ABEEólica
Associação Brasileira
de Energia Eólica

2016 ANNUAL WIND **POWER GENERATION** REPORT

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MESSAGE FROM THE CEO

Elbia Gannoum
ABEEólica CEO

This is the fifth ABEEólica Annual Wind Power Generation Report, and comes to you full of important industry numbers. This year, 2 GW of wind energy were added in 81 new wind-farms. This brought the total installed wind power capacity by end 2016 to 10.75 GW in 430 wind-farms, or 7% of the national electrical matrix. Wind energy created over 30 thousand jobs in 2016, for an investment of US$ 5.4 billion. These numbers reflect a strong industry, with major ability to capture funds and advanced technology that results in efficient implementation.

2016, the year of the Olympics, was also a record year for wind power. Just look at the data published by the National System Operator (ONS) for Saturday, November 5th 2016, when 52% of the energy in the northeast came from wind-farms. It is important to add that, according to the CCEE (the Electric Energy Trading Chamber), between 2015 and 2016 wind power grew 55%.

2016 will be remembered in the history of wind power as the year we reached 10 GW, an iconic milestone and the result of major investment in an industry that has shown strong growth in the past seven years, and today is 80% produced in the country. Therefore, despite the turbulent national scenario, 2016 was a good year for wind power in terms of projects contracted in prior auctions and completed in the year.

Global comparisons are also favorable. According to the GWEC (Global Wind Energy Council), Brazil has passed Italy and is now ranked # 9 worldwide in installed wind power capacity.

Regarding funding, the BNDES (Brazil's National Bank for Social and Economic Development), announced new funding tools for the energy sector and reiterated its support for low-impact renewable energy, keeping the same terms for wind power.

It is also important to mention the fundamental victory of wind power in obtaining Provisional Measure 735/2016[1], and keeping equal incentives for all renewable sources.

We are all aware that 2016 was a difficult year for Brazil, fraught by successive political crisis and a persistent recession that inhibited investments and pushed down the demand for energy. Cancelation of the Reserve Energy Auction late in the year was bad news for the industry and caused it to veer off what had been a positive path. 2016 was the first year since wind-farms started to take part in the auctions where no wind energy was contracted.

The result will shortly be felt along the entire manufacturing chain unless the situation is reversed with new auctions in 2017. This is what ABEEólica and its members are fighting for. I would like to close by reminding you that we publish monthly updates with industry numbers and news on the ABEEólica website and social network pages. Go online to keep track of what we are doing and what is going on in the industry.

I invite all of you to read our Annual Wind Power Generation Report, with all of the more important data for 2016. ***Good reading!***

[1]Provisional Measure is a regulatory act that foresees law. For the MP 735/2016, it initially called for removing incentives from some of the incentivized energy sources, including wind, in the form of a discount on the Transmission and Distribution System Use Fee (TUST/TUSD). However, ABEEólica and its members lobbied and created awareness among the Brazilian Congress and Senate regarding equality of generating sources, and the incentive was kept for all of the incentivized sources.

Installed capacity in Brazil all sources

Eighty one new wind-farms came on-stream in 2016, adding a total of 2,013.97 MW. These were built in the states of Rio Grande do Norte, Ceará, Bahia, Pernambuco, Piauí and Rio Grande do Sul. Rio Grande do Norte continues to lead in installed capacity, for the one more consecutive year.

NEW INSTALLED CAPACITY (MW)

State	Nº of Wind Farms	Power
RN	25	640.00
CE	21	485.03
BA	11	278.95
PE	10	273.59
PI	8	209.80
RS	6	126.60
Total	**81**	**2,013.97**

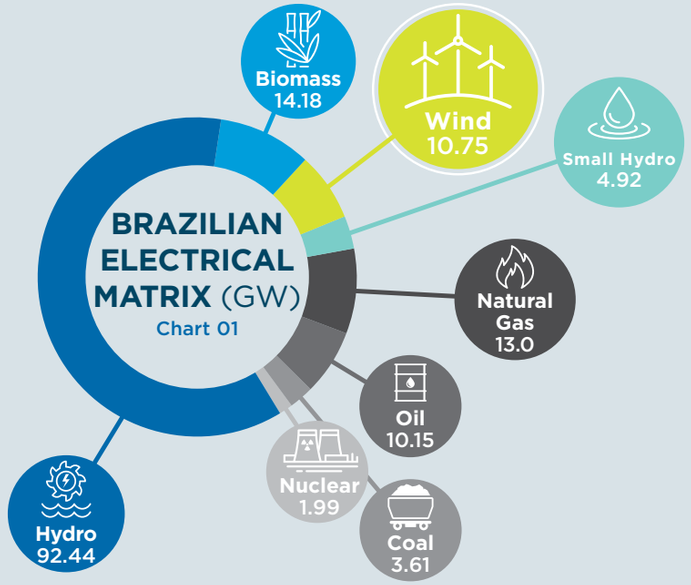
Source: ANEEL/ABEEólica

By the end of 2016 there were a total of 430 wind-farms in the country, with an installed capacity of 10.75 GW, a 23.06% increase in wind power compared to December 2015, when the installed capacity was 8.73 GW.[2]

Considering all sources of electricity, a total of 9.43 GW of new capacity were installed, primarily in hydro and wind power, which accounted for 60.15% and 21.35% respectively. With an additional 2.01 GW, wind power now makes up 7.10% of the Brazilian electrical matrix, as shown in Chart 1 following, with the percent contribution from all sources of energy to the electric power grid in 2016. It is important to remember that at the end of 2015, wind power accounted for 6.15% of the energy generated.

[2]Installed capacity in the 2015 Bulletin is slightly different and has been updated in this edition.

