

ROADSHOW OIL & GAS
NEW OPPORTUNITIES IN THE
BRAZILIAN O&G SECTOR
BRAZILIAN ENERGY
LEGISLATION & GLOBAL
TRENDS

18–21 November, 2019

PINHEIRONETO
ADVOGADOS



1 BRAZILIAN ENERGY MATRIX DECARBONIZATION

BRAZILIAN ENERGY MATRIX DECARBONIZATION

BRAZILIAN ENERGY MATRIX 2019 INTERNAL ENERGY OFFER

RENEWABLES = 45.3%



Sugarcane
Biomass
17.4%



Hydro
12.6%



Firewood and charcoal
8.4%



Bleach and other
renewables
6.9%

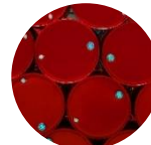
NON-RENEWABLES = 54.7%



Natural
Gas
12.5%



Uranium
1.4%



Oil and
byproducts
34.4%



Mineral
Coal
5.8%



Other non-renewables
0.6%

Source: Brazilian Energy Balance 2019 published by Energy Research Company - EPE

BRAZILIAN ENERGY MATRIX DECARBONIZATION AND INCENTIVIZED SOURCES

INCENTIVIZED SOURCES

Discount for Incentivized Sources (2002): discount of at least 50 per cent for electricity transmission and distribution from (i) small hydroelectric plants, (ii) solar, (iii) wind power, (iv) biomass and (v) qualified cogeneration, subject to specific requirements.

Proinfa (2002): governmental program to foster the generation of electric power through alternative energy sources (wind, small hydro and biomass) through long-term contracts and feed-in tariffs.

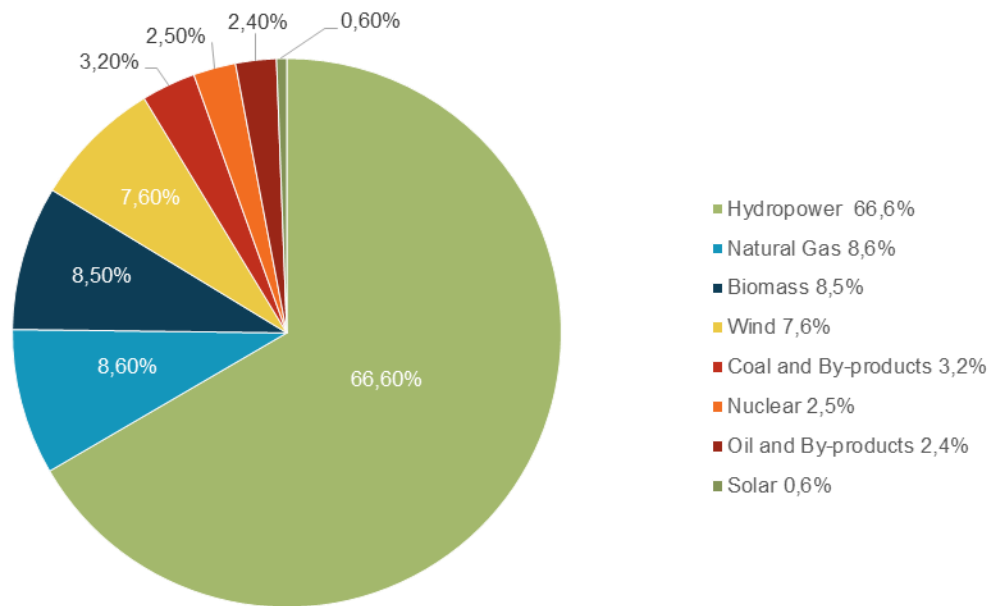
Distributed Generation (2012): net metering mechanism plays an important role in increasing the use of photovoltaic solar generation in Brazil, among other sources. The regulation is subject to periodical updates and a new revision is expected in the near future.

Adoption of the Paris Agreement (2016): Brazil ratified the Paris Agreement and committed to reduce greenhouse gas emissions by 37% below 2005 levels in 2025, and by 43% below 2005 levels in 2030 in its Nationally Determined Contribution (NDC).

Expected Growth for Wind and Solar: EPE's plan forecasts that, by 2027, renewable sources will account for close to 85% of the Brazilian electric matrix, with alternative energy sources hitting around 30%, rising from 22% in 2018.

