

# Monthly Energy Bulletin - Brazil

Reference Month: December 2013

## Domestic Energy Supply – DES

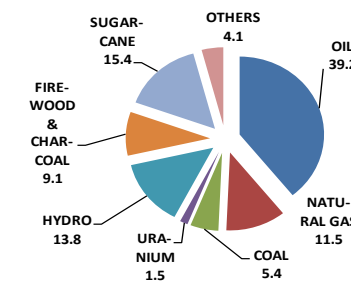
The Domestic Energy Supply (DES) (\*) (\*\*) - energy needed to move Brazil's economy - grew 4.1% in 2013, while GDP grew by 2.3%. The expansion of ethanol production, the continued good performance of energy consumption in transport, and increased energy losses in thermal generation, are the main driving factors on the rate of energy demand. The increased losses in thermoelectric explains 1.5 percentage point from 4.1% - without adding value - which reduces the rate of the DES to 2.6%, now closer to that of GDP.

**Total energy demand in 2013 should grow 4.1%**

The external dependence on energy, 12% of the DES, was close to that seen in 2012, of 11%.

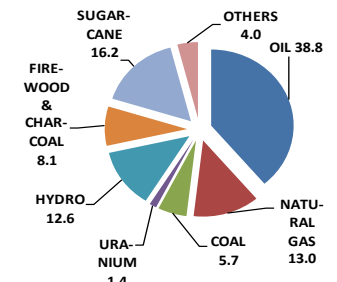
The share of renewables in the DES stood at 41.1% in 2013, down from 42.4% in 2012. The low performance of hydraulic generation, the use of charcoal in steel and wood to cook food were instrumental in the decline of renewables.

DES 2012 (%)



283.6 million toe  
42.4% renewables

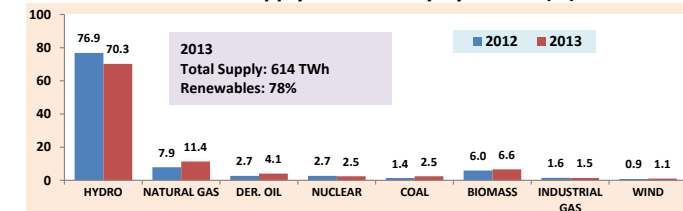
DES (Trend for 2013)



295,3 million toe  
41.1% renewables

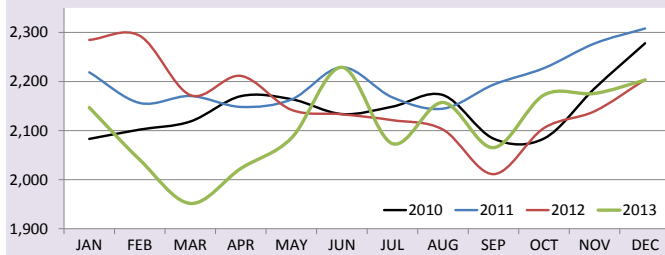
The Domestic Supply of Electricity, estimated at 614 TWh in 2013 (\*\*), grew by 3.6% over 2012, with renewables at 78%, against 84% in 2012.

Domestic Supply of Electricity by Source (%)

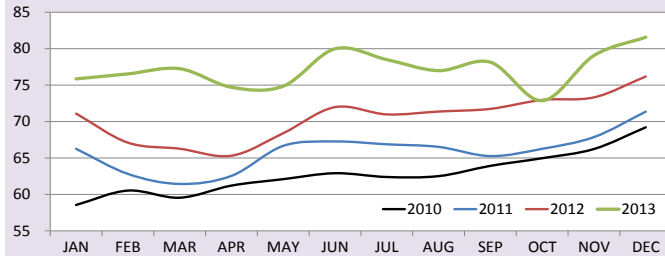


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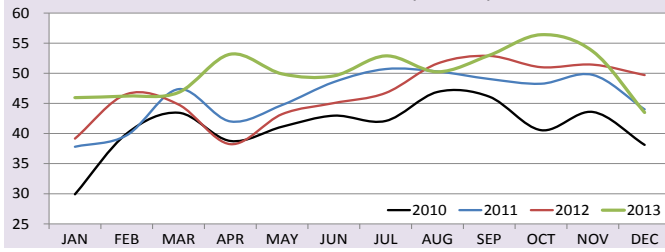
OIL PRODUCTION (10<sup>3</sup> bbl/d)



