

**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.

**Apparent consumption of oil derivatives** = distributors' sales (+) Petrobras' own consumption (including refinery gas) (+) Petrobras' direct sales. The monthly data published in the press and on the ANP<sup>3</sup> website do not consider the own consumption and direct sales of Petrobras, whose volume is about 20% of the total oil products consumption.

<sup>1</sup> Domestic Energy Supply (DES), or Total Energy Demand, includes final energy consumption in the residential sector and in the other economic sectors, includes losses in transmission and distribution, and losses on power transformation.

<sup>2</sup> The DES 2017 data still reflect the positions of the bulletin of December / 2017. On the other hand, the DELS data for 2017 account for results of the National Energy Balance - BEN, cycle 2018, although not yet definitive.

# Monthly Energy Bulletin - Brazil

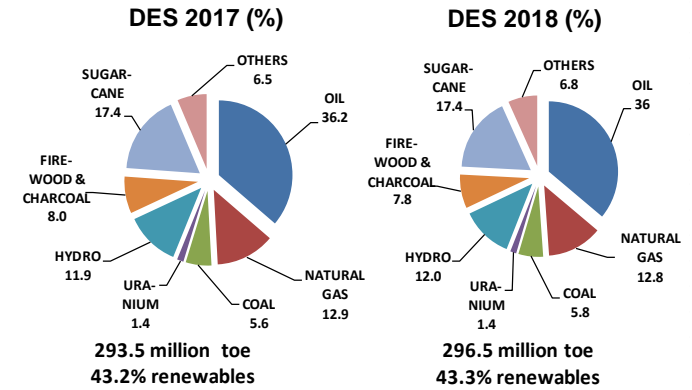
Reference Month: April 2018

## Domestic Energy Supply

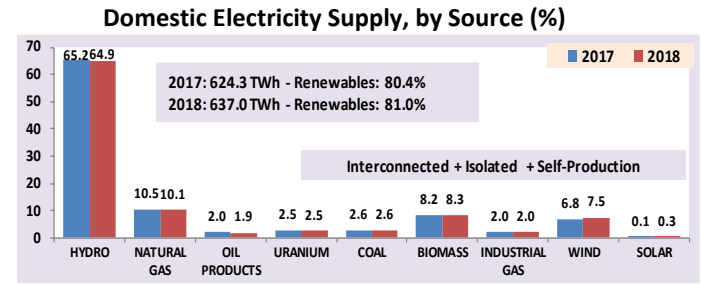
The energy consumption performance associated with the population's well-being is weak, until April 2018. There are decreases in electricity consumption of services and cement production, and slight increases in residential consumption of electricity and fuel consumption in Light vehicles. Some sectors are on the rise, such as steel, pellets, pulp, paper and sugar (commodities).

The Domestic Energy Supply – DES<sup>1</sup> increased by 0.9% by April 2018, over the same period of 2017. As of the date of this bulletin, the growth rate of 1.0% is expected for the year 2018 (1.4% to March and 2% to February).

**Total energy demand for 2018 is expected to grow slightly above 1%.**



The Domestic Electricity Supply – DELS<sup>2</sup> of 2018 was estimated at 637 TWh, showing an increase of 2.0% over 2017 (2.8% to February). The proportion of renewable sources should remain slightly above 80%. The wind power continues the increasing participation and the solar PV energy starts a process of strong increase in the DELS matrix.



## Highlights until April 2018

### Oil production still down in the year

Oil production grew 2% in April, compared to April 2017, but accumulated a drop of 0.4% in the year. Natural gas production grew by 6% in April, and increased by 4.2% in the year.

### Steel production remains high

Steel production increased 1.9% in April 2018 and 4.0% in the year (4.8% to March). Iron ore exports are down 6.8% in the year (-9.9% to March), and those of pellets are up 8.6% (0.9% to March).

### Hydraulic supply stable

Hydraulic generation is stable in the accumulated of the year, however, Itaipu's generation accumulates a 10% increase until April.

### Oil derivatives still down

Apparent consumption of petroleum products fell by 1.1% in April, accumulating a recoil of 2.2% in the year (-2.5% until March). Diesel consumption accumulated a high of 4.2% in the year, and the gasoline consumption dropped by 9.1%. The decline in gasoline has been offset by the increase in ethanol consumption, with 13.5% in the year. Total demand for natural gas increased 1.7% in the year, having sales for electricity generation declined 37.5% in April and 6.5% in the year.

