

## Management Concepts

- ✓ **Governance** - Improve the Ministry of Mines and Energy's competences regarding to public policies elaboration in the sector, with the introduction of risk and integrity approaches.
- ✓ **Predictability** - It comes from governance and foresees the publication of the auctions' timeline for electricity, oil and gas and mining, in order to allow investors and economy to respond for these opportunities.
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- ✓ **Dialogue** - Build a responsible, pragmatic, harmonious and transparent dialogue among the government entities, with business community, the industry agents and civil society.
- ✓ **Sustainability** - Ensure compliance with environmental, operational safety standards and procedures and the best practices in the energy and mining sectors, in an environmentally sustainable manner.

## Oil, Natural Gas and Biofuels Agenda - 2019

### Exploration and Production



Auction of surplus volumes related to the Transfer of Rights in 2019, the 6th Production Sharing Round and the 16th Concession Round. Updating of the multi-year calendar, guaranteeing the continuity of the auctions for exploratory areas. Expansion of the competence of the National Energy Policy Council, in the definition of exploration regimes in the pre-salt areas.

### Refining and Oil Products



Attracting investments to create competition in refining and logistics. Evaluation of alternatives to equalize LNG prices. Combating tax evasion and fuel adulteration.

### Biofuels



Continuity of the RenovaBio deployment, promoting security in supply, with sustainability and competitive prices. Gradual and competitive expansion of the biodiesel mixture percentage.

### Natural Gas



Support for the legislative and regulatory measures necessary to open the market, attracting investments and increasing competition. Synergistic development of the gas sector with that of electricity.

## Electricity Agenda - 2019



**Sort out the GSF (Generation Scaling Factor) issue:** To support devices solving GSF from the year 2013 to the present without tariff impact with the objective of reducing judicialization in the electricity sector and restoring the balance of the energy market.



**Re-evaluate the Eletrobras Capitalization model** – Within the privatization process, to recover the company's investment capacity in order to reinsert it as a major player in the expansion of the electric sector.



**Revise the system physical guarantees and exclude externalities from the Energy Reallocation Mechanism (MRE)** – In the long term, the correction of generation expectations from all sources is structural and will allow the planning and operation of the system to be closer to reality.



**Renegotiate the financial basis of the Itaipu Treaty (Annex C):** The amount of energy generated by Itaipu, the best way to market it and its pricing are under evaluation.



The conclusion of the works at the **Nuclear Thermoelectric Power Plant (UTN) of Angra 3** the start date for the commercial operation is planned for January 2026. With 1,405 GW of installed capacity, Angra 3 is considered relevant and beneficial for the operation of the National Interconnected System (NIS) and one of the three pillars of the Brazilian Nuclear Policy.



**Modernize the sector by prioritizing:** market opening, supply and demand price formation, energy and power ballast separation, adoption of the binomial tariff and the role of distributed generation, price reality, increased competition in the sector, reduction of inefficiencies, and the adequacy of subsidies.

## Mining Agenda



Increase attractiveness for investments in the mining sector.



Perform the new institutional arrangement of the mining sector (ANM).



Reduction of bureaucracy with the adoption of good practices and management tools.



Investments in geological knowledge.



Foster frameworks that promote greater reach of legal security for long phases of maturation of mining projects.




Offer available ANM areas (20,000 areas) and CPRM areas for auctions.

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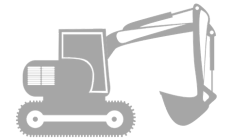
## Why invest in this sector in Brazil?



Brazil produces about  
**50**  
different mineral  
substances



**9,400**  
mines (mining  
concession regime)  
in activity



Occupied area:  
**0.5%**  
of the national  
territory



CFEM Collection:  
**USD 780 million**  
(increase of 65% compared  
to 2017, after amendment of  
legislation)



Amount of Mineral  
Production (2017):  
**US\$ 32.9  
billion**



Mining share in national  
GDP (2017):  
**4%**

## Areas to be offered to the market

There are about 20,000 available areas to be offered by the National Mining Agency (NMA) for mineral research and discovery of new deposits.

About 1,000 areas were initially selected for appreciation, considering geological data. The selection of the areas to be offered is directly related to its geological potentiality, around 200 areas in each Brazilian regions.

Data Sheets are available to the investors in the ANM site.



Publication of the bid notice is expected in June **2019**.

## Mining Rights Bidding

### Palmeirópolis Project - Copper, Lead and Zinc in the State of Tocantins

A block with copper, lead and zinc areas from Palmeirópolis will be offered in the state of Tocantins.

Good infrastructure and strategic location (nearby energy infrastructure and access through railroad and highways). The local community is in favor of the mining project in the region. The areas that will be offered cover around 6,500 hectares whose exploration reports have already been approved by the National Mining Agency (NMA) responsible for regulating the sector.



Publication of the bid notice is expected in **2019**.



Source: IPP, 2019

## Bidding Process

The auction winner will be defined by the combination of the following factors: signature bonus (fixed) minimum investment program and royalties (variable).



