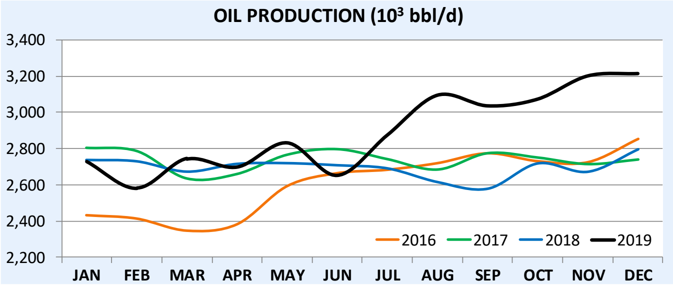

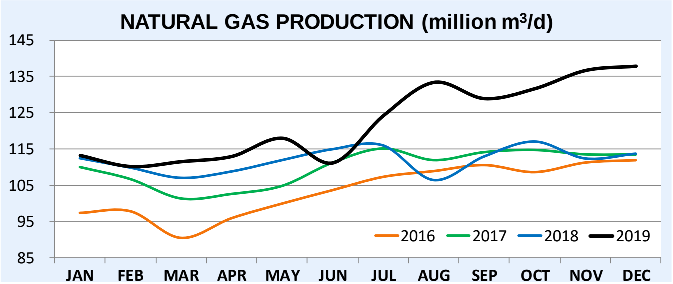

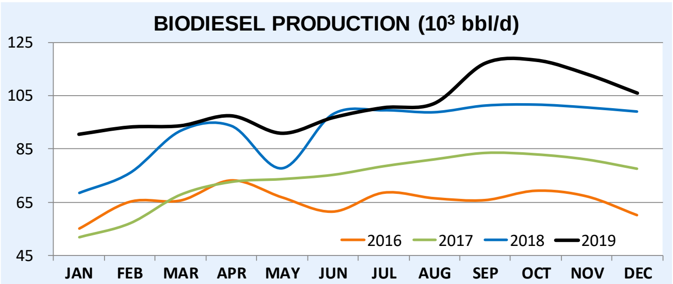

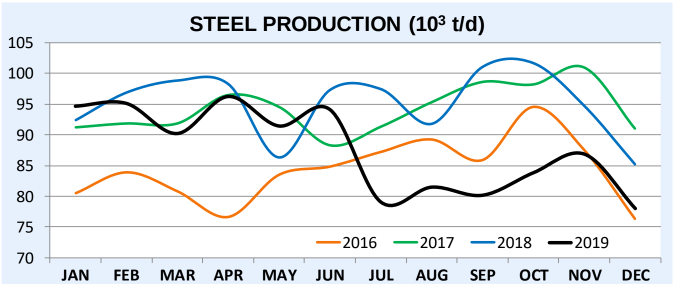

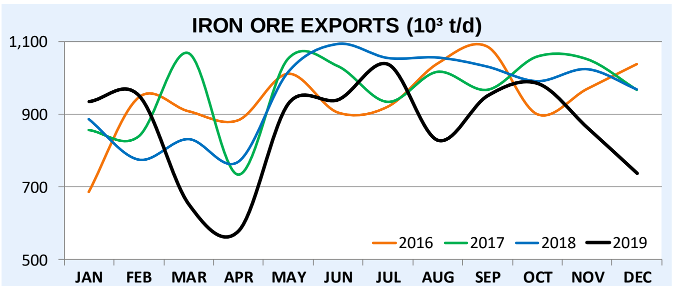

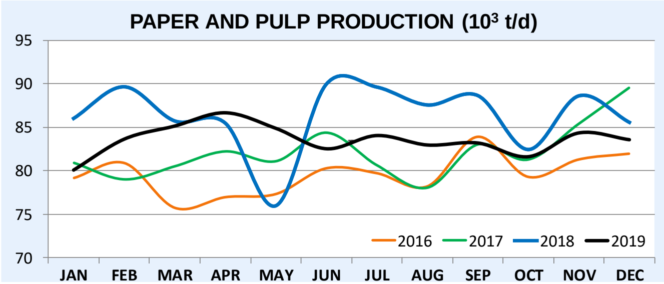

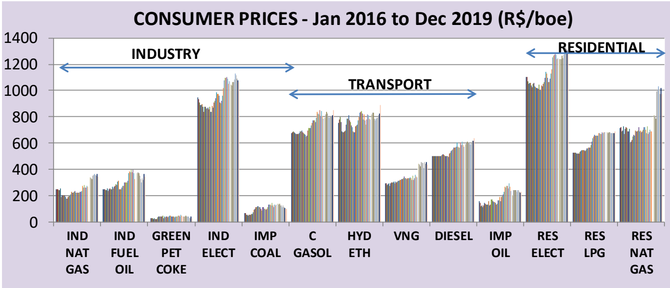

Note: For a better visualization, the minimum scale of the graphs was raised to the level close to the lowest value of the curves.

Methodological Remarks

The **purpose of this bulletin** is to follow up a set of energy and non-energy variables that provide a reasonable estimate of the behavior both monthly as cumulative of the total energy demand in Brazil.

Total demand of natural gas = domestic production (+) import (-) unused (-) reinjection.

[1]**Domestic Energy Supply (DES), or Brazilian energy demand,** represents the energy necessary to move the economy of a country or region over a period of time. Includes final energy consumption in the residential sector and in the other economic sectors, includes losses in transmission and distribution, losses on power transformation and the own consumption of the energy sector.

[2] The DES and DELS data from 2018 reflect the final results of the Brazilian Energy Balance (BEN), concluded in May by the Energy Research Office (EPE) in cooperation with the MME and its entities and agencies.

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Monthly Energy Bulletin – Brazil

Reference Month: December 2019

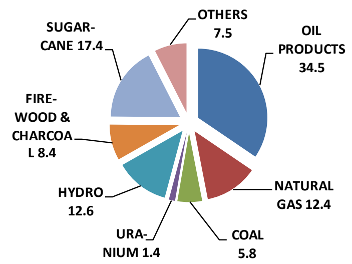
Domestic Energy Supply

