
We provide comment on the second quarter of 2017 for Alternative Energy:

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- Outlook
- Portfolio changes
- Performance
- Holdings

Quarterly commentary

The alternative energy sector had a good quarter in which the fund fared well. Several auctions showed the sector's economic competitiveness compared to conventional fuels and grid technologies. Offshore wind projects in an auction in Germany for delivery from 2024 decided they did not need a specific subsidy and would deliver power on a merchant basis. In India, tender bids by solar projects are proving cheaper than prices being paid to existing coal plants. Tesla won a tender in Australia to provide batteries that will improve grid resilience in South Australia. This involved a promise to deliver the largest li-ion battery ever built without subsidy within 100 days. Trump, meanwhile, appears to have become less negative towards alternative energy. Despite the proposed exit from the Paris climate accord, he has proposed using solar to defray the costs of the wall with Mexico. China, the leader in both production and installation of alternative energy facilities, witnessed strong solar installation numbers for the first half of 2017 and is maintaining and even increasing its ambitious targets for electric vehicles, batteries and associated infrastructure.

Performance contribution

Wind

The wind sector stocks contributed negatively to performance, with the Chinese renewable asset companies underperforming because of lower wind power output than expected for this quarter. China Datang was the only Chinese asset owner with a positive return this quarter, due to analyst upgrades.

Good Energy, a UK renewable energy utility has fallen in price as rumours of a possible merger with its largest competitor, Ecotricity subsided. Good Energy issued a corporate bond to fund growth, and is well positioned to grow its subscriber and generation base in the UK.

Mytrah Energy, an Indian wind power developer and independent power producer (IPP) has not moved significantly in price over the quarter despite satisfactory progress by the business. The company has continued to grow its portfolio and won a highly competitive solar auction in Q2 2017. Investor concerns relate to a stretched balance sheet, which the company is in control of and Indian country risk. Boralex, a Canadian wind power IPP, continued to do well operating its existing assets and growing its portfolio.

Solar

The solar stocks were the main contributors of positive performance within the portfolio. China solar installations in Q1 2017 were as high as in Q1 2016, leading to upwards revisions of demand expectations by analysts. Donald Trump seems to be leaving the key US Investment Tax Credit alone and has even suggested that the wall with Mexico be covered with solar panels. This announcement benefited both First Solar and SunPower share prices, two US headquartered module manufacturers. Mr Trump's attempts to push through tax reform have also been hampered, abating fears that capacity for solar financing from the tax equity market will be diminished. This also boosted the overall solar market as worries over a reduction in US demand exacerbating the oversupply situation appears to have been averted. The core solar holdings of Sunpower, First Solar, JinkoSolar and Canadian Solar all performed very well over the quarter.

JA Solar, the Chinese module manufacturer has seen less of a response to the improved market dynamics due to a lower management buyout offer being made during the quarter. Management had previously offered to buy the company out at \$6.80 per ADR. Management had previously made an offer of \$9.69 per ADR in June 2015.

Our Chinese solar glass manufacturing holding, Xinyi Solar, did poorly due to fears of industry oversupply and decreased project returns. China Singyes, a solar power system installer, is well positioned to benefit from the Chinese market moving from utility scale to rooftop installations, but had a poor quarter. The company spun out one of its small business units, which was less well received by the market.

Efficiency

Overall, our efficiency holdings were strong in the larger international companies but weak in the Chinese companies.

Schneider Electric appears to be benefitting from Chinese demand for its building and industry units. Kingspan Group is facing higher costs but these are being offset with a healthy increase in revenue. Prysmian continues to restructure and focus on delivering its energy projects, where we believe the long-term value in the company lies as countries will need to integrate more renewables and expand their electricity networks. The company's Q1 results fell below consensus but the stock could recover due to its long-term potential. Centrotech, a German company focused on energy efficiency technology for buildings, delivered on revenue and margin in Q1 2017 and expects further growth, boosting the share performance. Nibe Industrier, a heat pump and HVAC specialist, did relatively well, after beating its Q1 2017 highest analyst estimate. Johnson Controls, an HVAC and automotive battery producer, had a flat quarter as concerns around its earnings growth surfaced.

Wasion, Tianneng, Boer Power and Ricardo were poorer performers over the quarter. Wasion's largest customer, China's State Grid, decreased its orders after a centralized metering tender which weighed on its share price. The company's earnings also came in below expectations. Tianneng fell on voting results from its annual general meeting and recovered slightly following an analyst upgrade. We still feel that the company has potential due to its electric bicycle battery offering and its venture

into lithium-ion batteries for vehicles. Boer Power is currently in a restructuring phase. The company focuses on energy management in distribution grids, something that should be in high demand as China increases its renewable energy installations on rooftops. Ricardo appears to have a larger shareholder selling some of their portion towards the end of the quarter, suppressing the share price. We expect the stock to recover as its fundamentals and order book are strong.

Hydro

Iniziativa Bresciane has seen positive rainfall and has constructed several new hydro plants, but the share liquidity remains a barrier to increasing share price.

