

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

(\*) Domestic Energy Supply (DES), or Total Energy Demand, is the energy required to move the economy of a country or region, and 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.

(\*\*) The Cycle 2015 National Energy Balance, initiated by the Energy Research Company (EPE), will define the final data until April 2015.



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## Monthly Energy Bulletin - Brazil

Reference Month: December 2014

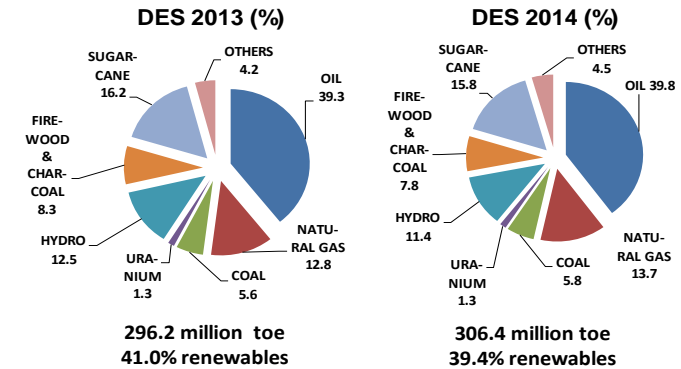
### Domestic Energy Supply – DES

The Domestic Energy Supply (DES) (\*) (\*\*) - energy needed to move Brazil's economy - grew 3.4% in 2014, while the GDP rate should be zero. The continued good performance of energy consumption in light vehicles, the expansion of 9% in pulp production, and the increase in energy losses in thermoelectric generation, are the main factors that explain the DES rate. The increased losses in thermoelectric plants explains 1.2 percentage points of the 3.4%, which would reduce the DES rate to 2.2%.

**Total energy demand (DES) in 2014 grows 3.4%**

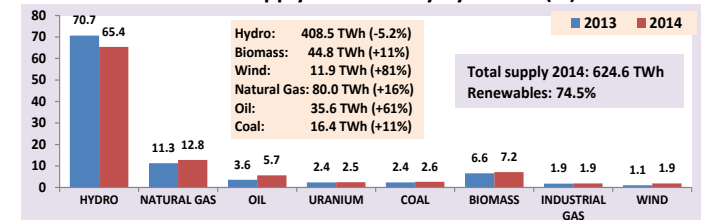
The external dependence on energy, 13% of DES, reduces a little more than 1 percentage point compared to 2013, due to the expansion of oil and gas production.

The renewables share in DES stood at 39.4% in 2014, below the 41%, verified in 2013. The decreases in hydropower (5%) and wood (3%) supplies, and the growth of only 1.4% in the sugarcane products, explain the above fact, in spite of the good expansions of wind and biodiesel supplies.



The Domestic Supply of Electricity, estimated at 625 TWh in 2014 (\*\*), presented an expansion of 2.4% over 2013, with renewables responding for 74.5%, against 78.4% in 2013.

### Domestic Supply of Electricity by Source (%)



MINISTRY OF MINES AND ENERGY - MME  
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## Highlights of 2014

### Oil and Gas production is on the up

In 2014, oil production grew expressive 11.4% and natural gas, 12.9%, results that place the external dependence on energy in 13% of DES, compared with 14.3% in 2013.

### One more year of decline in steel production

Steel production reduced 0.8% in 2014 (recoiled 1.1% in 2013). Iron ore exports, with a rising of 4.4%, repeat the good results of 2013 (3.6%). Pellets exports, with an expansion of 5.1%, reverse the decline of 8.8% from 2013.

### Hydro supply recoils more than 5%.

The hydraulic energy supply, of 408 TWh, closed 2014 with a decline of 5.2%, repeating the recoil rate of 2013. The national generation stood at 370 TWh, and the net imports, about 38 TWh.

### Oil products consumption grows about 5%

Apparent consumption of petroleum products increased 4.7% in 2014, repeating the good rates of 2013 (4.6%) and 2012 (5.7%), getting the C gasoline the rate of 9.9% (3.9% in 2013). Ethanol consumption, with a rate of 4.7%, does not repeat the excellent growth of 20% recorded in 2013. The diesel ended the year with a positive rate of 2%, below the 5.4% expansion recorded in 2013. The demand for natural gas ended 2014 with growth of 10.9% (17.6% in 2013 and 15.9% in 2012), due to a strong increase in electricity generation use. The industrial gas consumption grew by 4.2% (-1% in 2013).

