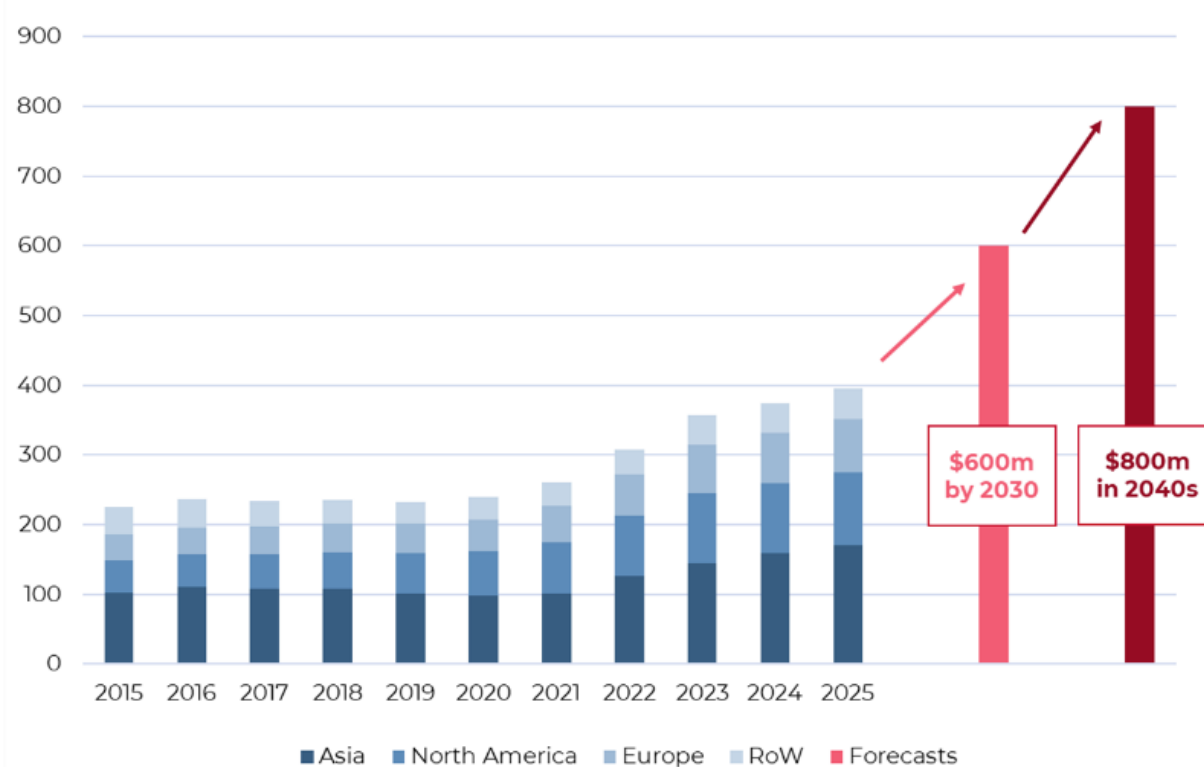


Chart of the Month: Global power grid investment by region (\$'bn)

Global power grids are struggling to cope with the accelerating secular trend of electrification. 80 million kilometers of new or refurbished grids – equal to the size of the current global grid - are needed by 2040. Annual investment in grids will need to double to over \$600bn by 2030 and average \$800bn pa in the 2040s.