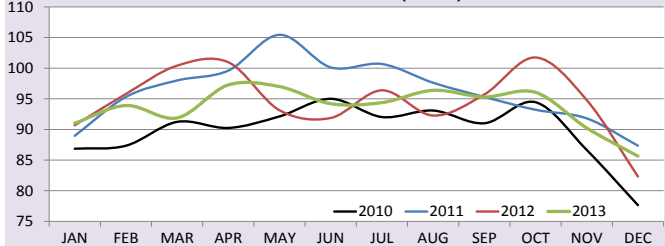
NATURAL GAS PRODUCTION (million m<sup>3</sup>/d)



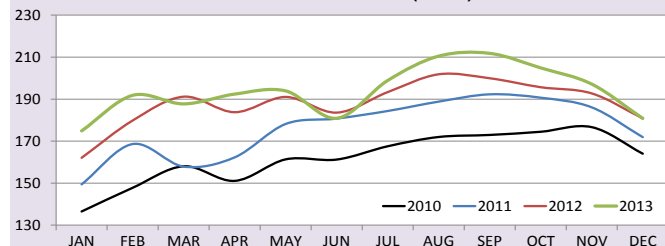
BIODIESEL PRODUCTION (10<sup>3</sup> bbl/d)



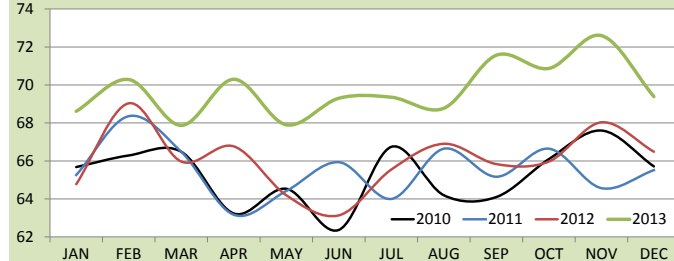
STEEL PRODUCTION (10<sup>3</sup> t/d)



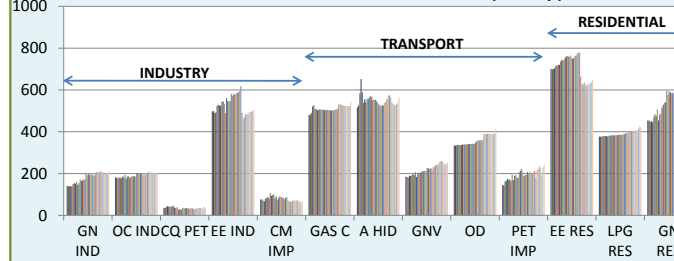
CEMENT PRODUCTION (10<sup>3</sup> t/d)



PAPER AND PULP PRODUCTION (10<sup>3</sup> t/d)



CONSUMER PRICES - Jan 2011 to Dec 2013 (R\$/bep)



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 2014 National Energy Balance, initiated by the Energy Research Company (EPE), will define the final data until April 2013.



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## Highlights of 2013

### Steel production recoils 1.1%

Steel production declined 1.1% in 2013, though rising 4.0% in December, compared to the same month of 2012. Iron ore exports increased by 3.6% in 2013. The pellet exports retreated 8.8% in the year.

### Hydro supply recoils close to 5%.

The hydraulic energy supply, with 433 TWh, closed 2013 with a decline of 5.2%. The national generation was 393 TWh in net imports and about 40 TWh. This was the preponderant factor for the renewables reduction in the electricity supply matrix.

### Oil products grows 3%

The apparent consumption of petroleum products increased by 3.1% in 2013 (5.9% in 2012), getting gasoline C with the rate of 2.7% (10.8% in 2012). The low rate of gasoline was due to the increase of 25% in the use of ethanol (decrease of 7.7% in 2012). The diesel closed the year with a positive rate of 5.3% (5.8% in 2012), being the larger inductors the agriculture and transport uses. The demand for natural gas closed 2013 with a 17.5% growth (17.7% in 2012), due to a strong increase in electricity generation use of 70% (120% in 2012). The industrial sector consumption of natural gas declined 1% in 2013.

