

Guinness Atkinson
Alternative Energy Fund
 Managers Quarterly Update
 Third Quarter 2017



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

- Quarterly comment
- Performance
- Portfolio changes
- Holdings
- Performance contribution
- Outlook

Quarterly commentary

The third quarter of 2017 continued to be a good quarter for alternative energy share price performance and sentiment. Much of the good news came from China, with an increased utility-scale solar installation target 2020, adding 10GW of demand per year, and a 20% increase in first half-year solar installations. The roll-back of tax incentives for renewables that many feared in the United States has not materialized. Offshore wind auctions in the United Kingdom showed dramatic drops in the cost of a technology some had written off as too expensive. Offshore wind is now a firm contender for reaching wholesale grid parity in several countries within the next decade and appears to be doing so more quickly than anyone expected. Electric vehicles continued to grow their market share in China and the West. Overall, the quarter was very positive for the alternative energy sector.

Fund Performance (Q3 2017)

The Guinness Atkinson Alternative Energy Fund was up 8.03% for the third quarter of 2017. This compared to a rise in the Wilderhill Clean Energy Index of 8.49%, an increase in the Wilderhill New Energy Global Innovation Index of 8.09% and an increase in the MSCI World Index of 4.96%.

Total Returns as of 09/30/17

Total returns	Q3 2017	1H 2017	YTD 2017	CY 2016	1 year	5 year	10 year	From launch (3/31/06)
Guinness Atkinson Alternative Energy Fund	8.03%	9.16%	17.93%	-17.16%	7.64%	4.25%	-14.15%	-10.74%
Wilderhill New Energy Global Innovation Index	8.09%	14.30%	23.54%	-6.43%	17.84%	12.97%	-5.59%	-1.28%
Wilderhill Clean Energy Index	8.49%	18.29%	28.33%	-22.12%	22.24%	2.95%	-14.20%	-11.98%
MSCI World Index	4.96%	11.02%	16.53%	8.19%	18.85%	11.65%	4.86%	6.39%

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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.

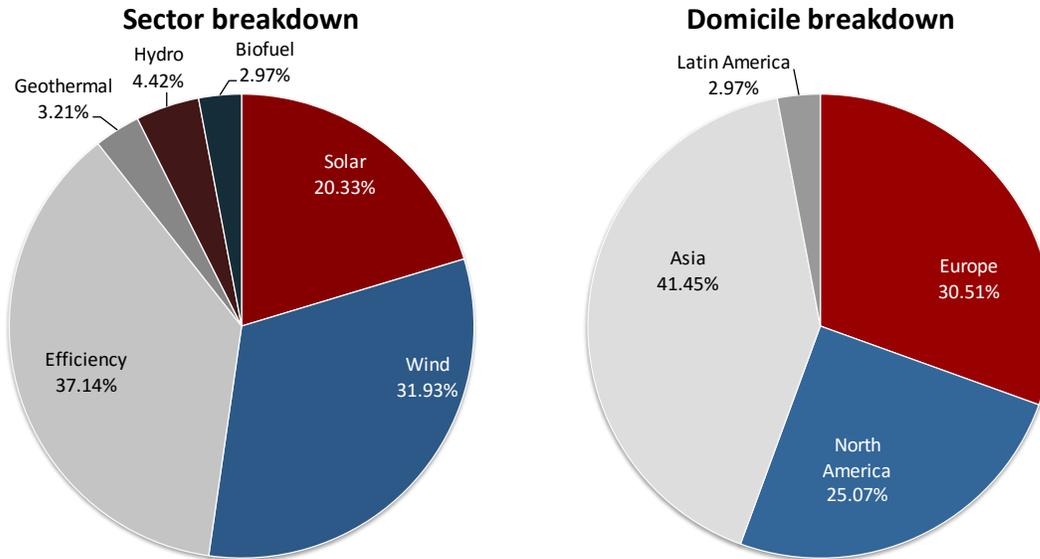
Portfolio valuation

	2009	2010	2011	2012	2013	2014	2015	2016	2017
Guinness Atkinson Alternative Energy Fund P/E	37.1	11.1	117.3	-84.7	20.1	13.8	14.9	21.7	12.0
MSCI World P/E	21.7	14.9	13.7	15.9	19.3	17.9	20.1	22.2	17.0
Premium (+) / Discount (-)	71%	-25%	759%	-634%	4%	-23%	-26%	-2%	-29%

Portfolio changes

We sold CEMIG, a Brazilian hydro-power utility, due to continuing concerns about the political situation in Brazil and oversupply in the Brazilian power market. We replaced the position with TPI Composites, a composite material provider who manufactures wind turbine blades.