Global power grid investment by region (\$'bn)



Source: Rystad, IEA, September 2025

News

- In a positive development for the US renewables industry, the US Treasury issued updated safe-harbor guidance that was widely viewed as supportive for the clean-energy build-out. The update confirmed that the changes would not apply retroactively, preserving eligibility for projects already underway, and it maintained the 5% capital expenditure (capex) “spend test” for small-scale systems. For large utility-scale projects, the 5% test was removed, but developers can still qualify by demonstrating physical work continuity and using the four-year construction window. As policy clarity continues to improve in the renewable energy space, we expect investment to accelerate.
- Global electric vehicle (EV) sales grew 21% year-on-year in July, according to research house Rho Motion. Sales growth in China, the largest EV market globally, slowed to 12% as a pause in some government subsidy programs tempered demand. Stronger growth is expected to return as new subsidies become available from August. Europe continues to experience strong, policy-driven growth as supportive subsidy schemes in key market drove 48% year-on-year growth in the month. As has been the case this year, growth in North America has lagged other major markets as political headwinds continue to dampen demand.

- Rapid growth in AI-related data-center load is colliding with limited spare capacity on the U.S. grid, heightening reliability and cost risks. In August, Google entered peak-time demand-response agreements with Indiana Michigan Power and the Tennessee Valley Authority to curtail consumption at AI data centers during system stress, underscoring the need for flexible load management. With existing generation capacity unable to meet the rising demand outlook, the Data Center Coalition has encouraged the U.S. Treasury to retain existing wind and solar tax credits, making the case that the U.S. will need all generation technologies to meet the AI-driven load growth and stay ahead of competition.
- US offshore wind continues to face significant policy headwinds. In late August, the Bureau of Ocean Energy Management (BOEM) issued a stop-work order on Ørsted's Revolution Wind project off Rhode Island, despite being ~80% complete. This followed BOEM's suspension of Equinor's Empire Wind off New York. In the same month, the administration cancelled \$679m of federal support across twelve offshore wind initiatives. Taken together, these actions are likely to lift political-risk premia, slow farm-downs and FIDs (final investment decisions), and weigh on supply-chain investment.
- Attractive valuations and growing electricity demand continued to drive M&A activity in the sustainable energy space in August. U.S. investment firm Sixth Street acquired 38% of Italian renewable energy company Sorgenia, in a deal valuing the business at \$4.6bn. Sorgenia has a portfolio of low-carbon assets across solar, wind, biomass and hydroelectric plants, with 1,700MW of installed capacity. This marks the latest in a series of power section transactions in 2025, led by Constellation Energy's \$16.4bn acquisition of Calpine and its portfolio of natural gas and geothermal generation assets.

