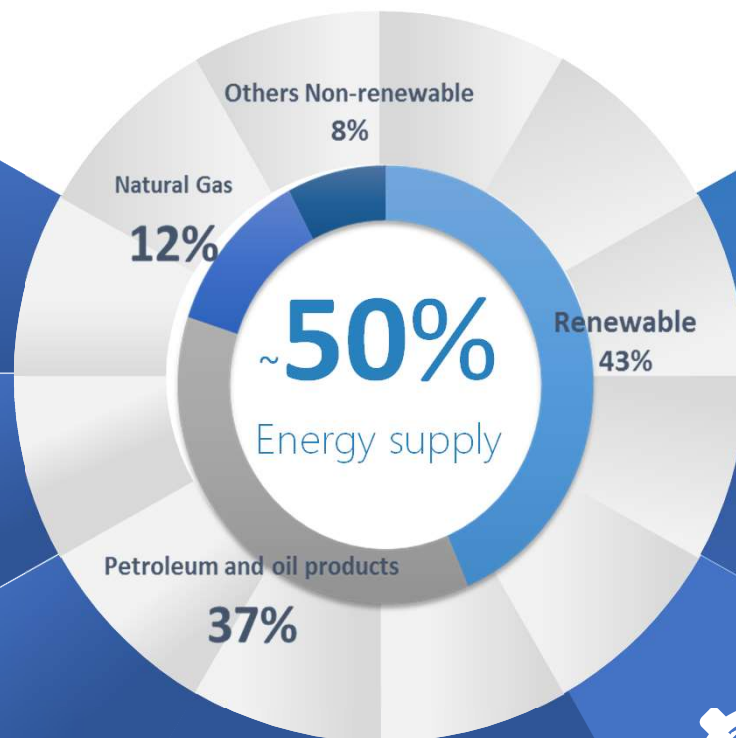
The Relevance of Oil and Gas Industry



**~1.8** USD  
Trillion

GDP (2019)

**11 %** Oil and Gas Industry



**9<sup>th</sup>**

Largest Oil Producer, the  
Largest of Latin America



**7<sup>th</sup>**

Largest Oil Products  
Consumer



**7<sup>th</sup>**

Largest FDI Destination

**9<sup>th</sup>**

Largest Economy \$

**5<sup>th</sup>**

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



**~ 212**

million

Population (2020)



# Brazilian Proven Reserves

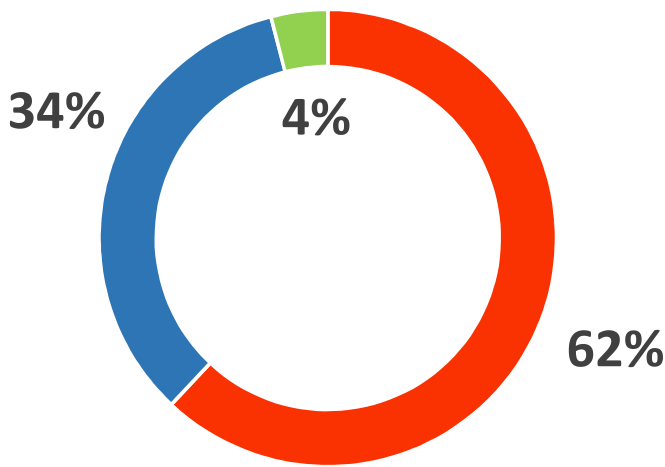
15 Billion boe

Oil  
12.7 Billion bbl

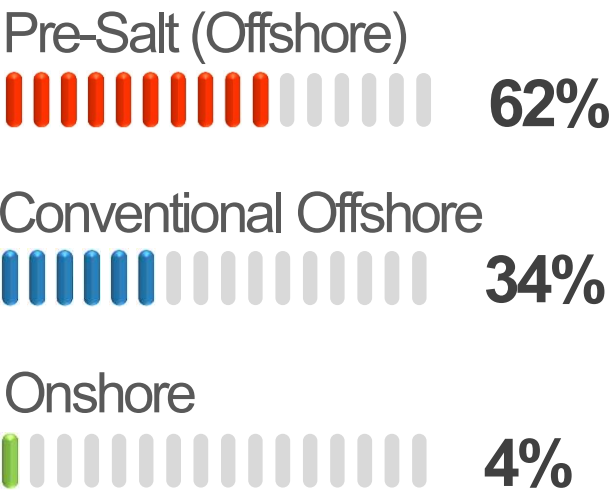
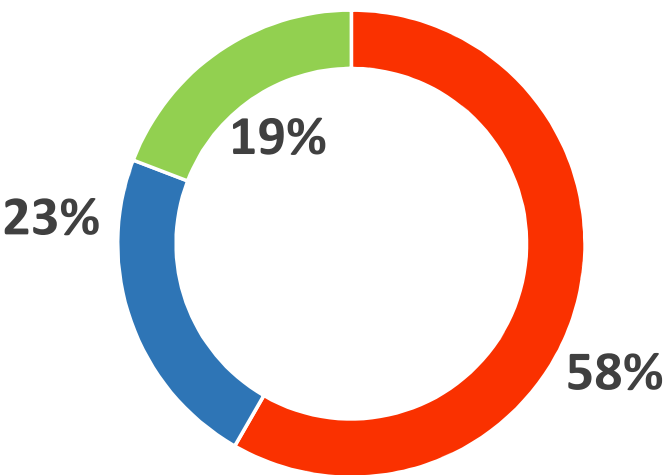
Gas  
365 Billion m³

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

Oil Proven Reserves



Gas Proven Reserves



# Brazilian Oil & Gas Production

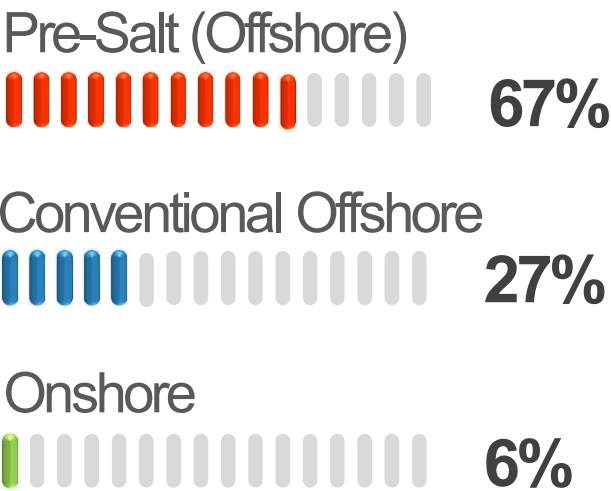
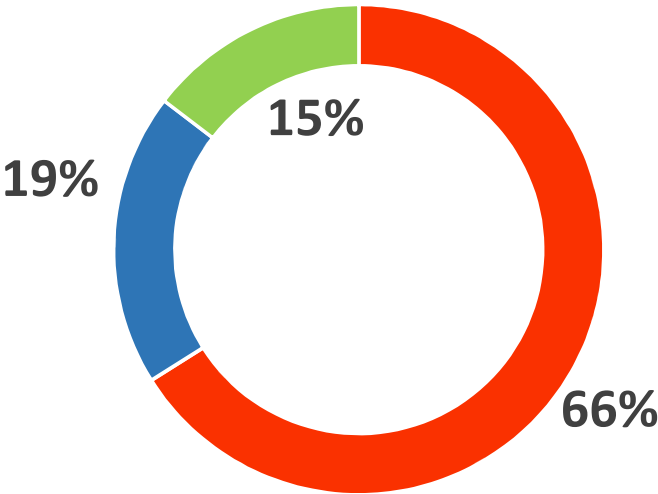
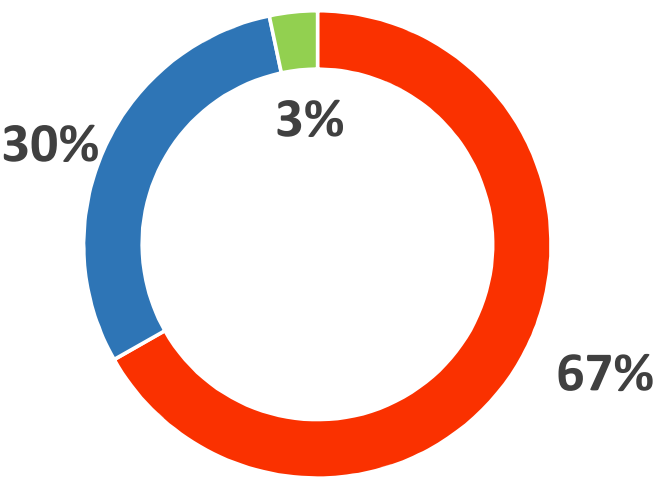
**3.74 Million\***  
boe/d

**Oil**  
**2.96**  
Million boe/d

**Gas**  
**124**  
Million m<sup>3</sup>/d

Oil Production (bbl/d)

Natural Gas Production (MMm<sup>3</sup>/d)



# Brazil is a Country with Continental Dimension with Unrealized Potential...



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



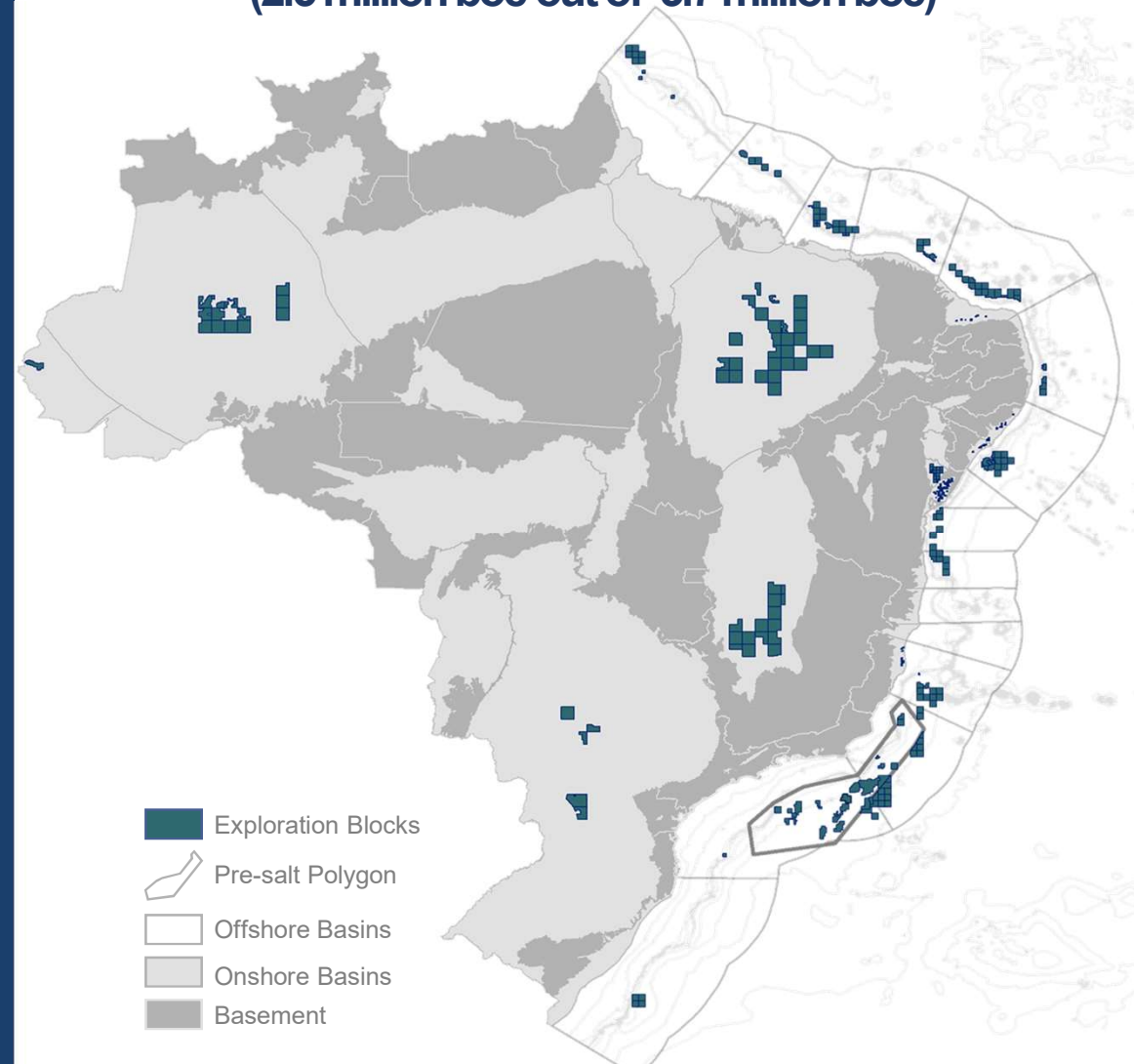
**2** Basins without a single well  
(Madre de Dios & Pernambuco – Paraíba)



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

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

Pre-Salt Production accounts for  
~ 67% of Total Production  
(2.5 million boe out of 3.7 million boe)



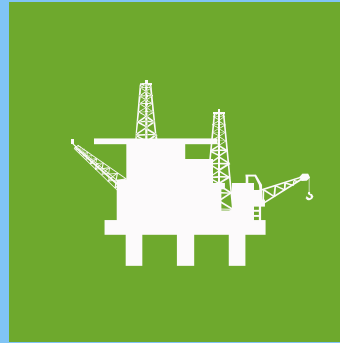
# Three Different E&P Environments



## Onshore

Mature Basins and New Frontier Basins (mostly gas prone). Potential for unconventional to be unleashed.

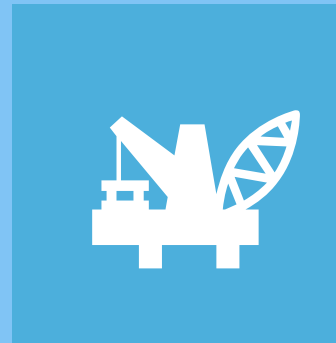
Production



## Conventional Offshore

All the East Margin besides the pre-salt region and Equatorial Margin, including new frontier areas and a significant number of large mature fields.