An excellent recovery of indicators correlated to household consumption was observed in 2019. In the year, residential electricity grew 3.1%, commercial electricity rose 4.0%, energy in light vehicles rose 4.5%, and cement consumption increased 2.6%. These indicators, in the same period of 2018, were respectively 2.6%, 0.6%, -1.2% and -1.3%.

Concerning Domestic Energy Supply (DES)[1] throughout 2019, the current constraints lead to an estimated growth of 1.5%, with renewables increasing by 1 percentage point in the matrix per source. Even so, the 2019 DES per capita will be 7% lower than in 2014, and equal to that of 2011.

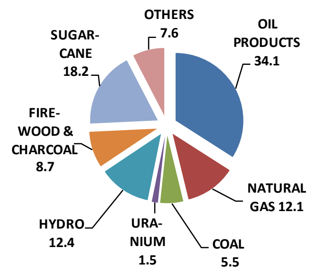
Total energy demand for 2019 is expected to increase about 1.5%

DES 2018 (%)



288.7 million toe
45.2% renewables

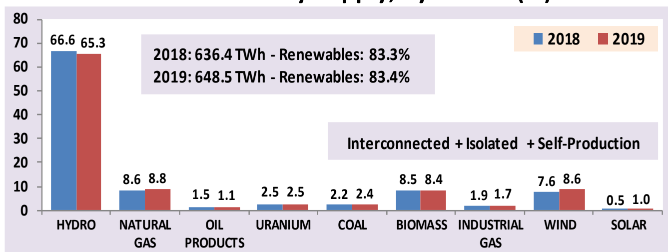
DES 2019 (%)



293.2 million toe
46.2% renewables

The Domestic Electricity Supply (DELS)[2] of 2019 was estimated at 648.5 TWh, showing an increase of 1.9% over 2018. The share of renewables should stay at 83%, with wind and solar energy continuing steady in their increasingly participations.

Domestic Electricity Supply, by Source (%)



MINISTRY OF MINES AND ENERGY - MME
SECRETARIAT OF ENERGY PLANNING AND DEVELOPMENT
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PÁTRIA AMADA BRASIL
BRAZILIAN GOVERNMENT

Highlights in December 2019

Oil production still growing

Oil production grew 15.1% in December 2019, compared to the same month of 2018, accumulating an increase of 7.6% in the year (-1.6% in 2018). Natural gas production increased by 21.2% in the month, and accumulates an increase of 9.5%. These increases will provide Brazil's energy surplus close to 7% in 2019 (1.6% in 2018).