The Brazilian IBOV Index has been weak over the second quarter because of the economic and political turmoil in Brazil. Cemig is particularly sensitive to these events, as it relies on government concessions and the Brazilian economy for power generation and demand and has performed weakly over the quarter.

Geothermal

The fund's geothermal holding, Ormat Technologies, exceeded analysts' expectations in Q1 2017 and contributed positively to performance as a result. The company continued to execute its project pipeline and acquired a battery management system software company in Q1 2017 to enter the energy storage and demand response markets in the long-term, two areas we believe will benefit from the increase in renewable energy deployment.

Biofuel

The fund's only biofuel holding, Brazil's Cosan has had a similar fate to Cemig, with macro worries about Brazil affecting sentiment, despite Cosan beating analysts' consensus estimates for the first calendar quarter.

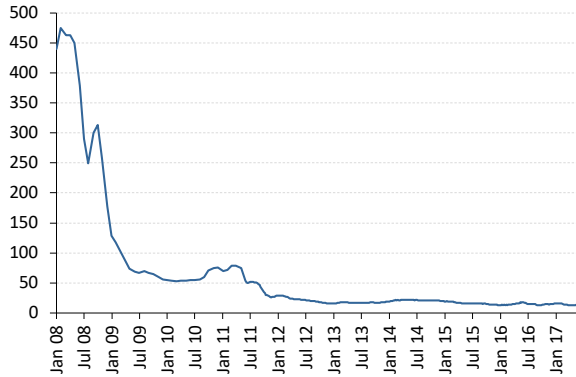
On a stock basis, the top five performers over the quarter were SunPower (53.1%), First Solar (47.16%), Canadian Solar (29.75%), JinkoSolar (25.53%) and Mytrah Energy (21.63%).

The bottom five performers were CEMIG (-27.05%), Concord New Energy (-18.10), Cosan (-15.91%), Good Energy (-12.87%) and Wasion (-12.63%).

Outlook

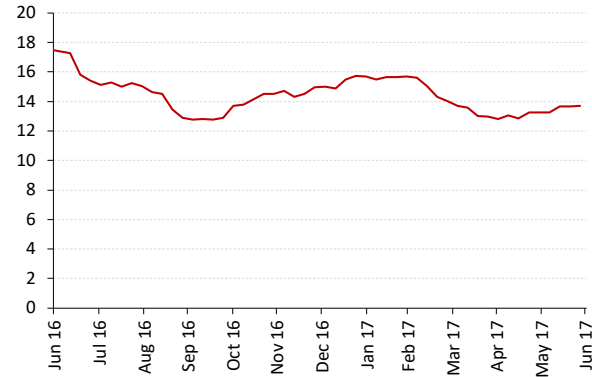
Solar

Long-term Silicon price (\$/kg)



Source: Bloomberg

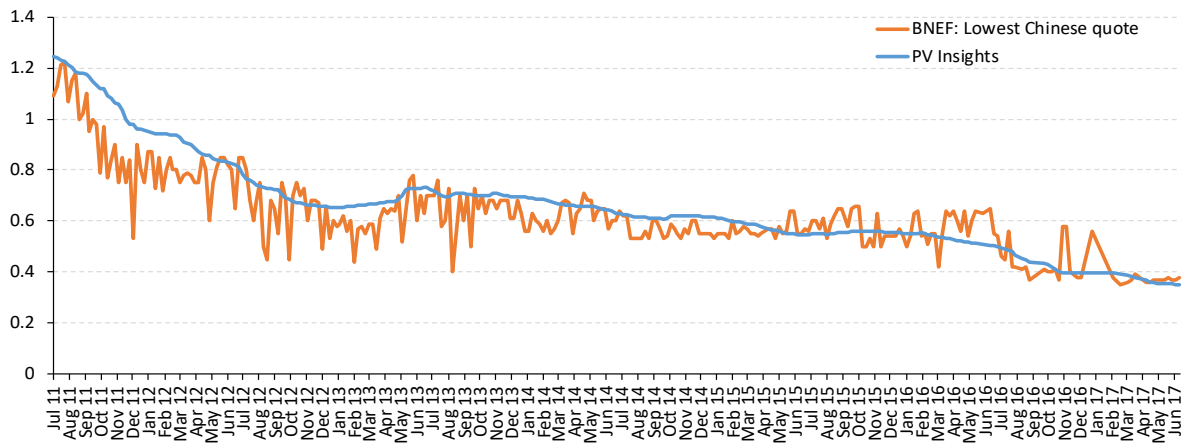
TTM Silicon price (\$/kg)



Source: Bloomberg

Over the quarter, the Bloomberg New Energy Finance polysilicon spot price decreased slightly from \$14.01/kg to \$13.69/kg. Polysilicon prices have risen from their all-time low at the end of Q3 2016 of \$12.80/kg. For historical context, polysilicon prices have fallen from a high of \$475/kg in February 2008. Since August 2012, polysilicon has failed to maintain a price above \$20/kg for any significant amount of time. The costs for producing silicon is now believed to be just under \$9/kg for the lowest cost producers. Several major polysilicon production plants still have costs of over \$20/kg, which are uncompetitive at today's prices¹. We do not believe that there will be a major bottleneck in polysilicon supply causing a price spike unless annual solar installation volumes more than double from current levels in the next year. We have no investments in polysilicon producers.