Production



## Pre-Salt

One of the World's hottest oil play, home to the largest offshore oil discoveries in the last decade.

Production



Average Oil Production Per Well

16,786<sub>bpd</sub>

122 wells

1,522<sub>bpd</sub>

574 wells

14<sub>bpd</sub>

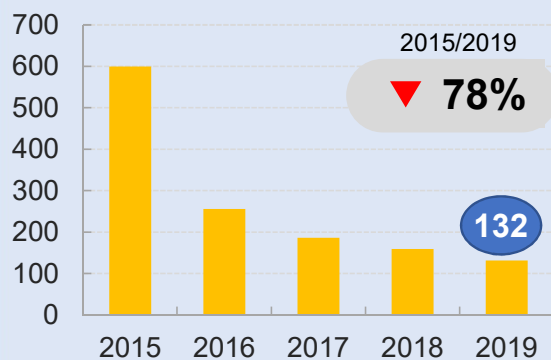
7,012 wells

\* May/2020

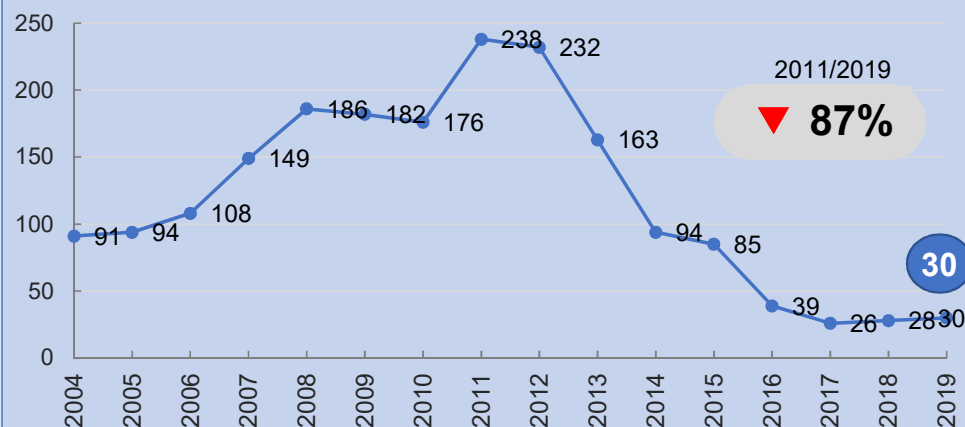


# Increasing Exploration and Revitalizing Activities

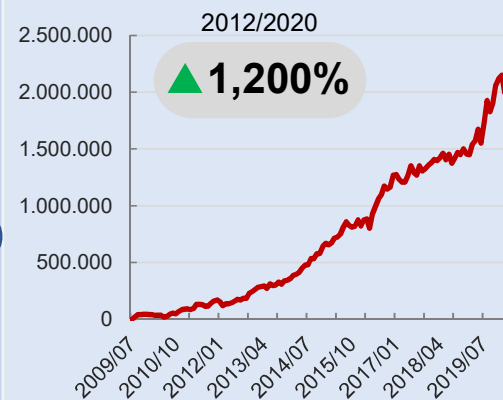
## Development Wells Concluded



## Exploration Concluded Wells



## Pre-Salt Oil Production (bpd)



2012/2019

▼ 42%

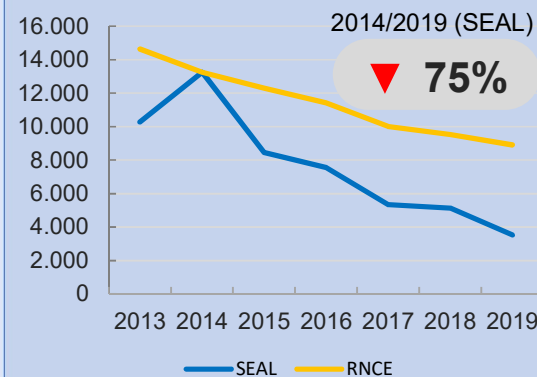
Onshore Oil Production  
(2019)

104,093

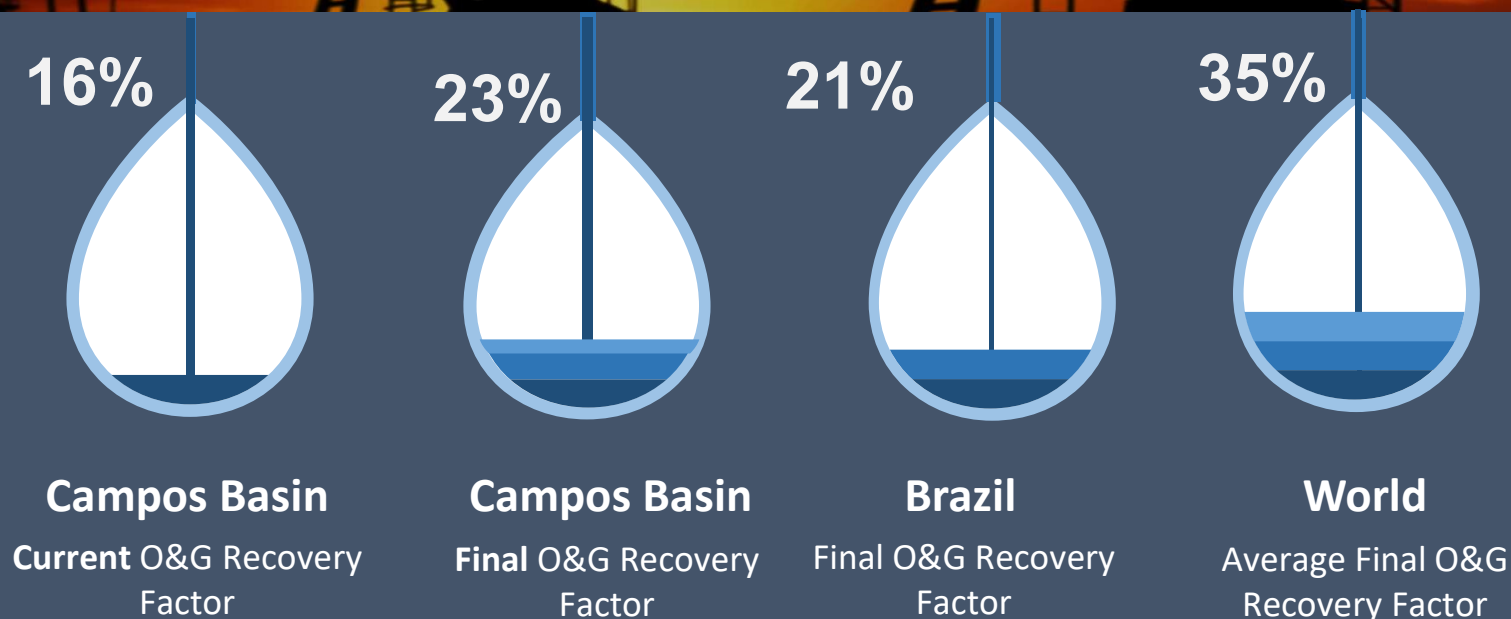
## Post-Salt Oil Production – Campos Basin Mature Fields (boe/d)



## Northeast Basins Offshore Oil Production (bpd)



# Maximizing Recovery Factor is an Unrealized Potential



1% addition in  
Campos Basin:

**985**Mboe

New Reserves

1% addition in  
Onshore:

**200**Mboe

New Reserves

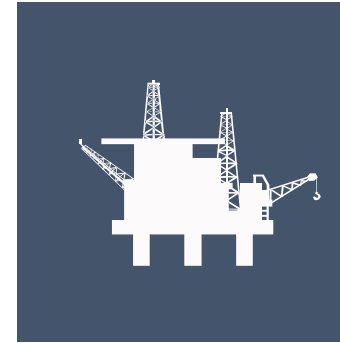
# E&P Strategic Initiatives - Maximizing Oil & Gas Production

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**Accelerate the Pre-Salt Development**

**Pre-Salt**



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

**Conventional Offshore**



**Attract Right Players to Each E&P Environment**

**Offshore/  
Onshore**



**Revitalize Onshore Exploration and Production (Conventional & Unconventional)**

**REATE**

# ANP E&P MISSION

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**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
- ❖ Strengthen Service Companies
- ❖ Develop the Supply Chain



# Next Brazilian Bid Rounds

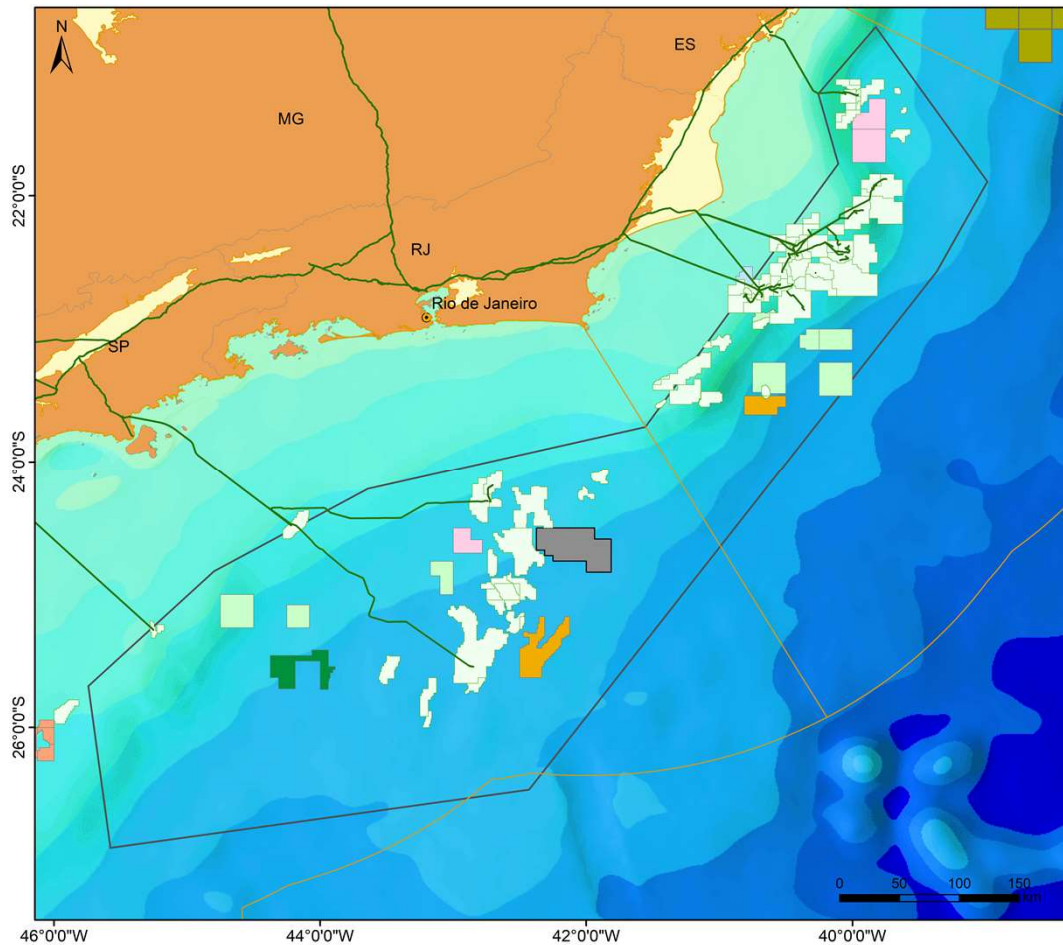


# Incredible Results Achieved - Bid Rounds (2017-2019)

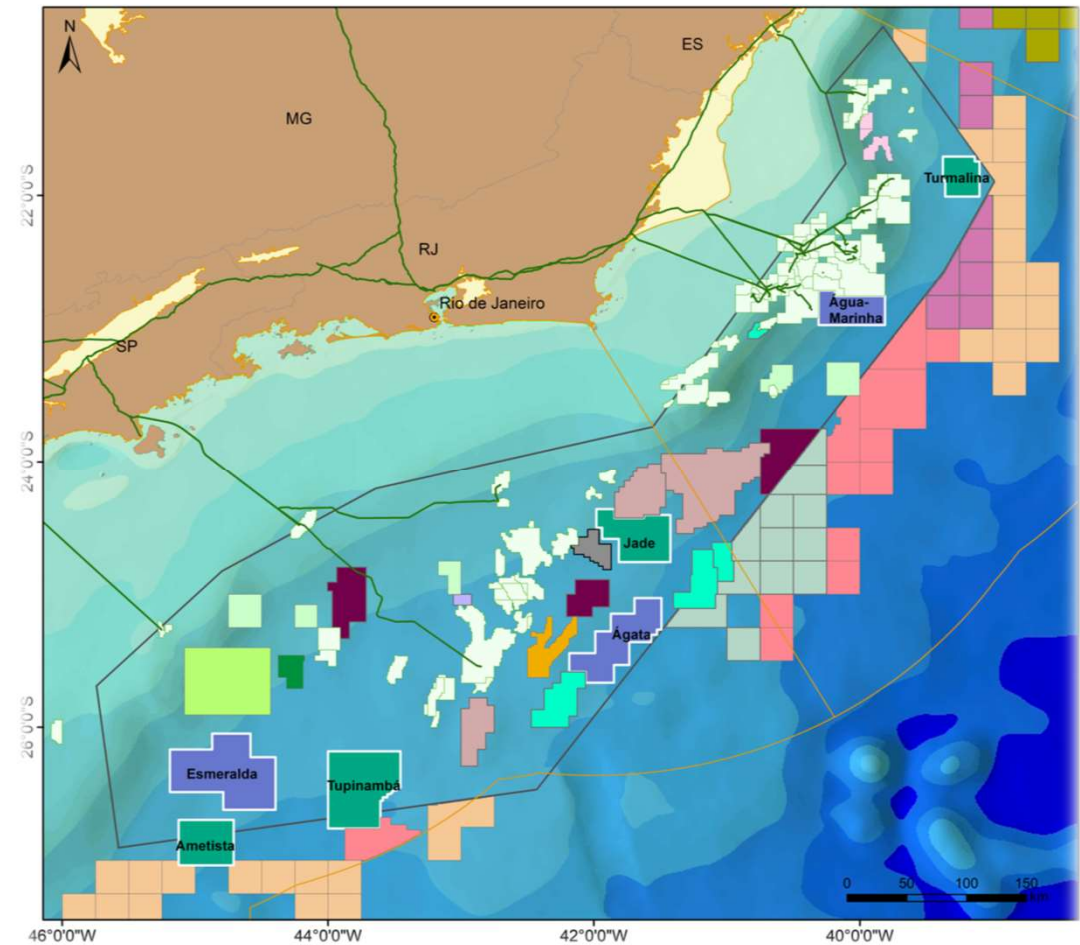
Bidding Round	Acquired Blocks	Signing Bonus (USD billion)	Registered Companies	Winner Companies	Premium
 Brasil 14 <sup>th</sup> Round Oil & Gas Bidding Rounds	37	0.893	32	17	1,556%
 PRE-SALT Brazil 2 PRODUCTION SHARE	3	0.767	10	7	261%
 PRE-SALT Brazil 3 PRODUCTION SHARE	3	0.663	14	6	202%
 PRE-SALT Brazil 4 PRODUCTION SHARE	3	0.732	16	7	202%
 ROUND Brazil 15 OIL AND GAS CONCESSIONS	22	1.862	17	12	622%
 PRÉ-SAL Brazil 5 PARTILHA DA PRODUÇÃO	4	1.586	12	8	170%
 OPEN ACREAGE Brazil OIL AND GAS CONCESSIONS	33	0.005	47	14	61%
 ROUND Brazil 16 OIL AND GAS CONCESSIONS	12	2.072	17	10	322%
 TRANSFER OF RIGHTS SURPLUS Brazil PRODUCTION SHARE	02	ToR 16.264	14	03	NA
 PRE-SALT Brazil 6 PRODUCTION SHARE	01	1.163	17	02	NA
<b>Total</b>	<b>120</b>	<b>26.0</b> USD/BRL= 4.3	<b>Significant Increase in Premiums</b>		