Financing: Brazil attracted almost \$57 billion in new asset finance for clean energy plants in 2010-17. Wind alone accounts for 56% of the total, while solar attracted just 6%. However, this is expected to increase as solar developers have secured almost 2GW in contracts in the 2017-18 auctions.

BRAZILIAN ENERGY MATRIX ELECTRIC POWER INSTALLED CAPACITY IN 2019



82% of the country's power generation capacity comes from renewable sources, making the country the largest power market in Latin America and one of the top 10 in the world

BRAZILIAN ENERGY MATRIX NATURAL GAS FOR RELIABILITY OF THE SYSTEM

NATURAL GAS FOR RELIABILITY OF THE SYSTEM

Run-of-the-river Power Plants: environmental concerns limit Brazil's ability to expand its hydropower generation capacity with large reservoirs. As a result, recent large hydropower plants were designed as run-of-the-river.

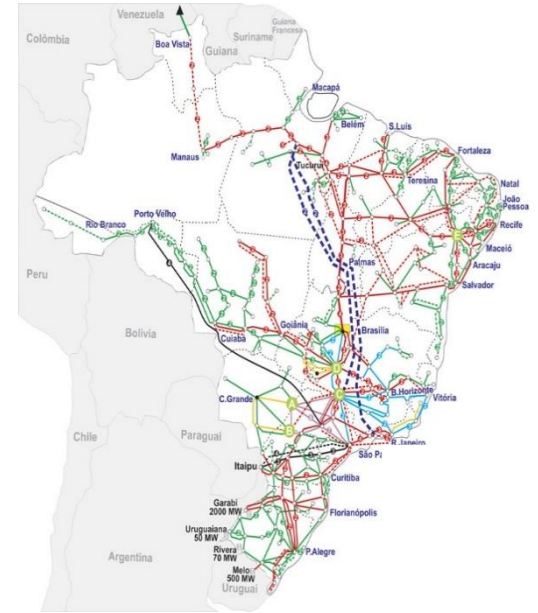
Dispatch of Natural Gas: high increase in thermopower generation due to consecutive years facing droughts. Oil and coal thermopower generation replaced by natural gas thermopower plants (including LNG-to-power projects).

Natural Gas Regulatory Framework (June 2019): significant changes expected upon approval of CNPE Resolution No. 16 -- guidelines to foster free competition in the natural gas market through unbundling, gas release, capacity release and open access to essential facilities.

Petrobras' Cease-and-Desist Agreement (July 2019): Administrative Council for Economic Defence (CADE) and Petróleo Brasileiro S.A. – Petrobras agreed that Petrobras shall take actions to open the Brazilian natural gas market, including divestments in natural gas transportation and distribution companies, and also through implementation of gas release and capacity release mechanisms, as well as open access to essential facilities.

GAS TRANSPORTATION AND ELECTRIC POWER TRANSMISSION

BRAZILIAN ENERGY MATRIX GAS TRANSPORTATION AND ELECTRIC POWER TRANSMISSION



BRAZILIAN ENERGY MATRIX

LNG TERMINALS, LNG-TO-POWER AND GAS-TO-WIRE POTENTIAL

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BRAZILIAN ENERGY MATRIX NUCLEAR POWER