Fund Holdings



Sector holdings are subject to change

Top 10 holdings as of 9/30/17	% of assets
Iniziative Bresciane - Inbre - SpA	4.38%
Tianneng Power International Ltd	3.86%
Wasion Group Holdings Ltd	3.66%
TPI Composites Inc	3.66%
Ricardo PLC	3.64%
China Suntien Green Energy Corp Ltd	3.63%
Prysmian SpA	3.55%
Kingspan Group PLC	3.49%
Huaneng Renewables Corp Ltd	3.47%
Concord New Energy Group Ltd	3.43%

Fund holdings are subject to change

Performance contribution

Top 5 holdings		Bottom 5 holdings	
China Suntien	37.52%	SunPower	-21.95%
Tianneng Power	25.83%	Chinga Singyes	-20.23%
Xinyi Solar	24.60%	Boer Power	-18.69%
Kingspan	23.82%	Senvion	-12.08%
JA Solar	20.00%	Johnson Controls	-7.08%

The strong quarterly performance came from across the sub-sectors to which the fund has exposure. Highest contribution was from the fund’s energy efficiency holdings, closely followed by the wind and solar holdings. All of the hydroelectric, geothermal and biofuels holdings contributed positively for the quarter.

Wind

The fund’s Chinese wind power asset owners fared well in this quarter. China Suntien reported a 51% increase in gross profit year on year in its half-year interim accounts. This was due to both power generation and gas sales volumes increasing by broadly 50%. Stronger demand was matched by more wind and lower curtailment. China Datang reported a near-doubling in operating profit, while Huaneng Renewables reported a 13% increase in profit after tax. New holding TPI Composites performed positively on the back of extensions of existing contracts. Mytrah, China Longyuan, and Boralex fared well as they announced results that were in-line with expectations.

Good Energy suffered as a result of issues with its payment collection system and lower growth in customer numbers. Senvion performed poorly over the quarter due to concerns around its core markets in Europe. Senvion has continued to win large orders against expectations and is outperforming its peers.

Solar

The fund’s solar manufacturing companies had a positive quarter. JA Solar’s share price was strong and is now in excess of the management buyout offer of \$6.80 per ADR, which had appeared to put a cap on the company’s share price since it was made at the beginning of June 2017. JinkoSolar and Canadian Solar performed well on the reporting of higher than expected solar installations in China and an increased Chinese government solar installation target. First Solar’s share price did well on better than expected results and because it is well positioned to benefit from any trade tariffs imposed on Chinese module imports – it is specifically excluded from the trade complaint. Xinyi Solar, which usually derives most of its revenue from its solar glass division, got a boost with the installation boom in China allowing its EPC services division to increase revenue significantly year on year.

SunPower disappointed markets with weak quarterly results and its weak share price further reflects the potential that it may be subject to any tariffs imposed under the expected trade commission ruling

in the United States. China Singyes issued a profit warning for semi-annual results, which negatively affected its share price and is particularly disappointing given the aforementioned solar installation boom.

Efficiency

Tianneng Power International (Chinese electric vehicle batteries) performed well after earnings beat analyst estimates. Kingspan Group, Prysmian, and Schneider Electric did well due to positive sentiment for European engineering related stocks and robust earnings announcements. Wasion Group (Chinese meter manufacturer) and Ricardo (automotive engineering consultancy) had strong quarters following announcement of growth in their order books. Nibe Industrier (world's leading heat pump manufacturer) continued to post positive news and performed well.