# Pre-Salt Exploration has Dramatically Increased in the Last 3 Years

2017

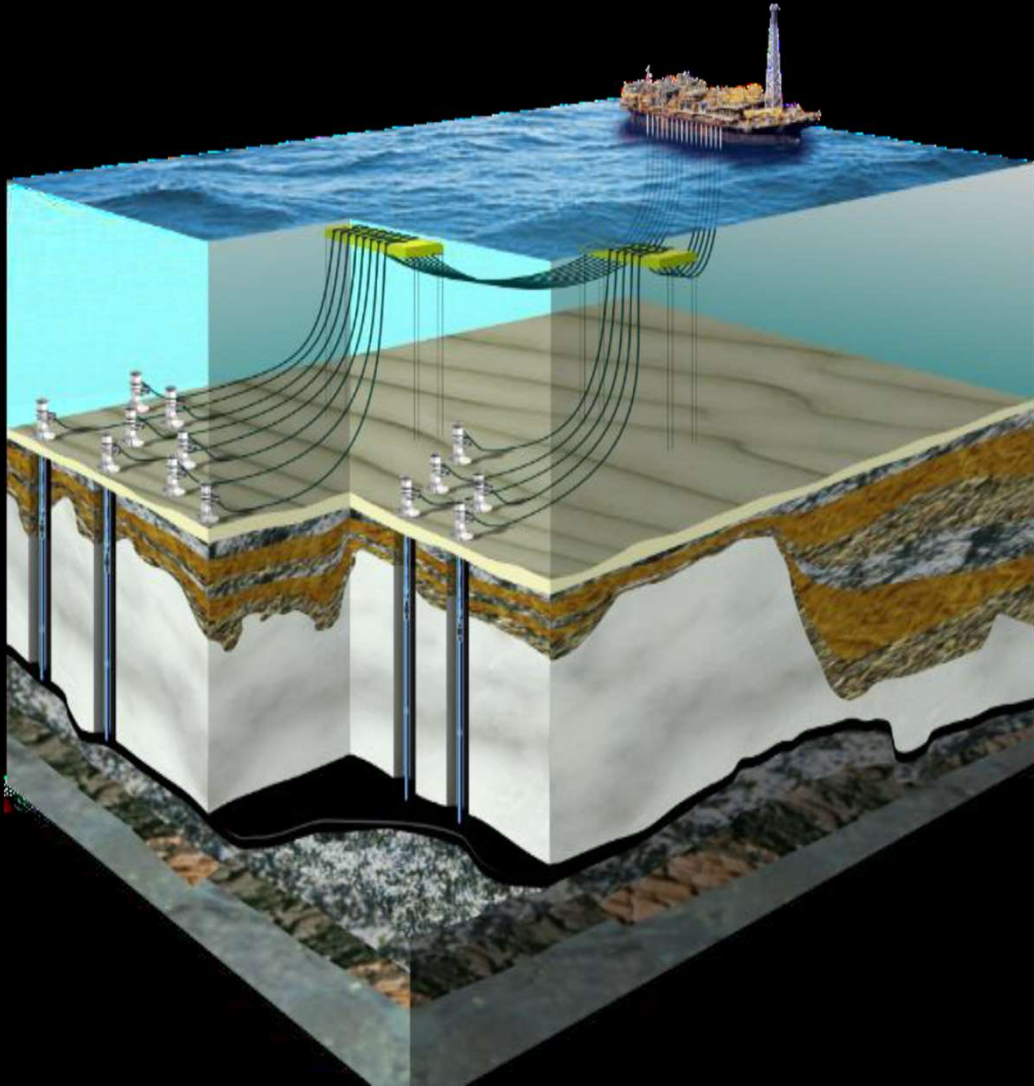


2020





# Government Initiatives



## Decree n° 10,320/2020



It creates a work group to improve the bidding round process in Brazil



MME, ANP and Economy Ministry will take part of this Group



There will be a reevaluation of Petrobras Preferred Rights in Bids for Production Sharing Agreements



Reevaluation of Production Sharing vs. Concession Agreements, and Key Economic Parameters

## PL n° 3,178/2019

Propose to Revoke Petrobras Preferred Rights in Bids for Production Sharing Regime, and whether

National Energy Policy Council Should Decide on Contracts Regime is Applied to Pre-Salt areas.



# Brazil Bid Rounds Calendar

ROUND 17  
Brazil  
OIL AND GAS CONCESSIONS

PRE-SALT 7  
Brazil  
PRODUCTION SHARE

OPEN ACREAGE  
Brazil  
OIL AND GAS CONCESSIONS

2020

2021

2022

OPEN ACREAGE  
Brazil  
OIL AND GAS CONCESSIONS

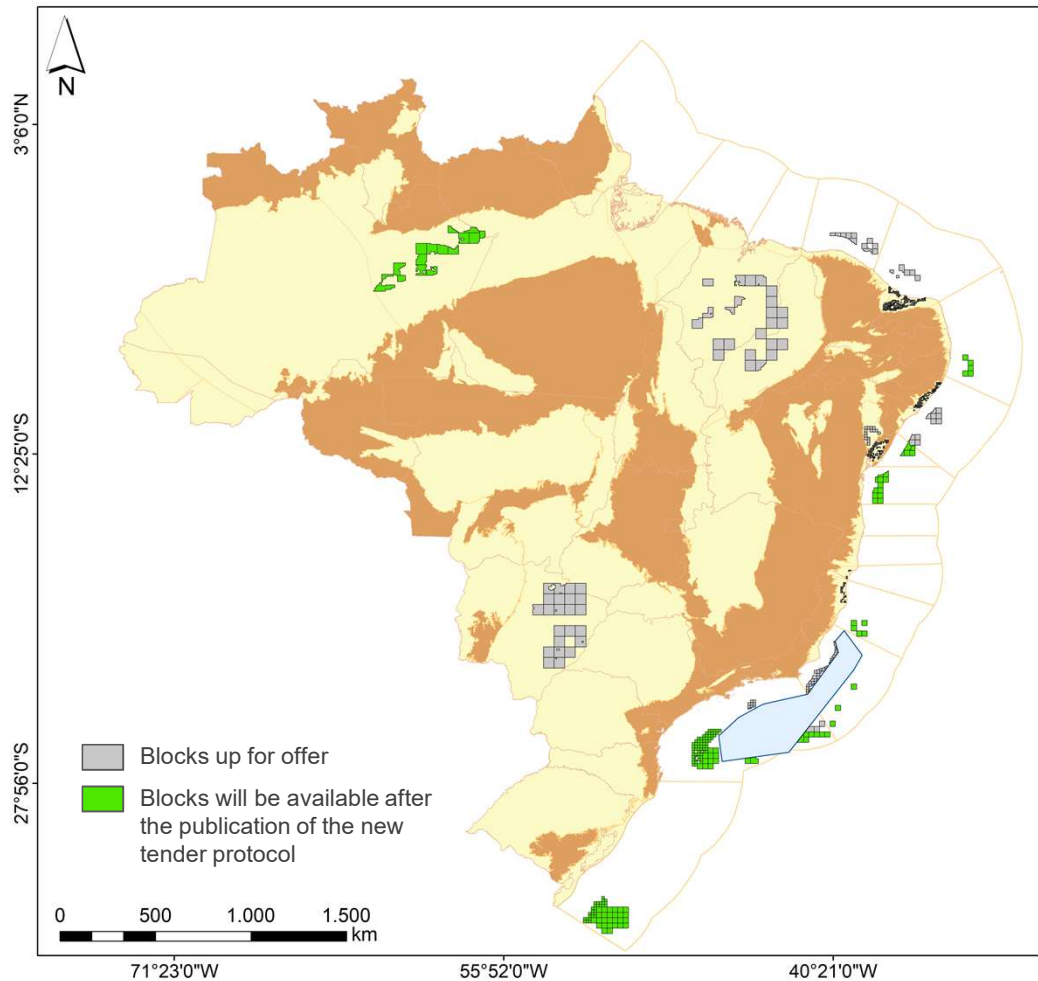
TRANSFER OF RIGHTS SURPLUS  
Brazil  
PRODUCTION SHARE

PRE-SALT 8  
Brazil  
PRODUCTION SHARE

ROUND 18  
Brazil  
OIL AND GAS CONCESSIONS

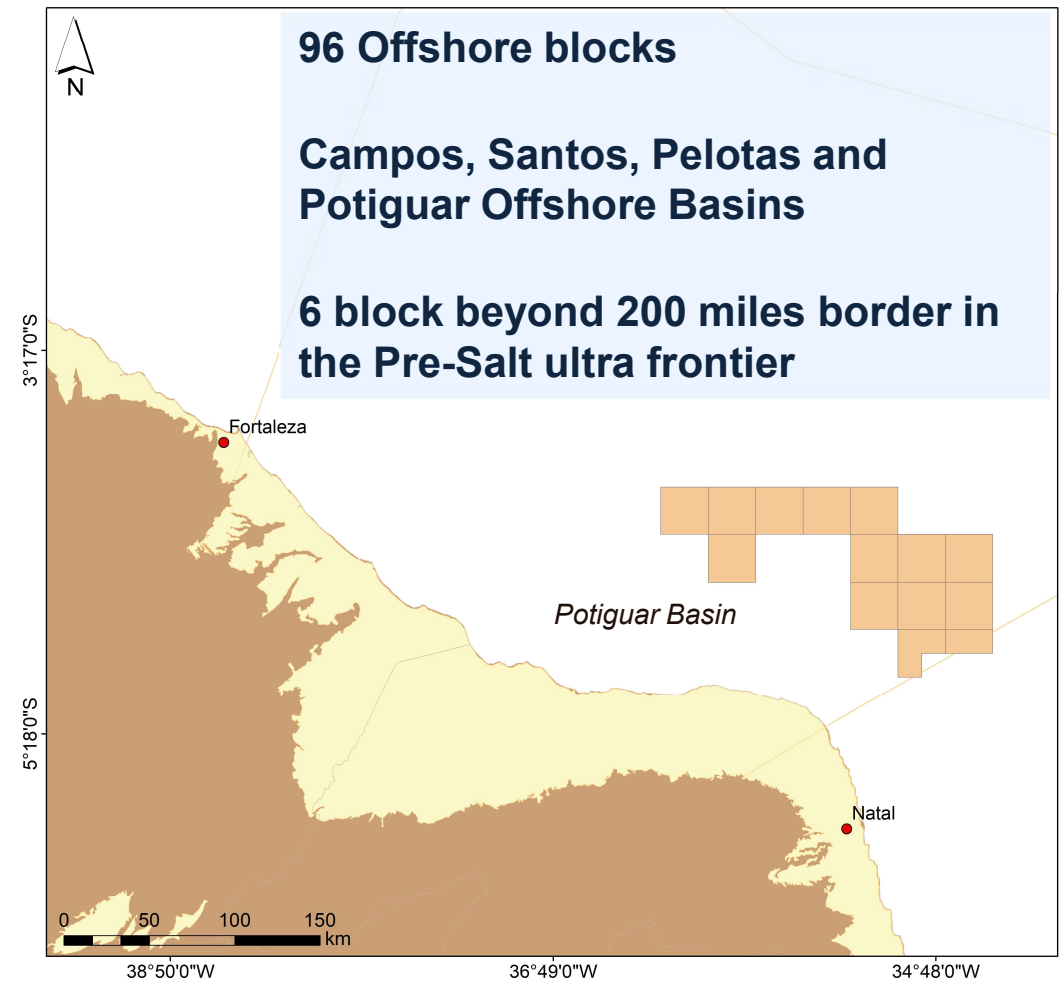
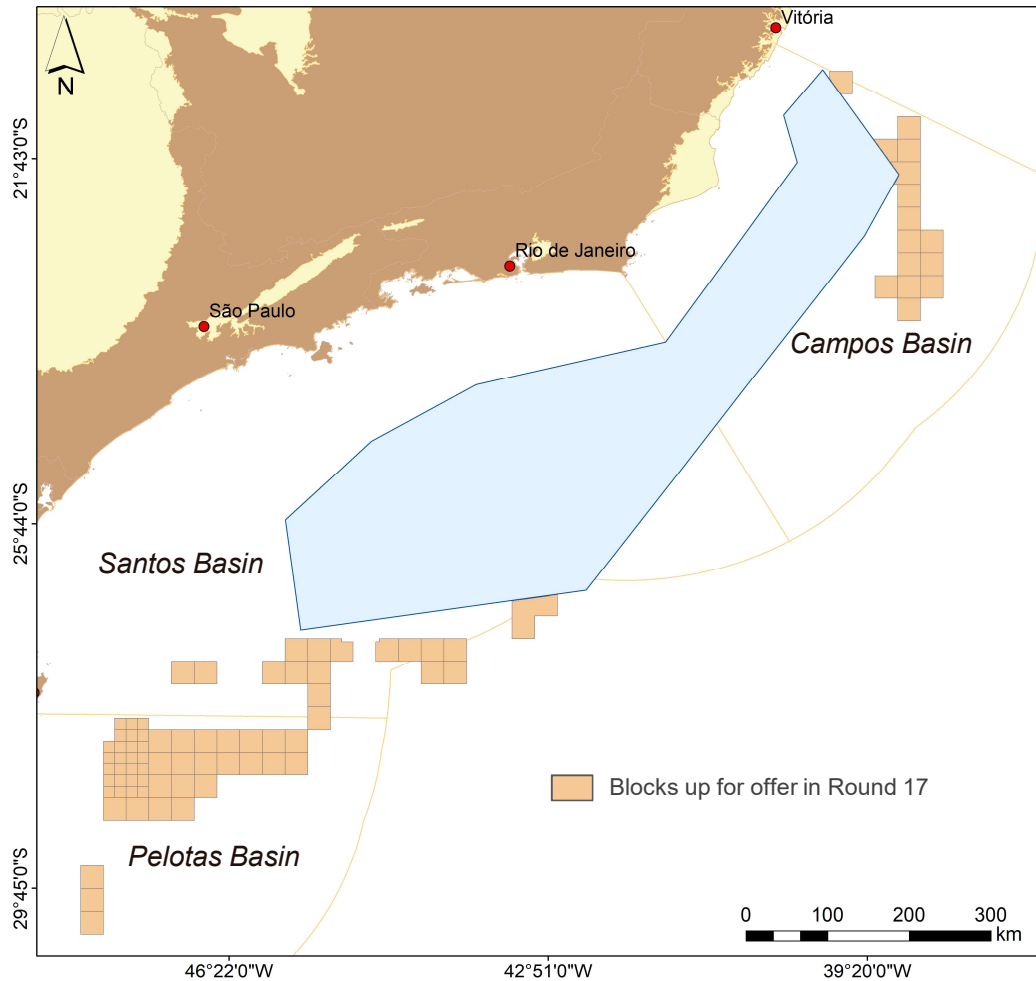
OPEN ACREAGE  
Brazil  
OIL AND GAS CONCESSIONS