61.2%
9.4%
7.1%
3.3%
8.6%
6.7%
2.4%
1.3%

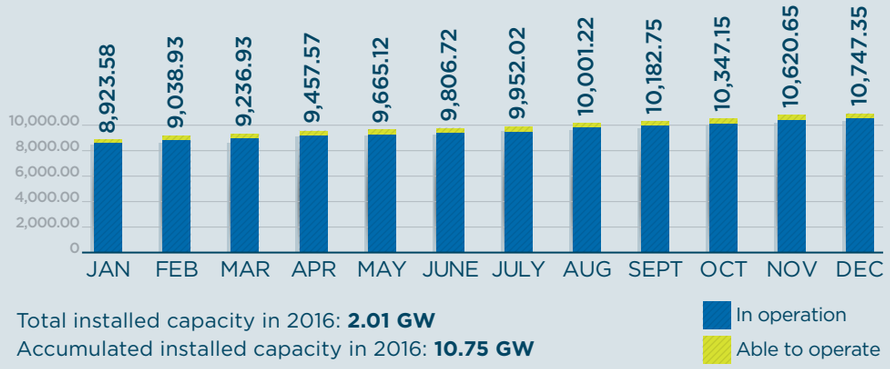


Source: ANEEL/ABEEólica

The 10.75 GW installed capacity includes 10.22 GW (95.11%) in commercial operation wind-farms, 0.17GW (1.59%) in test operation wind-farms and 0.35 GW (3.30%) in plants able to operate[3]. Chart 2 shows how installed capacity grew over the year, including those in operation[4] and those ready[5] to come on-stream.

GROWTH OF INSTALLED CAPACITY 2016 (MW)

Chart 02



Total installed capacity in 2016: **2.01 GW**
Accumulated installed capacity in 2016: **10.75 GW**

Source: ANEEL/ABEEólica

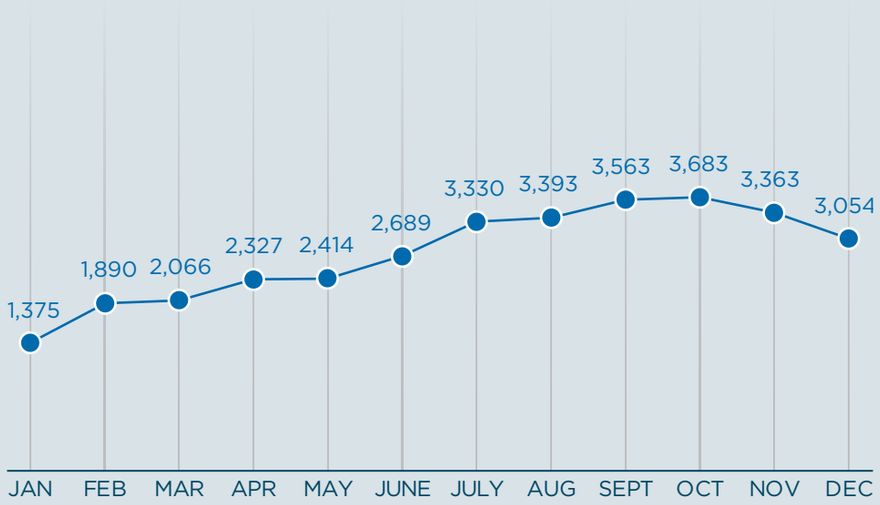
[3]On 2013, ANEEL (the Brazilian Electric Energy Agency) published Normative Resolution 583, which defines the terms and procedures for obtaining and maintaining the operating status of power generation concern. Chapter I, Art. 2, paragraph I, defines the new operating condition suitable to able to operate, defined as an operating situation where the generating unit is able to produce energy to meet its trade commitments or for its own exclusive use, however, it is unable to provide power to the system due to delays or limitations of the transmission or distribution systems.
[4]Considers the installed capacity of generating units in commercial operations and in test as defined in regulation, at the plant busbar. Considers the date of recognition as the date of test operations of the first generating unit of the wind park defined in regulation.
[5]Considers the date of recognition as the date of able to operate of the first generating unit of the wind park defined in regulation.

generation

In all, 35.15 TWh of wind energy were generated in 2016. Compared to 2015, energy produced by wind increased 55%. In 2016 2,762.9 GWh in average were generated, with a record in October of 3,683.8 GWh. Chart 4 shows the average generation figures for 2016.[6]

WIND POWER GENERATION 2016 (GWh)

Chart 03



Source: CCEE*/ABEEólica
*Electric Energy Trading Chamber

Total generated in 2016: **33.15 TWh**

In terms of percentage and supply, wind power accounted for 6% of all the electricity generated and added to the National Interconnected System (SIN). It reached a monthly peak of 8% in September, and a 15% instantaneous surge on October 2.

[6]This chart shows wind energy generated by wind-farms in test and commercial operations at the connection point.

In 2016 several records were broken in the months with the highest wind generation. **Below is a list of the records for the year.**

NORTHEAST

On November 5th, 2016 the record average wind energy generated in the Northeast Subsystem was 121.85 GWh, with a capacity factor of 69%. On this same day, 52% of all the energy used in the northeast came from the wind.

SOUTH

The record day for wind power in the south was October 10th, 2016 - 28,58 GWh. On that day, 15% of all energy in the south came from the wind.

NATION-WIDE

October 2nd, 2016 was the record for wind power in the National Integrated System, or 6,632 MW at 7:56 a.m. with a capacity factor of 75%. On this particular date and time, 15% of all of the energy consumed in the national integrated system came from the wind.

Source: ONS

The chart below shows that the northeast subsystem's wind power capacity is close to the total, accounting for 84.7% in 2016, compared to only 15.1% in the south subsystem. This is because most of the wind-farms in Brazil are located in the northeast. Expansion in generation in 2016 was greatest in the northeast, or 60%.

WIND POWER AS A PERCENT TOTAL POWER GENERATED[7]

Chart 04

	2015		2016		
Region	**Generation** (TWh)	**Share**	**Generation** (TWh)	**Share**	**% growth**
Southeast	0.08	0.4%	0.07	0.2%	-10%*
South	3.59	17.4%	4.83	15.1%	35%
Northeast	16.95	82.2%	27.17	84.7%	60%
Total	**20.62**	**--**	**32.07**	**--**	**55.5%**

