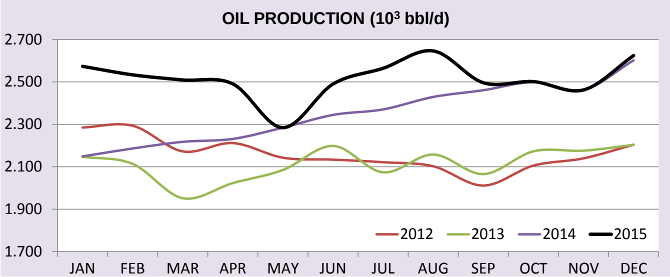

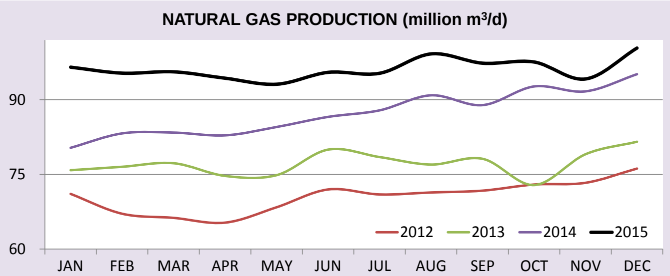

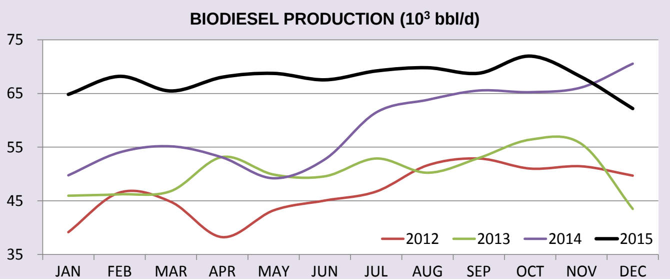

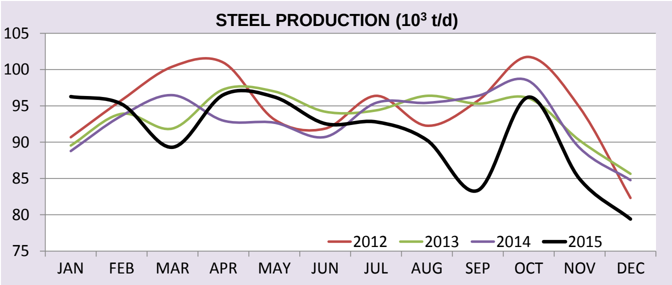

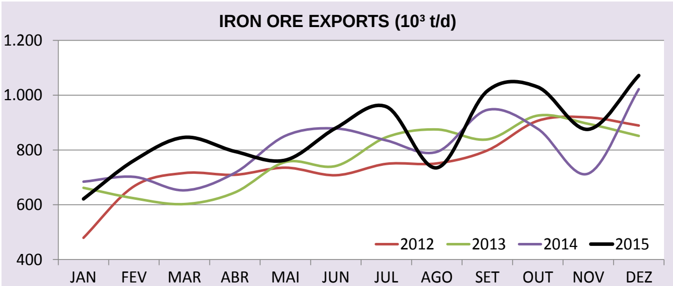

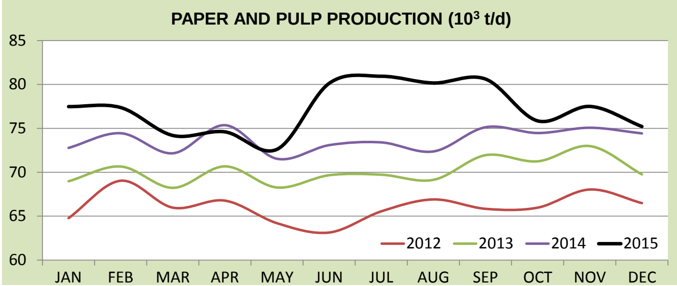

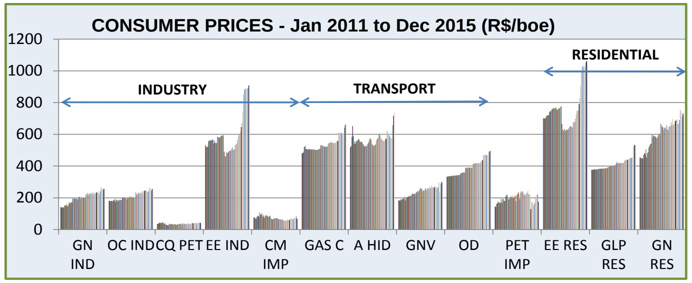

Note: For a better visualization, the minimum scale of the graphs was raised to the level close to the lowest value of the curves.

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 is equal to domestic production (+) import (-) unused (-) reinjection.