Energy consumption of the Otto cycle transport (gasoline, ethanol and gas), in equivalent gasoline, maintained a high growth rate of 5.8% in 2013, against 7.6% in 2012 (revised datum).

### Electricity consumption grows 3.5%

Electricity consumption (excluding captive self-production) grew 3.5% in 2013 (4.1% in 2012), becoming the industrial consumption with the lowest rate, of only 0.6% (0.1% in 2012). The industrial sector has been affected by the low performances of steel, ferroalloys and aluminum, mostly. The residential sector consumption stayed with 6.1%, followed by the commercial sector, 5.7%. The high residential consumption was due to the expansion of household goods, as a result of the easy credit of the "My Better House" program.

### Biodiesel production grows above 7%

Biodiesel production stood at 50 thousand bbl/day in 2013, an amount 7.3% higher than 2012 (47 thousand bbl/day).

### Electricity tariffs recede

The national average residential electricity tariff fell 15.2% in 2013, the commercial tariff declined 13.3% and the industrial, 12.9%.

The cement industry closed 2013 with a production growth of 3.1%, no more repeating the high rates of the previous years: 7.0% in 2012, 8.3% in 2011 and 14.5% in 2010.

Pulp production increased 7.4%, against a negative rate of 1.3% in 2012. Paper production grew less: 3.1% in 2013.

