



Alternative Energy Brief
December 2008

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Welcome to the December 2008 Guinness Atkinson Alternative Energy Brief.

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Our view on the current state of the alternative energy sector

Given the recent performance of stocks in the alternative energy sector, you would be forgiven for thinking that the apparently bright prospects for the industry had evaporated. In our opinion stocks have mainly been hurt by a combination of falling broad market multiples and rapid deterioration of the near term outlook as capital becomes scarce for all businesses and projects.

We would argue that, excepting total financial Armageddon, the long term prospects for the industry are still good. In fact, we believe alternative energy may be one of the first sectors to emerge from the current financial quagmire.

Industry drivers intact

Two of the three principal drivers for the adoption of alternative energy technology remain firmly intact (energy security and environmental concerns), only one (energy cost) has shown some deterioration over the last few months.

Energy Security still remains a top concern for the developed world, with most OECD countries seeing waning oil production (notably the US and the UK/Norway in the North Sea) and heavily reliant on imported oil from less stable countries. With the US looking to withdraw from Iraq, and little progress being made in Afghanistan, the future for the Middle East remains highly uncertain. The remainder of OPEC are hardly any more stable.

While the **Environment** has been knocked off the top political issue spot by the state of the economy, it has not fallen off the agenda. A key piece of Barack Obama's energy policy is \$150 billion in support for alternative energy over the next 10 years. The Japanese have reinstated subsidies for solar installations and one of the main areas being looked at for fiscal stimulus are alternative energy capital infrastructure projects.

Energy costs: the highly volatile oil price rose from a low of c.\$10 per barrel in 1998 to a high of \$147 per barrel earlier this year. This has since retraced to below \$40 per barrel as I write. We note that the oil price was \$50 per barrel at the beginning of 2007 and first closed above \$60 in June 2005. At \$60 and above we would still be in a much higher energy cost environment than the first half of this decade. In fact, a lower oil price is likely to lead to lower investment in exploration and production of oil, which could exacerbate already tight supplies.

Alternative energy does not compete directly with oil, but with electricity prices. The electricity price is more closely linked to the natural gas price which has also fallen, but generally electricity prices have not fallen as far as fossil fuel prices. Even more importantly the estimated capital costs of new build fossil fuel and nuclear power plants have risen sharply over the last 10 years while costs for alternative energy technology are falling. Many countries have aged fossil fuel and nuclear generation fleets that will need

replacing over the next 10-15 years. While there may be a pause in the rise in electricity prices, we still see higher electricity prices as inevitable over the medium term.

Key technologies' long term growth prospects are good

Wind turbine installations have been growing at a rate of 24% for the last 10 years and even so have reached just 1% of world electricity generation. Costs have reached a point where well-sited wind is competitive with fossil-fuel based grid electricity today, and we are a long way away from running out of potential sites for wind turbines. If the wind industry continues at a conservative 20% growth rate, it will only supply 10% of world electricity generation in 2022. In Denmark, they have reached 19.7% of their domestic electricity consumption from wind in 2007 and believe that with grid improvements they can go as high as 50%.

The market for photovoltaic solar electricity panels is still in its infancy, accounting for approximately 0.1% of world electricity generation today. To reach the point where solar can compete with grid-delivered electricity ("Grid Parity"), we estimate that the cost of solar has to halve from where it is now. There is a well defined path to achieve that over the next 4-5 years that does not require step changes in the technology. It would in fact be a combination of efficiency improvements, lower manufacturing costs, silicon cost reductions and enhancements to the installation process. From today's low levels, a continuation of 35% growth rates would see solar reach 5% of world electricity generation in 2023. This increase in scale of the industry will be a key factor in achieving the required cost reductions.

Hydro-electricity is theoretically the best form of renewable energy from a grid point of view. It can be stored and therefore can run as baseload or peaking electricity as needed. It can provide large scale generation. However, unfortunately, in the western world, a large percentage of the potential sites for hydroelectric schemes have already been developed. There is scope for further "Run of river" hydro schemes which do not involve dams, but again there is a finite number of quality construction sites. Investments in hydro attract us as they have long lives (100 years plus in some cases) and will benefit from rising electricity prices. Hydroelectric cannot however significantly increase its share of world electricity generation.

