



Global wind power: 2017 market and outlook to 2022

PES asked Steve Sawyer, Secretary General at GWEC for his outlook on the future of the wind industry markets. Will prices continue to fall or have they reached their lowest point? Where is the market increasing? Where is it slowing down? Read on and find out...

The global wind power market remained above 50 GW in 2017, with Europe, India and the offshore sector all having record years. Chinese installations were down - 19.66 GW - but the rest of the world made up for most of that. Total installations in 2017 were 52,492 MW, bringing the global total to 539,123 MW. The annual market was in fact down 3.8% on 2016's 54,642 MW; and the cumulative total is up 11% over 2016's year-end total of 487,219 MW.

The offshore segment had a record year with 4,331 MW of installations, an 87%

increase on the 2016 market, bringing total global installations to 18,814 MW, and representing a 30% increase in cumulative capacity globally. Offshore was about 8.4% of the 2017 annual market, and represents about 3.5% of cumulative installed capacity, but it's growing quickly.

Total new investment in clean energy rose to US\$ 333.5bn (€296.8bn¹) in 2017, up 3% over 2016, but still lower than the

record investment of USD 348.5bn (EUR 324.6bn) in 2015. According to BNEF, China alone accounted for 40% of total investment with US\$ 133bn (EUR 118.7bn); and the Asia Pacific region as a whole invested US\$ 187 billion, over 57% of the total. Total investment in wind amounted to 107 billion US\$.²

Cratering prices for both onshore and offshore wind continue to surprise. Markets in such diverse locations as Morocco, India, Mexico, Brazil and Canada range in the area of US\$ 0.03/kWh, with a recent Mexican tender coming in with prices below US\$ 0.02. I think we can safely consign the phrase 'renewables are too expensive' to the dustbin of history.

Meanwhile, offshore wind had its first

¹ Exchange rate used for USD to EUR conversion (USD1 = EUR 0.89)

² <https://data.bloomberglp.com/bnef/sites/14/2018/01/BNEF-Clean-Energy-Investment-Investment-Trends-2017.pdf>



‘subsidy-free’ tender in Germany last year, with tenders for more than 1 GW of new offshore capacity receiving no more than the wholesale price of electricity. A Dutch ‘subsidy-free’ offshore tender in early 2018 followed suit. While it will be some years before this is the new normal, offshore going forward is economically competitive with any and all new forms of generation, at least in Europe; offshore prices for projects to be completed in the next 5 years are half of what they were for the last five years; and this has sparked huge interest in the technology around the globe: in the United States, Japan, South Korea, Taiwan, India, Australia and even Brazil!

2017 was not a spectacular year in terms of global installations, but key developments marked the forward progress of the energy transformation. Driven by the improving economics of wind power, as well as solar and storage, the outlines of a future sustainable energy system are beginning to become clear.

‘Hybrid’ wind/solar/storage plants are now being built, able to supply clean reliable power 24/7 for much of the year; utilities are seriously experimenting with battery storage in place of peaker plants; and EV sales are booming in key markets. The development of local micro-grids, some using peer to peer power trading with blockchain technology, and more and more

sophisticated market structures for matching up supply and demand at all scales are just some of the elements beginning to emerge.

China, the largest overall market for wind power since 2009, retained the top spot in 2017. In 2017, wind power produced 305.7 TWh, an increase of more than 26% compared with 2016, and accounts for about 4.75% of total Chinese power generation.³

Installations in Asia once again led global markets, with Europe in the second spot, and North America in third. Once again in 2017, as has been the case since 2010 (except 2012), the majority of wind installations globally were outside the OECD.

³ <https://chinaenergyportal.org/en/2017-electricity-energy-statistics/>

By the end of 2017 there were 30 countries with more than 1,000 MW installed: 18 in Europe; 5 in Asia-Pacific (China, India, Japan, South Korea & Australia); 3 in North America (Canada, Mexico, US), 3 in Latin America (Brazil, Chile, Uruguay) and 1 in Africa (South Africa). Nine countries have more than 10,000 MW of installed capacity: China, the US, Germany, India, Spain, the UK, France, Brazil and Canada.

China will cross the 200,000 MW mark in 2018, adding another milestone to its already exceptional history of renewable energy development since 2005.

Looking ahead

The aftermath of the global financial crisis in the previous decade resulted in average global markets of about 40 GW/annum for

the period from 2009 to 2013. Breaking through the 50 GW barrier for the first time in 2014, the industry set a record of more than 60 GW due to anomalously high installations in China in 2015. In 2016 the market returned to the 'new normal' of just over 54 GW, and 2017 was in the same range.