Energy consumption, in equivalent gasoline, of the Otto cycle transport (gasoline, ethanol and gas), maintained a high growth rate of 6.2% in 2014 (5.8% in 2013).

### Electricity consumption grows a little

Electricity consumption (excluding captive self-production) grew 2.2% in 2014 (3.6% in 2013), having the industrial consumption a negative rate of 3.4% (in 2013 and 2012 the rates were already small: 0.6 and 0.1%, respectively). The industrial sector has been affected mostly by the low performances of steel, ferroalloys and aluminum. The commercial sector had an expressive expansion of 7.3%, and the residential sector, 5.8%. Some governmental programs contributed to these high consumption rates, like "My Better House" and "My House, My Life", for example.

### Biodiesel production grows above 16%

Biodiesel production stood at 58 thousand bbl/day in 2014, an amount 16.1% higher than 2013 (50 thousand bbl/day).

## Electricity tariffs rise

The national average residential electricity tariff rose 7.1% in 2014 (recoiled 15.2% in 2013), the commercial grew 8.8% (reduced 13.3% in 2013) and the industrial, 11.3% (reduced 12.9% in 2013).

### Basic data of 2013 and 2014

SPECIFICATION	DECEMBER							
	IN THE MONTH			ACCUMULATED IN THE YEAR				
	2014	2013	% 14/13	2014	2013	% 14/13	%2014	
<b>OIL</b>								
PRODUCTION - with Shale Oil and NGL(10 <sup>3</sup> b/d)	2,602	2,203	18.1	2,348	2,108	11.4	-	
IMPORTS AVERAGE PRICE (US\$/bbl FOB)	92	119	-22.4	110	113	-2.1	-	
<b>OIL PRODUCTS</b>								
TOTAL CONSUMPTION (10 <sup>3</sup> b/day)	2,857	2,649	7.9	2,808	2,681	4.7	100.0	
hereof: DIESEL with biodiesel - (10 <sup>3</sup> b/day)	1,006	947	6.2	1,062	1,041	2.0	35.9	
hereof: GASOLINE C (10 <sup>3</sup> b/day)	849	780	8.9	765	696	9.9	21.8	
CONSUMER PRICE - DIESEL (R\$/l)	2.61	2.47	5.7	2.51	2.33	8.0	-	
CONSUMER PRICE - GASOLINE C (R\$/l)	3.03	2.95	2.9	2.98	2.85	4.3	-	
CONSUMER PRICE - LPG (R\$/13 kg)	44.7	42.4	5.3	43.2	41.3	4.7	-	
<b>NATURAL GAS</b>								
PRODUCTION (10 <sup>6</sup> m <sup>3</sup> /day)	95.1	81.6	16.6	87.4	77.2	13.2	-	
IMPORTS (10 <sup>6</sup> m <sup>3</sup> /day)	48.0	32.0	50.2	52.5	45.2	16.1	-	
NON-UTILIZED AND REINJECTION (10 <sup>6</sup> m <sup>3</sup> /day)	21.5	17.8	20.6	19.9	14.2	40.3	-	
AVAILABILITY FOR CONSUMPTION (10 <sup>6</sup> m <sup>3</sup> /day)	121.6	95.7	27.1	120.0	108.2	10.9	100.0	
INDUSTRIAL CONSUMPTION (10 <sup>6</sup> m <sup>3</sup> /day)	41.0	41.0	0.1	43.0	41.3	4.2	35.8	