Source: CCEE/ABEEólica

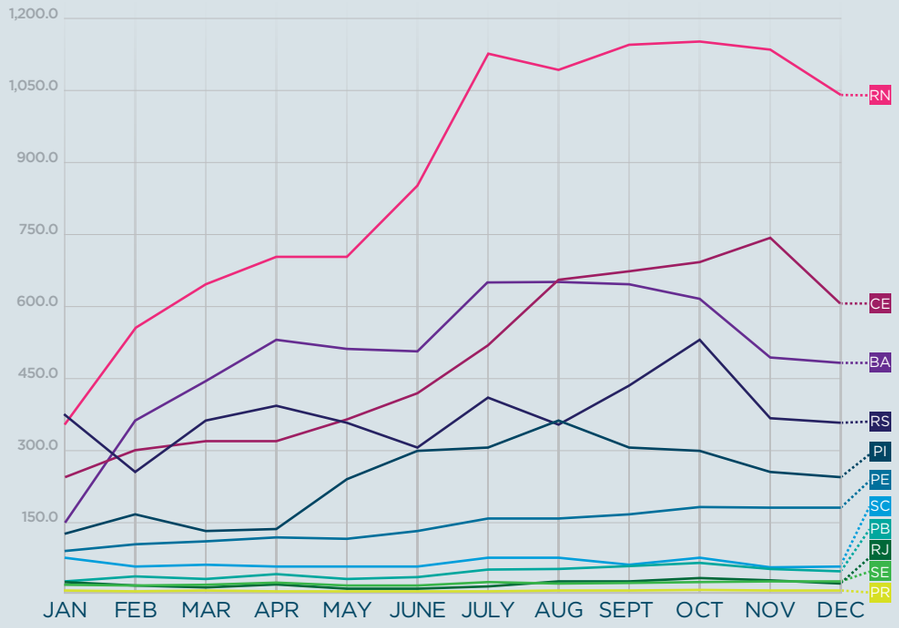
The five states with the most wind power generated in 2016 were Rio Grande do Norte (10.59 TWh), Bahia (6.08 TWh), Ceará (5.87 TWh), Rio Grande do Sul (4.56 TWh) and Piauí (2.91 TWh).

[7]Considering wind energy generated by wind-farms in test and commercial operations at the connection point.
*There is only one wind energy in the southeast, so fluctuations reflect only the climate in that region, which was slightly less favorable in 2016.

The chart below shows the amount of wind power generated in each Brazilian state.[8]

GENERATION BY STATE 2016 (GWH)

Chart 05



	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
RN	334.1	587.1	636.5	714.5	714.7	879.8	1,126.9	1,102.0	1,165.7	1,175.6	1,143.8	1,011.5
CE	251.6	308.0	323.1	321.7	349.7	417.9	521.0	652.8	678.1	686.0	747.3	612.8
BA	152.2	361.2	446.9	554.5	530.2	522.8	645.0	644.8	633.6	612.9	492.4	487.5
RS	380.6	280.2	354.8	408.2	343.2	319.9	398.6	338.0	433.9	565.8	378.4	354.3
PI	103.1	172.6	117.2	131.7	260.2	301.2	318.9	347.7	316.2	304.2	281.9	253.0
PE	40.4	62.1	66.8	69.4	68.0	119.6	163.9	163.2	179.9	188.7	183.8	183.8
SC	26.5	18.0	23.1	21.9	20.7	19.8	31.0	27.5	22.8	27.6	17.7	18.7
PB	6.3	11.8	9.7	13.8	9.2	10.9	15.8	16.5	18.1	20.5	16.0	14.7
RJ	6.2	6.7	5.6	5.0	2.6	2.0	3.7	7.2	7.2	8.3	7.9	6.2
SE	4.4	3.1	4.4	5.5	3.9	4.0	6.2	5.1	5.7	6.5	7.3	7.0
PR	0.3	0,2	0,3	0,2	0,2	0,2	0,3	0,3	0,3	0,4	0,3	0,3

Source: CCEE/ABEEólica

[8]This chart shows wind energy generated by wind-farms in test and commercial operations at the center of gravity.

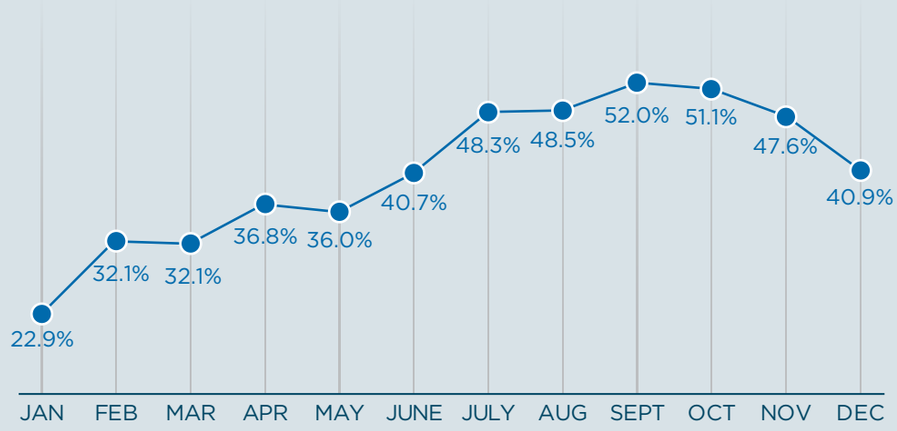
factor

The capacity factor[9] of a wind power source is calculated as the ratio of the plant's actual generation to its total capacity over a given period. The average capacity factor in 2016 was 40.7%. This is an outstanding result, showing an industry that is consolidated and outperforms that in many other countries, even when we include those acquired through PROINFA[10], with an average Capacity Factor of only 29.0%. Considering only the wind-farms participating in auctions, the average capacity factor was 41.6% in 2016, peaking at 52.8% in September.

According to the Ministry of Mines and Energy, in 2015 the average performance of wind-farms worldwide was 23.8%. This means the capacity factor in Brazil is much higher, demonstrating the unrivalled potential of the wind in Brazil. This chart shows the capacity factor of the wind-farms.

CAPACITY FACTOR 2016 (%)