Module Price (\$/W)



Source: Bloomberg

¹ Bloomberg New Energy Finance

Historically, prices have steadily decreased and have seen lurches downwards following the reduction in policy support from large markets. Module prices continue to decline but have shown signs of stabilizing in Q2 2017: The price dropped 3.5% from \$0.34/W to \$0.33/W, less than the 5% drop in Q1 2017. The price decline has been unexpectedly large over the last 12 months, down 34% since end June 2016, and correspondingly, the addressable market for solar power has increased significantly. At the end of 2016, analysts expected module prices to reach \$0.33/W in 2018, not 2017, and \$0.31/W in 2019 when now it looks possible for module prices to hit \$0.31/W by the end of the year. The solar market has outdone its forecasters yet again, which means demand growth should be supported and if anything should continue to exceed expectations. We are now at a point where solar is consistently proving competitive with fossil fuel alternatives in auctions in a diverse range of countries which will allow for lower policy impact on demand.

Over the long run, prices are likely to continue to decline further due to technology improvements and economies of scale which should enable manufacturers to maintain margins over the long run. Consolidation of the solar module manufacturers is likely and will further support margins. We believe that the companies in the portfolio are well-placed for the period we are in, with low cost bases, strong balance sheets and shareholder support.

Solar PV forecast

	2013	2014	2015	2016	2017e	2018e	2019e
World	41.6	45.0	56.0	75.4	79.2	87.1	93.6
Asia	23.4	26.6	35.7	48.0	48.2	41.8	42.3
North America & Caribbean	6.1	7.2	8.0	14.7	12.5	16.9	18.6
EU Europe	9.8	6.9	7.9	5.7	5.3	5.6	5.9
Non-EU Europe	0.9	0.6	1.1	1.6	3.3	4.4	5.1
Oceania	0.9	1.1	1.3	1.5	2.6	4.7	6.5
Central & South America	0.2	0.8	0.7	1.6	2.6	5.5	4.6
Middle East & North Africa	0.3	0.5	0.8	1.1	2.4	4.8	6.3
Africa (excl. North Africa)	0.3	1.3	0.5	1.0	1.9	2.9	3.7

Source: Bloomberg. Note: Sorted by 2017 forecast installations
 Forecasts are inherently limited and cannot be relied upon.

Overall, analyst forecasts of demand for solar panels show continued growth. It is probable that the global demand for solar panels will hit 100GW by the end of the decade. Many countries have announced the phase-out of any subsidy support for solar by mid-2020s due to its rapid cost declines and belief that the technology will be able to compete with fossil-fired generators. We believe that this would be a positive boost to the industry, as it would no longer be as vulnerable to policy changes.

Asia is by far the most important region for solar demand. China today accounts for most of that Asian demand and is expected by market commentators to stabilize at 25-35GW of annual demand between 2017 and 2020. In Q1 2017 China installed 7GW, much like last year's Q1. Following the Q1 announcement by the Chinese authorities, analysts increased their forecast for 2017 demand in China to 30GW. However, China is facing some problems with paying out its subsidies in time as the solar installation rates are higher than expected and the subsidy pot

empties faster than it can be replenished. So far, this has not stopped developers from developing and commissioning plants. China is beginning to introduce a tradable renewable energy certificate (REC) scheme that will enable faster payments to developers and alleviate the public financing of renewable energy projects. Our expectation is that once again Chinese demand will exceed analysts' forecasts.

India is emerging as Asia's second-largest demand source, surpassing Japan. In Q1 and Q2 2017 India held auctions for solar projects. The winning bids came in at 2,440 rupees (\$38/MWh), lower than the running costs of existing coal plants. India scrapped plans for 14GW of coal power plants because of the falling price of solar power in the country. India installed a record 4.5GW in 2016 and is poised to install around 9GW annually over the next three years. India has set an ambitious goal of 100GW of solar by 2022. Although the target may not be met, it is not unthinkable that India could come close given growth rates that have been achieved in other countries.

Installation volumes in Japan – once the second-largest PV market – will decrease to 5GW per year as the latest incentives are reduced. Other Asian market demand is forecast to pick up as governments and entrepreneurs increasingly recognize the possibilities for reform of electricity systems that solar affords for high energy cost, high insolation countries. We believe that analysts are underestimating the potential surge in solar installations in South Asia and South East Asian countries.