Johnson Controls International performed poorly due to its earnings tracking the lower end of guidance. Centrotec (German energy efficient boilers) decreased slightly as its EBIT for the first half of 2017 was 32% lower than the previous year. Boer Power (Chinese energy management hardware) also performed poorly but did post stronger numbers for the first half of 2017 that imply that the company is coming through its restructuring to return to growth.

Geothermal

The only geothermal holding in the portfolio, Ormat Technologies, also had a positive quarter. Analysts received Ormat's investor day well, with the stock rallying shortly afterwards.

Biofuel

The only biofuels holding is Cosan, a Brazilian energy conglomerate which uses biofuels for generation along with biofuel and natural gas distribution businesses. Cosan had a good quarter, which was helped by the strong Brazilian stock market performance.

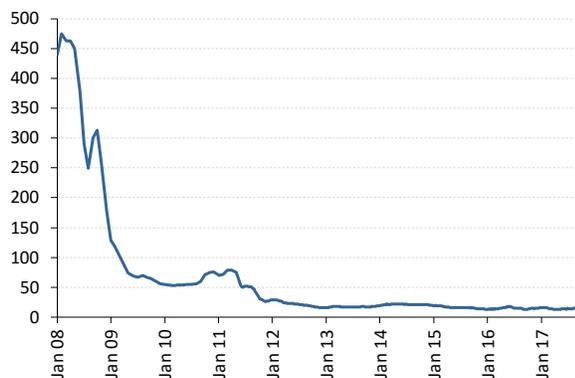
Hydro

Iniziative Bresciane, (small Italian hydroelectric power plants) had a positive quarter as recently built plants are expected to begin to contribute to its earnings and with improved rainfall levels over the summer.

Outlook

Solar

Long-term Silicon price (\$/kg)



Source: Bloomberg

TTM Silicon price (\$/kg)

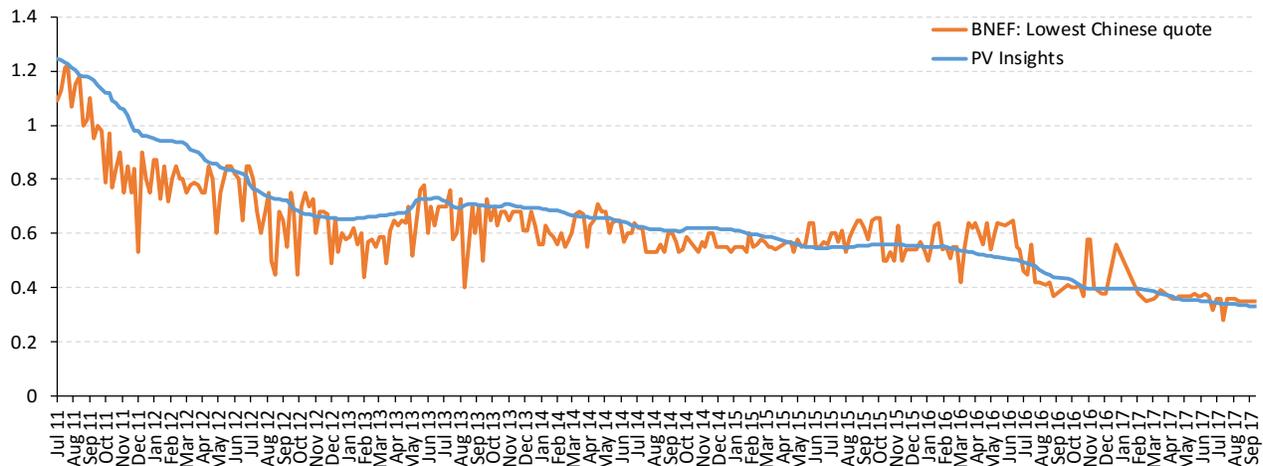


Source: Bloomberg

Over the quarter, the Bloomberg New Energy Finance polysilicon spot price increased from \$13.69 to \$15.43. Polysilicon prices had reached an all-time low at the end of Q3 2016. For historical context, polysilicon prices have fallen from a high of \$475/kg in February 2008 to just over \$50/kg in December 2009. Since then, polysilicon has continued to fall in price albeit not as dramatically. Since August 2012, polysilicon has failed to maintain a price above \$20/kg for any significant amount of time. The costs for producing silicon in existing plants is now believed to be just under \$10/kg for the lowest cost producers. Several polysilicon production plants still have costs of over \$20/kg¹. We are aware of smaller suppliers entering the market who claim to have production costs below \$10/kg due to new technologies or lower energy costs. We do not believe that there will be a major bottleneck in polysilicon supply causing a price spike unless annual installation volumes more than double from current levels in the next year. We have no investments in polysilicon producers.