Chart 06



Source: ANEEL/CCEE/ABEEólica

Average Capacity Factor in 2016: **40.7%**

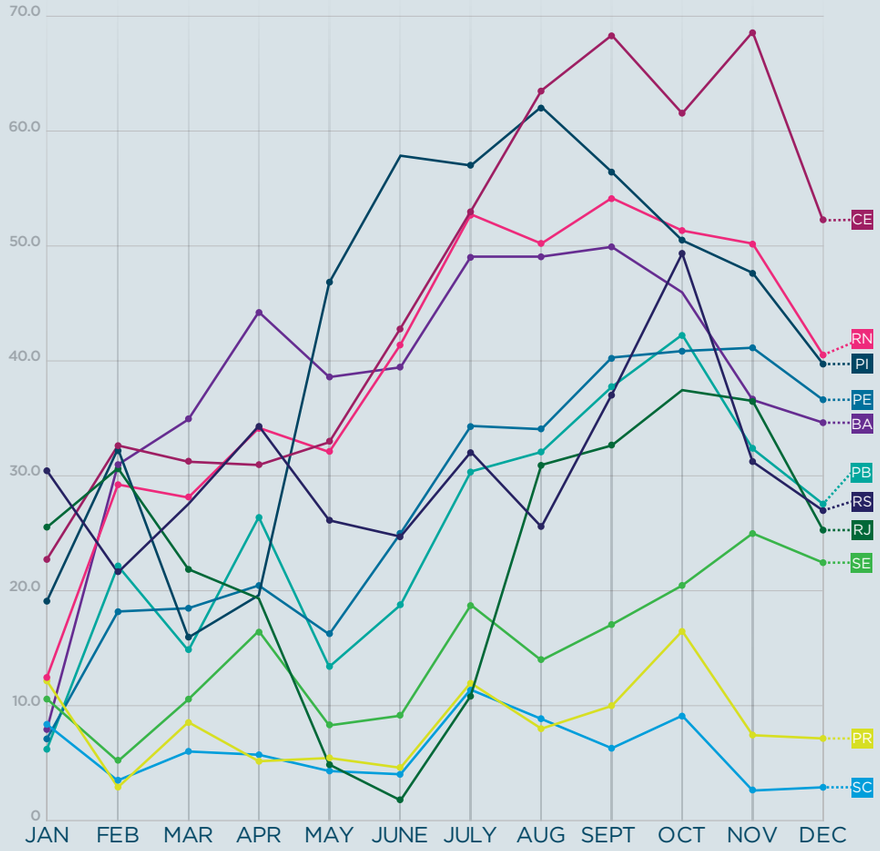
[9]This chart shows wind energy generated by wind-farms in commercial operation.
[10]Incentive Program for Alternative Sources, introduced by Law 10762 of November 11, 2003 and governed by Executive Order 5025 of March 30, 2004, regarded internationally as the pilot program of renewable energy for electric power generation in Brazil. PROINFA plants follow different a contracting model from that adopted by current plants (auctions) and use outdated technology.

During instantaneous peaks, wind-farm capacity factors exceeded 70%, as in the record generation measured in the northeast and SIN and discussed in the previous chapter.

The five states with the largest average capacity factor in 2016 were Ceará (47.6%), Piauí (43.7%), Rio Grande do Norte (41.8%), Bahia (40.6%) and Rio Grande do Sul (34.1%). The highest monthly capacity factor was measured in Ceará in September 66.1%. Chart 7 below shows the capacity factor calculated for each Brazilian state.

CAPACITY FACTOR BY STATE 2016 (%)

Chart 07



"The average capacity factor for wind power in Brazil was 40.7% in 2016. This result is well above the global average, which is around 25%. Once again, this is evidence that Brazil has some of the best winds in the word."

Elbia Gannoum

	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
RN	18.7%	33.0%	32.1%	37.2%	35.2%	43.2%	52.7%	50.6%	54.0%	51.6%	50.6%	42.2%
CE	27.4%	35.7%	34.6%	34.3%	36.0%	44.5%	53.0%	61.7%	65.9%	60.0%	66.1%	52.3%
BA	14.9%	34.4%	37.6%	45.7%	40.7%	41.5%	49.5%	49.5%	50.3%	47.1%	39.1%	37.4%
RS	33.9%	26.6%	31.4%	37.3%	30.3%	29.2%	35.2%	29.8%	39.6%	50.0%	34.5%	30.9%
PI	24.4%	35.4%	21.7%	25.9%	47.6%	56.9%	56.4%	60.6%	55.9%	50.7%	48.4%	41.7%
PE	14.4%	23.7%	23.8%	25.5%	22.0%	29.3%	37.1%	37.0%	42.1%	42.7%	43.0%	39.2%
SC	15.3%	11.1%	13.3%	13.1%	11.9%	11.8%	17.9%	15.9%	13.6%	15.9%	10.6%	10.8%
PB	13.6%	27.0%	20.8%	30.5%	19.7%	24.1%	33.9%	35.4%	40.2%	44.0%	35.5%	31.6%
RJ	29.8%	34.1%	26.8%	24.5%	12.3%	9.9%	17.6%	34.3%	35.8%	39.8%	39.2%	29.7%
SE	17.2%	12.7%	17.2%	22.2%	15.2%	16.1%	24.2%	20.0%	22.8%	25.5%	29.4%	27.2%
PR	18.5%	10.8%	15.4%	12.7%	12.9%	12.2%	18.5%	15.1%	16.7%	22.2%	14.5%	14.2%

Source: ANEEL/CCEE/ABEEólica

systemic gains

Despite the economic crisis of 2016, and the consequent low demand for energy in Brazil and over-contracting of the distributors, hydro power re-emerged in the news and in discussions of the power sector and issues related to their reservoir levels. In a country where most of the energy still comes from hydro plants, poor hydrology (limited rainfall) represents a supply risk. Even though demand for electricity fell in 2016, reservoir levels are concerning. Sobradinho - a hydro plant, for example, was only at 12% capacity early in the year, despite lower flows.

This scenario would be even more critical if the nation had not decided to diversify its range of renewable sources in recent years, with an emphasis on wind energy. Undoubtedly wind energy was the salvation of the northeast on numerous occasions in 2016. In a study performed by Thymos Consulting on behalf of ABEEólica, the risk of an energy shortage in the northeast was 6.1% in 2016, very close to the acceptable in a strategic plan that balances system costs and risks. Without wind-farms, the risk would have been 43.1%. The following chart compares the operation in 2016 and a simulated scenario in the absence of wind power.

RISK OF POWER DEFICIT IN THE NORTHEAST SUBSYSTEM 2016

Chart 08

Source: Thymos / ABEEólica

Also important in terms of the systemic gains due to wind-farms is the security it provides the northeast subsystem, in terms of continuity of generation. Interconnections between the northeast and other regions are often plagued by brush fires, especially in the second half of the year. As the region is a net energy importer, the northeast often suffers from localized blackouts when one of the interconnection lines is accidentally caught in a fire. As historically the northeast did not generate enough energy, it had to import from other subsystems.

With the emergence of wind-farms in the northeast the situation changed, and the region actually is sometimes a net energy exporter. Thus, even though brush fires continue to affect the interconnection lines, the number of blackouts no longer impacts a system that is able to sustain itself more securely. For example, on November 5th, 2016 there were 16 disruptions of the 500 kV north/northeast and northeast/south interconnection lines that had absolutely no impact on the National Interconnected System.