Outside of Asia the US is the most important market, where the extension of the Investment Tax Credit in December 2015 created a fertile support regime for growth of solar installations. With the election of Donald Trump, solar sentiment initially nosedived and then partially recovered as the US president has had trouble passing his proposals through Congress. The solar stock prices have, however, become very sensitive to president Trump's (Twitter) statements. Mr Trump's comment on covering the wall with Mexico with solar panels saw US solar stock prices increasing. The more serious trade case asking for a \$0.40/W tariff on foreign modules brought forward by Suniva, a US solar cell and module manufacturer that filed for Chapter 11 bankruptcy protection on 17th April, also lifted the share prices of First Solar and Sunpower, two US manufacturers of panels. If adopted, the solar sector in the US is likely to see lower demand as there will be lower access to cheap solar modules for installers. However, manufacturers are likely to respond quickly to any tariff to continue to supply the US market. There remains a big opportunity to lower costs of US installations - the US has one of the highest rooftop installation costs in the world at \$3/W.

Installation costs in Germany and Australia, are currently c.\$1.5/W and lower in China. The rooftop segment in the US could absorb some of the increase in module cost should the \$0.40/W tariff be adopted. We also believe there is scope for installation costs to reach the lower levels seen in China if tax credits are removed as these have a side effect of encouraging high upfront installation pricing. Lowering installation costs to these levels would allow customers to achieve similar economics to those they have with tax credits today. The economics of solar in many parts of the United States are so favorable that they should not require subsidies to support installations. This should underpin continued installation growth over the medium term in the US notwithstanding any policy change implemented.

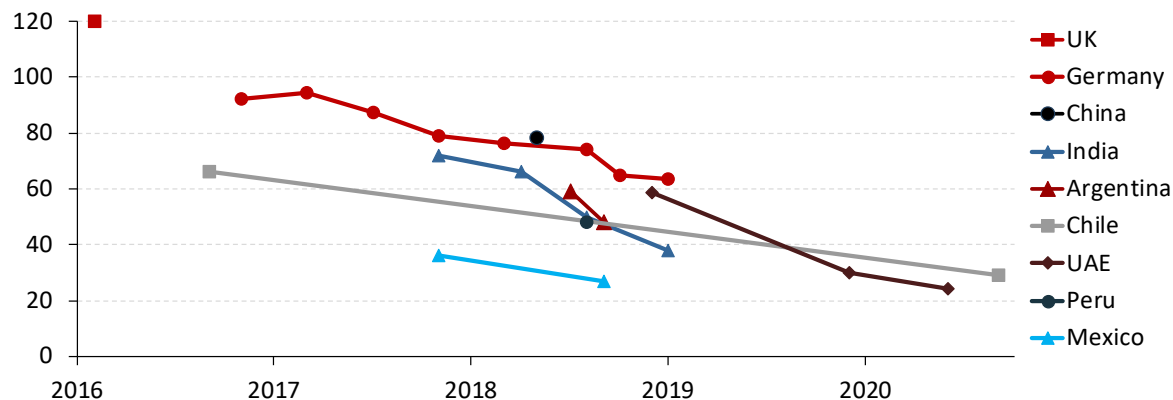
The European Union countries are seeing the highest growth in unsubsidized installations. Unsurprisingly, it is the sunny southern European countries with high energy costs where we believe there to be upside to analysts' solar installation forecasts between 2017 and 2020. Of the non-EU countries, it is Turkey who is witnessing the strongest solar demand today, following significant complications in its subsidy regime that have now been overcome.

The Latin American markets continue to have excellent prospects. Mexico has hosted several successful solar auctions, as has Argentina and growth even remains strong in Brazil, notwithstanding its political turmoil and stalling economy.

The Middle East and Africa have immense potential, especially with many countries in Africa having high power prices and high economic growth driving electricity demand growth. In the Middle East, countries using diesel to generate electricity are recognizing that there is a compelling case for solar that would allow them to maximize foreign currency oil revenues.

Solar LCOE developments

PV bids by delivery date (\$/MWh)



Source: Bloomberg, Cleantechica, Guinness Atkinson Asset Management

The chart above shows the trend of decreasing solar power over time according to delivery dates of tender-winning projects and by country. India (darker blue line) had the most sensational bid price drops of the quarter. The most recent winning bid came in at \$38/MWh on May 12, 2017, a 23% decrease from the winning bids in a separate auction only three months earlier. The delivery dates for India's winning bids are officially 12 months after signing of the bid acceptance. The chart above assumes more a more conservative timeline. India now joins the rapidly expanding club of countries where solar power is cheaper than running fossil fuel plants. With the quicker than expected decrease in module manufacturing costs and prices, we expect the number of countries where solar is cheaper than fossil fuel generators to grow.

As subsidies are rolled back due to lack of necessity, the solar market and module demand can grow organically without being rocked by subsidy changes as it was in the past. Other than cost, the advantages of solar power projects over conventional power generators, such as easy

permitting, short construction time and its modular nature, will allow for quick adoption and continued increases in demand.

Wind

The global wind power market decreased marginally in 2016 but is set to increase from 55GW in 2016 to 65GW in 2019. This growth is due to the rapid increase of offshore wind installations in China, the United Kingdom, Germany and other European countries. The second quarter in 2017 saw zero-subsidy offshore wind projects in the planning.