Apparent consumption of oil derivatives is equal 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**, 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.

(**) 2014 data reflect the **2015 cycle** of the **National Energy Balance**, completed in July by the Energy Research Company (EPE), with the support of MME and its institutions.

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Monthly Energy Bulletin - Brazil

Reference Month: December 2015

Domestic Energy Supply

Energy Demand recoils in 2015

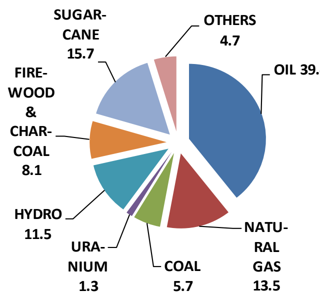
Up to December, economic and energy indicators show that **Domestic Energy Supply (DES) (*)** (**), the energy required to move the economy of a country or region, receded by 1.6%.

Increases in interest rates, inflation, unemployment and administered prices have been greatly affecting the domestic demand for goods and services, with repercussions in energy demand. The lower global economic performance had also its contribution.

Oil products, the main aggregate in DES, fell 6.2% in 2015. Still retreated: natural gas (-1.6%), uranium (-4.2%) and hydraulic (-2.2%). With positive rates were: "other sources" (14.9%) – biodiesel, wind, bleach and other biomass –, sugarcane products (3.3%), coal (2.6%) and firewood (0.8%).

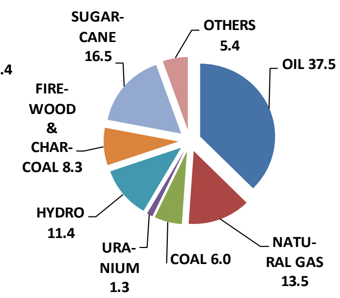
Renewable sources begin to constitute 41% of DES, a few higher than the 2014 indicator, of 39.4%.

DES 2014 (%)



305.6 million toe
39.4% renewables

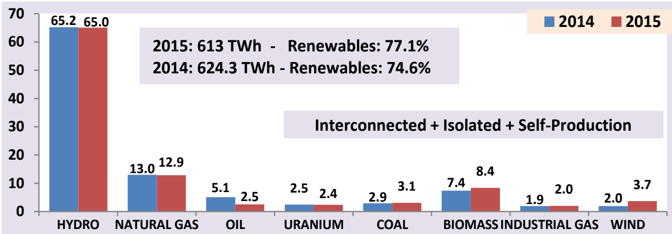
DES 2015 (%)



300.7 million toe
41.0% renewables

The **Domestic Electricity Supply** was estimated at 613 TWh for 2015(**), with a decrease of 1.8% over 2014. The wind generation should overcome 22 TWh, an increase of over 80%.

Domestic Electricity Supply, by Source (%)



MINISTRY OF MINES AND ENERGY - MME
SECRETARIAT OF ENERGY PLANNING AND DEVELOPMENT
OFFICE OF STRATEGIC ENERGY STUDIES

Highlights of December 2015

Oil production still accumulates significant rise

Referring to December 2015, oil production (including GNL) rose 0.9% and natural gas production increased by 5.5%. Year to date, the rates are 6.8% (7.2% without GNL) and 10.1% respectively.

Minerals exports levels increasing

Steel production declined 6.3% in December, accumulating an negative rate of 2.0% in the year. Iron ore exports rose 4.9% in the month, and 7.0% in the year. Pellets exports rose 9.9% in December, and 2.5% in the year.

Hydro Generation closed negative

The hydro power supply increased 6.2% in December over the same month of 2014, and the Itaipu generation increased 15%. Up this month, the hydraulic supply recoiled 2.2%.

Oil products consumption with strong decrease

In December, oil products apparent consumption recoiled 9.7% and accumulates -6.2% in the year. C gasoline recoiled 5.8% and diesel oil decreased 4.2%. Rates closed negative in the year: -7.4% for gasoline and -3.4% for diesel. The increase by 18.2% in light vehicles ethanol consumption offsets the gasoline negative effects.

In the same month, gas consumption decreased by 10.6%, accumulating -1.3% in the year. Natural gas sales for electricity generation decreased 12.1% in the month and 2.7% in the year.

The energy consumption of the Otto cycle transport (gasoline, ethanol and natural gas), in gasoline equivalent, closed 2015 with only 0.8%, much lower than the 2014 indicator, of 6.3%.

Electricity consumption recoiled

Electricity consumption – excluding captive self-production – recoiled by 2.5% in December, accumulating -1.8% in the year. Industrial consumption, with -7.3% in December, accumulates a reduction of 4.8% in the year. The industrial sector was in large part affected by the decline of 20% in aluminum production, an energy-intensive product. Residential consumption, with a recoil of 0.1% in December, accumulated -0.6% in the year. Commercial sector recoils 0.2% in the month, but closed 2015 with a positive rate of 0.7%.