A bad year for mining and metallurgy

Steel production ended the year down 8.1%. Iron ore exports fell 9.9% in the year, and pellets, down 28.8%.

Hydraulic supply stable in the year

The supply of hydraulic energy ends the year stable. The generation of Itaipu had a drop of 21% in the year.

Oil derivatives stable

Apparent consumption of oil products recoiled 3.9% in December, and ends the year with a rise of just 0.2% (excluding ethanol and biodiesel). Diesel consumption (including biodiesel) increased by 8.7% in the year. Gasoline C closed the year down 0.5%. Hydrated ethanol, with an accumulated increase of 16.3%, kept total consumption in light vehicles up. Total natural gas demand fell by 0.8% in the year, an indicator influenced by a 7% drop in industrial consumption.

Energy consumption in light vehicles of the Otto cycle (gasoline, ethanol and natural gas) accumulates a high of 4.5% (-1.2% in 2018, + 1.7% in 2017, -1.1% in 2016 and + 6.2% in 2014). This indicator directly reflects the purchasing power of the population, as well as the expectation of economic improvement.

Electricity consumption slows down

Electricity consumption, without energy self-producers, grew 2.0% in December and accumulated high of 1.4% in the year. Residential consumption rose 3.1% and commercial consumption, of 4.0%. On the other hand, industrial consumption accumulates low of 1.5% (2018 figures were revised upward).

Biodiesel production had a good increase

Biodiesel production increased 10.3% in the year. In previous years the rates were: 25% in 2018, 12.9% in 2017, -3.6% in 2016 and 15% in 2015.

Pulp production accumulated a 4.6% decrease in the year (positive 7.1% in 2018, 3.8% in 2017, 7.8% in 2016, 8.5% in 2015 and 9.2% in 2014). Cement consumption continues to recover, increasing 2.6% in the year (-1.3% in 2018).

Accumulated electricity tariffs recoil

The average domestic tariff for residential electricity accumulates 8.0% in the year (12.6% in 2018, stable in 2017, 5.8% in 2016 and 42.5% in 2015). The commercial tariff increased by 7.4% (12.4% in 2018, 0.7% in 2017, 5.7% in 2016 and 43.8% in 2015) and the industrial increased 5.7% (13.4% in 2018, 1.2% in 2017, 3.6% % in 2016 and 51.7% in 2015).