¹ Bloomberg New Energy Finance

Module Price (\$/W)



Source: Bloomberg

Module prices have declined steadily over the last six years. The most recent rapid module price decline happened in the second half of 2016, following the feed-in tariff cuts in China at the end of June. Since then module prices have continued to decrease, but at a slower rate.

During Q3 2017 module prices dropped 3% from \$0.33/W to \$0.32/W. The feed-in tariff cuts in China on June 30th did create a larger installation boom than expected (as it did in 2016), with 24.4GW having been installed in the first half of the year, up 20% from the year before. According to Bloomberg New Energy Finance, there has been a rush in China to commission projects as soon as possible due to a feared tariff cut for behind-the-meter projects. Stockpiling of modules by developers in the US ahead of the US International Trade Commission verdict has helped support module prices in the second half of 2017.

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 to weather this period, with low cost bases and/or strong balance sheets and shareholder support.

Solar PV forecast

	2013	2014	2015	2016	2017	2018
World	42.6	46.1	56.1	75.0	88.4	98.3
Asia	23.4	26.6	35.6	47.8	61.1	62.2
North America & Caribbean	6.1	7.2	7.9	14.5	11.6	14.8
EU Europe	9.8	7.0	8.1	5.9	6.8	7.2
Non-EU Europe	0.2	0.8	1.2	1.5	2.4	3.6
Oceania	0.9	0.6	0.9	1.4	2.3	2.2
Central & South America	0.9	1.0	1.1	1.4	1.6	3.2
Middle East & North Africa	0.3	0.5	0.9	1.1	1.4	3.4
Africa (excl. North Africa)	0.3	1.3	0.3	0.9	0.8	1.2

Source: Bloomberg. Note: Sorted by 2017 forecast installations

Forecasts are inherently limited and cannot be relied upon.

We believe that Bloomberg forecasts underestimate global demand for 2018 and beyond. Over the last five years analysts' forecast have been continually raised over the year and we are seeing that again this year.

An increasing number of countries are removing subsidies for solar. The rapid cost declines have enabled this as installations are becoming viable economically without subsidies. This is resulting in auctions at which the price for solar generation from plants is fixed over most of their expected useful life.

Asia remains the largest regional market for solar installations. China, which today accounts for most of that demand, has an annual feed in tariff that is adjusted in June. In the first half of 2017, China installed 24GW of solar, 20% more than last year, driven by developers trying to install prior to the feed-in tariff cut. This was above most analysts' expectations. China also increased its cumulative PV installation target up to a range of 190-200GW by 2020, excluding smaller rooftop installations and poverty alleviation programmes. With China's cumulative capacity having reached just over 110GW in August 2017, this leaves a minimum of 80 GW of utility scale PV to be installed over three years. With additional demand coming from rooftop projects, we could easily see China installing upwards of 40GW per year by 2020.

India has announced a goal to increase solar capacity to 100 GW by 2022, which will require a ramp up in the pace of solar capacity additions. The country is likely to install between 9 and 10GW in the following two years.

Japan has been a very important market for 2014, 2015 and 2016 due to high feed-in tariffs offered. We expect this to decrease significantly into low single-digits. Japan could follow other countries' footsteps into introducing an auction system. We still believe that analysts are underestimating the growth that will be achieved in the medium term in Asia, particularly South-East Asia.