# Open Acreage – Permanent Offer



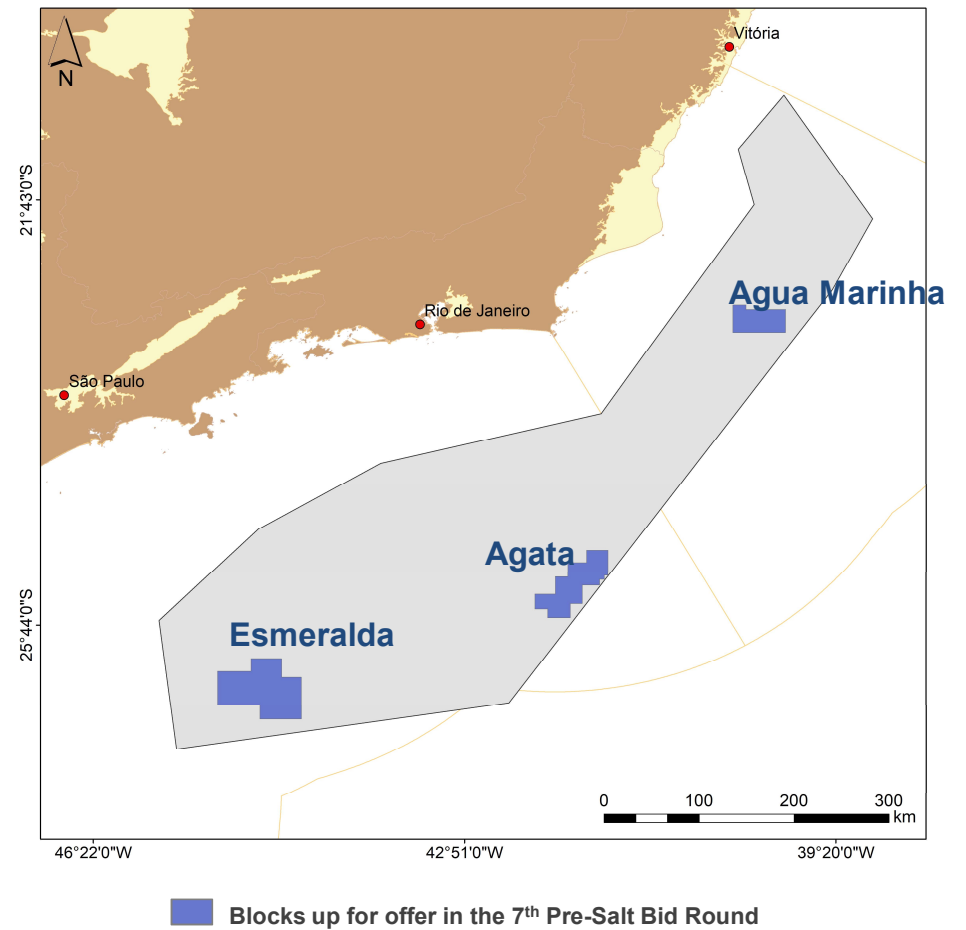
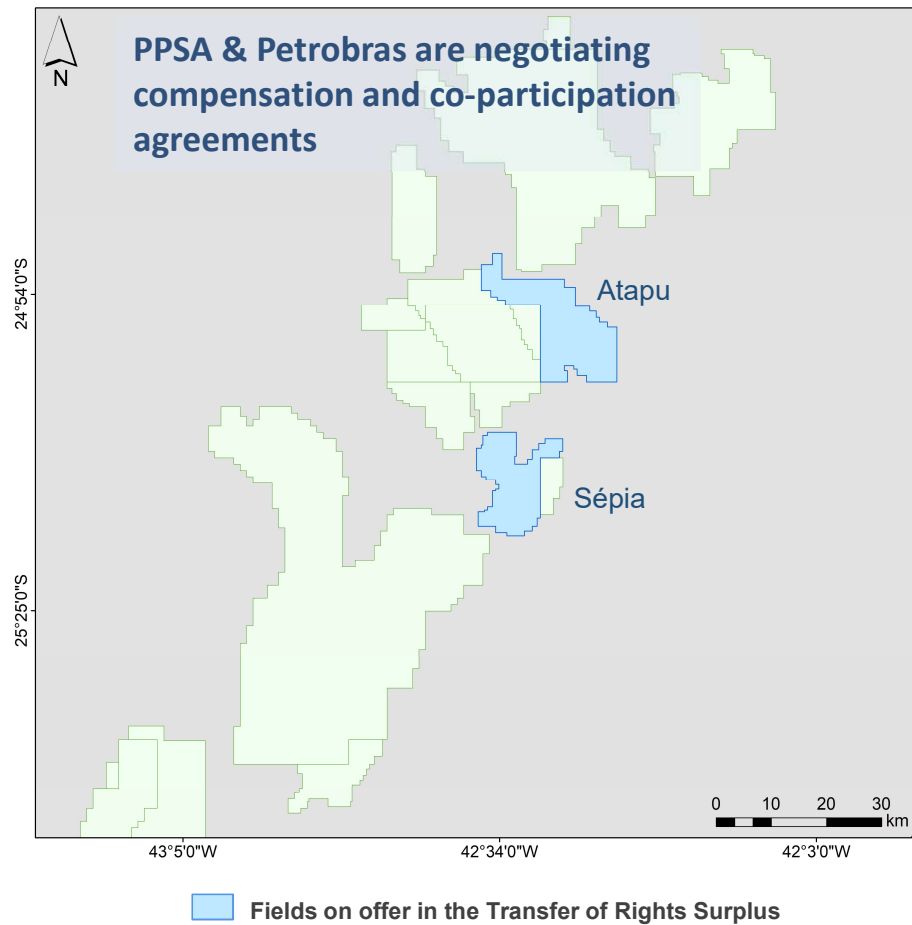
- Wide **variety of areas** (offshore & onshore)
- **708 Exploration blocks** (567 up for offer)
- 3 marginal fields (**1 up for offer**)
- New Tender Parameters will be published **on July 2020**
- **57 Oil Companies** have already registered for this process
- Companies can submit Their **Registration Anytime**

# 17<sup>th</sup> Bid Round – 96 Blocks under Concession Regime



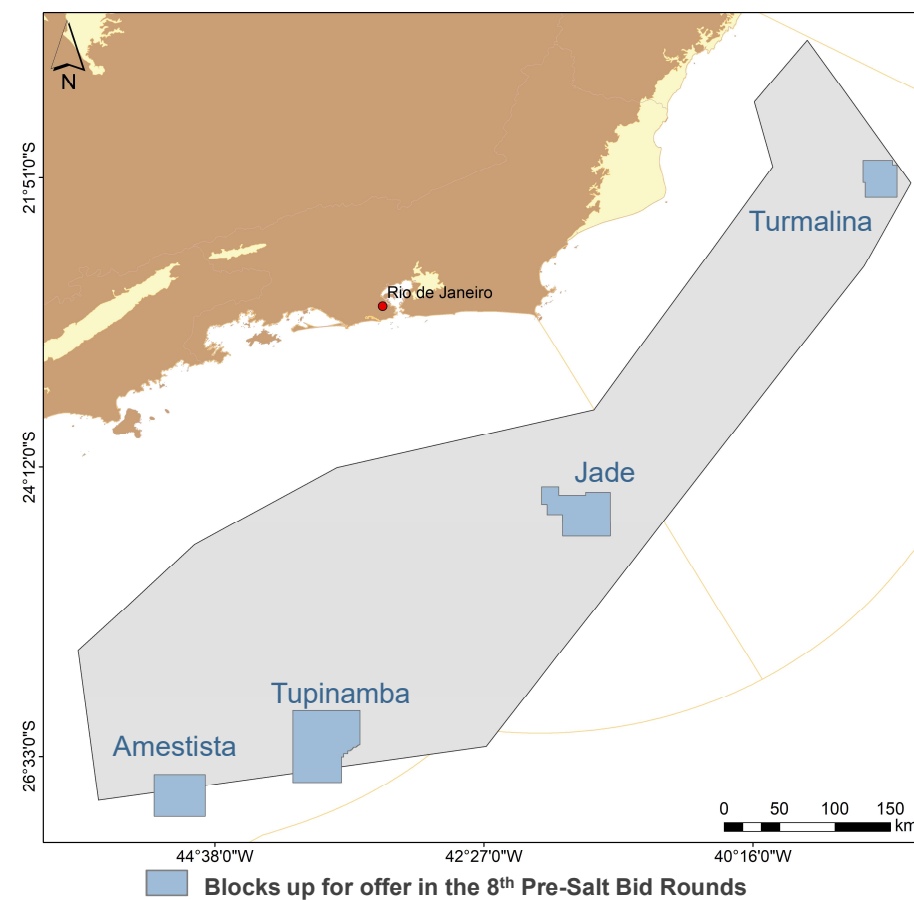
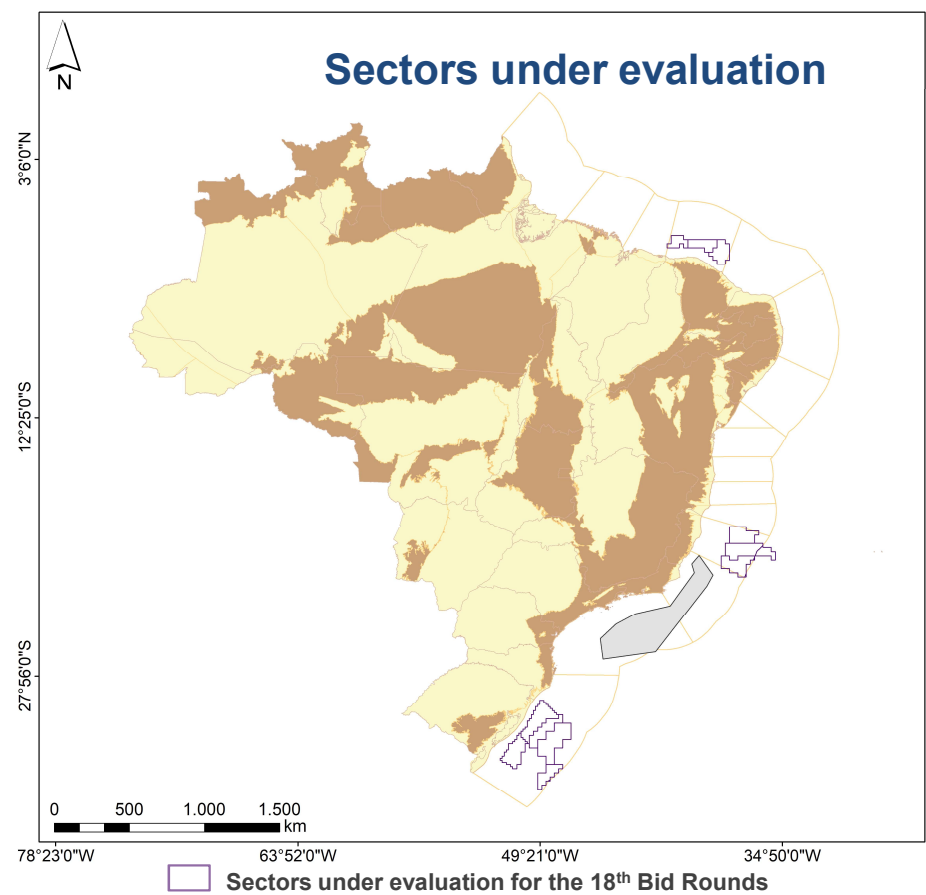