Biodiesel production closed high

Biodiesel production stood at 62 kbbl/day in December, with a decrease 11.9% over the same month of 2014. In the year, it accumulates an increase of 14.9%.

Electricity rates with strong rise

In the year to date, the national average residential electricity tariff rose 42.5%, the commercial tariff grew 43.8%, and the industrial, 51.7%.

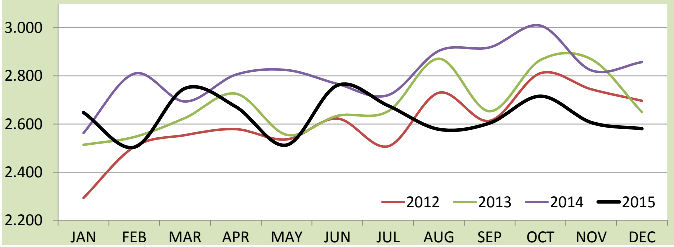
Basic data of 2014 and 2015

SPECIFICATION	DECEMBER – IN THE MONTH 2015	IN THE MONTH 2014	IN THE MONTH % 15/14	ACCUMULATED IN THE YEAR 2015	ACCUMULATED IN THE YEAR 2014	ACCUMULATED IN THE YEAR % 15/14	%2015
OIL							
PRODUCTION - with Shale Oil and NGL(10^3 b/d)	2.624	2.602	0,9	2.515	2.354	6,8	-
IMPORTS AVERAGE PRICE (US$/bbl FOB)	50	92	-46,3	62	110	-44,2	-
OIL PRODUCTS							
TOTAL CONSUMPTION (10^3 b/day)	2.580	2.857	-9,7	2.635	2.808	-6,2	**100,0**
hereof: DIESEL with biodiesel - (10^3 b/day)	965	1.006	-4,2	1.049	1.086	-3,4	37,8
hereof: GASOLINE C (10^3 b/day)	800	849	-5,8	708	765	-7,4	21,5
CONSUMER PRICE - DIESEL (R$/l)	2,99	2,61	14,5	2,84	2,51	13,0	-
CONSUMER PRICE - GASOLINE C (R$/l)	3,63	3,03	19,9	3,34	2,98	12,4	-
CONSUMER PRICE - LPG (R$/13 kg)	54,1	44,7	21,0	48,3	43,2	11,8	-
NATURAL GAS							
PRODUCTION (10^6 m^3/day)	100,4	95,1	5,5	96,2	87,4	10,1	-
IMPORTS (10^6 m^3/day)	42,6	52,9	-19,4	50,4	52,9	-4,7	-
NON-UTILIZED AND REINJECTION (10^6 m^3/day)	32,4	24,2	33,6	28,1	20,2	39,5	-
AVAILABILITY FOR CONSUMPTION (10^6 m^3/day)	110,7	123,8	-10,6	118,5	120,1	-1,3	**100,0**
INDUSTRIAL CONSUMPTION (10^6 m^3/day)	37,9	43,4	-12,6	43,5	43,2	0,6	36,7
POWER GENERATION CONS. (10^6 m^3/day)	42,6	48,4	-12,1	45,9	47,2	-2,7	38,7
INDUSTRIAL PRICE SP(*) (US$/MMBtu) - consumption range of 20,000 m^3/day	11,6	15,5	-25,6	13,1	17,2	-23,5	-
MOTOR PRICE SP (US$/MMBtu)	13,4	17,7	-23,9	14,8	19,7	-25,3	-
RESIDENTIAL PRICE SP (US$/MMBtu)	33,0	45,7	-27,8	37,9	49,7	-23,6	-
ELECTRICITY							
NATIONAL INTERCONNECTED SYSTEM	65.306	65.602	-0,5	63.987	65.085	-1,7	**100,0**
SOUTHEAST/MIDWEST POWER LOAD (MWavg)	38.551	38.653	-0,3	37.468	38.722	-3,2	58,6
SOUTH POWER LOAD (MWavg)	10.649	11.478	-7,2	10.852	11.182	-2,9	17,0
NORTHEAST POWER LOAD (MWavg)	10.650	10.385	2,6	10.389	9.957	4,3	16,2
NORTH POWER LOAD (MWavg)	5.456	5.086	7,3	5.277	5.194	1,6	8,2
TOTAL CONSUMPTION (TWh) (**)	38,7	39,7	-2,5	465,1	473,5	-1,8	**100,0**
RESIDENTIAL	11,1	11,1	-0,1	131,4	132,2	-0,6	28,2
INDUSTRIAL	13,4	14,5	-7,3	169,5	178,1	-4,8	36,4
COMMERCIAL	7,8	7,9	-0,2	90,4	89,7	0,7	19,4
OTHER SECTORS	6,3	6,2	1,7	73,8	73,4	0,5	15,9
PLANTS ENTRY INTO OPERATING (MW)	1.295	1.069	21,1	6.428	7.509	-14,4	-
RESIDENTIAL PRICE (R$/MWh)	631	457	38,2	597	419	42,5	-
COMMERCIAL PRICE (R$/MWh)	517	406	27,4	531	369	43,8	-
INDUSTRIAL PRICE (R$/MWh)	543	374	45,3	507	334	51,7	-
ETHANOL AND BIODIESEL							
BIODIESEL PRODUCTION (10^3 b/d)	62	71	-11,9	68	59	14,9	-
MOTOR ETHANOL CONSUMPTION (10^3 b/d)	510	501	1,9	508	430	18,2	-
ETHANOL EXPORTS (10^3 b/d)	58	27	115,7	32	24	33,7	-
HYDRATED ETHANOL PRICE (R$/l)	2,66	2,04	30,3	2,23	2,07	7,9	-
COAL							
ELECTRICITY GENERATION (MWavg)	2.019	2.170	-6,9	2.047	1.985	3,1	-
IMPORT PRICE (US$ FOB/t)	72,0	94,7	-24,0	88,5	106,4	-16,8	-
NUCLEAR ENERGY							
ELECTRICITY GENERATION - (GWh)	1.490	1.492	-0,1	14.734	15.378	-4,2	-
INDUSTRIAL SECTORS							
STEEL PRODUCTION (10^3 t/day)	79	85	-6,3	91	93	-2,0	-
ALUMINIUM PRODUCTION (10^3 t/day)	2,1	2,3	-10,0	2,1	2,6	-20,1	-
IRON ORE EXPORTS (10^3 t/day)	1.072	1.022	4,9	863	807	7,0	-
PELLETS EXPORTS (10^3 t/day)	203	185	9,9	140	137	2,5	-
PAPER PRODUCTION (10^3 t/day)	26,8	28,4	-5,6	28,3	28,6	-1,1	-
PULP PRODUCTION (10^3 t/day)	48,4	46,0	5,2	48,9	45,1	8,5	-
SUGAR PRODUCTION (10^3 t/daY)	49	35	40,1	93	97	-4,4	-
SUGAR EXPORTS (10^3 t/day)	92	73	26,4	67	66	1,2	-