POWER GENERATION CONS. (10 <sup>6</sup> m <sup>3</sup> /day)	50.0	34.3	45.6	47.3	38.9	21.6	39.4	
INDUSTRIAL PRICE SP(*) (US\$/MMBtu) - consumption range of 20,000 m <sup>3</sup> /day	15.8	16.6	-4.9	17.2	16.6	3.2	-	
MOTOR PRICE SP (US\$/MMBtu)	18.6	18.8	-1.0	19.8	20.3	-2.1	-	
RESIDENTIAL PRICE SP (US\$/MMBtu)	46.0	48.3	-4.7	49.7	51.5	-3.5	-	
<b>ELECTRICITY</b>								
NATIONAL INTERCONNECTED SYSTEM	65,602	64,348	1.9	64,943	62,824	3.4	100.0	
SOUTHEAST/MIDWEST POWER LOAD (MWavg)	38,653	37,895	2.0	38,722	37,843	2.3	59.6	
SOUTH POWER LOAD (MWavg)	11,478	11,202	2.5	11,182	10,627	5.2	17.2	
NORTHEAST POWER LOAD (MWavg)	10,385	10,021	3.6	9,957	9,705	2.6	15.3	
NORTH POWER LOAD (MWavg)	5,086	5,230	-2.8	5,032	4,650	8.2	7.7	
TOTAL CONSUMPTION (TWh) (**)	39.7	39.6	0.2	473.8	463.7	2.2	100.0	
RESIDENTIAL	11.1	10.7	4.3	132.1	124.9	5.8	27.9	
INDUSTRIAL	14.5	15.3	-5.3	178.2	184.5	-3.4	37.6	
COMMERCIAL	7.9	7.6	3.6	89.9	83.7	7.3	19.0	
OTHER SECTORS	6.2	6.0	2.6	73.7	70.6	4.4	15.5	
PLANTS ENTRY INTO OPERATING (MW)	1,069	317	236.9	7,509	5,889	27.5	-	
RESIDENTIAL PRICE (R\$/MWh)	457	392	16.6	419	391	7.1	-	
COMMERCIAL PRICE (R\$/MWh)	406	344	18.0	369	339	8.8	-	
INDUSTRIAL PRICE (R\$/MWh)	374	308	21.5	334	301	11.3	-	
<b>ETHANOL AND BIODIESEL</b>								
BIODIESEL PRODUCTION (10 <sup>3</sup> b/d)	71	43	62.2	58	50	16.1	-	
MOTOR ETHANOL CONSUMPTION (10 <sup>3</sup> b/d)	501	439	14.2	430	410	4.7	-	
ETHANOL EXPORTS (10 <sup>3</sup> b/d)	27	19	38.4	24	50	-52.1	-	
HYDRATED ETHANOL PRICE (R\$/l)	2.04	2.02	0.9	2.07	1.97	5.0	-	
<b>COAL</b>								
ELECTRICITY GENERATION (MWavg)	2,170	1,716	26.4	1,985	1,608	23.4	-	
IMPORT PRICE (US\$ FOB/t)	94.7	117.2	-19.2	106.4	132.6	-19.8	-	
<b>NUCLEAR ENERGY</b>								
ELECTRICITY GENERATION - (GWh)	1,492	1,409	5.9	15,358	15,450	-0.6	-	
<b>INDUSTRIAL SECTORS</b>								
STEEL PRODUCTION (10 <sup>3</sup> t/day)	85	86	-1.0	93	93	-0.8	-	
ALUMINIUM PRODUCTION (10 <sup>3</sup> t/day)	2.3	3.4	-32.0	2.6	3.6	-26.2	-	
IRON ORE EXPORTS (10 <sup>3</sup> t/day)	1,022	851	20.0	807	773	4.4	-	
PELLETS EXPORTS (10 <sup>3</sup> t/day)	185	175	5.6	137	130	5.1	-	
CEMENT PRODUCTION (10 <sup>3</sup> t/day)	180	175	3.1	194	192	1.0	-	
PAPER PRODUCTION (10 <sup>3</sup> t/day)	28.6	28.1	1.7	28.6	28.6	-0.2	-	
PULP PRODUCTION (10 <sup>3</sup> t/day)	47.5	41.3	15.0	44.9	41.1	9.2	-	
SUGAR PRODUCTION (10 <sup>3</sup> t/day)	34	60	-44.1	97	102	-5.7	-	
SUGAR EXPORTS (10 <sup>3</sup> t/day)	73	76	-4.0	66	73	-9.8	-	

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

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