The mining titles will be auctioned, providing detailed knowledge of the mineral deposits and the development of new mines.



# OIL, NATURAL GAS AND BIOFUELS

GOVERNANCE | PREDICATABILITY | STABILITY | DIALOGUE | SUSTAINABILITY

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**Biofuels** - Continuity of the RenovaBio deployment, promoting security in supply, with sustainability and competitive prices. Gradual and competitive expansion of the biodiesel mixture percentage.



**Natural Gas** - Support for the legislative and regulatory measures necessary to open the market, attracting investments and increasing competition. Synergistic development of the gas sector into electrical matrix.

## Development of the Brazilian natural gas market



The domestic natural gas must gain more room in thermal generation and industrial, commercial and residential markets.



High gas potential in Brazil and pre-salt development: replacement of LNG by domestic gas.



Regional auctions of natural gas thermals to reduce energy costs and consume domestic gas.

## Why invest in this sector in Brazil?



Three exploration and production environments: **Onshore**, **Conventional Offshore** and **Pre-Salt**.

**Onshore** - mature and new frontiers (oil and gas) basins, potential for non-conventional. Production of 8%.

**Average oil production per well: 16 barrels per day - 6,765 wells**

**Conventional Offshore** - East Margin (beyond pre-salt) and Equatorial Margin, new frontiers and mature fields. Production of 37%.

**Average oil production per well: 1,603 barrels per day - 631 wells**

**Pre-Salt** - one of the best plays in the world, with the biggest offshore oil discoveries in the last decade. Production of 55%.

**Average oil production per well: 16,712 barrels per day - 87 wells**

## Bidding rounds

These are auctions in Brazil, by which the Union grants the **right to explore and produce oil and natural gas**. Since 1999, 15 rounds of exploratory blocks and four of mature fields, under the **concession regime**, and 5 pre-salt Rounds under the **production share regime** have been carried out. More than 100 companies, domestic and foreign, of different sizes, have already participated in the competitions.

By 2021, seven rounds offering areas containing billions of oil barrels are planned, which create an opportunities for all types of exploration and production companies. In 2019, three auctions will be hold: Transfer of Rights (TOR), 6th Production Sharing Round and the 16th Concession Round.

## Auction of surplus in oil of the Transfer of Rights (TOR)

Oil is a strategic resource. Brazil occupies a prominent position and still has the capacity to expand operations. The year 2019 should be marked by the accomplishment of one of the largest oil auctions, the surplus of Transfer of Rights. The Transfer of Rights is an area that was granted by the government to Petrobras in 2010, in an indirect exchange of the company's shares for the right to explore up to five billion barrels of oil. During the exploration, Petrobras confirmed the existence of a larger than expected volume, which will be sold by the government in auction later this year.

- 📍 Four blocks in the Santos basin: Búzios, Itapu, Atapu and Sépia
- 📍 Estimates of doubling existing reserves and future expectations
- 📅 Expected for 4th quarter
- 📍 Best producing areas worldwide

## 6th Production Sharing Round - Pre-Salt



### Scheduled for 4th quarter



The blocks are referred to as Aram, Bumerangue, Cruzeiro do Sul, Sudoeste de Sagitário and Norte de Brava



Estimated signature bonus amount around **USD 1,9 billion**



Minimum investment commitments around **USD 250 millions**



Total amount invested around **USD 1,75 billion**



**27.43%** shall be the minimum average percentage of Union oil surplus



In the production sharing, the contracts are awarded to the company that offers the largest volume of so-called oil surplus to the Union. The amount offered is the volume of oil or gas remaining after the company discounts operating costs and investments.

## 16th Bidding Round



### Scheduled for the 4th quarter



There will be offered: **36 blocks in five basins**: Pernambuco-Paraíba, Jacuípe, Camamu-Almada, Campos and Santos



29,91 thousand km<sup>2</sup> of area



The estimated bid bonus offer is around **USD 587 millions**



Minimum expected exploratory investments around **USD 150 millions**



Total investment value approximately **USD 750 millions**



In concessions, the one who offers the highest subscription bonus (amount paid to the Union) wins the contract.

USD = aprox. 4 BRL (29/03/2019)



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- ✓ **Sustainability** - Ensure compliance with environmental, operational safety standards and procedures and the best practices in the energy and mining sectors, in an environmentally sustainable manner.
- ✓ **Energy Planning** - Ensure the continuous challenge of promoting the expansion of energy matrix, guaranteeing energy security, considering the objectives of sustainable development and fair tariff.

## Electricity Agenda - 2019

**Sort out the GSF (Generation Scaling Factor) issue:** To support devices to solve GSF from the year 2013 to the present without tariff impact with the objective of reducing the judicialization in the electricity sector and restoring the liquidity of the energy market.