# 7th Pre-Salt Bid Round & Transfer of Rights (ToR)



# 8th Pre-Salt Bid Round & 18th Concession Round

Under Development for 2022



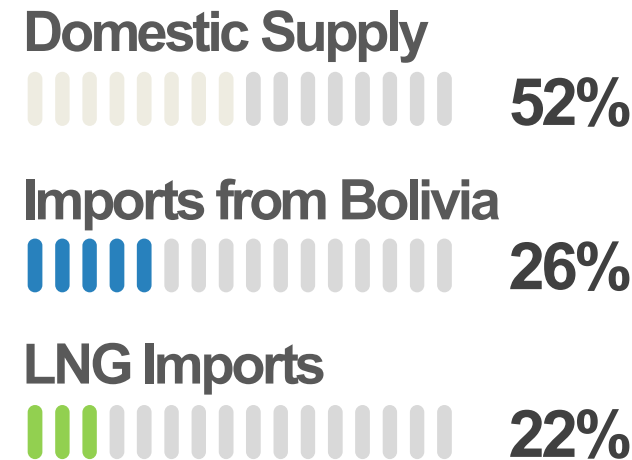
# Natural Gas Market Ongoing Initiatives



# Natural Gas Market in Brazil Supply/Demand at Glance

## SUPPLY

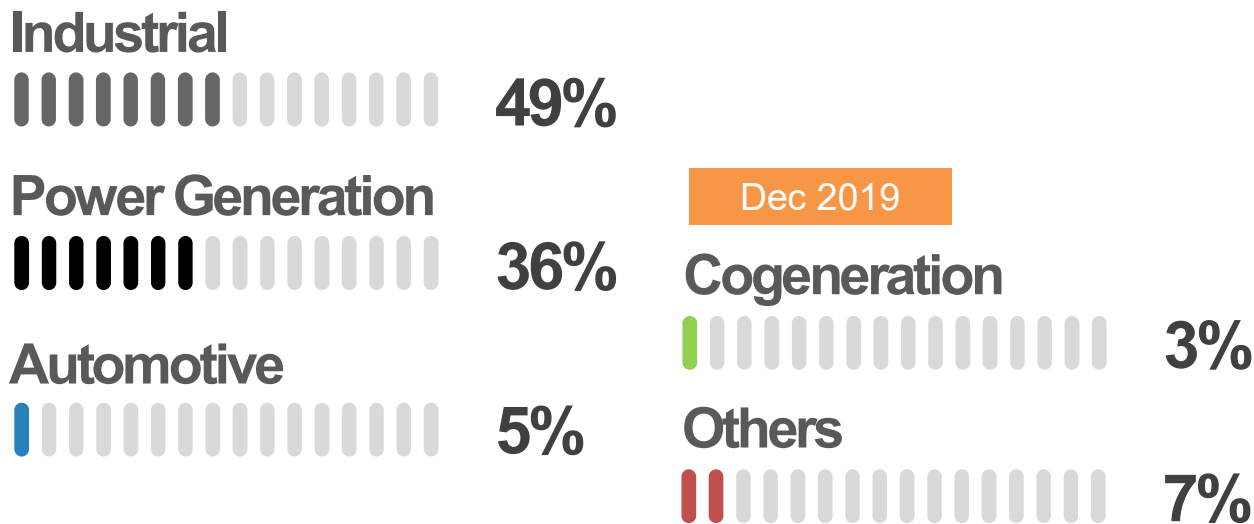
92 Million m<sup>3</sup>/d



## DEMAND

92 Million m<sup>3</sup>/d

### Consumption by Sector

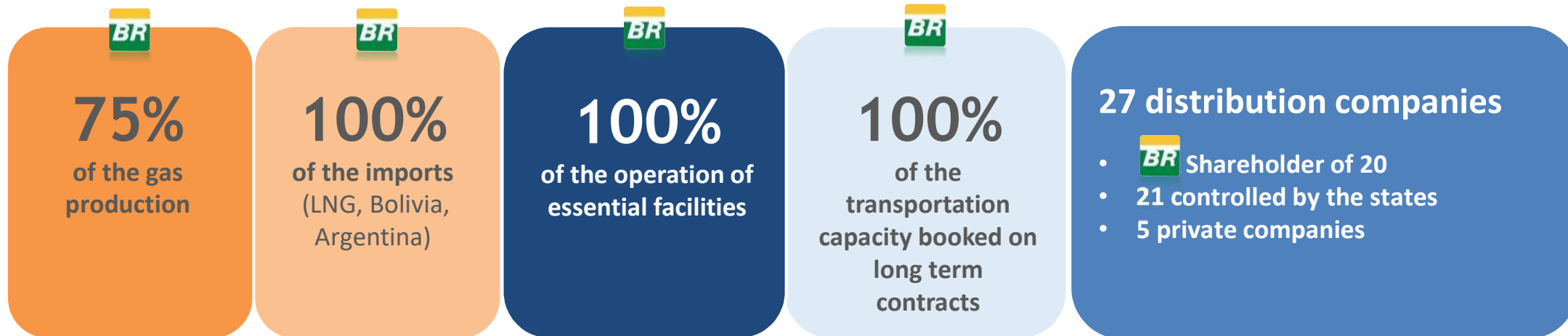




# PETROBRAS IN THE BRAZILIAN GAS MARKET

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## Vertical Integrated Monopoly



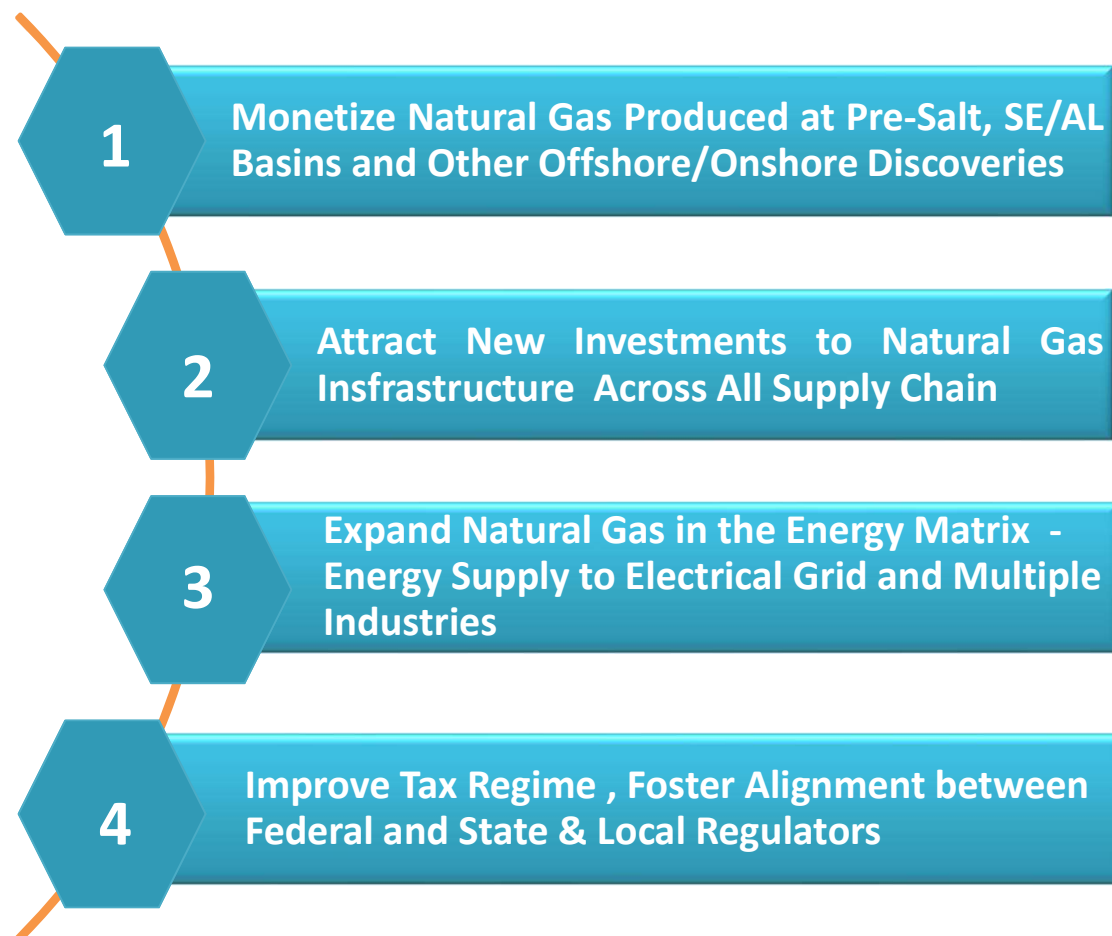
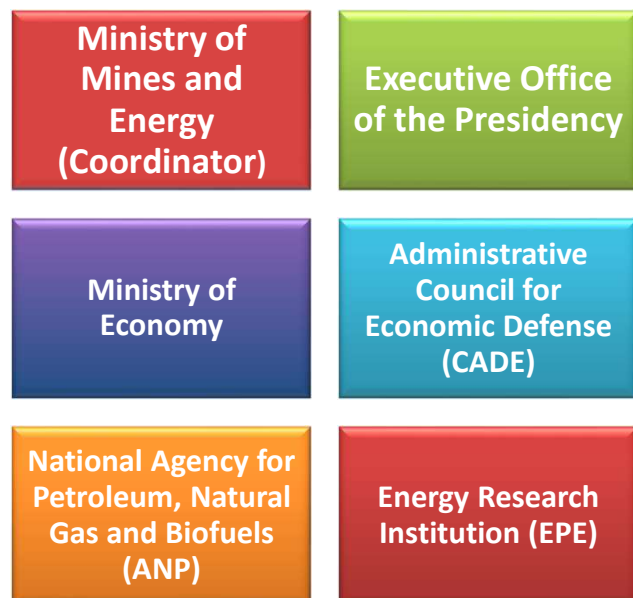
Continental dimensions with **incipient infrastructure**  
**Market concentrated on supply** and demand



# NEW GAS MARKET

**Government Program – Main Objective is to Development an Open, Competitive and Dynamic Natural Gas Market**

## Institutions Involved



# Main Changes in the Gas Sector

OFFSHORE/ONSHORE E&P



Upstream  
pipelines

NGPU

LNG

Transport

ESGN

Distribution

LDCs

Consumption

Thermopplants

No  
Thermopplants

MARKET AREA MANAGERS

UNBUNDLING

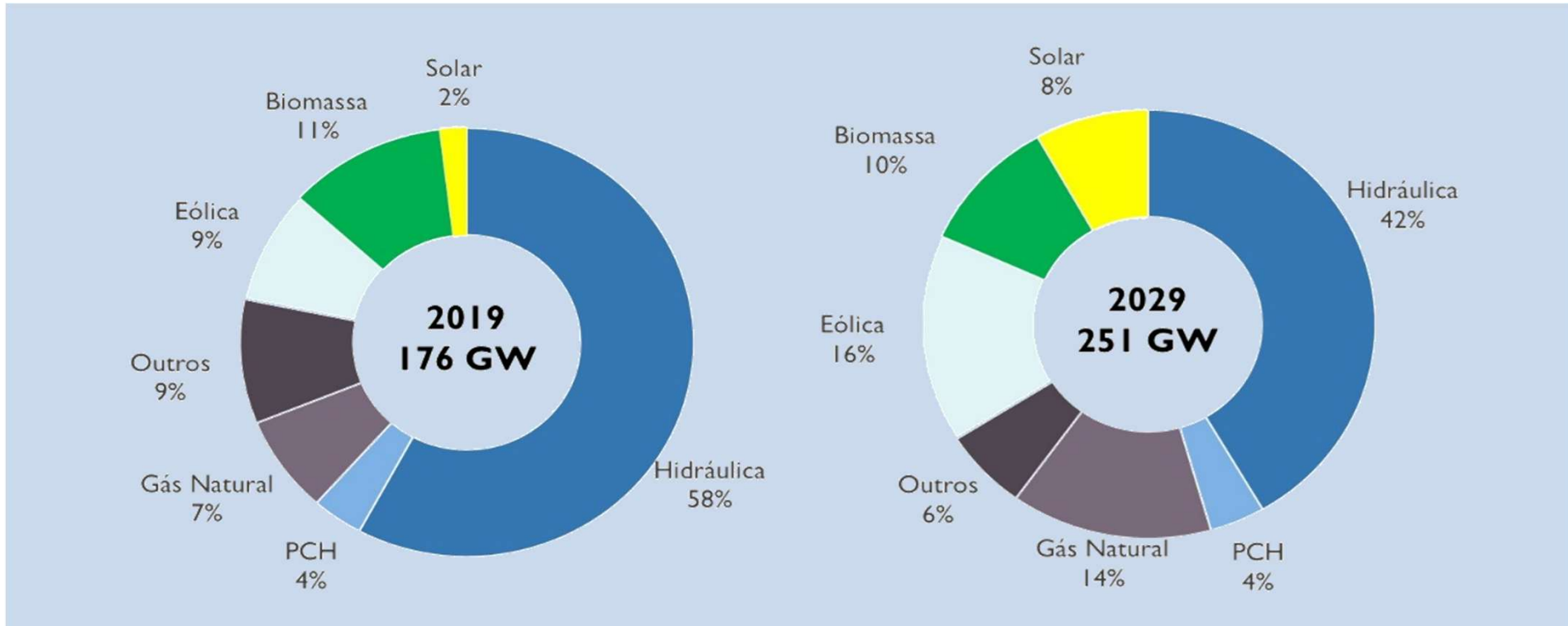
ENTRY-EXIT SYSTEM

INCENTIVES FOR THE STATES TO  
PRIVATIZE DIST. COMPANIES, TO  
STRENGTHEN REG. AGENCIES,  
AND TO ADOPT REGULATORY BEST  
PRACTICES.