Another well-proven technology is geothermal energy. Today, geothermal energy is generated at sites with hot water or steam close to the earth's surface. There are still further sites to develop, and we expect to see growth in the sector. As with Hydro-electricity, the baseload, long life characteristics of geothermal power are highly attractive and are expected to be developed wherever possible. The most exciting potential for geothermal comes in the form of "hot-rock" or enhanced geothermal systems, where water is pumped down and passed through heated rocks (typically granite) and forced back up to the surface where the energy is captured. This would involve drilling 5km or more under the earth's surface and if the technology can be mastered, this could become a major contributor to world energy generation.

A conundrum for investors is presented by biofuels. While they provide the only scale alternative to fossil fuels for vehicles today, problems with pressure on food prices have caused political support for biofuels to wane. In tandem with that, refining margins have been reduced by the high feedstock prices and refining overcapacity. There may be potential in the higher yield much-vaunted “next generation” biofuels, but we note that these do require a step change in the technology.

Improvements in efficiency are touted as a further way in which society will be able to address the tightening supply/demand balance. Most efficiency gains are captured by the energy user, but there are a number of companies that provide efficiency related services. Interesting investment themes here include ground source heat pumps, building efficiency systems, demand response networks, transmission line improvements and energy storage.

And finally, we are often asked about other technologies such as fuelcells and wave/tidal power. These are areas which may in the long run be “game-changing”, but for now the technologies are too expensive and early stage. We constantly monitor this, but remain cautious about companies where you have to invest today for “jam” in ten years time.

Near term prospects create uncertainty

For many of the ultimate builders and developers of alternative energy projects, these are capital intensive infrastructure projects where the capital requirements are offset by the low risk of the cashflows from the assets. In the current financing market project finance desks are effectively shut to all deals however attractive. This has an inevitable impact on project pipelines, although projects that had previously gained financing are being completed.

At some stage, whether from government pressure or economic imperative, the banks will need to start putting their capital back to work in order to finance interest payments. Alternative energy projects typically provide government or utility guaranteed highly predictable long term revenue streams with returns well above government bond yields. We therefore argue that these projects will be among the first to gain financing when the debt markets re-open. As a further benefit for alternative energy project investors, returns are highly sensitive to interest rates, and lower absolute interest rates for debt on projects will enhance equity returns.

Double edged swords

Today investor uncertainty is created by lower energy prices and concern that energy demand will decline significantly in the current recession. Here we suggest that over the medium term energy demand is likely to remain robust, as the major energy demand growth drivers are in the emerging economies of China, India etc. In these countries internal economic growth is propelling standard of living improvements that require step changes in energy consumption and which will more than outweigh any near term demand declines in the developed markets. Low energy prices will have the additional

effect of supporting energy demand – the demand destruction that was seen at \$147 oil will be far less prevalent.

With national budgets stretched, we have concerns that some government subsidy programmes will be scaled back or postponed. As ever with government intervention, this is impossible to predict, but we take comfort from the high level of importance still attached to energy issues and that infrastructure projects including alternative energy projects are likely to be seen as a positive way for governments to spend their way out of the recession.

Raw materials such as steel and copper have seen sharp falls in price which while indicative of weak growth internationally provide an opportunity for many alternative energy companies to bring the costs of their products down. For example, we had seen 5 years of increasing wind turbine prices, with costs increasing to match. Wind turbine manufacturers will be able to address any softening in prices as a result of project delays with lower costs of production.

Stock valuations attractive

Finally and most importantly for investors, valuations in the sector now appear much more attractive than 2½ years ago after their last strong market move. Many stocks are now trading on earnings multiples in the 2-10x range, where there may be some risk that earnings in 2009 will be lower than expected, but where the long term growth potential is over 20% per annum. We believe the fund can therefore invest in growth companies at the valuations of cyclical businesses.

Sector and geographic breakdown

Sector	% of Assets	Region	% of Assets
Solar	34.23%	Europe	51.96%
Wind	29.31%	North America	27.30%
Hydro	9.88%	Asia	10.01%
Efficiency	8.92%	Australasia	0.42%
Geothermal	8.10%	Latin America	4.32%
Biomass Energy	3.20%		
Biofuel	0.39%		

We maintained our overweight position in Solar stocks with a 34.29% holding. Near term potential catalysts include:

- Clarity on how Obama will implement his alternative energy spending plan
- Lower silicon costs
- Improvements in the availability of debt
- Low interest rates feeding into project IRRs

We believe that valuations are now reflecting the current weak markets, but the balance sheet strength of much of the industry means that companies should be able to survive, and (given survival) the outlook is positive.