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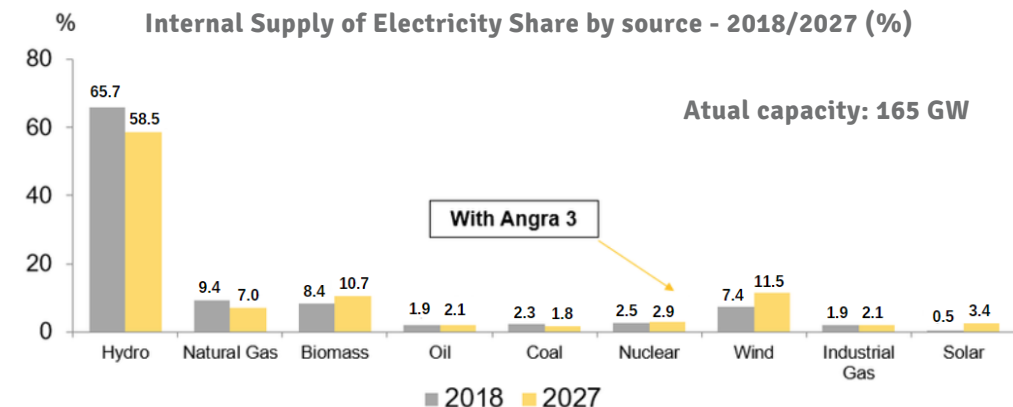
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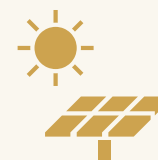
## Brazilian Electric Matrix Projection



### Non-renewable

Brazil 2018: **16%**

Worldwide 2018: **86%**



### Renewable

Brazil 2018: **84%** - 2027: **79%**

Worldwide 2018: **14%**

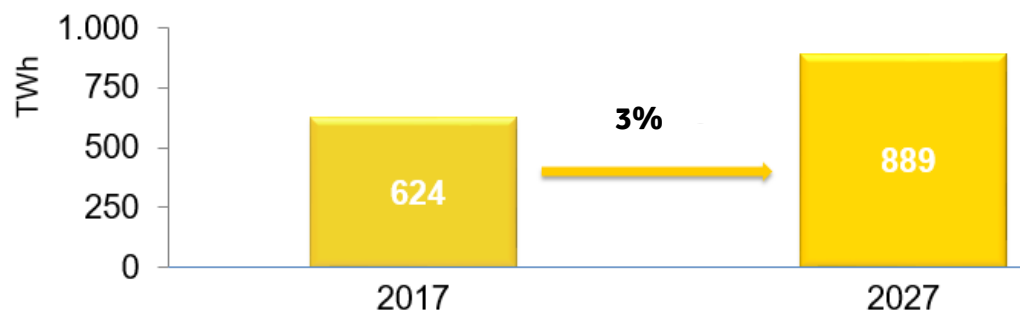


**Opportunity**

Source: PDE 2027, 2018

## Supply energy x GDP

### Electricity



GDP: 2.7% to 3% p.a. and GDP per capita: 2.2% p.a. (2017/2022/2027)

Source: PDE 2027, 2018

## Electricity Auctions - 2019

### New Energy

Boosting the energy sector is one of Brazil's greatest challenges. For this, still in 2019, two new energy auctions will be accomplished, which aim to meet the increased charge from distributors. In this case, energy from plants that have not yet been built will be sold and hired.

**Auction A-4** – It is scheduled for the 2nd quarter of 2019. The energy supply must start on January 2023. This auction has the potential of investments generation by USD 1,25 billion

**Auction A-6** – it is scheduled for the 3rd quarter of 2019. The energy supply must start on January 2025. This auction has the potential of investments generation by USD 1,75 billion.

## Supply auction to Roraima's isolated systems

The auction aims to give robustness to the state's power generation system, with alternatives to innovative environmental solutions. The Power Auction for the supply of Boa Vista and connected locations is already underway. The hiring aims to ensure greater security in the energy supply in the state and reduce dependence on energy imports from neighboring countries.



**The auction is scheduled for May 2019.**

There are registered power plants from several sources, as Solar, Wind, Oil, Diesel, Biomass, Biofuel, Biogas, and battery storage systems. The amount of investments estimated is USD 1 billion

### Transmission Auction

The demand for energy increases more and more, and to seek the reliability of the system, annual auctions will be held. These auctions will support projects to expand and modernize the country's energy transmission infrastructure, including the construction, assembly, operation and maintenance of transmission facilities.



The auction is scheduled for the 4th quarter of 2019. The planned extension is 2.477 Km of transmission lines with 5,745MVA of power transformation capacity, which are distributed by 10 Federation States (Goiás, São Paulo, Minas Gerais, Rio de Janeiro, Acre, Pará, Bahia, Alagoas, Ceará e Rio Grande do Sul), summing USD 1 billion of investments expected.



The one who offers the best Allowed Annual Revenue (AAR) in comparison to the maximum established will win the competition. The AAR is the revenue that the concessionaires are entitled to provide the public transmission service as of the start of operations.

USD = 4BRL (29/03/19)