China remains the largest market by far for the wind sector. China is forecast to install around 21GW per year between 2017 and 2020, including offshore wind. China tightened curtailment rules making it less easy to curtail wind output. This translates to an increase in revenues for Chinese wind power plant owners overall. So far, curtailment has fallen and the new legislation has been enforced successfully, although curtailment remains a drag on performance for operators. The Chinese government has halted further development of onshore wind farms in regions where curtailment is highest, meaning that there will be less electricity price pressure on those areas and on existing wind facilities owners margins. Annual installations of onshore wind in China may decrease, but those decreases will be countered by an increase in annual installations of offshore wind projects providing between 1.5GW and 2.5GW of incremental demand in China.

Most of the Chinese wind market is supplied by Chinese turbine manufacturers, offering limited opportunities for non-Chinese manufacturers. As China ventures into offshore, more non-Chinese companies may enter that market. Conversely, as the Chinese market stagnates, the open question is whether Chinese manufacturers will expand their customer base abroad and take some market share off non-Chinese manufacturers.

Offshore wind updates

In April 2017, Dong Energy, the Danish utility focusing on Offshore wind power for growth, and EnBW, a German utility, both won auctions for offshore wind projects in the North Sea. The greatest surprise was that both winning bids were for zero government subsidies, mainly relying on the future wholesale power price to provide sufficient cash flows for project returns. The difference between these bids and those that bid for a subsidy could simply be due to differing in-house power price forecasts, rather than some large advantage in the project construction. (Bloomberg)

Although these projects will not have fixed payments for each MWh delivered, there are other forms of government support. These projects have a €0/MWh price floor should the price fall below zero for up to six consecutive hours. The German renewable energy law also guarantees the projects, if built, a paid-for transmission line and priority dispatch to the wholesale power market. The speculation is that turbines with a capacity of 15MW would be used to bring down the cost, which is double the capacity of the largest wind turbine currently in operation, as well as cheap financing. In addition, the projects are only due to be commissioned by 2024 with final financing decisions to be made in 2021.

These projects are still seen as exceptions to the rule. Other countries do not have the same levels of government support as these projects enjoy, and would likely still require some form of subsidy.

Wind forecast

	2013	2014	2015	2016	2017	2018	2019
World (including offshore)	34.4	48.7	62.7	54.8	60.1	63.7	65.5
Asia	17.2	23.7	32.7	27.6	29.2	29.4	30.3
EU Europe	11.9	10.5	13.8	11.8	15.4	11.2	12.8
North America & Caribbean	3.0	7.8	10.6	9.8	9.2	12.1	12.9
Central & South America	0.7	3.9	3.3	3.3	2.5	6.1	3.8
Non-EU Europe	0.9	0.9	1.1	1.4	1.5	1.8	1.9
Africa (excl. North Africa)	0.0	0.7	0.7	0.4	1.4	1.5	1.3
Oceania	0.5	0.8	0.4	0.3	0.4	0.8	1.6
Middle East & North Africa	0.2	0.4	0.2	0.2	0.4	0.9	0.9

Source: Bloomberg. Note: Sorted by 2017 forecast installations.

Forecasts are inherently limited and cannot be relied upon.

The United States is the largest individual market outside Asia. The United States Congress extended the production tax credit (PTC) which supports wind installations at the end of 2015 out to 2019. The PTC declines annually from end-2016 onwards, meaning that there was a rush to securing the subsidy in 2016, leading to record orders for larger global wind turbine manufacturers. Following this, there will be a rush to begin construction of onshore wind farms before the end of every year until end-2019. However, this may not translate into immediate earnings for turbine manufacturing companies since the PTC works on when construction is commenced or money spent on the project so far, rather than by commissioning date. To qualify for the PTC, projects must be completed within two years from start of construction, meaning that wind turbine manufacturers are likely to see an increase in their earnings with a one-year lag. This two-year completion rule also explains the increase in forecast wind installations in North America expected in 2018.

With the expected cost and performance improvements of turbines, we believe that onshore wind power will be even more competitive compared to conventional sources in the United States, which may support higher growth than expected in 2018 and 2019 and will help the industry continue once the PTC has tapered off.

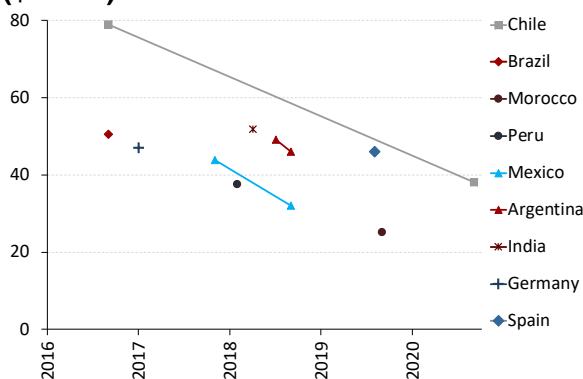
Europe is expected to continue to witness annual wind installation demand of between 11GW and 13GW between 2016 and 2018, driven by the feed-in-tariffs in France and general competitiveness of wind power with conventional sources. Auctions for onshore wind power projects were introduced in Germany in May 2017 and are expected to drive down wind installation pricing. Expected annual onshore wind installation levels in Germany are expected to fall by around 1GW but there may be unexpected demand from the change in market dynamics. Germany is starting construction on a transmission link with Norway, essentially using Norway's many hydro plants as energy storage. This opens grid capacity and would allow for even higher penetration of renewables in northern and central Europe.