We hold 29.31% in wind and our positions in wind are split evenly between turbine manufacturers and wind farm developers. The larger wind farm utilities have been the better performers here, with smaller developers and turbine manufacturers hard hit by the current conditions. While analysts expectations for 2009 might still be too positive, the long term outlook for sector growth and profitability is good and we are seeing very attractive valuations.

Efficiency includes stocks in a number of areas from hybrid vehicles and ground source heat pumps to building efficiency and LED lighting where companies will profit from reducing energy use for industry and consumers. We currently hold 8.92% of the portfolio in efficiency stocks.

Hydro forms a lower risk strand of the portfolio, with a current weight of 9.88%. The overarching idea behind holding these is because of their low operating cost which means that increases in electricity prices and payments for carbon credits go straight to the bottom line. Geothermal Power, at 8.10% of the fund, has similar dynamics, and is similarly location constrained, but is at a much earlier stage of implementation.

We remain circumspect about Biofuels which account for 0.39% of the fund now, although we are monitoring valuations carefully. We prefer biofuels stocks that have some form of vertical integration (ie they manage their own feedstock production).

Biomass Energy accounts for 3.20% of the fund. There are a number of opportunities in this space, but the growth potential and returns are less attractive than elsewhere.

Fuelcells remain some way from mass commercialization and we currently hold no investments. Similarly we hold no wave/tidal investments today.

Europe accounts for 51.96% of the assets in the fund versus 27.30% in North America. This reflects the earlier development of the European wind and solar industries. We have 14.74% in Asia, Australia and Latin America and are continually looking for international opportunities that are under the US investor's radar screen. We were holding 6% in cash at the end of November. This is higher than usual, but enables us to make trades and rebalance at more opportunistic moments.

Top Ten Holdings as of 11/28/08	% of Assets
Ormat Technologies Inc	4.54%
Cia Energetica de Minas Gerais	4.30%
EDP Renovaveis SA	4.24%
Wacker Chemie AG	4.11%
Iberdrola Renovables	4.04%
EDF Energies Nouvelles SA	3.43%
WFI Industries Ltd	3.39%
Novera Energy PLC	3.20%
Echelon Corporation	3.17%
PNO Energy Development Corporation	3.14%

Liquidity analysis as at 11/28/08

Mkt Cap \$m	Positions	% of Assets	Position size	Positions	% of Assets
>1000	17	50.34%	Full	23	65.89%
500-1000	5	8.99%	Half	15	24.30%
250-500	5	10.73%	Research	10	3.81%
100-250	11	14.50%			
50-100	2	5.48%			
<50	8	3.96%			

The liquidity of the portfolio remains good. The percentage of the portfolio that is in stocks with a market capitalization of over \$1 billion has however fallen to 50.34% from a high of 66.08%. Only 9.44% of the portfolio is invested in stocks with a market capitalization below \$100 million. While the universe has grown steadily, recent market moves have reduced the size of some of the companies in the sector, and there are no new issues. We are endeavouring to maintain a balance between holding larger capitalization more liquid stocks and positions in smaller capitalization less liquid stocks where the value and growth opportunity might be greater.

We have segmented the portfolio into three types of holding: full, half and research. We currently hold 23 full units and 15 half units, with a further 10 research positions. This enables us to benefit from a strict rebalancing discipline.

Valuation as at 11/28/2008

Valuation metrics	07	08	09 (est.)
P/E	13.01	12.46	10.19
P/Sales	1.23	1.03	0.83
EV/Sales	1.41	1.18	0.96
EPS growth		4.43%	22.25%
Sales growth		20.02%	23.11%
% NAV +ve eps	84.52%	85.32%	90.17%

Source: GA estimates, Bloomberg. P/E based on total portfolio value but include negative earnings at zero.

We include valuation metrics for the portfolio to demonstrate why we perceive there to be an investment opportunity in the sector. The fund is trading on a 12.46x P/E multiple in 2008 which falls to a 10.19x P/E multiple in 2009. This is a function of the strong growth of the industry, notwithstanding downgrades as analysts pare their forecasts. By comparison the S&P500 at the end of November at 896.24 was on a higher P/E of 13.85x based on the current (Zacks 26 Dec) estimate of S&P500 EPS of 64.69 for 2009.