Outside of Asia, the next most important market is the United States. On September 22, 2017, the US International Trade Commission ruled that solar panels made from imported silicon cells have been hurting US solar cell and module manufacturing plants. The International Trade Commission has thereby authorized President Donald Trump to impose penalties on the imports of solar products later in 2017 or in early 2018. The complainant, US module maker Suniva, initially asked for import duties on solar cells starting at \$0.40/W and a floor price on modules of \$0.78/W. After the ruling in its favour, Suniva asked for \$0.25/W for solar cells after reviewing price data from other companies. President Trump has the ultimate say on what the tariffs will look like. First Solar would be a likely beneficiary of raised pricing in the short term, as their technology is not affected by the ruling and so they could theoretically price others out relatively easily. Demand for modules may be impacted in the short-term, but large Chinese PV companies have already been looking at sites for cell manufacturing in the US, meaning that up to 5GW of solar cell manufacturing capacity could come online by mid-2019, according to Bloomberg New Energy Finance. Overall, we would

expect the ruling to have a temporary effect on the US solar market, but in the mid-to-long term we continue to be positive on the outlook for US solar demand.

Europe is now evolving from having been the leading subsidy-driven market to being driven by unsubsidised installations. Unsurprisingly, it is the southern European countries with high insolation and high energy costs where we believe there to be upside to analysts' forecasts between 2017 and 2020.

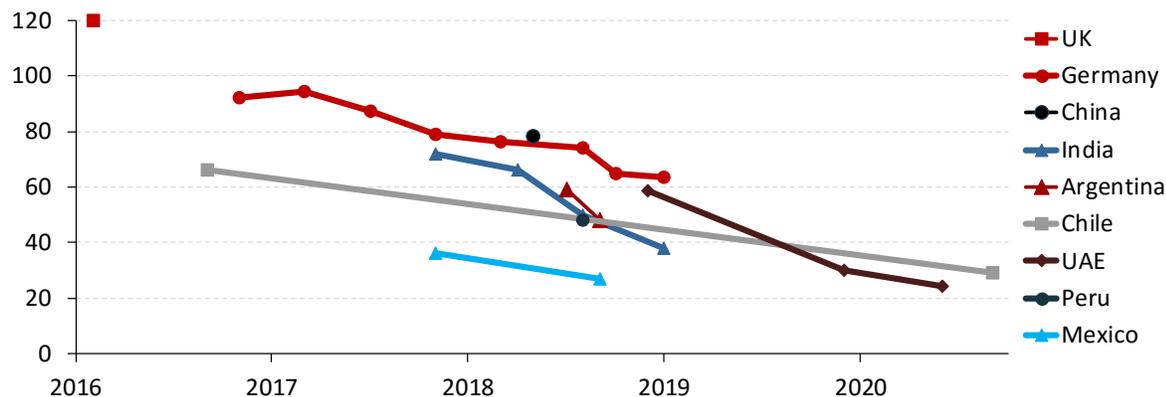
Latin America is the next most important market and we believe has huge potential because of grid constraints and utility costs. The slowing of Brazil's economy and the consequential cancellation of auctions for renewables was a blow to the Latin American renewables industry. The Middle East and Africa have huge potential although it may take time for them to benefit from the installation cost efficiencies being achieved elsewhere in the world.

Lower module and project prices are improving the economics of solar PV and are beginning to compete with fossil fuel generation in many locations. This transition away from subsidies is likely to lead to a meaningful surge in installations growth that is less likely to be matched by product price falls. Since solar PV projects are easy to permit and quick to build compared to other power generating technologies, taking only a few months compared to years, we expect demand levels for solar PV to respond to lower prices faster than other technologies.

The solar auction price record remains Mexico's \$27/MWh bid for construction in 2019 and as shown below, bids in Peru and Chile are approaching those levels, with all countries on a downwards trajectory.

Solar LCOE developments

PV bids by delivery date (\$/MWh)



Source: Bloomberg, Cleantechica, Guinness Atkinson Asset Management

Wind

Analysts expect onshore wind installation to grow in 2017 compared to 2016 by low single-digit percentages. We expect a greater increase in 2018 before the market stabilizes at 60GW.