## Basic data of 2012 and 2013

SPECIFICATION	DECEMBER			ACCUMULATED IN THE YEAR			
	2013	2012	%13/12	2013	2012	%13/12	%2013
<b>OIL</b>							
PRODUCTION - with Shale Oil and NGL(10 <sup>3</sup> b/d)	2,203	2,204	0.0	2,111	2,160	-2.3	-
IMPORTS AVERAGE PRICE (US\$/bbl FOB)	119	118	0.5	113	118	-4.3	-
<b>OIL PRODUCTS</b>							
TOTAL CONSUMPTION (10 <sup>3</sup> b/day)	2,649	2,697	-1.8	2,681	2,600	3.1	100.0
hereof: DIESEL with biodiesel - (10 <sup>3</sup> b/day)	947	1,052	-9.9	1,041	988	5.3	36.9
hereof: GASOLINE C (10 <sup>3</sup> b/day)	780	765	2.0	696	678	2.7	20.8
CONSUMER PRICE - DIESEL (R\$/l)	2.47	2.15	14.6	2.33	2.09	11.5	-
CONSUMER PRICE - GASOLINE C (R\$/l)	2.95	2.75	7.0	2.85	2.74	4.3	-
CONSUMER PRICE - LPG (R\$/13 kg)	42.4	40.1	5.8	41.3	39.3	5.0	-
<b>NATURAL GAS</b>							
PRODUCTION (10 <sup>6</sup> m <sup>3</sup> /day)	81.6	76.2	7.1	77.2	70.6	9.4	-
IMPORTS (10 <sup>6</sup> m <sup>3</sup> /day)	32.0	39.2	-18.4	45.2	35.7	26.6	-
NON-UTILIZED AND REINJECTION (10 <sup>6</sup> m <sup>3</sup> /day)	17.8	13.3	34.1	14.2	13.6	4.3	-
AVAILABILITY FOR CONSUMPTION (10 <sup>6</sup> m <sup>3</sup> /day)	95.7	102.1	-6.2	108.2	92.7	16.7	100.0
INDUSTRIAL CONSUMPTION (10 <sup>6</sup> m <sup>3</sup> /day)	42.6	38.6	10.3	41.4	41.8	-1.0	38.2
POWER GENERATION CONS. (10 <sup>6</sup> m <sup>3</sup> /day)	40.3	37.9	6.3	39.5	23.1	71.5	36.5
INDUSTRIAL PRICE SP*(*) (US\$/MMBtu) - consumption range of 20,000 m <sup>3</sup> /day	15.8	16.6	-5.0	16.8	16.9	-0.2	-
MOTORIZED PRICE SP (US\$/MMBtu)	19.1	20.1	-5.0	20.3	19.8	2.4	-
RESIDENTIAL PRICE SP (US\$/MMBtu)	49.8	50.1	-0.6	51.7	51.7	0.0	-
<b>ELECTRICITY</b>							
NATIONAL INTERCONNECTED SYSTEM	64,348	62,801	2.5	62,824	60,582	3.7	100.0
LOAD - SOUTHEAST/MID-WEST (MWavg)	37,895	38,679	-2.0	37,843	37,220	1.7	60.2
LOAD - SOUTH (MWavg)	11,202	10,553	6.1	10,627	10,233	3.8	16.9
LOAD - NORTHEAST (MWavg)	10,021	9,571	4.7	9,705	9,009	7.7	15.4
LOAD - NORTH (MWavg)	5,230	3,998	30.8	4,650	4,120	12.9	7.4
TOTAL CONSUMPTION (TWh) (**)	39.6	37.8	4.8	463.7	448.1	3.5	100.0
RESIDENTIAL (TWh)	10.7	10.1	5.3	124.9	117.6	6.1	26.9
INDUSTRIAL (TWh)	15.3	14.8	3.1	184.5	183.5	0.6	39.8
COMMERCIAL (TWh)	7.6	7.1	7.1	83.7	79.2	5.7	18.1
OTHER SECTORS (TWh)	6.0	5.7	5.7	70.6	67.8	4.2	15.2
PLANTS' ENTRY INTO OPERATING (MW)	317	641	-50.5	5,889	3,983	47.9	-
RESIDENTIAL PRICE (R\$/MWh)	392	473	-17.1	391	462	-15.2	-
COMMERCIAL PRICE (R\$/MWh)	344	404	-14.8	339	392	-13.3	-
INDUSTRIAL PRICE (R\$/MWh)	308	361	-14.7	302	347	-12.9	-
<b>AUTOMOTIVE ETHANOL CONSUMPTION</b>							
BIO DIESEL PRODUCTION (10 <sup>3</sup> b/d)	43	50	-12.5	50	47	7.3	-
MOTOR ETHANOL CONSUMPTION (10 <sup>3</sup> b/d)	371	336	10.5	413	329	25.5	-
ETHANOL EXPORTS (10 <sup>3</sup> b/d)	16	94	-83.4	39	53	-26.6	-
HYDRATED ETHANOL PRICE (R\$/l)	2.02	1.94	4.4	1.97	1.94	1.4	-
<b>COAL</b>							
ELECTRICITY GENERATION (MWavg)	1,716	907	89.1	1,608	872	84.3	-
IMPORT PRICE (US\$/t)	117.2	146.7	-20.1	131.7	179.9	-26.8	-
<b>NUCLEAR ENERGY</b>							
ELECTRICITY GENERATION - (GWh)	1,409	1,391	1.3	15,450	16,038	-3.7	-
<b>INDUSTRIAL SECTORS</b>							
STEEL PRODUCTION (10 <sup>3</sup> t/day)	86	82	4.0	94	95	-1.1	-
ALUMINIUM PRODUCTION (10 <sup>3</sup> t/day)	3.4	3.8	-11.3	3.6	3.9	-8.9	-
IRON ORE EXPORTS (10 <sup>3</sup> t/day)	851	889	-4.3	773	746	3.6	-
PELLETS EXPORTS (10 <sup>3</sup> t/day)	175	151	15.4	127	139	-8.8	-
CEMENT PRODUCTION (10 <sup>3</sup> t/day)	181	181	0.0	194	188	3.1	-
PAPER PRODUCTION (10 <sup>3</sup> t/day)	28.1	27.5	2.1	28.6	27.8	3.1	-
PULP PRODUCTION (10 <sup>3</sup> t/day)	41.3	38.9	6.0	41.1	38.2	7.4	-
SUGAR PRODUCTION (10 <sup>3</sup> t/day)	61	64	-5.4	99	105	-5.8	-
SUGAR EXPORTS (10 <sup>3</sup> t/day)	76	79	-4.5	73	67	10.2	-

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

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