The percentage of holdings with positive eps increases from 85.32% in 2008 to 90.17% in 2009. On an EV/Sales basis, the fund is trading on 1.03x 2008 sales, falling to 0.83x 2009 sales. These are not multiples that reflect the long term growth potential of the sector, notwithstanding that there may be delays in some projects in the sector while the financing market recovers.

We think that the table above emphasises how the alternative energy companies in which we are invested are companies that are achieving real sales and earnings today and can be analysed using conventional financial metrics – we feel they do not require a “new paradigm” to justify valuations.

Fund performance (November 2008)

The Guinness Atkinson Alternative Energy Fund was down 10.50% in November 2008. We are down 68.00% year to date, which is behind the WilderHill New Energy Global Innovation Index, but just ahead of the WilderHill Clean Energy Index. In the bigger scheme of things we are broadly in line with our benchmarks, although that is cold comfort with the sector down so far this year. While we anticipated that the alternative energy sector would be volatile, we have been surprised by how low valuations have gone as a result of the condition of the global economy and financial markets. This is particularly marked given the good operating performance of many of the companies in the sector.

Broad market weakness has seen the alternative energy sector hit hard – the S&P 500 Index was down just 7.18% in November.

Total Returns as of 09/30/08

				QTD 08	YTD 08	1 Year	From inception
Guinness Atkinson Alternative Energy Fund (inception 03/31/06)				-31.20%	-41.78%	-38.81%	-10.28%
WilderHill New Energy Global Innovation Index				-30.08%	-38.68%	-31.56%	0.91%
WilderHill Clean Energy Index				-25.98%	-47.64%	-37.06%	-15.17%

Gross Expense Ratio 1.58%

Total Returns as of 11/28/08

	Nov08	QTD 08	YTD 08	1 Year	From inception
Guinness Atkinson Alternative Energy Fund (inception 03/31/06)	-10.50%	-45.03%	-68.00%	-67.57%	-27.84%
WilderHill New Energy Global Innovation Index	-8.57%	-40.56%	-63.55%	-61.84%	-16.25%
WilderHill Clean Energy Index	-14.62%	-41.99%	-69.63%	-64.72%	-29.80%

Gross Expense Ratio 1.58%

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 funds impose a redemption fee of 2% on shares held less than 30 days. Performance data does not reflect the redemption fee. If reflected, total returns would be reduced.

Stock performance

Top 5	Size	Nov	Bottom 5	Size	Oct
Ormat	Full	24.59%	Applied Intellectual	Research	-84.30%
Composite Tech	Half	20.69%	VRB	Research	-83.71%
EDP Renovaveis	Full	20.41%	Suntech	Full	-51.20%
Iberdrola Ren.	Full	10.67%	Renesola	Full	-44.75%
Vestas	Full	8.82%	Thermal Energy Intl	Research	-42.06%

The top five performers saw our top geothermal stock, Ormat, recover somewhat and two of the larger utilities – EDP Renovaveis and Iberdrola Renovables lead on the performance. Composite Technologies sell carbon fibre core transmission cables and wind turbines and recovered with the announcement of a UK wind turbine sales deal. Vestas the wind turbine manufacturer also bounced.

The three research holdings which are in the bottom 5 were small and reflect the very tricky times that early stage companies are facing. One of these (and the smallest) has been written off completely. Suntech and Renesola are two Chinese solar companies. The Chinese manufacturers suffered as the US dollar versus Euro exchange rate eroded their competitive position.

Thank you for your continuing support.

Tim Guinness
Edward Guinness
Matthew Page
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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.

This information is authorized for use when preceded or accompanied by a prospectus for the Guinness Atkinson Global 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 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.

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 business's stand to benefit substantially from societal transition toward the use of cleaner energy and conservation.

The S&P 500 Index is a broad based unmanaged index of 500 stocks, which is widely recognized as representative of the equity market in general.

Price to earnings ratio (P/E) is equal to a stock's market capitalization divided by its aftertax earnings over the previous 12 months.

Earnings per share measures total earnings divided by the number of shares outstanding.

The price to sales ratio (P/S) is equal to the total capitalization of the company divided by total sales (revenue).

The enterprise value to sales ratio (EV/S) measures a company's enterprise value in relation to its total sales (revenue).

One cannot invest directly in an index.

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