Wind forecast

	2015	2016	2017	2018	2019	2020
World (including offshore)	63	55	59	61	65	57
Asia	33	27	28	28	29	27
EU Europe	14	12	15	12	13	8
North America & Caribbean	10	10	9	12	14	14
Central & South America	3	3	3	4	3	2
Non-EU Europe	1	1	2	2	2	3
Africa (excl. North Africa)	1	0	1	1	0	1
Oceania	0	0	0	1	2	0
Middle East & North Africa	0	0	0	1	2	3

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

As with solar, China represents the largest wind market. China is forecast to install around 20GW per year between 2017 and 2020. Chinese wind farm operators benefit from limitations on curtailment implemented in May 2016. China's National Energy Administration restricted grid connections in regions with the highest grid curtailment levels, meaning that wind farms in these regions will not be able to connect to the grid.

Most of the Chinese wind market is supplied by Chinese turbine manufacturers, offering limited opportunities for non-Chinese manufacturers. The question for many wind manufacturers is whether Chinese wind turbine manufacturers would gain acceptance from clients outside of China.

The United States is the second largest market for wind installations. 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 commence building projects in 2016 and there will be a rush to begin construction of 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 to two year lag depending on payment timings.

With the expected cost and performance improvements of turbines, we believe that onshore wind power is now competitive compared to conventional sources in the United States, which may result in higher numbers of installations than expected in 2018 and 2019 and would support demand once the PTC has tapered off.

European installation levels are expected to decline from a peak of 15GW in 2017 as low prices from auctions temper demand. European demand is being driven by attractive feed-in-tariffs in France and pull in for demand in Germany in 2016 where developers were rushing to complete

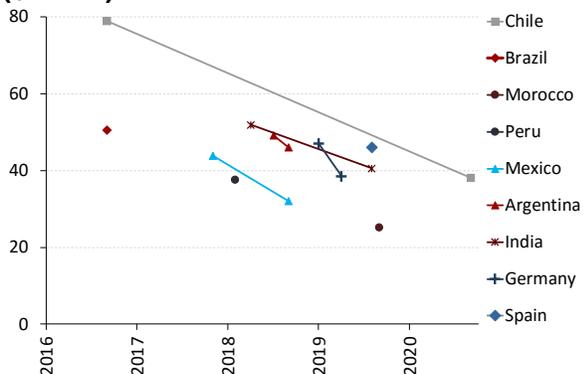
projects by year-end before auctions begin in Germany in 2017. Germany is starting construction of two 1.4GW transmission links with Norway, that will allow Germany to benefit more from Norway’s hydro plants for backup capacity and energy storage. This opens grid capacity and would allow for even higher penetration of renewables in northern and central Europe.

Auctions across the globe continue to bring wind power prices down, with turbine suppliers seeing some pressure on margins. Price pressure in the onshore wind sector has not to date been as intense as in the solar sector – there are fewer manufacturers, the technology is broadly competitive today and Chinese manufacturers have not gained the trust of developers outside of China. 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 market was historically driven in part by large corporations signing PPAs, and we are beginning to see the same thing happen in Europe, reducing the importance of the utilities. We believe this trend will continue and support unsubsidized installations.

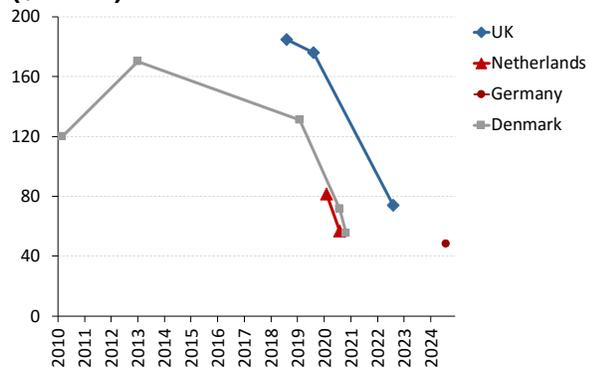
Wind LCOE developments

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 standardised for plant lifetime or financing cost and so values may not necessarily be directly comparable.