Energy consumption in light vehicles of the Otto cycle (gasoline, ethanol and natural gas) increased by 0.9% in the year (1.7% in 2017, -1.1% in 2016, 0.8% in 2015 and 6.2% in 2014). It is an indicator that directly reflects the effects of the economy on the purchasing power of the population.

### Electricity consumption with small high

Electricity consumption (excluding self-producers that do not use the public grid) accumulated a high of 1.2% in the year (0.9% in the whole of 2017 and -0.9% in 2016). In the year, industrial consumption expanded by 3.7% and residential consumption increased by 0.4%. Commercial consumption fell by 0.3% in the year.

### Biodiesel production in a strong high

Biodiesel production continued to grow strongly in April (28.7%), accumulating 32.3% in the year (12.9% in all of 2017, -3.6% in 2016 and 15% in 2015).

Pulp production increased by 9.9% in the year, but still had a low comparison base in 2017 (3.8% in 2017, 7.8% in 2016, 8.5% in 2015 and 9.2% in 2014). Paper production accumulates growth of 2.7% (1.7% throughout 2017).

## Electricity rates increases

The average domestic tariff for residential electricity grew 5.2% in the year over the same period of 2017 (stable in 2017, 5.8% in 2016 and 42.5% in 2015). The commercial tariff increased 5.4% (0.7% in 2017, 5.7% in 2016 and 43.8% in 2015) and the industrial tariff increased 7.0% (1.2% in 2017, 3.6% in 2016 and 51.7% in 2015).