Manager's Comments

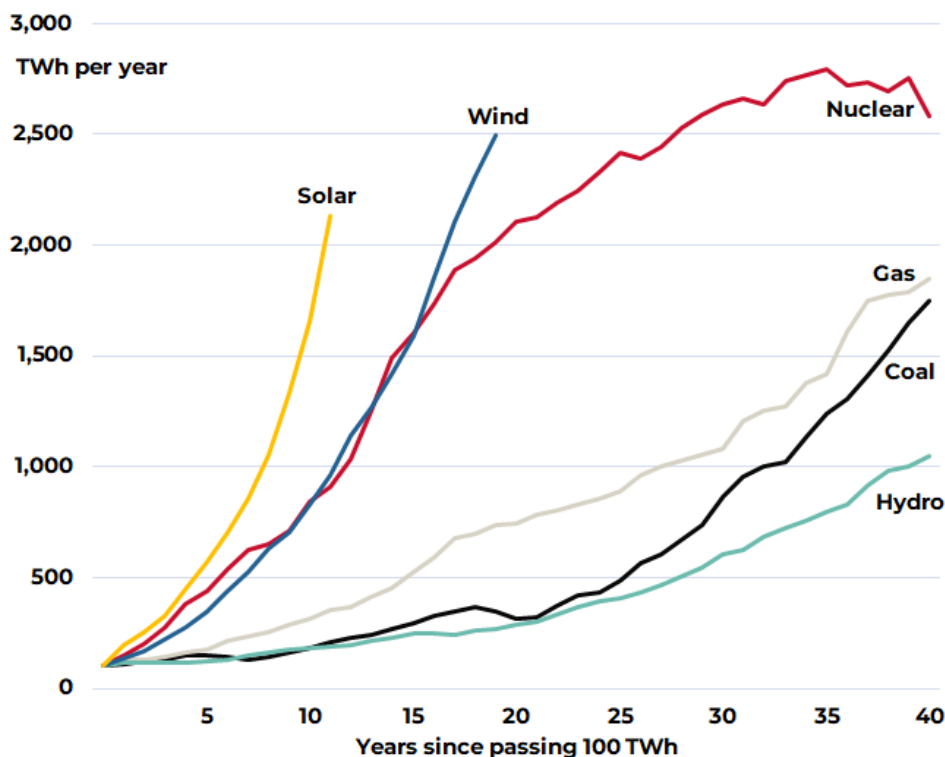
"Back to school" for sustainable energy

Supportive supply cost and investment trends confirm that the global energy transition is continuing and, with US clean energy policy now clarified, sustainable energy equities have started to perform. In this 'back to school' piece we review the key sectors in the Guinness Atkinson Alternative Energy Fund and see an earnings growth outlook that sits at odds with the sector's depressed valuation levels.

Global energy transition goes on, despite US headwinds

The global clean energy industry has suffered over the last 18 months due to the nomination and election of Donald Trump as President of the United States and the subsequent passing of his "One Big Beautiful Bill" (OBBB). With support for the US clean energy industry under pressure, you would be forgiven for thinking that the global energy transition has stalled. We would argue quite differently and suggest that we are still in the very early stages of the secular energy transition trend of growing renewable/low carbon energy supply and the electrification of global energy demand. Wind and solar are growing faster than any prior form of power supply, whilst the electrification of the world energy system is leading to sharply positive revisions for power demand. The energy transition is just getting into its stride.

Annual global power generation after exceeding 100 Terawatt-hour (TWh) in a year



Source: Nat Bullard; EMBER; Guinness Atkinson Funds, data as of 8.31.2025

Despite the passing of the OBBB and Donald Trump’s “Liberation Day” tariffs, sustainable energy equities have outperformed markets year to date. We believe this performance generally reflects:

- The strength of electrification theme: the world waking up to the level of investment needed to expand and modernize the power grid, and to meet new power demand;
- In Europe, real investment being added to green rhetoric, with Germany’s new infrastructure spending including significant sums earmarked for clean energy; and
- The outcome of Trump’s OBBB being not as bad as many feared, and its passage may well be seen as a significant clearing event.

No doubt the OBBB makes clean energy development in the United States tougher relative to existing Inflation Reduction Act language, but its effects are likely to be somewhat nuanced. As expected, EVs and offshore wind were relative losers in the OBBB, but clean energy equipment manufacturing was a relative winner. Uncertainty around the outcome had forced many clean energy developers to stall their developments (nearly \$19bn of clean energy projects have been cancelled in 2025, most in the lead up to the OBBB, according to Atlas Public Policy’s Clean Economy Tracker) but activity is now starting to recover. In recent days, the US Treasury has confirmed that projects started by July 2026 will have up to four years to “safe harbor” tax credits (much later than many feared), so there is a reasonable chance the projects get quickly restarted and equipment orders start to recover quite nicely from here.

With the tax credits now settled, we expect the market to focus more on the issues raised by **surging electricity demand growth** in the US, thanks to of data centers, AI and the reshoring and electrification of industry. This inflection in electrification is likely to keep demand strong for new renewable power (as it is

