

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 ANP³ website do not consider the own consumption and direct sales of Petrobras, whose volume is about 20% of the total oil products consumption.

¹ 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.

² 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: March 2018

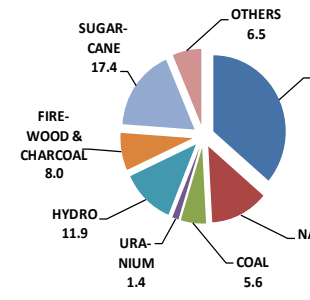
Domestic Energy Supply

Energy consumption associated with the well-being of the population is falling, until March 2018. There are retreats in energy consumption of light vehicles and consumption of residential electricity and services. Some sectors are producing upwards, such as steel, pulp, paper, ferroalloys and cars.

The Domestic Energy Supply – OIE¹ increased by 0.6% to March 2018, over the same period of 2017. Until the publication date of this bulletin it was estimated a growth rate of 1.4% for the OIE, for the whole year of 2018 (2% through February).

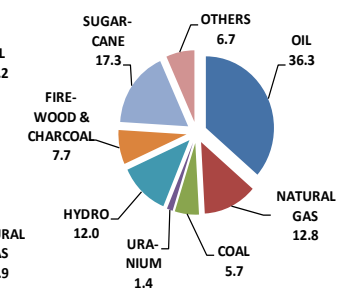
Total energy demand in 2018 is expected to grow below 2.0%.

DES 2017 (%)



293.5 million toe
43.2% renewables

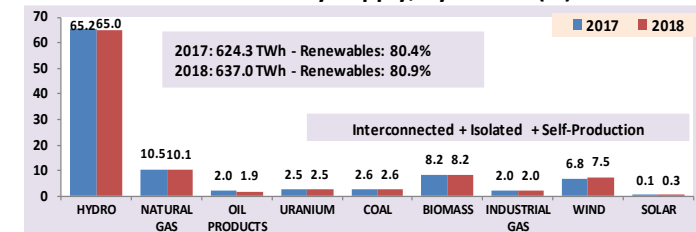
DES 2018 (%)



297.6 million toe
43.1% renewables

The Domestic Electricity Supply – DELS² of 2018 was estimated at 637 TWh, showing an increase of 2.8% 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 PV energy starts a process of strong increase in the DELS matrix.

Domestic Electricity Supply, by Source (%)



Highlights until February 2018

Oil production with a slight decrease

Oil production up to February was down 1.1%. Natural gas production grew by 3.6% over the same period of 2017.

Steel production in a high

Steel production grew 7.6% in March 2018, and 4.8% in the year. Exports of iron ore fell 9.9% in the year and those of pellets are up 0.9% (10% until February).

Hydraulic supply in decline

Hydraulic generation accumulates a drop of 2.6% in the year. Itaipu generation accumulates a 8.7% increase.

Oil derivatives declining

Apparent consumption of petroleum products fell by 2.5% until March 2018. Diesel consumption increased by 2.1% in the year, and gasoline consumption dropped by 9.6%. The decline in gasoline was offset by a sharp increase in ethanol demand of 13.1%. Total demand for natural gas increased 6.7%, and sales for electricity generation, 8.0%.

Energy consumption in light vehicles of the Otto cycle (gasoline, ethanol and natural gas) decreased by 0,9% to March (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 economy effects on the population's purchasing power.

Electricity consumption with small high

Electricity consumption (excluding self-producers that do not use the public network) accumulated a high of 0.4% in the year (0.9% in the whole of 2017 and -0.9% in 2016). Industrial consumption is the only one with a positive rate in the year: 3.3% (4.3% up to February). Residential consumption decreased by 1.1% in the year, and the commercial consumption fell by 1.5%. A less severe summer until March contributed to lower consumption.

Biodiesel production in a strong high

Biodiesel production increased strongly in March (35.3%), accumulating 33.7% in the year (12.9% in all 2017, -3.6% in 2016 and 15% in 2015).

Pulp production increased by 11.8% 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 2.5% (1.7% throughout 2017).

Electricity rates increases

The average domestic tariff for residential electricity grew 4.8% in the year, over the period of 2017 (stable in 2017, 5.8% in 2016 and 42.5% in 2015). The commercial tariff increased by 5.1% (0.7% in 2017, 5.7% in 2016 and 43.8% in 2015), and the that of the industrial increased 6.4% (1.2% in 2017, 3.6% % in 2016 and 51.7% in 2015).