NUCLEAR POWER

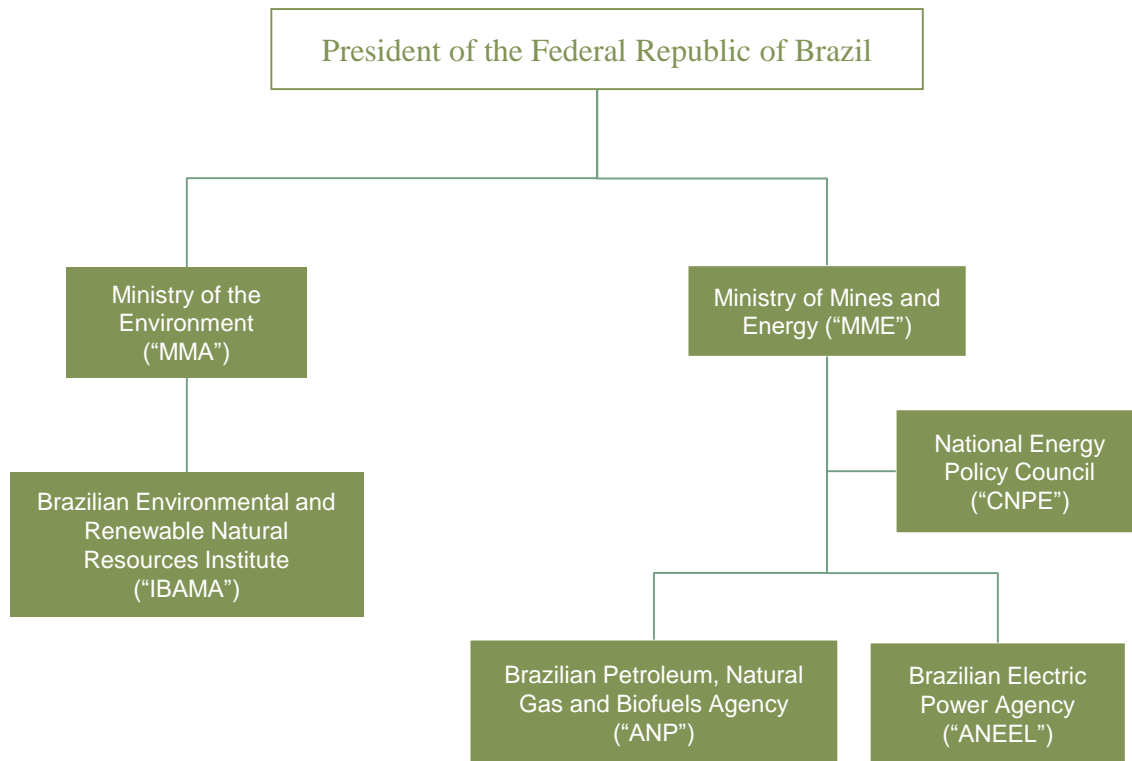
Current Scenario: Brazil has two nuclear reactors in operation (Angra 1 and Angra 2, based on a long-term partnership with Germany) and a third plant had its construction (Angra 3) interrupted.

Monopoly: pursuant to the Brazilian Federal Constitution, the federal government shall have the power to operate nuclear energy services and exercise state monopoly over research, prospecting, mining, enrichment and reprocessing, industrialization and trade in nuclear ores and their by-products.

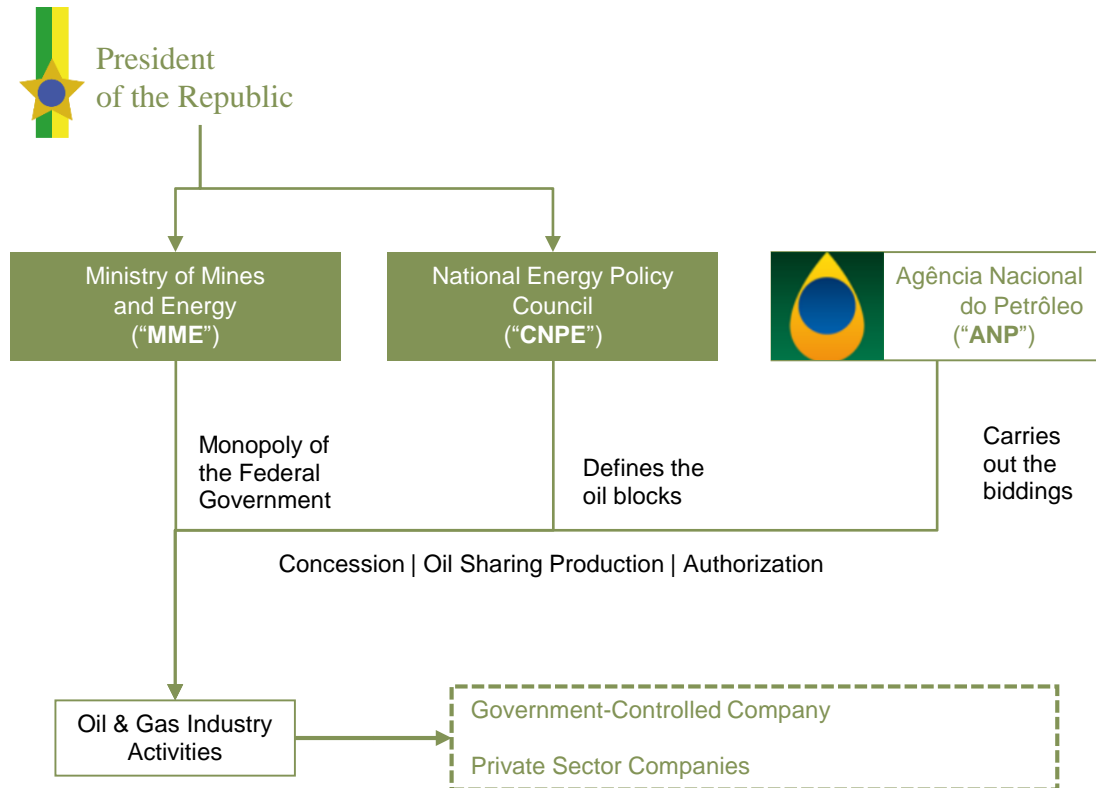
Further Expansions: 2029 Energy Plan (draft form), which is currently under public consultation, indicates that Brazil has the sixth largest reserve of uranium in the world as well as the required technology and expertise to develop new nuclear thermopower plants. New plants are expected to be proposed.