Canada and Mexico are the next sources of demand growth. Mexico's liberalization of the energy market has increased installation expectations. The country's second power auction in early October brought new records to Latin America, with wind dropping to \$32/MWh, only \$2 higher

than the cheapest wind bid record set in Morocco. Chile has made headlines due to its auctions where wind power bids have decreased in price since last year, down to \$38/MWh from \$79/MWh. The delivery dates for these two prices are four years apart, partially explaining the dramatic drop in price, equivalent to an annualized decrease of 17%.

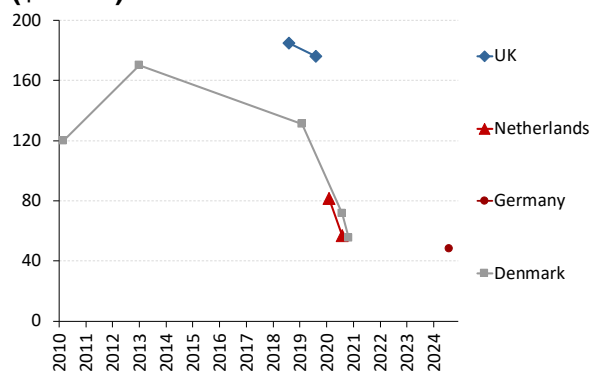
Wind LCOE developments

Onshore wind bids by delivery date (\$/MWh)



Source: Bloomberg, Guinness Atkinson Asset Management

Offshore wind bids by delivery date (\$/MWh)



Source: UK government, Government of the Netherlands, Windpower Monthly, Vattenfall, Guinness Atkinson Asset Management

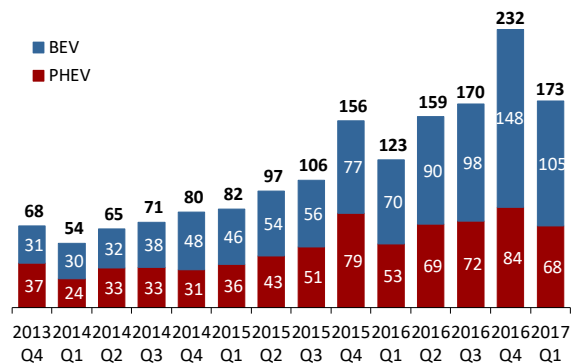
Note: Projects have not been standardized for plant lifetime or financing cost and so values may not necessarily be directly comparable.

Auctions across the globe continue to bring wind power prices down, with turbine suppliers seeing pressure on margins. Price pressure in the onshore wind sector is not as intense as in the solar sector – there are fewer manufacturers, the technology is broadly competitive today and policy remains broadly supportive. However further research and development spending to improve efficiency and lower costs will as with all industries be critical in allowing all in the value chain to maintain margins.

Corporates continue to provide purchase power agreements (PPAs) to renewable energy projects, predominantly wind. The US electricity market is driven in part by large corporations signing direct PPAs with power producers, and we are beginning to see the same thing happen in Europe, reducing the importance of the utilities.

Electric Vehicles

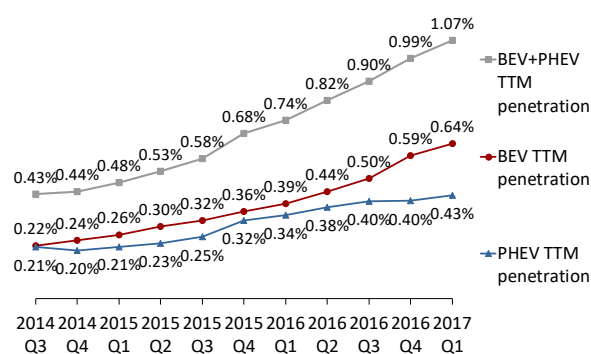
Quarterly plug-in vehicle sales in selected countries (thousands)



Source: Bloomberg, Cleantechnica

Note: Selected countries include Austria, Belgium, Canada, China, Denmark, France, Germany, Ireland, Italy, Japan, Netherlands, Norway, Spain, Sweden, Switzerland, UK and USA. These countries were chosen for data availability and represent three-quarters of all car sales globally.

Trailing 12-month plug-in vehicle penetration of new car sales in selected countries (%)



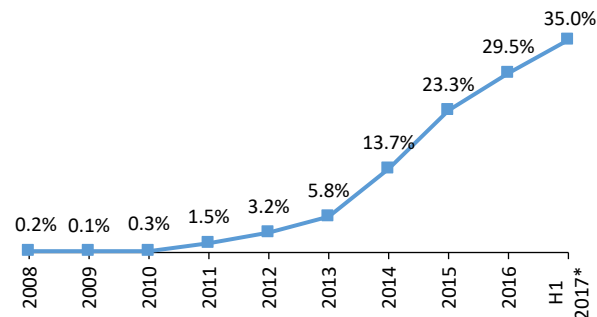
Source: Bloomberg. Note: TTM means trailing twelve months. Total EV sales across selected countries divided by total car sales in these countries show the penetration above.