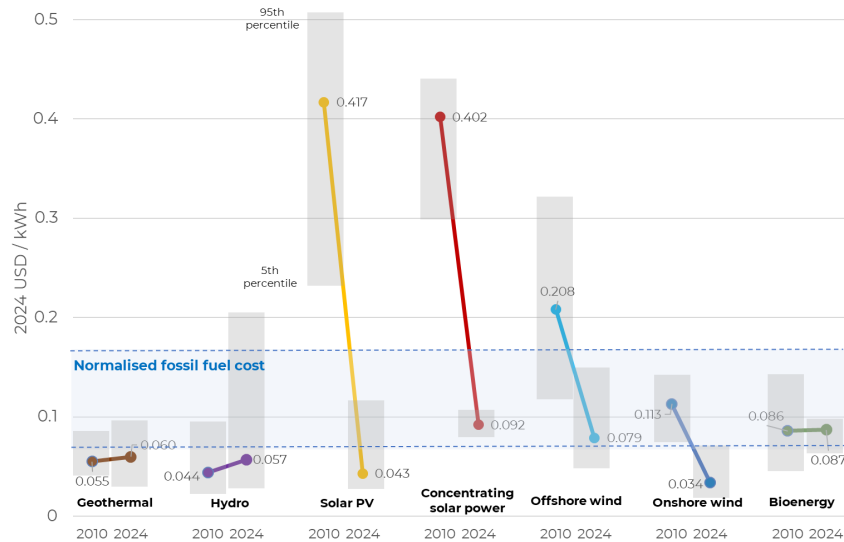
more economic and faster to market than other forms) and we expect renewable power purchase agreements (PPAs) to continue to inflate. Growth in demand is very likely to highlight weaknesses and the need for significant investment in the US electric grid.

Looking beyond the US, we continue to see **positive energy transition trends**. In Europe, Germany's new infrastructure spending (EUR100bn earmarked for clean energy within EUR500bn total infrastructure spend) provides earnings growth potential for our companies, while the UK announced further EV support and South Korea introduced its own 'Inflation Reduction Act' to support the development of clean energy. Meanwhile, China continued full steam ahead with its broad-based electrification strategy and we saw some early signs that the government is starting to address the significant oversupply in some clean energy manufacturing industries.

There have been numerous headwinds and tailwinds for global clean energy policy over the last few years and there are likely to be more in the years ahead. We urge investors to concentrate on industry activity, and we continue to find that project cost data and global clean energy investment data gives us confidence in the economic rationale for renewables.

Recently published data from IRENA (International Renewable Energy Agency), based on real projects commissioned across the world in 2024, showed that the levelized cost of electricity (LCOE) of solar and wind remained **broadly flat last year**, keeping both firmly at the bottom end of the cost curve. We believe that this cements the attractiveness of both energy forms, since these data points now include the effects of post-COVID supply chain issues, raw material cost inflation and the effect of higher interest rates. The flat supply cost profile of wind and solar contrasts with gas fired power, where the **cost of a gas turbine has increased 2.3x since 2022**.

Global LCOE of newly commissioned utility-scale renewable power technologies (2010–2024)



Source: IRENA, Guinness Atkinson Funds, data as of 8.31.2025














The recent World Energy Investment 2025 report from the International Energy Agency (IEA) estimates that global investment in clean technologies remains on track to hit **nearly \$2.2tn in 2025**, 10% more than 2024 and almost twice the spend on coal, oil and gas. Supporting this, in the first half of the year, Bloomberg New

Energy Finance (BNEF) estimate that a record \$386bn was invested in renewable energy projects (also up 10%yoy) with wind projects up 24% and solar up 5%.

So, we feel it is fair to say that the energy transition continues to make economic sense. And while the strong equity performance year to date reflects some relief after the passage of the OBBB, more importantly it reflects a continued economic supply cost advantage that is incentivizing growing investment in the face of surging electricity demand.