NEGOTIATED  
Third Party Access

Source: NG Committee, 2019

# Evolution of Total Installed Capacity: 2019 - 2029



- Does not include portion of Itaipu UHE belonging to Paraguay
- Includes: Centralized + Self-Production + Distributed Generation

Source: MME/PDE 2029



# Lower the Energy Costs with Less Emissions – Natural Gas Integration to Electrical Grid and Industrial Sectors



Estimated Investments Associated with the New Gas  
Market in Brazil: 2020-2029

**R\$ 43 Billions**



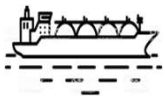
Flow Pipelines

**R\$ 13.05** billions



Transportation Pipelines

**R\$ 17.06** billions



LNG Regasification Terminals

**R\$ 0.8** billion

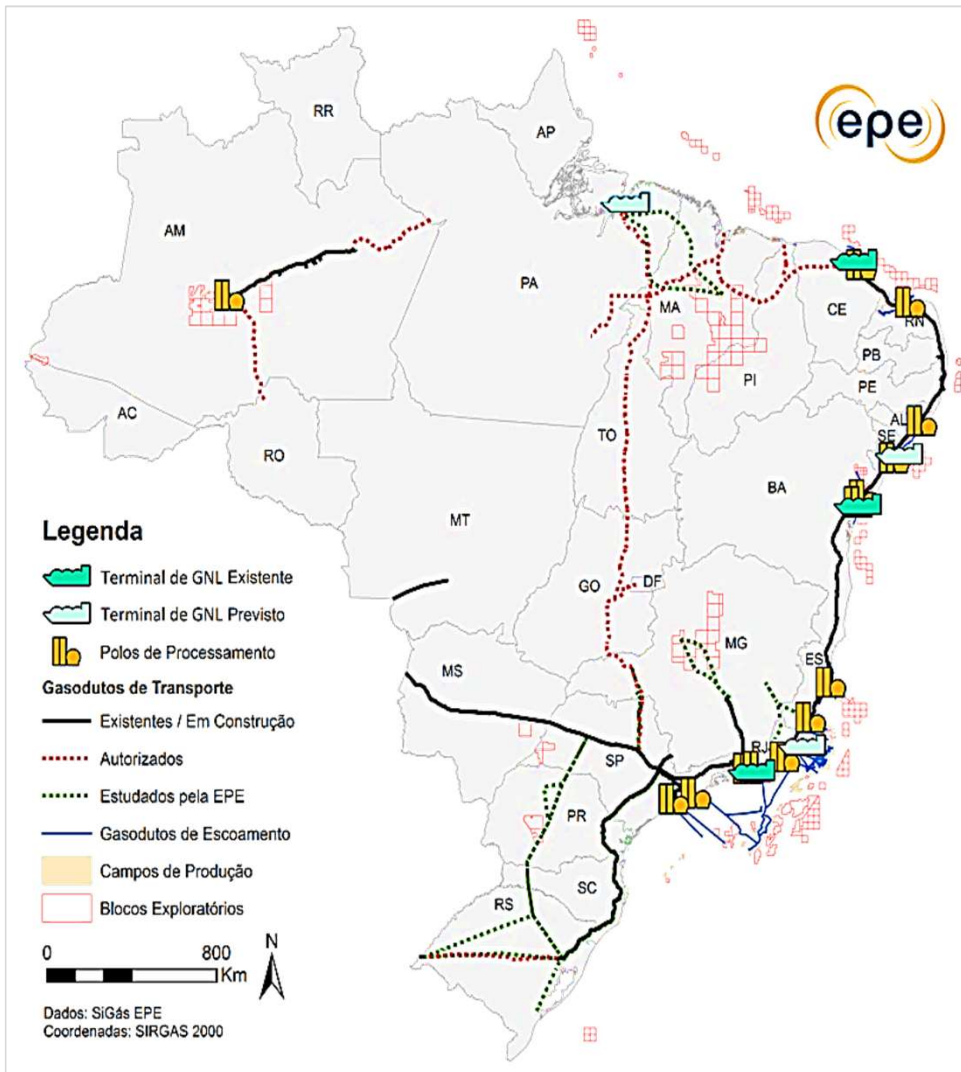


NGPUs

**R\$ 11.03** billion

Source: MME/ PDE 2029

# Ongoing Investments in Natural Gas Infrastructure



## Natural Gas Flow and Transportation Pipelines

### Flow Pipelines:

- Rote 3, 2020, 18 millions m<sup>3</sup>/d
- Sergipe-Alagoas Basin, 2025, 12 to 20 millions m<sup>3</sup>/d

### Transportation Pipelines:

- GASFOR II, Strech Horizonte/CE - Caucaia/CE, 83 km
- Gasoduto Itaboraí/RJ-Guapimirim/RJ, 11 km



## Natural Gas Processing Units (UPGNs)

- UPGN Caburé/BA, 2020, 0,5 million m<sup>3</sup>/d
- UPGN COMPERJ, 2021, 21 millions m<sup>3</sup>/d
- UPGN Sergipe, 2025, 12 a 20 millions m<sup>3</sup>/d

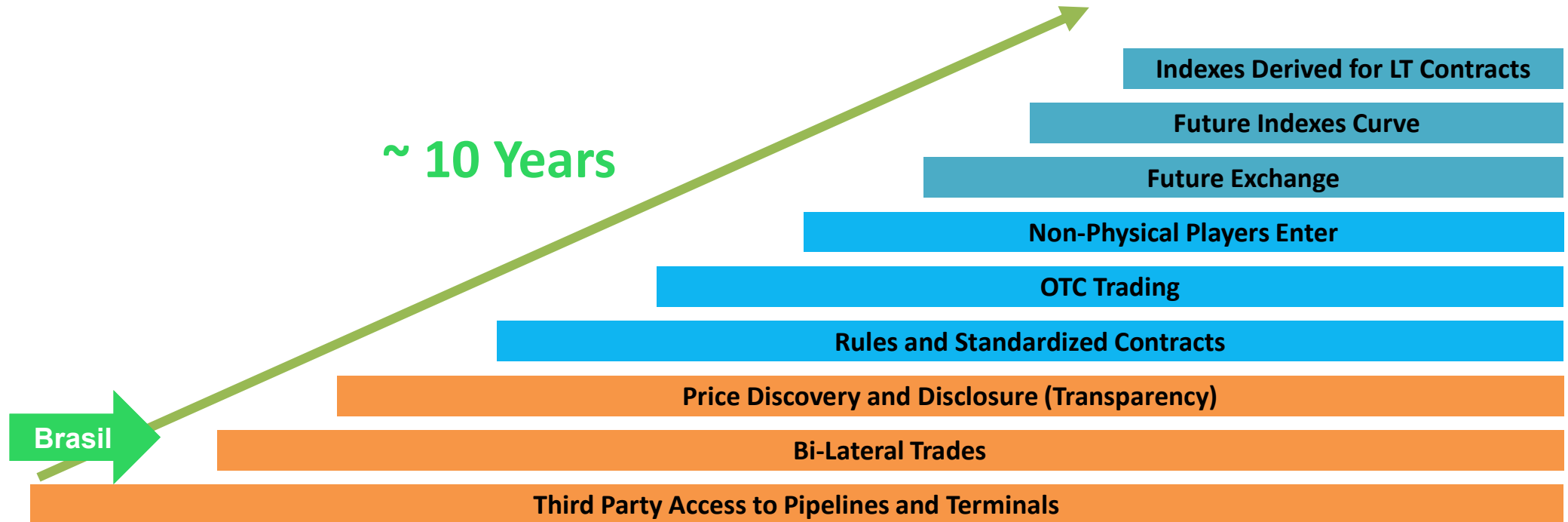


## LNG Regasification Terminals

- Barra dos Coqueiros/SE, 2020, 21 millions m<sup>3</sup>/d
- Porto do Açu/RJ, 2021, 21 millions m<sup>3</sup>/d
- Barcarena/PA, 2022, 15 millions m<sup>3</sup>/d
- + 3 LNG Terminals, up to 2029, 21 millions m<sup>3</sup>/d each one

Source: EPE.

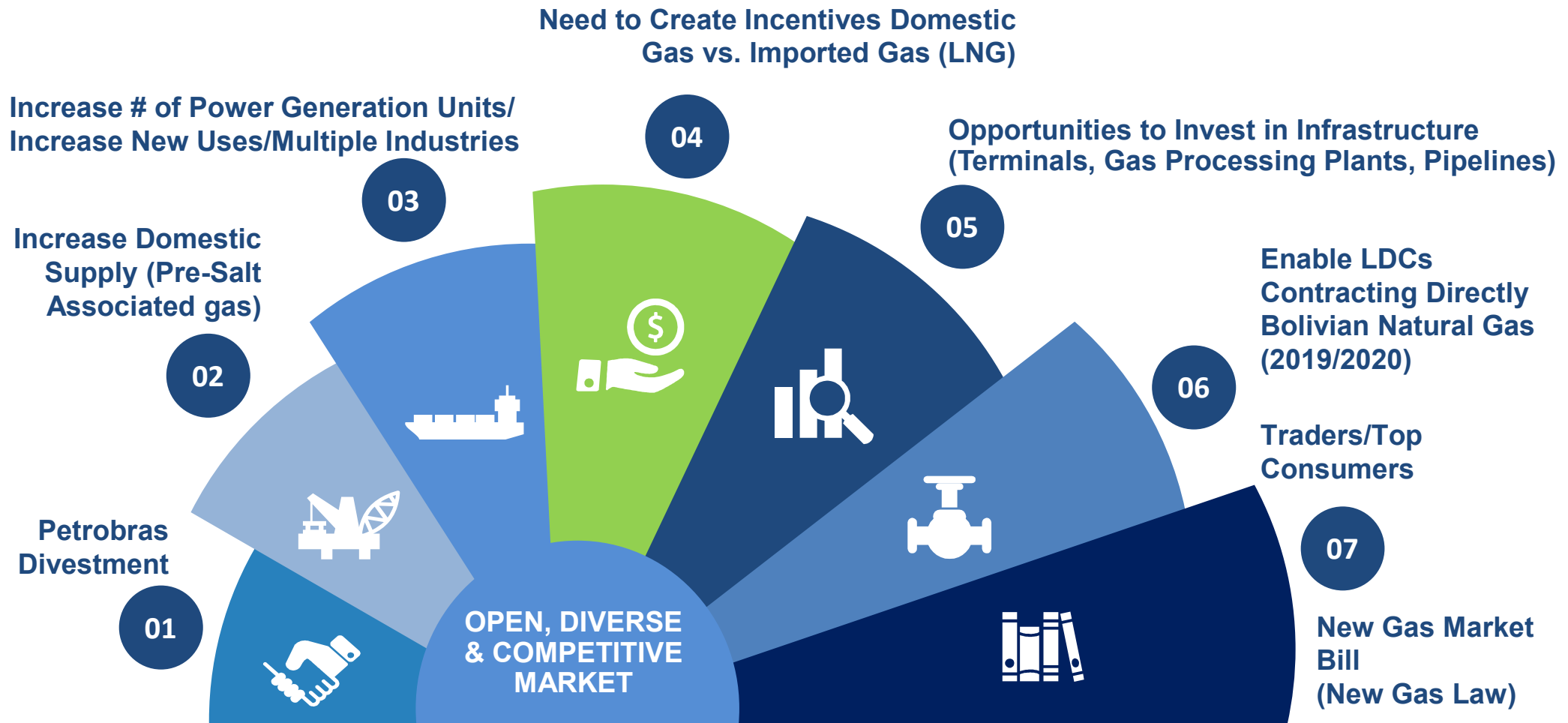
# Natural Gas Market Development (HUBs Development)