Electric vehicles (EVs) continue to grow on a year on year basis. Compound quarterly growth rate is 7.43% between Q4 2013 and Q1 2017, translating to a 33.2% compound annual growth rate. However, the data shows that Q1 is seasonally the worst quarter of the year for EV sales. If this pattern continues, the EV market share would reach record levels in 2017.

The graph on the right shows the TTM market share of EVs in new car sales in the selected countries. The market share has been consistently growing for the last two and a half years. Overall, Q1 2017 saw the electric vehicle market share increase well above 1% including all major markets. In most markets, the new EV models that have a longer battery-only range have been very successful. The older models of the Nissan Leaf which have a shorter range, are selling well potentially due to discounts now that the newer version has been released. We anticipate another record year for electric vehicles and view Norway as a bellwether for the potential of the EV market.

Bellwether for combustion engine vehicles: Norway

Annual plug-in vehicle sales in Norway as percentage of total passenger vehicles sold



Source: *Opplysningsrådet for Veitrafikken AS*

As has been the case for the duration of the graphs on page 11, Norway has the highest market share of EVs among new car sales, with preliminary H1 2017 numbers showing a record 35% market share for EVs, with both Q1 and Q2 also having 35% EV market share. This is up from 30% in 2016. June 2017 saw the EV market share climb to 42%. The exceptionally high market share in Norway is due to effective tax breaks, which bring the price of an EV on par with combustion engine vehicles, and benefits to EV owners along with a relative expansive charging network.

Stationary storage progress updates

Stationary battery storage and electric vehicles are intertwined thanks to similar battery technologies. Cost reductions in one can lead to cost reductions in the other. Stationary battery storage technologies have been used in a string of successful projects over the last few quarters, with projects being completed in a matter of months. Tesla announced that the company will install a 100MW/129MWh battery plant in 100 days in South Australia to help remedy the grid which is less reliable than desired. Elon Musk, Tesla's CEO, said that if the company could not deliver this project – the largest stationary battery storage project in history – the price charged would be zero. Mr Musk said this would cost the company at least \$50m. This is equivalent to an all-in project cost of \$388/kWh as a most optimistic estimate, a competitive stationary battery cost.

Portfolio changes

No changes to the portfolio

Fund Performance (Q2 2017)

The Guinness Atkinson Alternative Energy Fund was up 4.18% for the second quarter of 2017. This compared to an increase in the Wilderhill Clean Energy Index of 8.54%, an increase in the Wilderhill New Energy Global Innovation Index of 7.34% and an increase in the MSCI World Index of 4.19%.

Guinness Atkinson
Alternative Energy Fund
 Managers Monthly Update
 Second Quarter 2017



Total Returns as of 06/30/17

Total returns	Q2 2017	1H 2017	CY 2016	1 year	3 year	5 year	10 year	From launch (03/31/06)
Guinness Atkinson Alternative Energy Fund	4.18%	9.16%	-17.16%	3.79%	-15.05%	2.40%	-14.53%	-11.58%
Wilderhill New Energy Index	7.38%	14.30%	-6.43%	14.98%	-3.07%	11.56%	-5.56%	-1.99%
Wilderhill Clean Energy Index	8.54%	18.29%	-22.12%	14.02%	-14.03%	0.01%	-14.03%	-12.86%
MSCI World Index	4.19%	11.01%	8.19%	18.89%	5.87%	12.05%	4.60%	6.08%

Calendar year returns	2012	2013	2014	2015	2016
Guinness Atkinson Alternative Energy Fund	-15.20%	61.54%	-14.29%	-11.40%	-17.16%
Wilderhill New Energy Index	-4.14%	55.70%	-2.16%	1.51%	-6.43%
Wilderhill Clean Energy Index	-17.37%	58.54%	-16.93%	-10.36%	-22.12%
MSCI World Index	16.56%	27.43%	5.58%	-0.28%	8.19%