Basic data

SPECIFICATION	MARCH							
	IN THE MONTH			ACCUMULATED IN THE YEAR				
	2018	2017	%18/17	2018	2017	%18/17	%2018	
OIL								
PRODUCTION - with Shale Oil and NGL(10 ³ b/d)	2,671	2,636	1.3	2,711	2,742	-1.1	-	
IMPORTS AVERAGE PRICE (US\$/bbl FOB)	68	63	7.2	68	54	26.6	-	
OIL PRODUCTS								
TOTAL CONSUMPTION (10 ³ b/day)	2,489	2,584	-3.7	2,458	2,521	-2.5	100.0	
hereof: DIESEL with biodiesel - 10 ³ b/day)	1,027	1,033	-0.6	963	943	2.1	37.2	
hereof: GASOLINE C (10 ³ b/day)	736	801	-8.2	709	784	-9.6	23.1	
CONSUMER PRICE - DIESEL (R\$/l)	3.38	3.05	10.9	3.38	3.07	10.2	-	
CONSUMER PRICE - GASOLINE C (R\$/l)	4.20	3.69	13.9	4.20	3.72	12.9	-	
CONSUMER PRICE - LPG (R\$/13 kg)	66.8	55.7	20.0	67.0	55.5	20.6	-	
NATURAL GAS								
PRODUCTION (10 ⁶ m ³ /day)	107.0	101.3	5.6	109.7	106.0	3.6	-	
IMPORTS (10 ⁶ m ³ /day)	26.6	28.2	-5.6	26.7	21.3	25.4	-	
NON-UTILIZED AND REINJECTION (10 ⁶ m ³ /day)	36.8	32.0	15.0	34.6	31.9	8.7	-	
AVAILABILITY FOR CONSUMPTION (10 ⁶ m ³ /day)	96.8	97.5	-0.8	101.8	95.4	6.7	100.0	
INDUSTRIAL CONSUMPTION (10 ⁶ m ³ /day)	38.8	41.7	-7.0	37.7	39.8	-5.4	37.0	
POWER GENERATION CONS. (10 ⁶ m ³ /day)	23.4	24.9	-6.0	25.5	23.6	8.0	25.1	
INDUSTRIAL PRICE SP(*) (US\$/MMBtu) - consumption range of 20,000 m ³ /day	12.4	11.0	12.3	12.4	10.8	15.4	-	
MOTOR PRICE SP (US\$/MMBtu)	18.2	17.2	5.8	18.3	17.3	5.6	-	
RESIDENTIAL PRICE SP (US\$/MMBtu)	37.9	36.5	4.0	38.0	35.6	6.7	-	
ELECTRICITY								
NATIONAL INTERCONNECTED SYSTEM	69,823	68,254	2.3	68,489	68,211	0.4	100.0	
SOUTHEAST/MIDWEST POWER LOAD (MWavg)	41,793	39,381	6.1	40,564	39,801	1.9	59.2	
SOUTH POWER LOAD (MWavg)	12,091	12,078	0.1	12,165	12,331	-1.3	17.8	
NORTHEAST POWER LOAD (MWavg)	10,899	11,208	-2.8	10,852	10,966	-1.0	15.8	
NORTH POWER LOAD (MWavg)	5,632	5,886	-4.3	5,535	5,413	2.2	8.1	
TOTAL CONSUMPTION (TWh) (**)	40.0	40.4	-1.0	118.7	118.3	0.4	100.0	
RESIDENTIAL	11.8	12.2	-3.4	35.2	35.6	-1.1	29.6	
INDUSTRIAL	14.0	13.8	1.5	41.5	40.1	3.3	35.0	
COMMERCIAL	7.8	7.9	-1.9	23.1	23.4	-1.5	19.4	
OTHER SECTORS	6.4	6.4	-0.9	19.0	19.1	-0.9	16.0	
PLANTS ENTRY INTO OPERATING (MW)	369	145	153.9	1,366	1,500	-8.9	-	
RESIDENTIAL PRICE (R\$/MWh)	646	632	2.2	652	622	4.8	-	
COMMERCIAL PRICE (R\$/MWh)	574	562	2.1	581	553	5.1	-	
INDUSTRIAL PRICE (R\$/MWh)	547	531	3.0	560	526	6.4	-	
ETHANOL AND BIODIESEL								
BIODIESEL PRODUCTION (10 ³ b/d)	92	68	35.3	79	59	33.7	-	
MOTOR ETHANOL CONSUMPTION (10 ³ b/d)	477	441	8.1	470	416	13.1	-	
ETHANOL EXPORTS (10 ³ b/d)	13	11	22.1	17	15	13.7	-	
HYDRATED ETHANOL PRICE (R\$/l)	3.03	2.75	10.5	3.01	2.81	7.1	-	
COAL								
ELECTRICITY GENERATION (MWavg)	1,716	1,688	1.7	1,540	1,408	9.4	-	
IMPORT PRICE (US\$/t)	144.2	153.2	-5.9	136.3	156.3	-12.8	-	
NUCLEAR ENERGY								
ELECTRICITY GENERATION - (GWh)	1,498	1,322	13.3	3,724	3,962	-6.0	-	
INDUSTRIAL SECTORS								
STEEL PRODUCTION (10 ³ t/day)	99	92	7.6	96	92	4.8	-	
ALUMINIUM PRODUCTION (10 ³ t/day)	2.2	2.2	-0.6	2.2	2.2	-1.2	-	
IRON ORE EXPORTS (10 ³ t/day)	833	1,070	-22.2	834	926	-9.9	-	
PELLETS EXPORTS (10 ³ t/day)	91	104	-11.9	87	86	0.9	-	
PAPER PRODUCTION (10 ³ t/day)	29.2	28.8	1.2	28.9	28.2	2.5	-	
PULP PRODUCTION (10 ³ t/day)	56.5	51.7	9.4	58.1	52.0	11.8	-	
SUGAR PRODUCTION (10 ³ t/day)	12	12	0.8	11	12	-7.4	-	
SUGAR EXPORTS (10 ³ t/day)	64	52	24.8	58	63	-7.6	-	

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

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