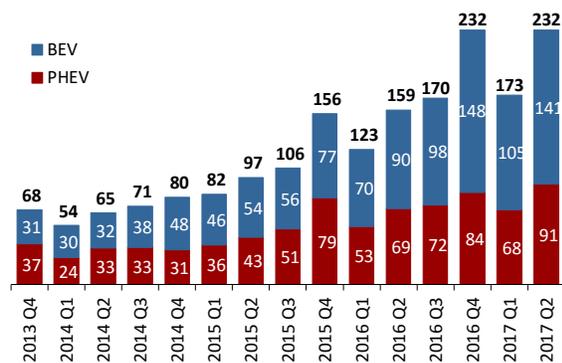
Offshore wind updates

The offshore wind sector reached a dramatically lower price in the most recent UK contract for difference (CFD) auctions. Offshore wind specialists Dong Energy, Innogy/Statkraft and EDPR/Engie were awarded contracts for 3.2GW of offshore wind to be built between 2021 and 2023. Unlike in continental Europe, where several project components like grid connections are subsidized, the UK requires the offshore wind developer to pay for everything. Therefore, the prices offered by the bidders show the complete anticipated cost of building a whole offshore wind farm to be commissioned in the early 2020s. The prices ranged from £57.50 to £74.75/MWh (\$76-\$99/MWh), inflation indexed for 15 years. For comparison, the Hinkley Point nuclear power facility had a strike price of £92.5/MWh, inflation indexed for 35 years. These latest UK offshore CFD prices represents a 62% decrease in offshore wind power prices compared to the first Offshore wind farm commissioned via CFD auctions in the UK.

Electric Vehicles

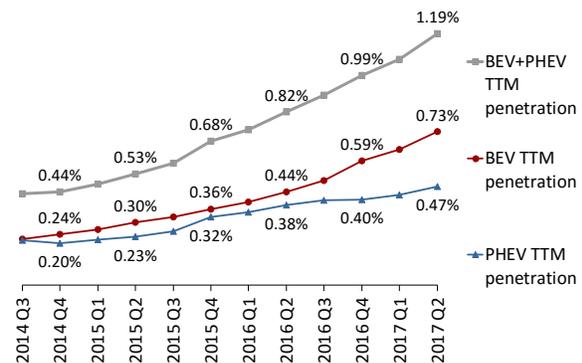
Electric vehicles (EVs) have shown strong growth in sales numbers since 2014. Compound quarterly growth rate is 9.2% between Q4 2013 and Q3 2017, translating to a 42.0% compound annual growth rate.

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



Source: Bloomberg, Cleantecnica

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.

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.

The graphs above show the quarterly sales and trailing twelve months market share of electric vehicles. The data is derived from country by country data from a group of the leading countries for electric vehicle sales. While growth remains steady, market share for electric vehicles is still only at 1.19%, which provides significant potential for growth. Annual installations are yet to reach 1 million vehicles per annum.

Norway has the highest market share of EVs among new car sales, with 34% in Q2 and 35% in Q1 2017. The exceptionally high market share in Norway is due to effective tax breaks and benefits to EV owners along with a relative expansive charging network. The next highest market share is found in Sweden, with 4.1% electric vehicle market share in Q2 2017.

In May 2016, Germany introduced a subsidy scheme for EVs worth €1.2 billion. Prospective EV owners can apply for a €4,000 or €3,000 grant when purchasing a BEV or a PHEV, respectively. The market share of EVs in Germany has been over 1% since Q4 2016 and is increasing. Most Western European countries now have electric vehicle market share above 1%.

It took Norway a further three years to reach 3% market share once it had reached the 1% threshold, after which only three more years were needed to reach 30%. While the tax breaks and subsidies had a profound impact on this, Norway is showing that consumers can adapt to using electric vehicles and gives some indication of the potential for electric vehicle demand to reach tipping points in the rest of the developed markets.

The fund remains well positioned to benefit from the growth opportunities in the alternative energy sector. Given the current low valuations that reflect cautious market sentiment for the alternative energy sector, we believe that the fund has the potential to deliver good returns for investors over the next five years. Thank you for your support.

Edward Guinness and Samira Rudig October 2017

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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.

P/E represents the price to earnings ratio, which is the current share price divided by the earnings per share of a company.

One cannot invest directly in an index.

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