The systemic gains from increased wind power remain directly linked to the flexibility of an energy matrix rich in options. In Brazil, still heavily dependent on hydro power, diversification is essential. As there are no more projects for large hydro plants for environmental reasons, wind power has emerged as the cheapest option to expand the installed electric power capacity safely and avoiding high costs, especially those associated with thermal plants.

Diversification due to wind-farms can provide immeasurable advantages, such as avoiding power rationing. This is why a diversified matrix is increasingly important. Recognizing that there is a natural fluctuation in wind energy generation, ABEEólica conducts studies with hybrid options and storage alternatives, always focusing on the security of the system and universal supply, which in 2016 was strongly bolstered by the winds.

THE IMPORTANCE OF RESERVE ENERGY AUCTIONS

The work of Thymos, mentioned above, showed the contribution of the plants marketed in reserve energy auctions. In this case, it shows that reserve wind energy has been essential for the system. This was made especially clear in 2016. It works as sort of an insurance, a reserve that significantly reduces the risk of a deficit in the system overall, and in particular in the northeast subsystem. Without reserve wind energy, the risk of an energy shortage in the northeast would almost triple from the acceptable figure of 6.1% in 2016 to 14.9%.

The reserve auction is not only an energy policy tool, it may prove to be very important if the goal is cheaper rates for electricity. From a commercial point of view, contracting reserve energy results in a higher EER (Reserve Energy Fee). However, the EER of a wind-farm may be considered insurance, as it reduces the probability that higher-cost thermal plants will be switched on. In fact, in periods of unfavorable hydrology, the increase in rate due to going from yellow or red flags[11] can be quite a bit higher than the EER.

[11] Brazilian signaling for higher tariffs due to the available energy conditions and a forecast of inflows.

Wind power contribution to residential supply

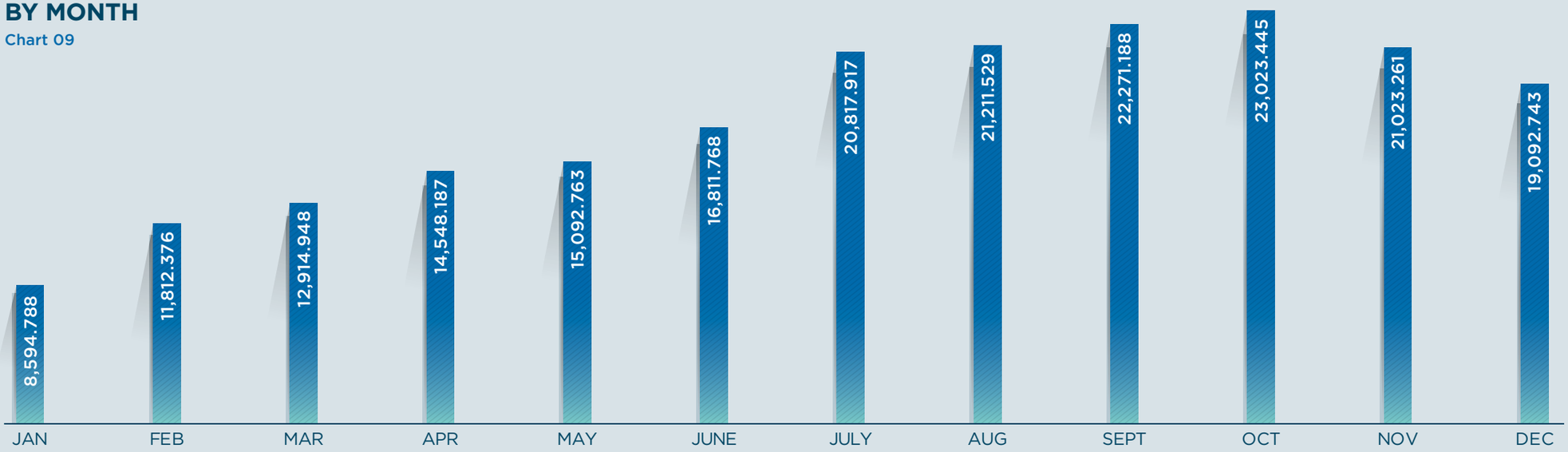
The importance of wind power generated in 2016 can also be measured based on the number of Brazilian households powered by this source, another index that demonstrates how important it is. According to the monthly review published by EPE (Energy Research Company), average residential consumption in Brazil in 2016 was 160 kWh per month.

Therefore, an average of 17.27 million households were supplied by wind power, equivalent to some 52 million inhabitants[12], almost 58% more than in the previous year, when wind power supplied 33 million people. Thus, in 2016 wind powered were able to provide electric power for more people than the population of the north and south combined (about 47 million people)[13],or almost the entire consumption of the state of São Paulo. (38.212 GWh)[14]. In both cases considering residential consumption verified.

The following chart simulates the number of households powered by wind energy in 2016.

HOUSEHOLDS SUPPLIED BY WIND POWER, MONTH BY MONTH

Chart 09

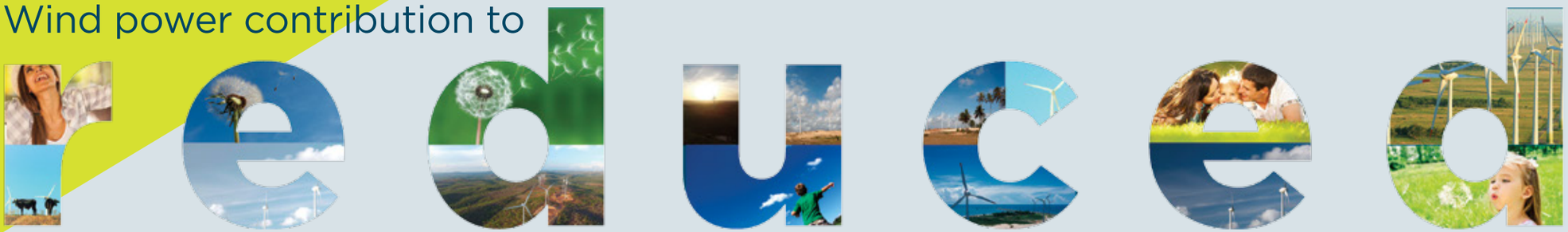


Source: CCEE/EPE/ABEEólica

Monthly average number of households supplied in 2016: **17 million**

[12]Considering an average of three people in each household.
[13]IBGE data.
[14]Data from the 2016 National Energy Balance.