What does all this mean for wind markets in 2018-2022? We expect the annual market to remain at roughly 2017's level for 2018 due to anticipated decreases in Germany, the UK and India. This will be balanced by increases in North America, the Middle East and Africa and Latin America. The annual market will return to growth in 2019 and 2020, breaching the 60 GW barrier once again and continue to

grow, albeit at a slower pace, in the beginning of the new decade. We expect to see total cumulative installations reach 840 GW by the end of 2022.

The Asia market continues to dominate and will do so for the foreseeable future. While China continues to be by far the largest market globally, the days of dramatic year-on-year annual market increase are probably over, at least for the next few years. India will play a much stronger role, although the 2018 market will disappoint. Europe is unlikely to repeat the record installation levels of 2017, but we've been looking for a downturn in Europe for the last five years at least, and it hasn't come yet, although there has been a worrying concentration in fewer

and fewer markets. North America looks pretty stable for the next few years, and we're expecting Mexico to start to fulfil its promise in 2018.

Despite the fact that Brazil's political and economic woes have abated somewhat, we will feel the effect of the lack of auctions for most of the last two years over the next three years. Argentina is one of the brightest spots in the wind universe at the moment, and Chile will continue to grow, as will some of the smaller Latin American markets. The South African hiatus is over, and there should also be significant installations in North Africa in the coming years. Australia will continue to be the only significant market in the Pacific for the coming years as the fulfilment of the Mandatory Renewable Energy Target proceeds apace.

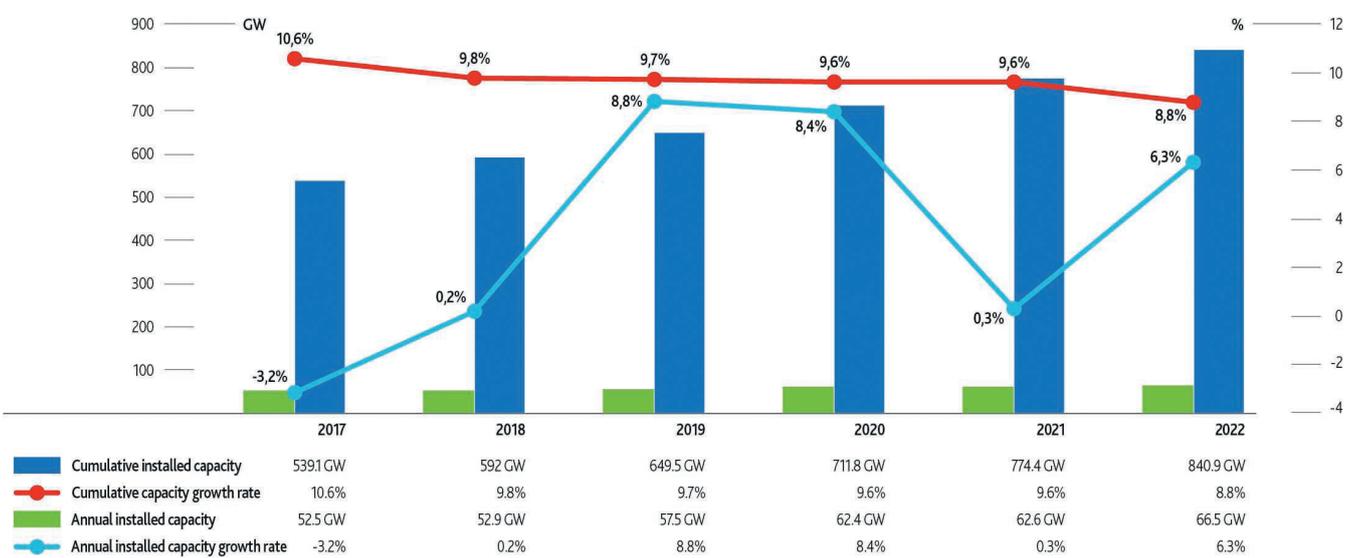


Will there be unforeseen surprises? Probably. Will Russia and Saudi Arabia finally begin to reach their potential and provide rapidly growing major new markets for the industry? Perhaps. What about the Vietnam, the Philippines and the rest of the Southeast Asia? The only thing that we can say for certain is that the increase in the rate of change in energy markets will continue to accelerate in the coming years.