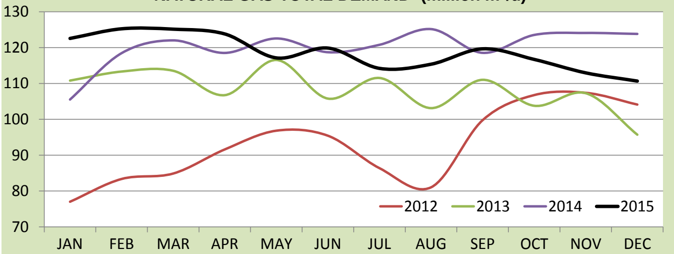
(*) SP is the acronym of the state of São Paulo.

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

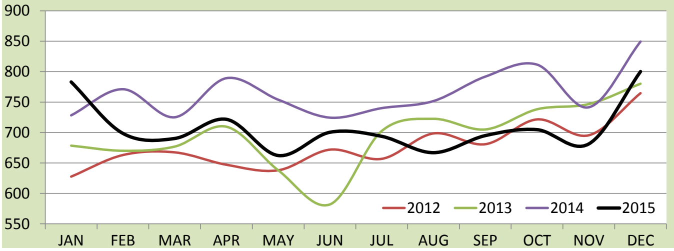
OIL PRODUCTS TOTAL CONSUMPTION (10^3 bbl/d)



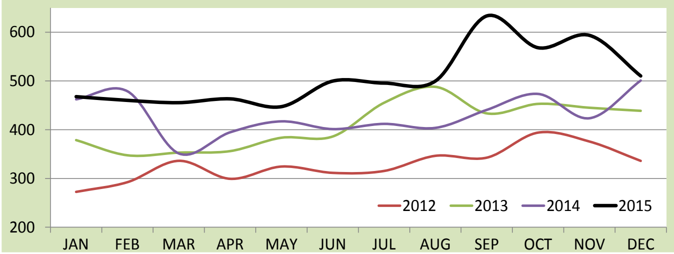
NATURAL GAS TOTAL DEMAND (million m^3/d)



C GASOLINE CONSUMPTION (10^3 bbl/d)



MOTOR ETHANOL TOTAL CONSUMPTION (10^3 bbl/d)



NATIONAL INTERCONNECTED SYSTEM POWER LOAD (GWavg)