Wind power contribution to



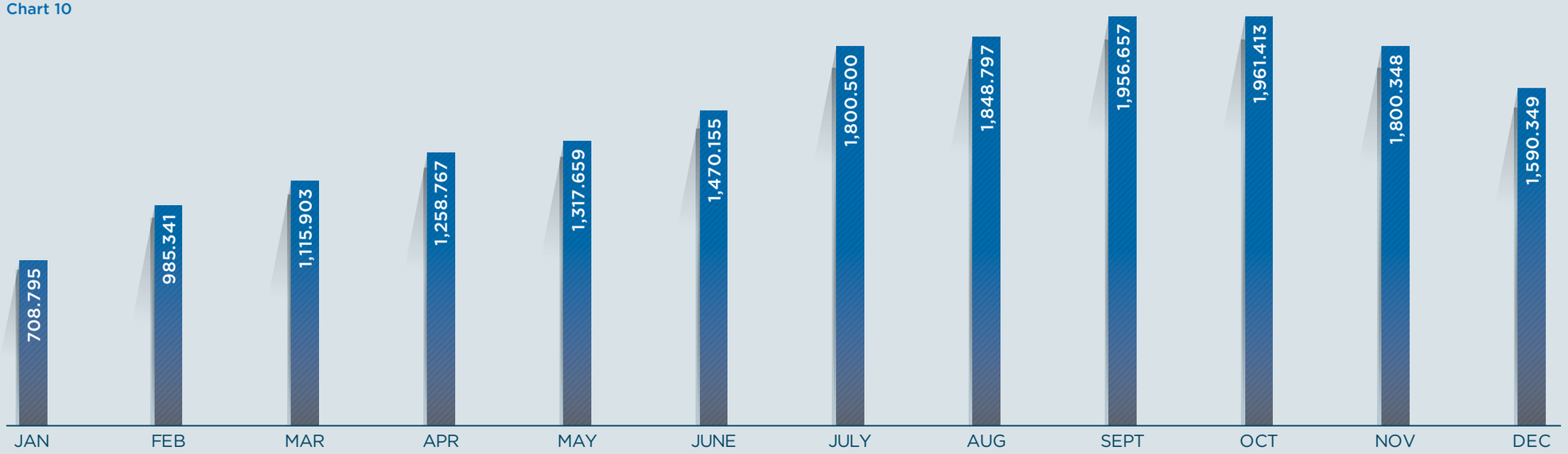
CO_2 emissions

In addition to very low implementation impact, wind power does not emit any CO_2, and can replace other, CO_2 emitting sources. The following chart shows CO_2 emissions avoided due to wind power month by month[15].

Total avoided CO_2 emissions in 2016 added up to 17.81 million tons, equivalent to the annual emissions of 12 million automobiles[16].

AVOIDED CO_2 EMISSIONS IN EACH MONTH OF 2016 (TONS)

Chart 10



Source: ANEEL/MCTI/ABEEólica

Avoided CO_2 emissions in 2016: **17.81 million tons**

[15]Based on the MCTI's (Brazilian Ministry of Science, Technology and Innovation) methodology and data used to calculate emissions avoided due to wind power (75% in power plant operation and 25% in power plant construction).

[16]Considers the indices in the 2014 State of São Paulo Vehicular Emissions Report issued by CETESB, the state of São Paulo Environmental Company.

Socioenvironmental contributions of Wind Power

Wind power is renewable, non-polluting, has low environmental impact and helps Brazil fulfill its Climate Agreement Goals.

Wind farms do not emit CO_2. In one year wind power avoided CO_2 emissions equivalent to that of almost the entire vehicle fleet in the city of São Paulo.

Among the best cost-benefits of any energy.

Enables land-owners to continue planting their crops or growing their animals.

Generates income and improves the quality of life of land-owners who lease their land for wind tower placement.

Settles people in the country-side.

Promoted a drop in the consumer cost of energy by trading a more competitive and less costly energy than that obtained from other sources.

In addition to the benefits shown in the picture alongside, wind energy has a positive impact on the community due to social, cultural, healthcare and environmental projects undertaken for the development of the local population. We must point out that due to BNDES funding, a percentage of the investment must focus on social projects. However, more often than not this goes beyond the required amount and develops extremely important projects for the community. Below are a few examples of community projects undertaken by wind energy players:

- Digital inclusion activities, training youth and adults, fostering employability and enterprise.
- Projects to expand access to safe water for drinking or for farming/animal farming such as fish, sheep and chicken.
- Stronger and expanded local production chains such as coconut, manioc, corn, beans, honey, milk and others to improve the population's income and promote sustainable development.
- Health promotion projects including oral health and nutrition, for instance.
- Activities to encourage sports, alongside monitoring schoolwork.
- Activities to encourage tourism, art, gastronomy and regional culture with festivals, courses, training and contests.
- Encouraging local artisans.
- Educational projects such as day-care centers and schools, with initiatives to increase the quality of life of students in public schools, with citizenship activities, educator training and better school environments, promoting discussions on sustainable development and renewable energy.

Another important initiative is the Renewable Energy Certificate Program, a joint ABEEólica, Abragel (Brazilian Clean Energy Generation Association) and Totum Institute initiative to certify wind, solar and biomass generators, as well as small hydro plants (PCH), using Totum to trade Renewable Energy Certificates. The first 200 first certificates were traded in 2014. In 2016 there were over 100 thousand transactions.

In 2016 the Totum Institute launched Ziit, an app that allows people to charge their cell phones using renewable energy. The system uses a balance and REC purchase system. When using Ziit, for every watt-hour used, a renewable source watt-hour will be generated. In Brazil, Ziit can be downloaded from the App Store or Google Play, consumers then choose the type of energy they want and plug in their cell phone charger. Whenever Ziit is open, even in the background, the cell phone will be charged with renewable energy.