2 OVERVIEW OF BRAZILIAN ENERGY LEGISLATION

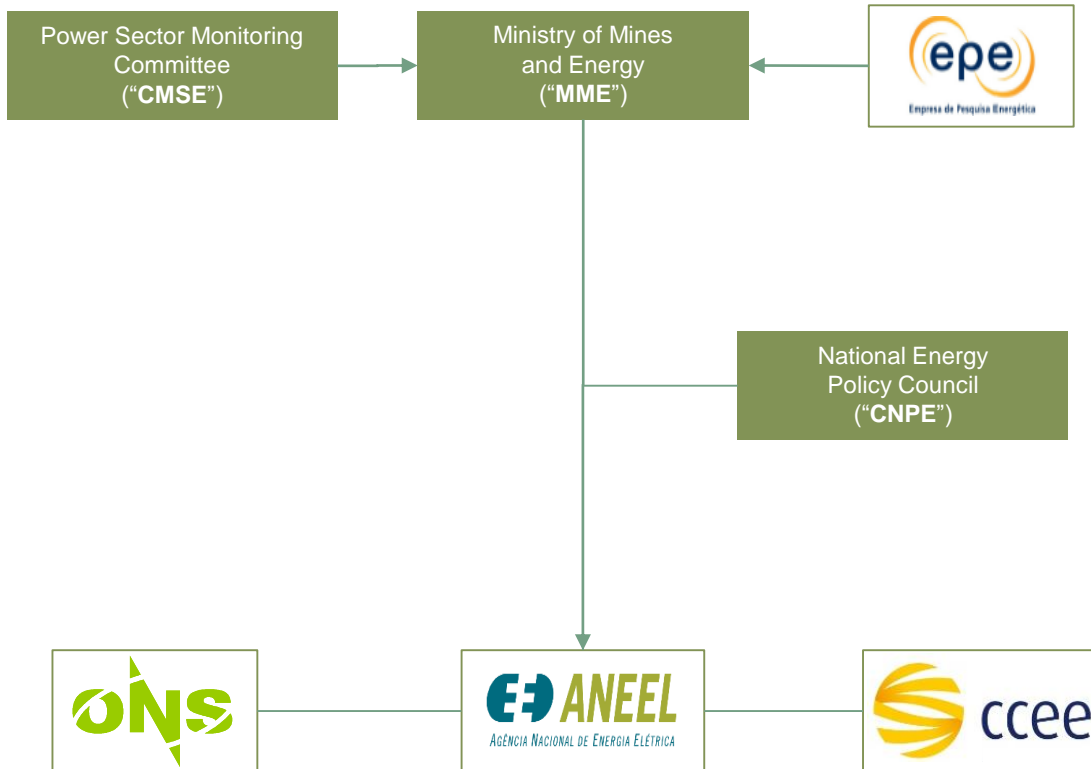
OVERVIEW OF BRAZILIAN ENERGY SECTOR STRUCTURE



OVERVIEW OF BRAZILIAN O&G SECTOR STRUCTURE

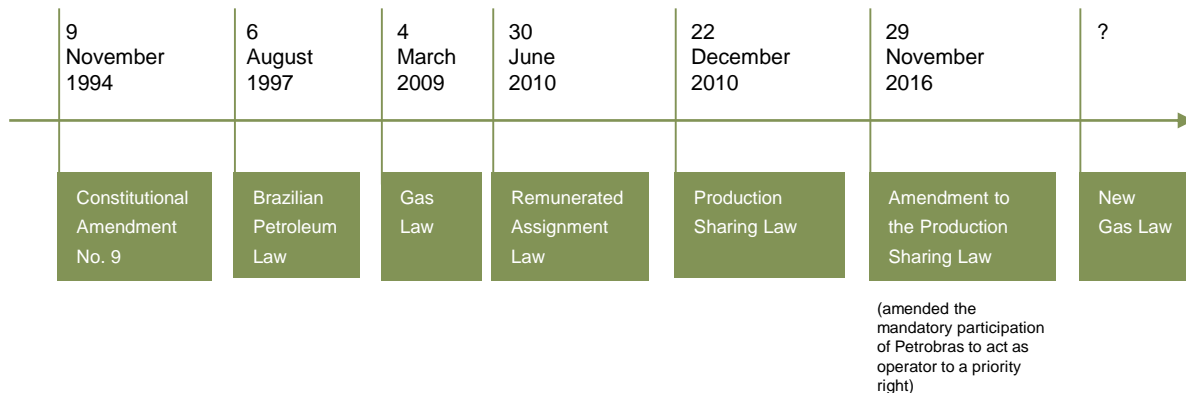


OVERVIEW OF BRAZILIAN ELECTRIC POWER SECTOR STRUCTURE



3 OVERVIEW OF BRAZILIAN O&G LEGISLATION

OVERVIEW OF BRAZILIAN O&G LEGISLATION



Constitutional Amendment No. 9: enabled the federal government of Brazil to contract with companies of either the public sector or the private sector the carrying out of the activities of the oil industry, with due regard for the conditions established later by the Brazilian Petroleum Law, which was issued in order to regulate the end of the monopoly formerly exercised by the federal government of Brazil through Petrobras in oil-related activities.

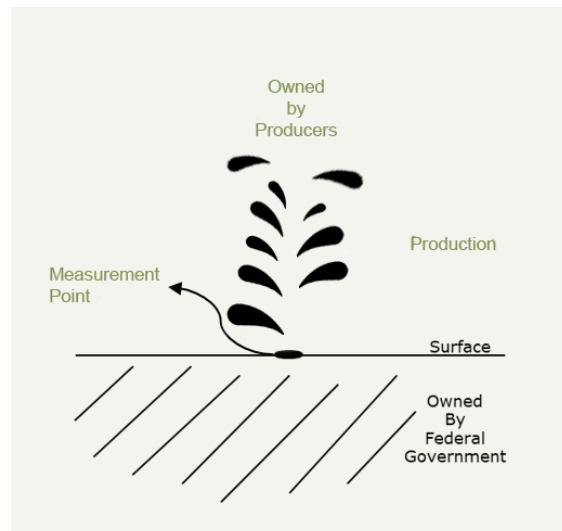
Brazilian Petroleum Law: regulates the national energy policy and activities related to the oil monopoly and created both the National Energy Policy Council ("CNPE") and the Brazilian Petroleum, Natural Gas and Biofuels Agency ("ANP"), among other features.

Remunerated Assignment Law: authorized the Granting Authority to onerously transfer exploration and production rights to Petrobras up to 5 billion oil barrels.

Production Sharing Law: the exploration and production of oil, natural gas and other fluid hydrocarbons under production sharing regimen in the pre-salt and other strategic areas, and the creation of the Social Fund (also known as "*Fundo Social*"), which funds are destined to the social and regional development for programs and projects related to: (i) education; (ii) sports; (iii) public health; (iv) science and technology; (v) environment; and (vi) mitigation and adaptation measures to climate changes.

OVERVIEW OF BRAZILIAN O&G LEGISLATION

WHO OWNS THE OIL?



Market

Exploration and Production Regimes:

- (i) Concession
- (ii) Production Sharing Regime PSR (Pre-Salt)
- (iii) Remunerated Assignment to Petrobras (up to 5 billion BOE)*