### Basic data

SPECIFICATION	APRIL							
	IN THE MONTH			ACCUMULATED IN THE YEAR				
	2018	2017	%18/17	2018	2017	%18/17	%2018	
<b>OIL</b>								
PRODUCTION - with Shale Oil and NGL(10 <sup>3</sup> b/d)	2.714	2.661	2,0	2.712	2.722	-0,4	-	
IMPORTS AVERAGE PRICE (US\$/bbl FOB)	69	58	19,1	66	55	20,5	-	
<b>OIL PRODUCTS</b>								
TOTAL CONSUMPTION (10 <sup>3</sup> b/day)	2.469	2.497	-1,1	2.461	2.515	-2,2	100,0	
hereof: DIESEL with biodiesel - (10 <sup>3</sup> b/day)	1.018	920	10,6	977	937	4,2	37,7	
hereof: GASOLINE C (10 <sup>3</sup> b/day)	707	765	-7,6	708	779	-9,1	23,0	
CONSUMER PRICE - DIESEL (R\$/l)	3,43	3,02	13,8	3,39	3,05	11,1	-	
CONSUMER PRICE - GASOLINE C (R\$/l)	4,13	3,64	13,5	4,18	3,70	13,0	-	
CONSUMER PRICE - LPG (R\$/13 kg)	67,0	57,2	17,1	67,0	56,0	19,7	-	
<b>NATURAL GAS</b>								
PRODUCTION (10 <sup>6</sup> m <sup>3</sup> /day)	108,7	102,6	6,0	109,5	105,1	4,2	-	
IMPORTS (10 <sup>6</sup> m <sup>3</sup> /day)	22,2	33,3	-33,3	25,6	24,3	5,3	-	
NON-UTILIZED AND REINJECTION (10 <sup>6</sup> m <sup>3</sup> /day)	36,1	28,3	27,5	35,0	31,0	13,0	-	
AVAILABILITY FOR CONSUMPTION (10 <sup>6</sup> m <sup>3</sup> /day)	94,9	107,6	-11,8	100,1	98,4	1,7	100,0	
INDUSTRIAL CONSUMPTION (10 <sup>6</sup> m <sup>3</sup> /day)	39,7	41,8	-5,0	38,2	40,3	-5,3	38,2	
POWER GENERATION CONS. (10 <sup>6</sup> m <sup>3</sup> /day)	20,7	33,2	-37,5	24,3	26,0	-6,5	24,3	
INDUSTRIAL PRICE SP(*) (US\$/MMBtu)(a)	12,4	11,1	11,2	12,4	10,8	14,4	-	
MOTOR PRICE SP (US\$/MMBtu)	18,2	17,5	4,4	18,3	17,4	5,3	-	
RESIDENTIAL PRICE SP (US\$/MMBtu)	37,9	36,8	3,1	38,0	35,9	5,8	-	
<b>ELECTRICITY</b>								
NATIONAL INTERCONNECTED SYSTEM	66.651	63.872	4,4	68.030	67.126	1,3	100,0	
SOUTHEAST/MIDWEST POWER LOAD (MWavg)	39.409	37.636	4,7	40.275	39.260	2,6	59,2	
SOUTH POWER LOAD (MWavg)	11.787	10.907	8,1	12.071	11.975	0,8	17,7	
NORTHEAST POWER LOAD (MWavg)	10.601	10.309	2,8	10.790	10.802	-0,1	15,9	
NORTH POWER LOAD (MWavg)	5.414	5.269	2,8	5.505	5.377	2,4	8,1	
TOTAL CONSUMPTION (TWh) (b)	40,6	39,2	3,7	159,3	157,4	1,2	100,0	
RESIDENTIAL	11,8	11,2	5,1	47,0	46,8	0,4	29,5	
INDUSTRIAL	14,5	13,9	4,6	56,0	54,0	3,7	35,2	
COMMERCIAL	7,9	7,7	3,2	31,0	31,1	-0,3	19,5	
OTHER SECTORS	6,4	6,4	-0,2	25,3	25,5	-0,7	15,9	
PLANTS ENTRY INTO OPERATING (MW)	481	772	-37,7	1.847	2.272	-18,7	-	
RESIDENTIAL PRICE (R\$/MWh)	650	612	6,3	651	619	5,2	-	
COMMERCIAL PRICE (R\$/MWh)	578	545	6,1	581	551	5,4	-	
INDUSTRIAL PRICE (R\$/MWh)	555	510	8,8	559	522	7,0	-	
<b>ETHANOL AND BIODIESEL</b>								
BIODIESEL PRODUCTION (10 <sup>3</sup> b/d)	94	73	28,7	83	62	32,3	-	
MOTOR ETHANOL CONSUMPTION (10 <sup>3</sup> b/d)	459	500	-8,2	468	437	7,0	-	
ETHANOL EXPORTS (10 <sup>3</sup> b/d)	16	27	-41,9	17	18	-6,9	-	
HYDRATED ETHANOL PRICE (R\$/l)	2,97	2,64	12,5	3,00	2,77	8,4	-	
<b>COAL</b>								
ELECTRICITY GENERATION (MWavg)	1.233	1.622	-24,0	1.463	1.462	0,1	-	
JMPORT PRICE (US\$/ FOB/t)	161,9	159,9	1,2	153,0	152,3	0,5	-	
<b>NUCLEAR ENERGY</b>								
ELECTRICITY GENERATION - (GWh)	1.424	1.440	-1,1	5.148	5.402	-4,7	-	
<b>INDUSTRIAL SECTORS</b>								
STEEL PRODUCTION (10 <sup>3</sup> t/day)	98	97	1,9	97	93	4,0	-	
ALUMINIUM PRODUCTION (10 <sup>3</sup> t/day)	2,0	2,2	-8,9	2,1	2,2	-3,1	-	
IRON ORE EXPORTS (10 <sup>3</sup> t/day)	770	735	4,8	818	878	-6,8	-	
PELLETS EXPORTS (10 <sup>3</sup> t/day)	92	67	38,6	88	81	8,6	-	
PAPER PRODUCTION (10 <sup>3</sup> t/day)	29,3	28,4	3,0	29,0	28,3	2,7	-	
PULP PRODUCTION (10 <sup>3</sup> t/day)	56,2	53,8	4,4	57,6	52,4	9,9	-	
SUGAR PRODUCTION (10 <sup>3</sup> t/day)	180	161	12,0	53	49	8,4	-	
SUGAR EXPORTS (10 <sup>3</sup> t/day)	38	54	-29,6	53	60	-12,5	-	

(a) range of 20,000m<sup>3</sup>/day; (b) Self-producers, do not use public grid, is not included.