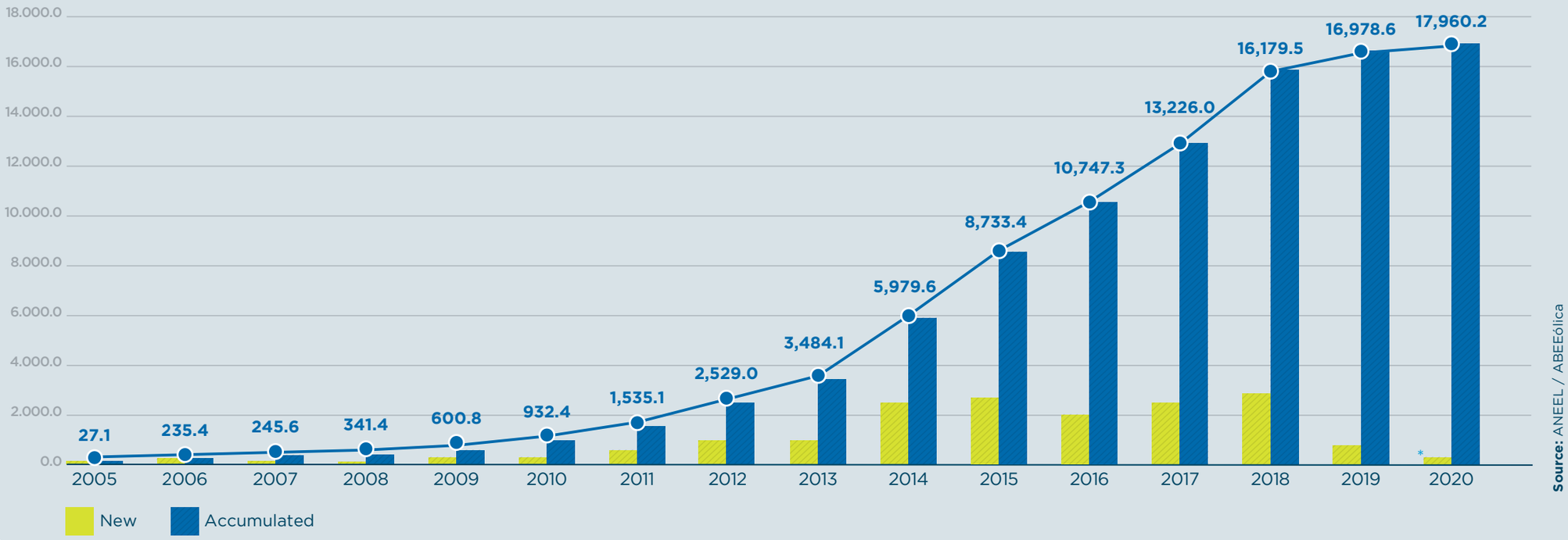
expansion of the Wind Power Installed Capacity

The following chart shows the increase in installed capacity and the growth in wind power as a function of previous contracts in regulated auctions and free market agreements.

The small amount contracted in 2015, and none in 2016, impacted the wind energy supply chain, and we already see a drop in new energy installed in 2019 and 2020. There is still possibility to leverage this curve with new auctions in 2017.

GROWTH OF THE INSTALLED CAPACITY (MW)

Chart 11



Source: ANEEL / ABEEólica

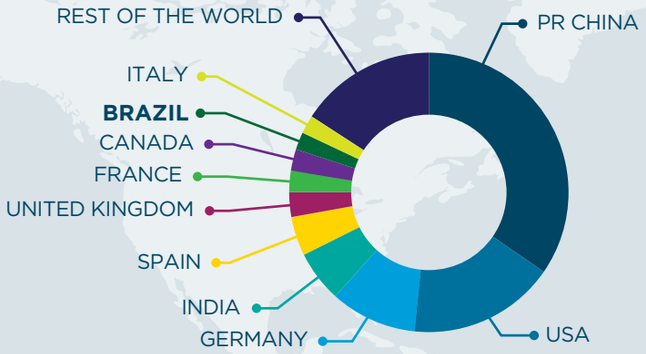
*There are some wind farms in this block with no forecast date to start to operate, due to problems with the supply of equipment and machinery.

Figures

In 2016, Brazil passed Italy in the GWEC (Global World Energy Council) List of Installed Wind Capacity, and is now #9 in the world.

TOP 10 ACCUMULATED WIND POWER CAPACITY 2016

Chart 12

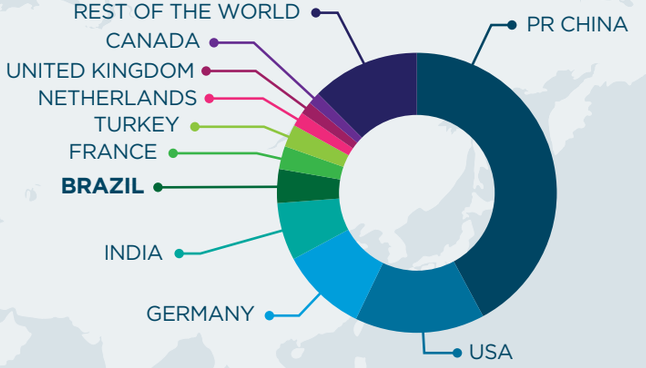


	COUNTRY	MW	%
1º	PR CHINA	168,690	34.7
2º	USA	82,184	16.9
3º	GERMANY	50,018	10.3
4º	INDIA	28,700	5.9
5º	SPAIN	23,074	4.7
6º	UNITED KINGDOM	14,543	3.0
7º	FRANCE	12,066	2.5
8º	CANADA	11,900	2.4
9º	**BRAZIL**	**10,740**	**2.2**
10º	ITALY	9,257	1.9
	REST OF THE WORLD	75,577	15.5
	TOTAL TOP 10	**411,172**	**84**
	WORLD TOTAL	**486,749**	**100**

In the new installed capacity list Brazil ranks fifth, having installed 2 GW of new capacity in 2016. In this list Brazil dropped one position and was passed by India, which installed 3.6 GW of new capacity in 2016. Below is the GWEC ranking.