Reservoirs

- Oil
- Natural Gas
- Other Fluid Hydrocarbons

Onshore

Brazilian Territorial Waters

Continental Shelf

Exclusive Economic Zone

* Transfer of Rights Operation – TRO/Surplus Auction – to adopt the PSR

OVERVIEW OF BRAZILIAN O&G LEGISLATION

MAIN DIFFERENCES BETWEEN REGIMES

Concession	Production Sharing
Adopted since the opening of the O&G market – "end of Petrobras monopoly" (1995)	First auction in 2013 – Petrobras priority
Concession Area (Onshore and Offshore)	Pre-Salt and Strategic Areas
Risk Contract Production owned by Concessionaires	Risk Contract Production Shared with Government
N/A	Cost Oil (only in case of commercial discovery)
No Partnership Required	Mandatory Consortium with PPSA and, if preference right is exercised, Petrobras as Operator and with at least 30%
No intra-project governmental interference	PPSA appoints 50% of members of the Operating Committee, including the chairman with veto rights and casting vote
Signature Bonus offered by the bidder (minimum amount established under the bidding rules)	Federal Government Profit Oil offered by the bidder
Royalties of 10% of the value of the oil production (possibility of reduction, limited to at least 5%)	Royalties of 15% of the value of the production of oil
Special Governmental Participation - in case of large or profitable production (exemption or a variable percentage from 10% to 40% over the gross production deducted costs and royalties)	Fixed Signature Bonus defined by the CNPE
Payment for the use of the area (per Km ² or fraction)	Payment to the landlord in case of onshore fields (so far no strategic area onshore)
Payment to the landlord for onshore fields	
Fully tested model	Under Test

4 OVERVIEW OF BRAZILIAN ELECTRIC POWER LEGISLATION

OVERVIEW OF BRAZILIAN ELECTRIC POWER LEGISLATION

ASPECTS OF ELECTRIC POWER SECTOR

Electric Power Generation may be destined to: (Decree No. 2.655/98)

supply of the distribution public service (Regulated Market) – Auctions, Long-term Power Purchase Agreements;

free commercialization, or with concessionaires, permissionaries and authorized companies (Free Market); or

exclusive consumption within the commercial or industrial facilities of generator (Self Production)

Independent Power Producer (“IPP”): the individual or legal entity or companies joined in a consortium, which receives a concession or authorization to produce electric power destined to the commercialization of all or a portion of the generated power, at its own account and risk);

Self Producer: the individual or legal entity or companies joined in a consortium, which receives a concession or authorization to produce electric power exclusively destined to its own use.

OVERVIEW OF BRAZILIAN ELECTRIC POWER LEGISLATION

COMMERCIALIZATION OF ELECTRIC POWER

- Power purchase agreements shall be registered with the Electric Power Commercialization Chamber (CCEE). In addition to registration, approval or ratification by ANEEL, as applicable.
- Agents shall observe the coverage (*lastro*) requirements with respect to contracted electric power, as follows:
 - **selling agents** (generators, distributors and importers): coverage for sale of electric power to guarantee 100% of their respective contracts – own generation or electric power acquired in PPAs entered into with other selling agents;
 - **distributors**: 100% of their respective electric power markets attended thereby through PPAs entered into with selling agents; and
 - **buying agents**: (distributors, Free / Special Consumers, traders): 100% of their respective loads – own generation or PPAs entered into with selling agents.
- Obligations above shall be measured on a monthly basis by CCEE; in case of default, the agents shall be subject to the penalties established in the rules and proceedings of commercialization, PPAs and applicable ANEEL regulations.

OVERVIEW OF BRAZILIAN ELECTRIC POWER LEGISLATION

OVERVIEW OF BRAZILIAN ELECTRIC POWER LEGISLATION

Electric Power Sector Envisaged Reform: there are currently two bills of law under discussion in Congress (Bill of Law No. 1,917/2015 and Bill of Law No. 232/2016) which aims to reform the electricity sector. Both bills of law were amended in the last years to reflect the contributions made by players in the electricity sector made during 2017-2018 as part of a public consultation on legislative changes to correct problems and settle disputes in the sector (Public Consultation No. 33 of June/2017);

GSF: Bill of Law No. 10,985 of November/2018 is current under discussion in Congress and purports to establish new conditions for the renegotiation of the Generation Scaling Factor – GSF (i.e., allowing the renegotiation of debts of the hydropower generators in the spot market), among other matters;

Electric Power Sector Modernization: MME created (i) a working group composed by members of the MME, ANEEL, CCEE, EPE and ONS to present new proposals for the modernization of the electric power sector (Ordinance No. 187/2019); and (ii) a committee for the implementation of such new proposals (Ordinance No. 403/2019);