Wind power is increasingly the most competitive way of adding new power generation to the grid in an increasing number of markets, even competing against heavily subsidized incumbents; and for the first time we can say that this now includes offshore.

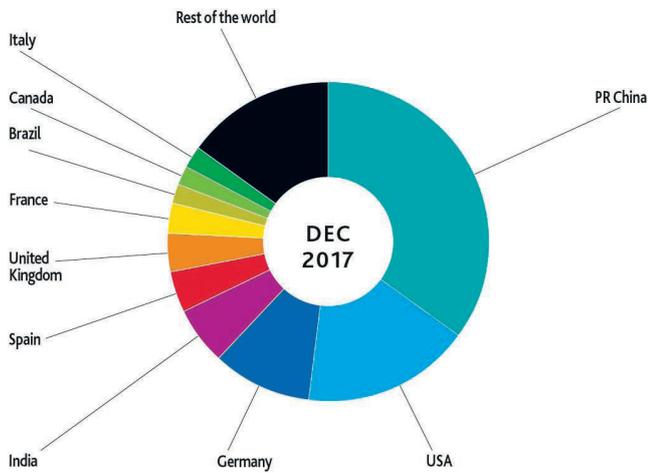
Wind is a mature technology, with proven reliability and cost competitiveness. It is both more and more often the technology of choice for utilities, and has also dominated the surging corporate PPA market, where savvy companies look to

MARKET FORECAST 2018-2022



Source: GWEC

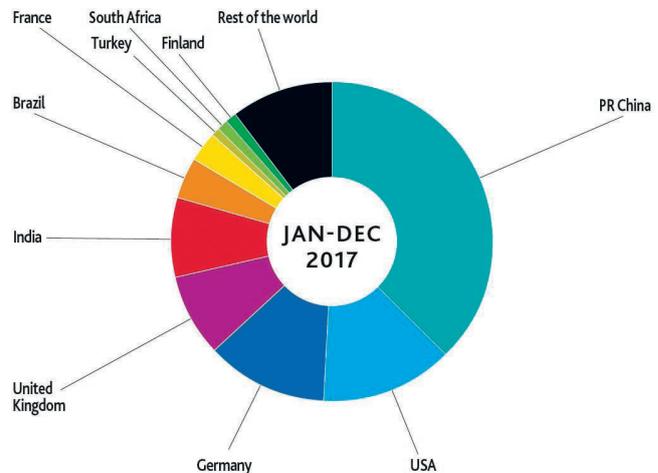
TOP 10 CUMULATIVE CAPACITY DEC 2017



Country	MW	% Share
PR China	188,392	35
USA	89,077	17
Germany	56,132	10
India	32,848	6
Spain	23,170	4
United Kingdom	18,872	4
France	13,759	3
Brazil	12,763	2
Canada	12,239	2
Italy	9,479	2
Rest of the world	82,391	15
Total TO P10	456,732	85
World Total	539,123	100

Source: GWEC

TOP 10 NEW INSTALLED CAPACITY JAN-DEC 2017



Country	MW	% Share
PR China	19,660	37
USA	7,017	13
Germany	6,581	12
United Kingdom	4,270	8
India	4,148	8
Brazil	2,022	4
France	1,694	3
Turkey	766	1
South Africa	618	1
Finland	535	1
Rest of the world	5,182	10
Total TOP 10	47,310	90
World Total	52,492	100

Source: GWEC

both provide a hedge against potentially wildly fluctuating fossil prices, and at the same time reduce their carbon footprint – not to mention ‘greening’ their image with increasingly vigilant consumers.

Wind is making a rapid transition from a technology reliant on ‘support’ in most markets, to one where it stands on its own economically, even without any kind of financial benefit for the major rewards society reaps from its deployment in terms of clean air and carbon-dioxide emissions reductions. Hopefully we’ll get there one day. But in the meantime, the industry will have to struggle with shifting policy regimes and the inevitable gaps that accompany them and do our best to take it to the next level – annual installations of 60, 70, or even 100 GW/year. This will be necessary to meet the Paris targets and secure a sustainable energy future on a planet left habitable for succeeding generations.

2017 saw a concentration of installations in a smaller number of markets in Europe, Africa, and Latin America, reversing a trend for a diversification of markets that has marked the industry’s growth over the last decade. That needs to change, and there

are solid signs that it will in 2018, but we shall see.

There is still an acute need around the world for new power generation, which is clean, affordable, indigenous, reliable and quick to install. Wind power is leading the

charge in the transition away from fossil fuels; and continues to blow away the competition on price, performance and reliability.

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