CY = Calendar Year

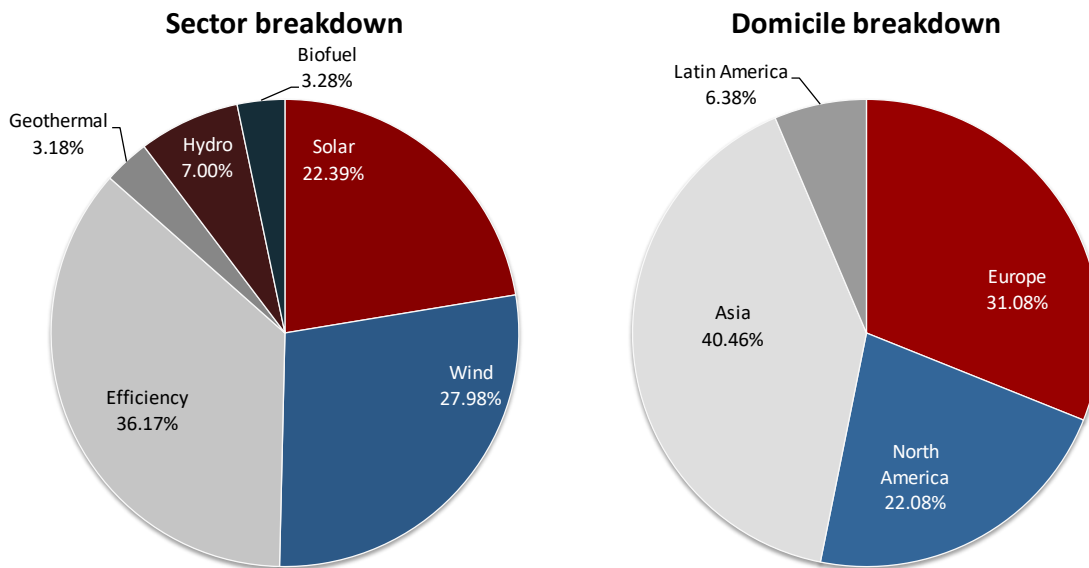
Expense Ratio: 1.99% (net); 2.60% (gross)

All return figures represent average annualized returns except for periods of one year or less, which are actual returns.

Performance data quoted represents past performance; past performance does not guarantee future results. The investment return and principal value of an investment will fluctuate so that an investor's shares, when redeemed, may be worth more or less than their original cost. Current performance of the Fund may be lower or higher than the performance quoted. Performance data current to the most recent month end may be obtained by visiting www.gafunds.com or calling 800-915-6566.

The Advisor has contractually agreed to reduce its fees and/or pay Fund expenses (excluding Acquired Fund Fees and Expenses, interest, taxes, dividends on short positions and extraordinary expenses) in order to limit the Fund's Total Annual Operating Expenses to 1.98% through June 30, 2018. To the extent that the Advisor waives its fees and/or absorbs expenses to satisfy this cap, it may recoup a portion or all of such amounts absorbed at any time within three fiscal years after the fiscal year in which such amounts were absorbed, subject to the 1.98% expense cap in place at the time recoupment is sought, which cannot exceed the expense cap at the time of the waiver. The expense limitation agreement may be terminated by the Board of the Fund at any time without penalty upon 60 days' notice.

Fund Holdings



Sector holdings are subject to change

Top holdings as of 06/30/17	% of asset
Iniziativa Bresciane – Inbre – SpA	4.34%
SunPower Corp	4.16%
JinkoSolar Holding Co Ltd	3.79%
Canadian Solar Inc	3.72%
Senvion SA	3.68%
China Datang Corp Renewable Power Co Ltd	3.59%
CENTROTEC Sustainable AG	3.52%
Johnson Controls International plc	3.49%
First Solar Inc	3.48%
Boralex Inc	3.36%

Fund holdings are subject to change

Guinness Atkinson
Alternative Energy Fund
Managers Monthly Update
Second Quarter 2017



Commentary for our views on global energy and Asia markets is available on our website. Please [click here](#) to view.

Total returns reflect a fee waiver in effect and in the absence of this waiver, the total returns would be lower.

Opinions expressed are subject to change, are not guaranteed and should not be considered investment advice.

This information is authorized for use when preceded or accompanied by a prospectus for the Guinness Atkinson Alternative Energy Fund. The [prospectus](#) contains more complete information, including investment objectives, risks, charges and expenses related to an ongoing investment in The Fund. Please read the prospectus carefully before investing.

The Fund invests in foreign securities which will involve greater volatility and political, economic and currency risks and difference in accounting methods. The risks are greater for investments in emerging markets. The Fund is non-diversified meaning its assets may be concentrated in fewer individual holdings than diversified funds. Therefore, the Fund is more exposed to individual stock volatility than diversified funds. The Fund also invests in smaller companies, which will involve additional risks such as limited liquidity and greater volatility. Current and future portfolio holdings are subject to risk. The Fund's focus on the energy sector to the exclusion of other sectors exposes the Fund to greater market risk and potential monetary losses than if the Fund's assets were diversified among various sectors.

Fund holdings and/or sector allocations are subject to change at any time and are not recommendations to buy or sell any security.

The WilderHill New Energy Global Innovation Index (NEX) is a modified dollar weighted index of publicly traded companies which are active in renewable and low-carbon energy, and which stand to benefit from responses to climate change and energy security concerns.

The WilderHill Clean Energy Index (ECO) is a modified equal dollar weighted index comprised of publicly traded companies whose businesses stand to benefit substantially from societal transition toward the use of cleaner energy and conservation.

The MSCI World Index (MXWO) is a capitalization weighted index that monitors the performance of stocks from around the world.

One cannot invest directly in an index.

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