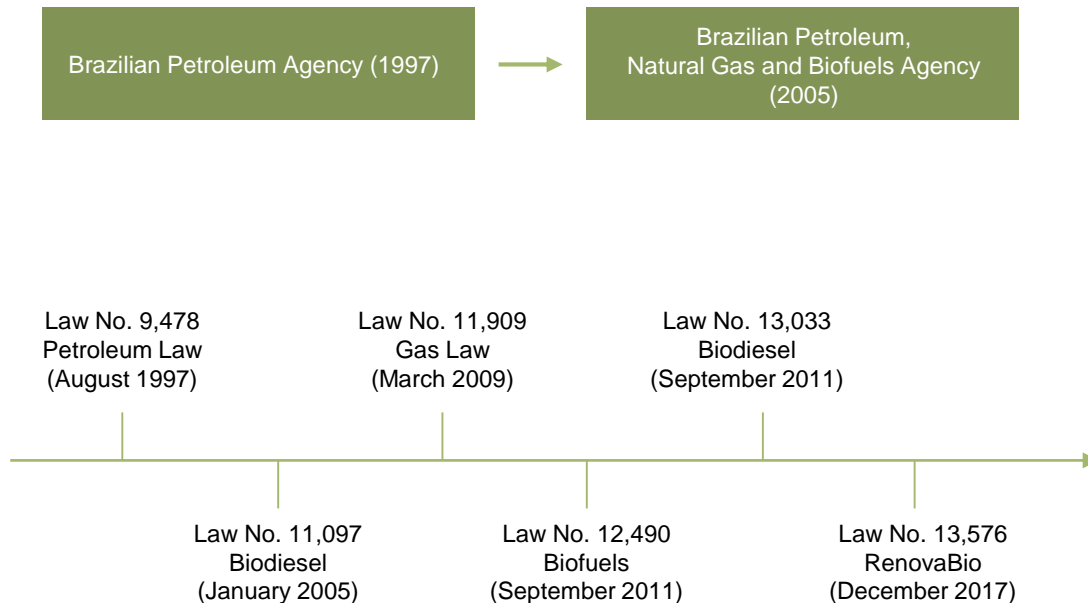
Privatization of Eletrobras: The Federal Government proposed Bill of Law No. 5,877 in November 2019 for the privatization of Centrais Elétricas Brasileiras S.A. – Eletrobras upon sale and purchase of shares in the stock market.

5

BRAZILIAN ENERGY SECTOR GLOBAL TRENDS

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FROM O&G FOCUS TO ENERGY FOCUS



BRAZILIAN ENERGY SECTOR GLOBAL TRENDS

FROM O&G FOCUS TO ENERGY FOCUS

Petrobras Strategic Plan 2040

- participation in solar and wind projects – partnership with Total in 2018;
- gradual entry in the solar distributed generation market;
- offshore wind power projects for the next decade – partnership with Equinor in 2018;
- BioQAV production and GreenDiesel in plants integrated to refineries;
- US\$13,9 billion of investments in refining, natural gas and renewables from 2019 to 2023 (i) refining (61%); (ii) natural gas and electric power generation (36%); and (iii) renewables sources (3%).

Other Landmark Investments in Brazil by International Companies

- Apodi Solar Plant (162 MW) – Joint Venture between Equinor and Scatec Solar
- Solar (140 MW) and Wind (160 MW) Projects – Total Eren

BRAZILIAN ENERGY SECTOR GLOBAL TRENDS

ENERGY EFFICIENCY

Energy Efficiency Program: ANEEL's program established upon the approval of Law No. 9,991 of July 2000 which established mandatory investment in research and development projects as well as energy efficiency. New procedures for the Energy Efficiency Program were approved by ANEEL in October 2018.

Procel: National Program of Electric Energy Conservation established by the Interministerial Ordinance No. 1,877 of December, 1985. Law No. 13,280 of May 2016 established new criteria for the application of investments in energy efficiency programs and Procel.

ELECTRIFICATION

Electricity Storage: ANEEL approved 23 proposals in 2017 for the insertion of electricity storage systems in the electricity sector upon ANEEL Public Call for Strategic Research and Development Projects No. 21/2016.

Electric Vehicles: ANEEL issued in June 2018 the Normative Resolution No. 819, which establishes the procedures and conditions for the development of activities related to the reload of electric vehicles. ANEEL also received 38 project proposals under the ANEEL Public Call for Strategic Research and Development No. 022/2018 for the development of solutions on efficient electric mobility.

VIELEN DANK!
MUITO OBRIGADO!

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