Basic Data

SPECIFICATION	DECEMBER – IN THE MONTH 2019	2018	% 19/18	ACCUMULATED IN THE YEAR 2019	2018	% 19/18	98
OIL							
PRODUCTION - with Shale Oil and NGL(10^3 b/d)	3,216	2,794	15.1	2,898	2,695	7.6	-
IMPORTS AVERAGE PRICE (US$/bbl FOB)	66	79	-16.6	67	74	-9.6	-
OIL PRODUCTS							
TOTAL CONSUMPTION (10^3 b/day)	2,314	2,407	-3.9	2,434	2,430	0.2	**100.0**
hereof: DIESEL with biodiesel - (10^3 b/day)	920	894	2.9	1,042	959	8.7	40.7
hereof: GASOLINE C (10^3 b/day)	723	701	3.1	658	661	-0.5	21.6
CONSUMER PRICE - DIESEL (R$/l)	3.81	3.50	8.9	3.59	3.47	3.5	-
CONSUMER PRICE - GASOLINE C (R$/l)	4.62	4.37	5.8	4.39	4.37	0.3	-
CONSUMER PRICE - LPG (R$/13 kg)	69.9	69.4	0.8	69.1	68.1	1.6	-
NATURAL GAS							
PRODUCTION (10^6 m^3/day)	137.8	113.7	21.2	122.5	111.9	9.5	-
IMPORTS (10^6 m^3/day)	25.3	14.1	79.5	26.9	29.6	-9.1	-
NON-UTILIZED AND REINJECTION (10^6 m^3/day)	57.8	42.1	37.5	47.6	38.8	22.6	-
AVAILABILITY FOR CONSUMPTION (10^6 m^3/day)	105.2	85.7	22.8	101.8	102.7	-0.8	**100.0**
INDUSTRIAL CONSUMPTION (10^6 m^3/day)	34.2	35.2	-2.9	37.0	39.8	-7.0	36.3
POWER GENERATION CONS. (10^6 m^3/day)	33.1	13.4	147.1	29.0	27.7	4.8	28.5
INDUSTRIAL PRICE SP(*) (US$/MMBtu) -	15.3	12.2	25.3	15.5	12.2	27.1	-
MOTOR PRICE SP (US$/MMBtu)	19.3	15.9	21.6	19.5	16.4	19.5	-
RESIDENTIAL PRICE SP (US$/MMBtu)	42.8	31.6	35.3	40.7	33.9	19.9	-
ELECTRICITY							
NATIONAL INTERCONNECTED SYSTEM	66,861	67,069	-0.3	66,866	65,590	1.9	**100.0**
SOUTHEAST/MIDWEST POWER LOAD (MWavg	37,693	39,095	-3.6	38,769	38,130	1.7	58.0
SOUTH POWER LOAD (MWavg)	11,880	11,814	0.6	11,365	11,363	0.0	17.0
NORTHEAST POWER LOAD (MWavg)	11,668	10,992	6.1	10,964	10,714	2.3	16.4
NORTH POWER LOAD (MWavg)	5,620	5,168	8.7	5,572	5,381	3.5	8.3
TOTAL CONSUMPTION (TWh) (**)	40.6	39.8	2.0	482.0	475.2	1.4	**100.0**
RESIDENTIAL	12.2	11.6	4.7	141.9	137.6	3.1	29.4
INDUSTRIAL	13.4	13.8	-2.3	167.4	170.0	-1.5	34.7
COMMERCIAL	8.1	7.8	4.0	92.2	88.6	4.0	19.1
OTHER SECTORS	7.0	6.7	4.1	80.6	79.0	2.1	16.7
PLANTS ENTRY INTO OPERATING (MW)	416	1,718	-75.8	6,560	7,175	-8.6	-
RESIDENTIAL PRICE (R$/MWh)	779	751	3.7	774	716	8.0	-
COMMERCIAL PRICE (R$/MWh)	694	664	4.5	690	643	7.4	-
INDUSTRIAL PRICE (R$/MWh)	646	639	1.0	651	616	5.7	-
ETHANOL AND BIODIESEL							
BIODIESEL PRODUCTION (10^3 b/d)	106	99	7.1	102	92	10.3	-
MOTOR ETHANOL CONSUMPTION (10^3 b/d)	629	606	3.7	566	512	10.4	-
ETHANOL EXPORTS (10^3 b/d)	41	17	137.7	34	31	11.5	-
HYDRATED ETHANOL PRICE (R$/l)	3.21	2.83	13.5	2.91	2.89	0.7	-
COAL							
ELECTRICITY GENERATION (MWavg)	1,772	704	151.7	1,544	1,398	10.4	-
IMPORT PRICE (US$ FOB/t)	107.9	139.4	-22.6	136.1	141.7	-3.9	-
NUCLEAR ENERGY							
ELECTRICITY GENERATION - (GWh)	1,479	1,392	6.3	16,128	15,674	2.9	-
INDUSTRIAL SECTORS							
STEEL PRODUCTION (10^3 t/day)	78	85	-8.6	87	95	-8.1	-
ALUMINIUM PRODUCTION (10^3 t/day)	2.0	1.6	24.3	1.8	1.8	-1.0	-
IRON ORE EXPORTS (10^3 t/day)	738	970	-23.9	866	961	-9.9	-
PELLETS EXPORTS (10^3 t/day)	68	101	-32.4	68	95	-28.8	-
PAPER PRODUCTION (10^3 t/day)	29.7	29.1	2.1	28.9	28.9	-0.1	-
PULP PRODUCTION (10^3 t/day)	53.9	56.5	-4.6	54.7	57.3	-4.6	-
SUGAR PRODUCTION (10^3 t/daY)	18	32	-43.5	80	80	-0.4	-
SUGAR EXPORTS (10^3 t/day)	46	52	-11.4	49	60	-18.4	-

(*) SP is the acronym of the state of São Paulo.

(**) The traditional self-producers (consumers that do not use public grid) is not included.