*"Hubs development a path to maturity, European Model" – fonte: H.Rogers (OIES)*

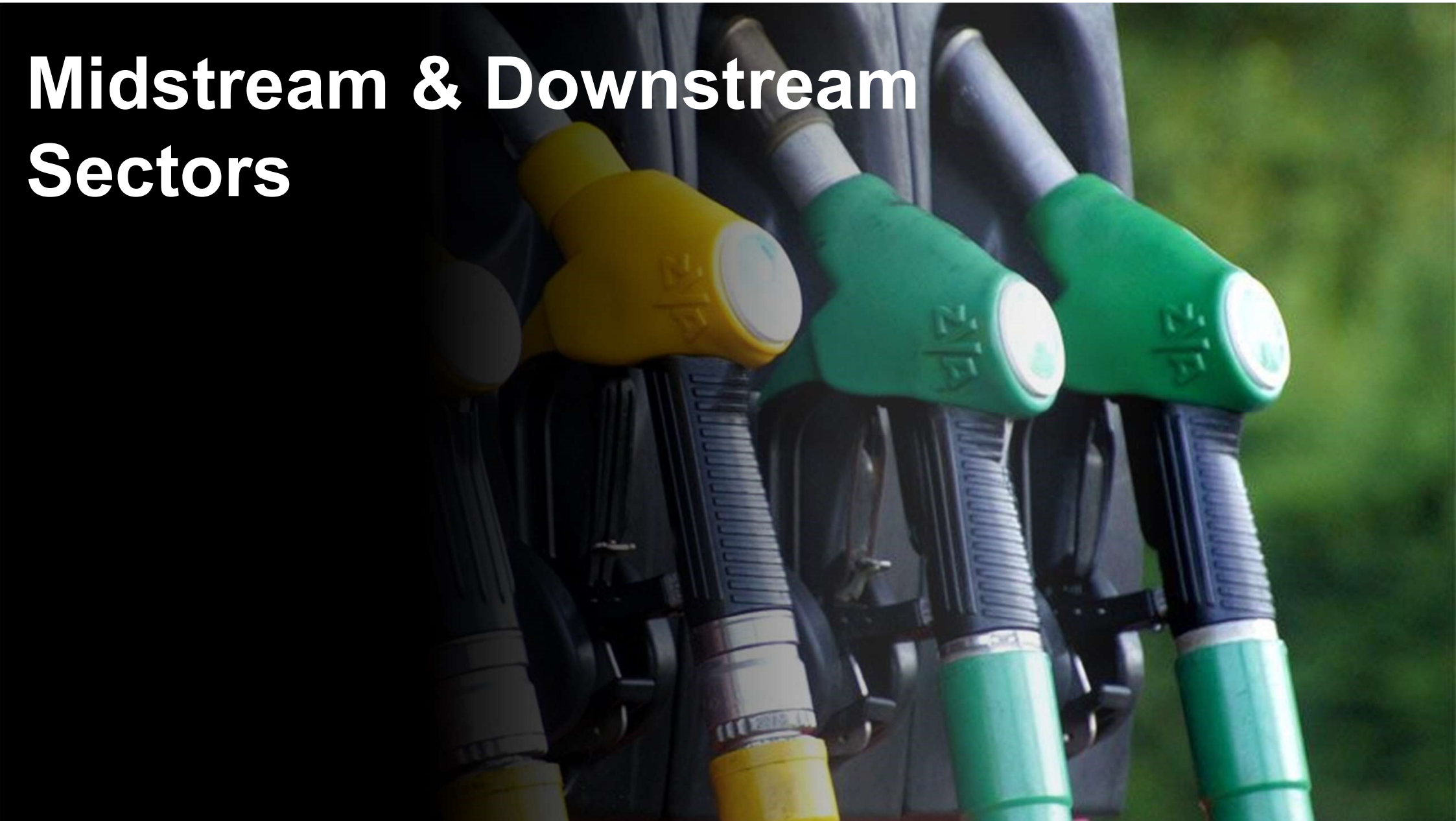
- Access to 3rd party Infrastructure and LNG Terminals
- Increase and Diversified Number of Agents in the Market (Increase Liquidity)
- Standardized Contracts

# Summary of Main Initiatives





# Midstream & Downstream Sectors



# Downstream Overview in Numbers

Brazil is the 9<sup>th</sup> Largest Oil Producer in the World

Brazil is the 7<sup>th</sup> Largest Consumer of Oil Products in the World

National Sales of Oil Products (Gasoline, Diesel, QAV, LPG)

**~2.0**  
Million bpd

Imports  
(ethanol, naphtha, QAV, LPG, Gasoline and Diesel)

**543**  
Thousand bpd

**17**

Refineries

2019 Average

**~73%**

Refinery Utilization factor

**Monopoly  
“De Facto”**

98% of The installed refining capacity is owned by Petrobras

## Solid and Growing Participation of Biofuels

National Sales of Biofuels (Ethanol and B100)

**667**  
Thousand bpd

**378**

Ethanol Mills

**51**

Biodiesel Plants

Source: SIMP/ANP

# Downstream Supply Chain

## Supplies

- **17** Oil Refineries
- **270** Ethanol Plants
- **534** Importers and Exporters of Petroleum and Derivatives
- **172** Lubricant Importers
- **125** Lubricant Producers
- **13** Lubricant Re-refiners
- **51** Biodiesel Producers



## Distributors

- **157** Liquid Fuel Distributors
- **19** LPG Distributors
- **19** Solvent Distributors
- **29** Asphalt Distributors
- **8** Aviation Fuel Distributors



## Resellers /Ind. Consumers

- **40,990** Retailers of Liquid Fuels (17,862 white flag)
- **59,885** LPG Resellers
- **421** TRRs & 23 TRRs-NI
- **263** Aviation Dealers
- **21,130** Refueling Points
- **73** Solvent Industrial Consumers



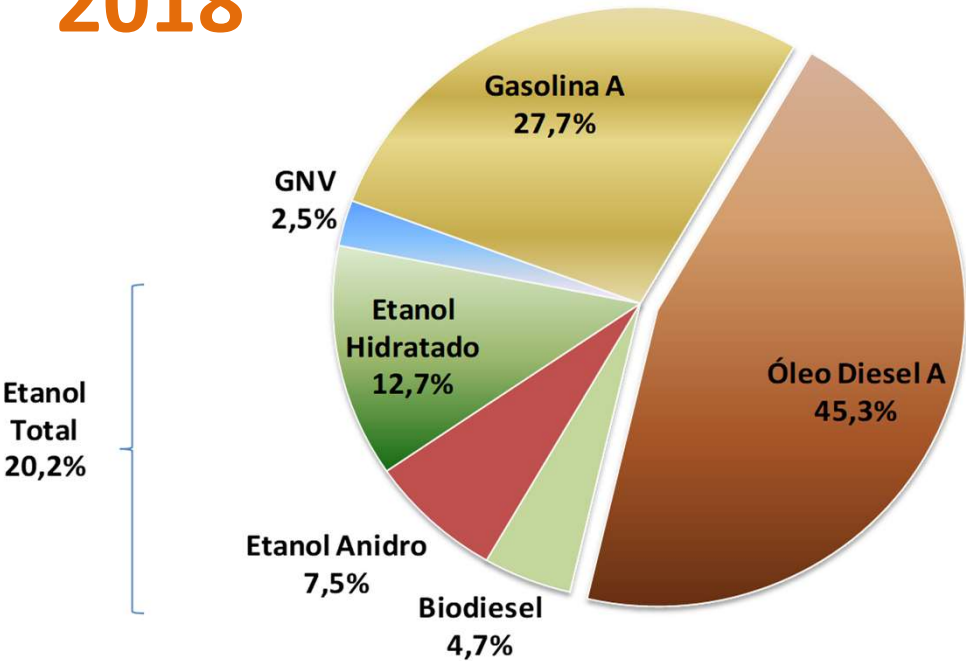
**124,653 Regulated Agents**

Source: SIMP/ANP

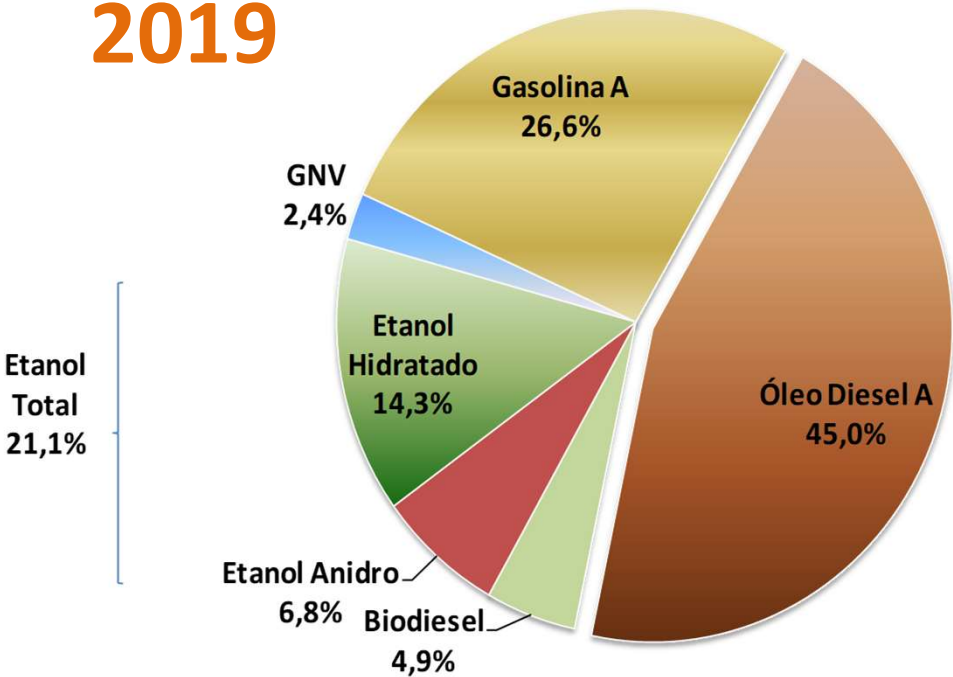


# Road Transportation Fuel Consumption Overview

2018



2019



Continue Expansion of the Biofuels Participation.

Source: SIMP/ANP

Combustível	Variação 19/18	
Óleo Diesel A	▲	2,5%
Biodiesel	▲	8,4%
Etanol Anidro	▶	-0,6%
Etanol Hidratado	▲	16,2%
GNV	▼	0,0%
Gasolina A	▶	-0,6%



# Prior COVID-19...Early Signs of Economic Recovery

Volume of Fuel Sold (m<sup>3</sup>)

~140MM

Growth 18/19

2.97%



Diesel B

~3.0%



Diesel Market Recovery Aligned to Economic Recovery (Incl. Biodiesel)

~ 8,4%

Hydrous Ethanol

~16.2%



Otto Cycle

~5.1%

Aviation  
Fuel



2.8%

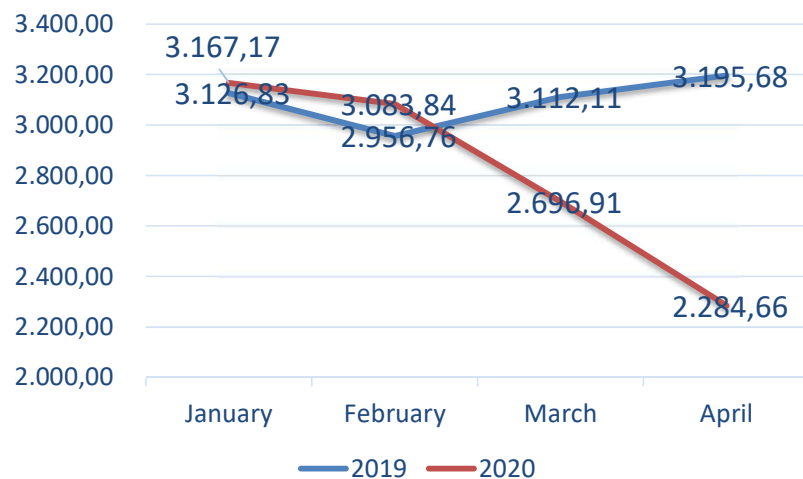


Increased Operational Efficiency

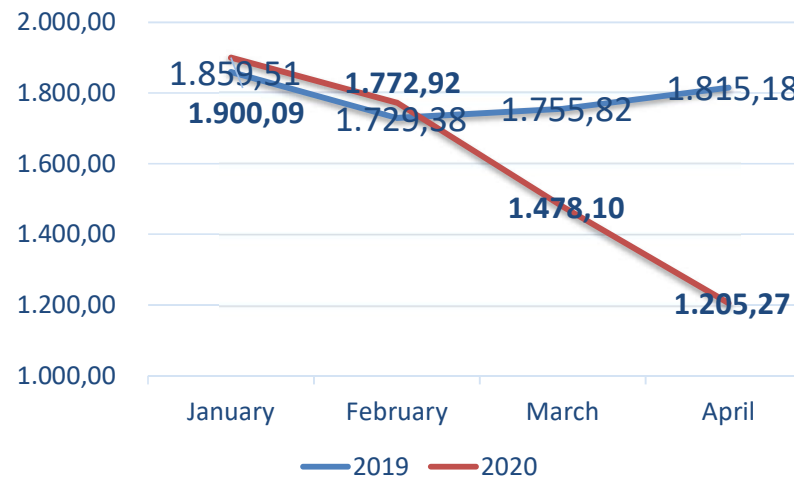
# COVID - 19 Crisis – Impact on Sales Volumes 1Q/2020 vs 2019 (1/2)

2020/2019	Gasoline	Ethanol	Diesel	LPG	Aviation Fuel
January	1,29%	2,18%	0,94%	1,18%	-3,47%
February	4,30%	2,52%	3,17%	1,79%	-0,21%
March	-13,34%	-15,82%	3,42%	11,99%	-28,94%
April	-28,51%	-33,60%	-14,10%	4,28%	-84,73%
Total	-9,35%	-11,22%	-1,79%	4,87%	-27,95%

## Gasoline (mil m<sup>3</sup>)



## Ethanol (mil m<sup>3</sup>)

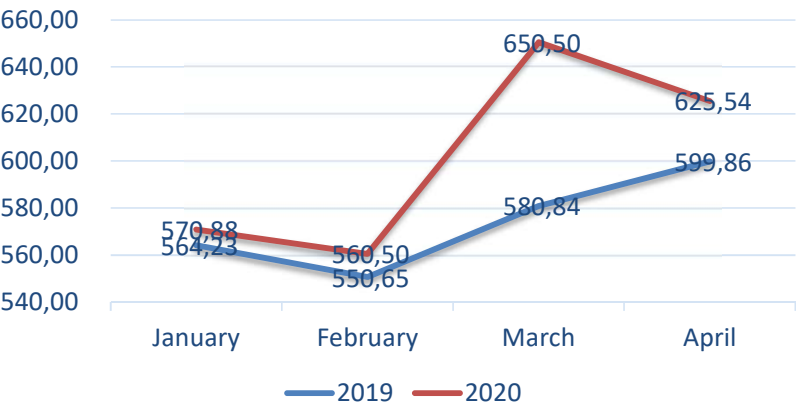


# COVID - 19 Crisis – Impact on Sales Volumes

## 1Q/2020 vs 2019 (2/2)

*“Consumer Behavior has Changed Dramaticly – Possible some Perennial Changes in Consumer Behavior “*