TOP 10 NEW WIND POWER CAPACITY 2016

Chart 13



	COUNTRY	MW	%
1º	PR CHINA	23,328	42.7
2º	USA	8,203	15.0
3º	GERMANY	5,443	10.0
4º	INDIA	3,612	6.6
5º	**BRASIL**	**2,014**	**3.7**
6º	FRANCE	1,561	2.9
7º	TURKEY	1,387	2.5
8º	NETHERLANDS	887	1.6
9º	UNITED KINGDOM	736	1.3
10º	CANADA	702	1.3
	REST OF THE WORLD	6,727	12.3
	TOTAL TOP 10	**47,873**	**88**
	WORLD TOTAL	**54,600**	**100**

Source: GWEC

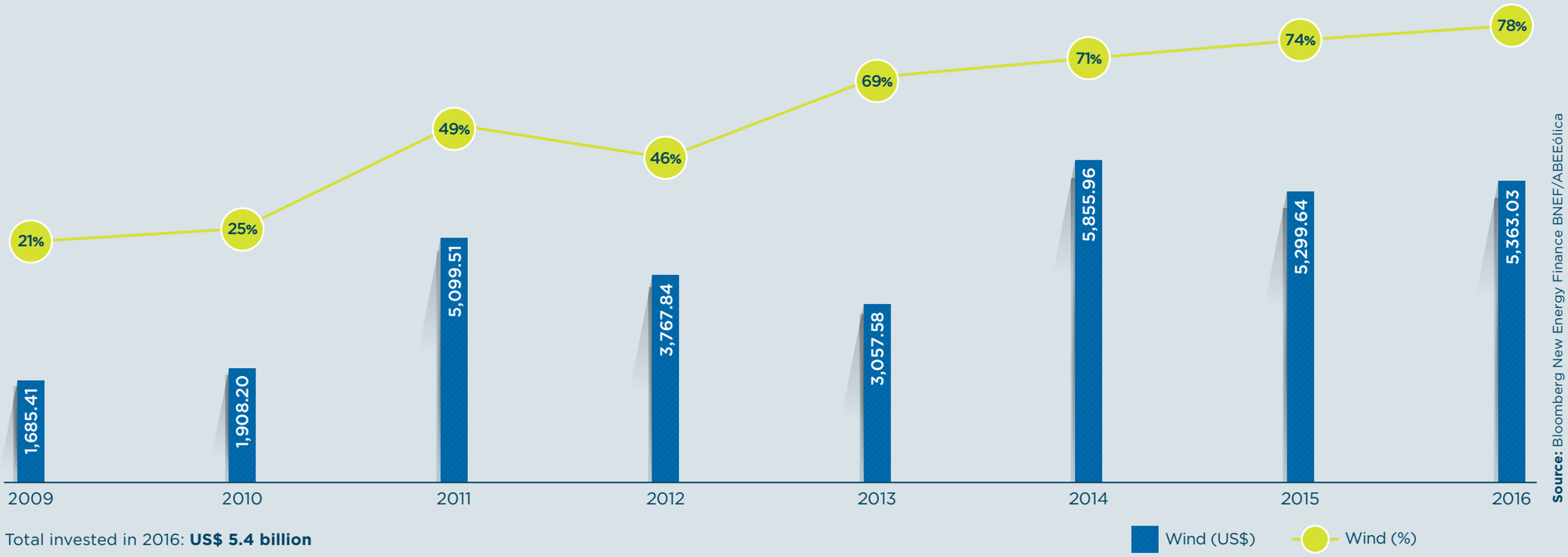
investments in Wind Power

A total of US$ 5.4 billion were invested in wind power in 2016. If we look at 2009 through 2016, the total was US$ 32 billion.

The following chart shows investments in renewable energy and the amount invested in wind energy since 2009.

INVESTMENTS IN US$ MILLION

Chart 14



Source: Bloomberg New Energy Finance BNEF/ABEEólica

Total invested in 2016: **US$ 5.4 billion**

CLOSING REMARKS

2017 will certainly be a challenging year for wind power in Brazil. ABEEólica believes there are three main issues that will demand special attention - demand, transmission and funding.
Cancelation of the Reserve Auction in December last year, just a few days before it was scheduled to take place caused considerable insecurity in the industry, and this situation must be reversed. This will be a joint effort, as the government and private enterprise must work together to create a stronger and more modern power industry that gives investors confidence. The cancelation was caused by low demand due to the economic crisis, with the government arguing there was a surplus in the system.

ABEEólica believes the issue is deeper, as there is a surplus on paper, but really very little actually guaranteed power. For this reason we agree with the government's decision to hold a De-contracting Auction in 2017. Furthermore, there is a superficial and mistaken belief that contracting reserve energy will burden consumers, when in fact just the opposite is true. With no reserve wind power, we may have to switch on more expensive sources.

Another important factor is that wind power has been essential for the entire Brazilian power grid in recent years, the industry chain is efficient and has bene the recipient of significant investment. Contracting at least 2 GW of wind energy a year is essential to signal investors and give them confidence to invest in the entire chain. It is also essential is Brazil is to achieve its commitments under the Paris Climate Agreement.

Therefore, considering that since the onset of wind power in this country 2016 was the first year with no contracting, demand will be an important and central issue for the entire industry in 2017. This will be the year the government must implement important strategic measures and take clear action if it wants to retain the wind energy production chain and show its commitment to climate issues.

The second point that is important for 2017 is that Brazil must focus on transmission without further ado. ABEEólica is aware of the importance and severity of the problem, and arranged for an in-depth study to analyze Brazil's entire transmission system, the hurdles it presents and possible ways to overcome them. This study covers five theme-based books and is in the final publication stages.

Results will be shared with government bodies, industry experts and decision makers to expand what is essentially a clear, technical argument on this topic.

Funding should also get a great deal of attention in 2017. Despite favorable changes announced by the BNDES, which calmed investors a bit, there is still much to be done on this theme. Brazil must develop new funding mechanisms, which is even more critical in a scenario of economic instability.

On the other hand, political instability makes investors wary, and if they do not find attractive and varied funding terms this may make it hard for Brazil to grow, not only in energy but in infrastructure in general.

As a final note, we should be proud of the growth of wind-farms in recent years; the data in this bulletin is proof of this, but his must not overshadow our efforts for continued growth. It is important to remember that the wind-farms going up now are the outcome of auctions that happened at least three years ago. In 2017, we will have a large amount of installed capacity, some 13 GW by year end. This is a good number, but comes from auctions in previous years. Therefore, 2017 will be a good year only because of previous auctions, and will require a lot of work to ensure new wind energy contracts and safe and sustainable growth for the entire industry.

"The biggest challenge in 2017 will be demand and the need for auctions to contract wind energy."

Elbia Gannoum

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About ABEEÓLICA
Established in 2002, ABEEólica, the Brazilian Wind Power Association is a non-profit organization that brings together and represents the wind power sector in Brazil. Since it was created, ABEEólica has effectively contributed to the development and recognition of wind energy as a competitive, clean, renewable, low-impact source of energy, and a strategic element of Brazilian electrical matrix.

Join us
Learn of the advantages of being a member and read the association statues on the ABEEólica website at “Join Us”, or send an e-mail to **comunicacao@abeeolica.org.br**

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