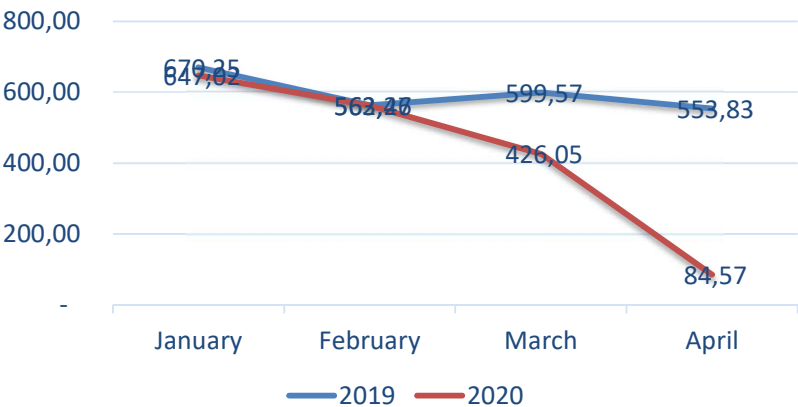
LPG (mil t)



Diesel (mil m<sup>3</sup>)

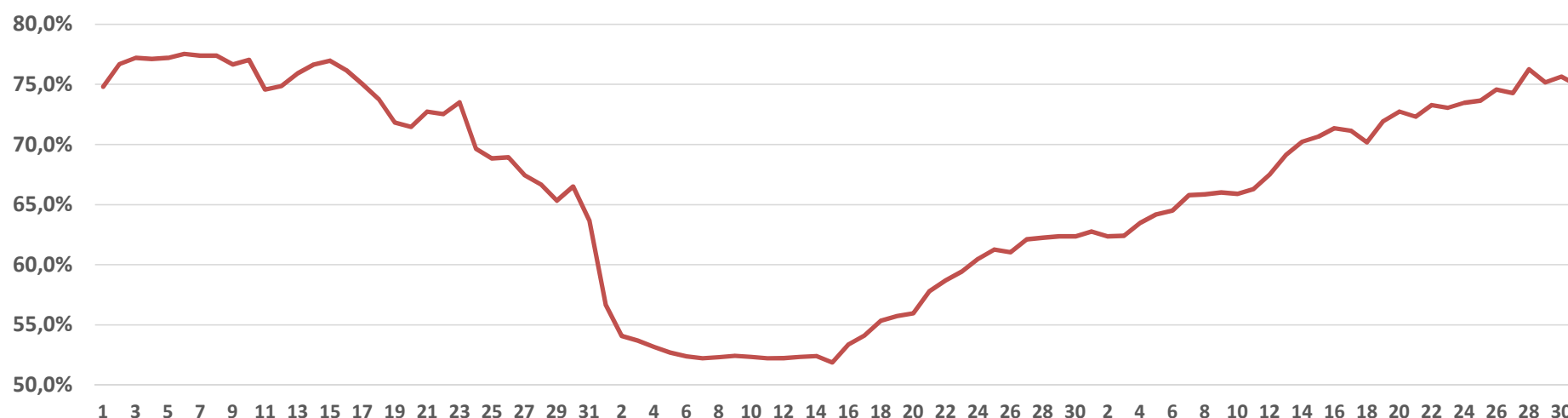


Aviation Fuel (mil m<sup>3</sup>)



# Petrobras Refineries Runs Mar-May/2020 – Demand Impact

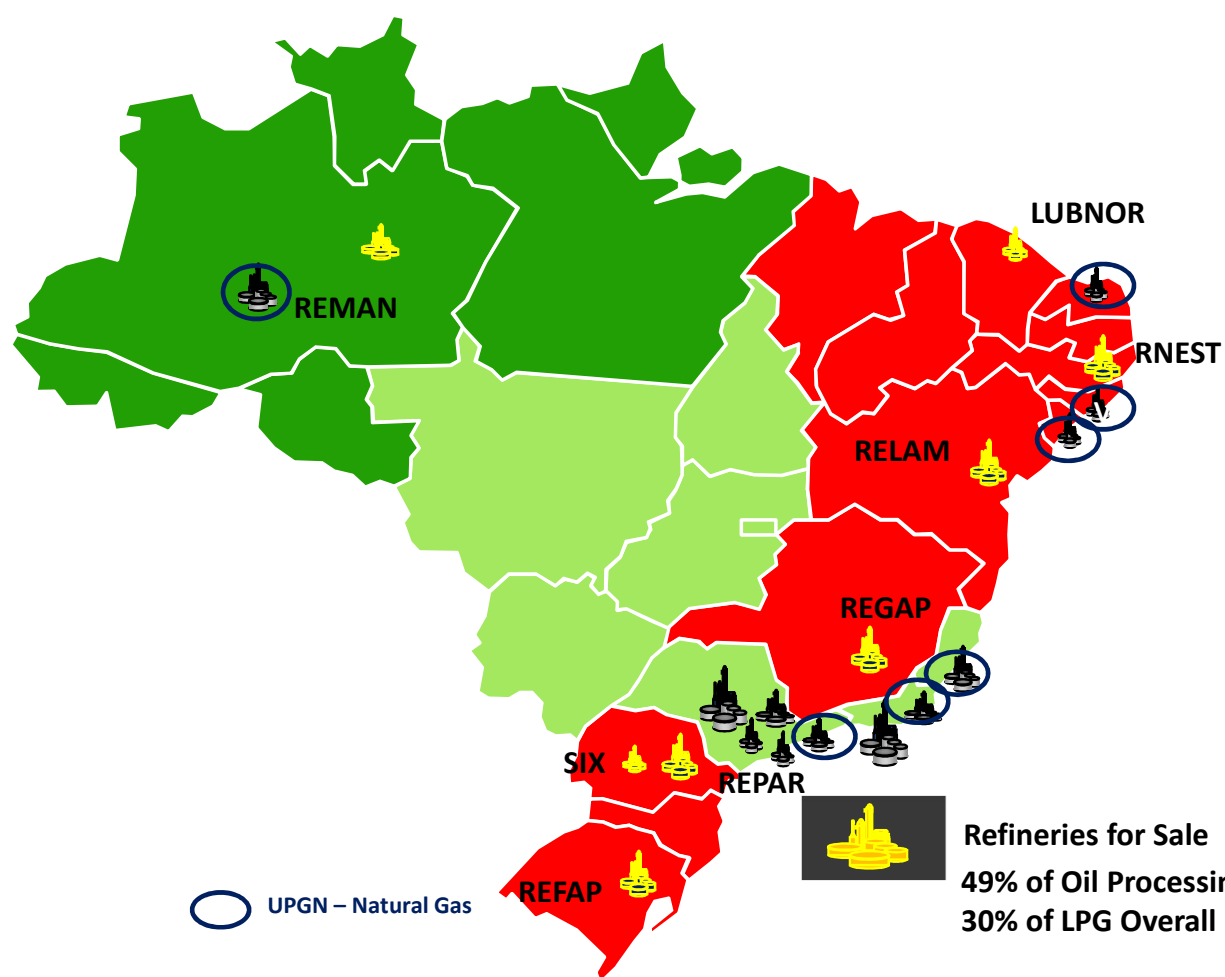
After a Dramatic Impact on Oil Products Demand, Petrobras Refineries are Bouncing Back



Dado	REMAN	LUBNOR	RNEST	RLAM	REDUC	REGAP	REVAP	REPLAN	RECAP	RPBC	REPAR	REFAP	RPCC	TOTAL
Capac.	7.300	1.650	15.900	60.000	40.000	26.400	40.000	69.000	10.000	28.488	34.000	35.000	7.100	374.838
FUT	17%	89%	100%	69%	87%	72%	100%	53%	67%	80%	84%	73%	68%	74,9%



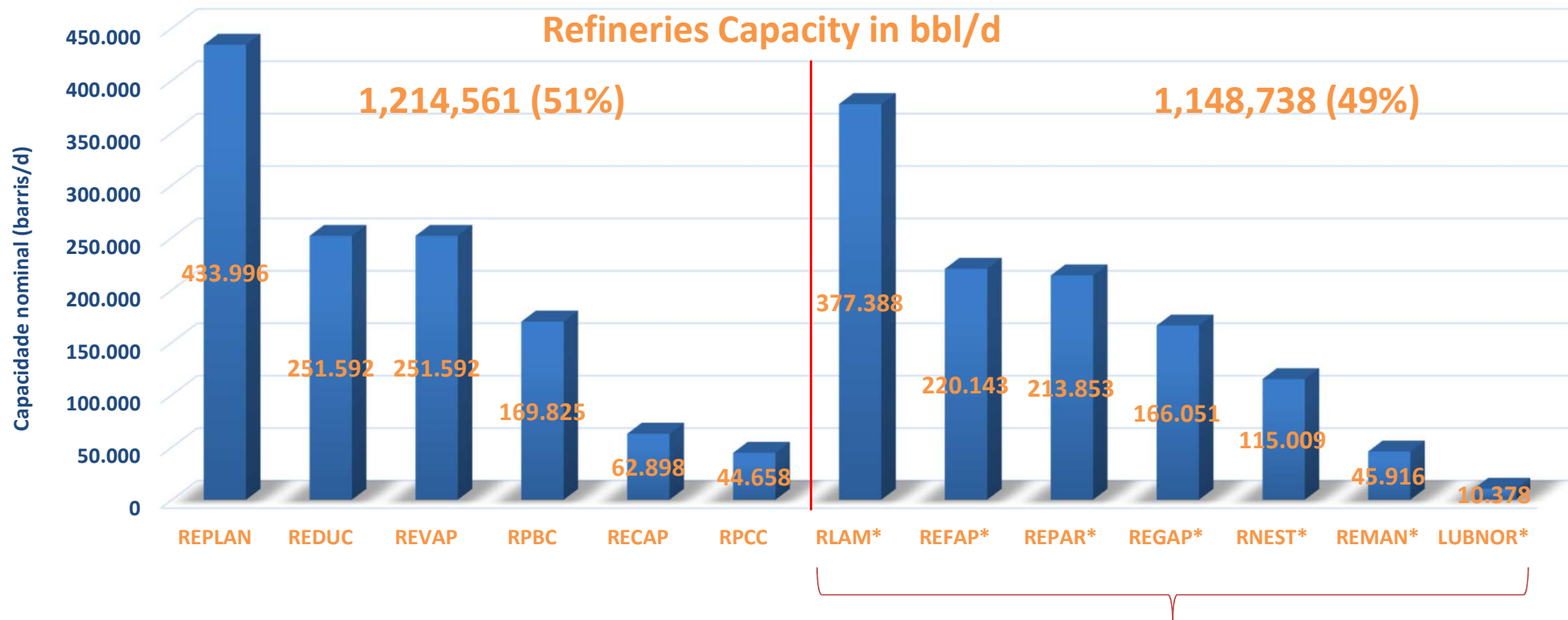
# Eight Petrobras Refineries are Under the Divestement Program



Refinery	Capacity (kbpd)	Terminals (+ pipelines)
RELAM	323	Madre de Deus, Candeias, Itabuna e Jequié
RNEST	115	Suape
REPAR	208	Paranaguá*, São F. do Sul, Guaramirim, Itajaí, Biguaçu
REFAP	201	Tramandaí, Niterói
REGAP	150	(ORBEL I e II)
REMAN	46	Manaus
LUBNOR	8	Mucuripe
SIX	5.800 t/d	-

 **Refineries for Sale**  
49% of Oil Processing Capacity  
30% of LPG Overall Production

# Petrobras Refineries Capacity Under The Divestment Programm



\* Divestment Program

Fonte: ANP (Site – Autorizações, em 30/05/19)

# FINAL REMARKS – FOUNDATIONS FOR RECOVERY

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- ❖ ACCELERATE NEW GAS MARKET INITIATIVES
- ❖ CONTINUE PRIVATIZE PORTS/TERMINALS/RAILROADS AND ROADS (LOGISTICS)
- ❖ ATTRACT NEW INVESTMENTS (Public & Private)

- ❖ DECIDE ON PETROBRAS PREFERRED RIGHTS
- ❖ IMPROVE BID ROUNDS ECONOMIC PARAMETERS
- ❖ SIMPLIFY CONTRACT REGIME & GOVERNANCE

INFRASTRUCTURE  
PROJECTS WITH  
BROAD ECONOMIC  
IMPACT

FUTURE BID ROUNDS  
ATTRACTIVENESS

SENSIBLE POLICIES  
& REGULATIONS

DEVELOPMENT of an  
OPEN, COMPETITIVE  
AND DYNAMIC  
MARKET

- ❖ PROMOTE STABLE AND PREDICTABLE POLICIES & REGULATION
- ❖ ENABLE INVESTMENTS TO PROSPER
- ❖ IMPROVE ENERGY POLICIES & REGULATIONS TOWARDS A CLEANER ENERGY MATRIX

- ❖ SUPPORT PETROBRAS DIVESTMENT PROGRAM
- ❖ ATTRACT NEW ENTRANTS TO VARIOUS MARKET SEGMENTS



**The Best Way To Predict The  
Future Is To Create It"**

**Abraham Lincoln**

**Thank You!**



# Key Government Measures

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- ☐ Cease and Desist Agreement CADE & Petrobras
- ☐ New Gas Law & ANP Regulation
- ☐ Improvement of Energy Auctions Rules
- ☐ Alignment of Federal Government and State/Local Regulators
- ☐ Incentives for the States to Adopt Best Practices
- ☐ Natural Gas Training Program to State & Local Regulators
- ☐ Tax Legislation Review

## CEASE AND DESIST AGREEMENT – CADE / PETROBRAS

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CADE – Antitrust Authority

- ☐ Sell equity shares on transmission and distribution companies
- ☐ Nominate needed capacities on entry and exit zones of the transmission grid
- ☐ Allow Third Part Agreement (TPA) on gathering pipelines and NGPUs
- ☐ Cease buying gas from other producers
- ☐ Rent one of the LNG regasification plants (Bahia LNG Terminal)

**Deadline : 31/12/2021**