The key themes in the Guinness Atkinson Alternative Energy portfolio

The Guinness Atkinson Alternative Energy fund is positioned to benefit from numerous themes within the broader secular trend of the energy transition. We highlight eight such themes below:

Theme	Example holdings	Weighting (%)
1 Electrification of the energy mix		26.9%
2 Modernising the power grid		12.0%
3 Rise of the electric vehicle and auto efficiency	 	11.3%
4 Power semiconductors	 	8.9%
5 Wind & solar: equipment manufacturing	 	8.5%
6 Low carbon power generation: regulated producers		8.5%
7 Low carbon power generation: independent producers	 	7.6%
8 Building and Industrial efficiency	 	15.1%
9 Other (inc cash)		1.3%

The **electrification of the energy mix** is the key secular trend of the energy transition with electricity growing around 4%pa (increasingly displacing fossil fuels) and reaching around 60% of final world energy use by 2050. Electricity demand equivalent to the size of 1.5x global oil industries is being created and this is a challenge for many governments and companies that are not used to seeing much growth. While we see high growth rates for AI and data center electricity demand, we note that the electrification trend is much broader based and includes industry, buildings, and transportation.

As part of this, the global **power grid needs to be modernized**. Much of the western world power grid is 40-50 years old and over half of US grid transformers are over 30 years old. By 2040, we see estimates that over 50 million km of new grids and 30 million km of refurbished grids will be needed, equivalent to a doubling of the global power grid today. Grid spending rose 9% in 2024 and will need to grow from nearly \$400bn in 2025 to \$600m by 2030 and average \$800mn in the 2040s.

The **rise of the electric vehicle** should see the global transportation sector’s share of global electricity demand grow from less than 1% today to around 15% by 2050, representing a 50x increase in electricity demand. China is leading the race with more than 50% of new car sales being EVs because the average battery EV is now cheaper than the average ICE (internal combustion engine) vehicle. Following the current “S curve” will see China at 80% adoption of EVs in 2030 while still globally exporting low-cost vehicles than are more efficient than their ICE counterparts. Further reductions in the cost of battery manufacturing will support the transition towards EVs and **power semiconductor** demand will also rise.

Bottom of the cycle conditions in **clean energy equipment manufacturing** will improve as demand for wind and solar power persists. Renewables represented over 90% of new power capacity installed globally in 2024 and renewables remain attractive either due to speed of delivery or cost of supply relative to fossil fuels. In solar, we believe that module prices have bottomed and that China may have some success in removing excess capacity for the industry. In wind, turbine prices have moved higher allowing manufacturers to stabilize margins. Both wind, solar manufacturing could see short term demand spikes prior to the roll-off of tax credits in the United States.

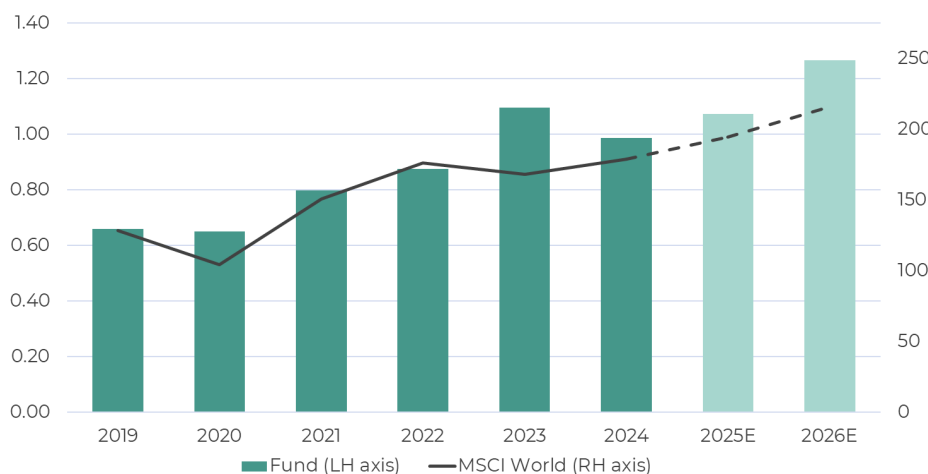
Our **low carbon generation companies** are well placed to benefit from rising electricity demand expectations and rising electricity prices. Urgency around electricity demand brings substantial opportunities for these companies to invest in either new renewable supply or substantial grid upgrades at attractive regulated or semi-regulated rates of returns. Rising PPA prices and lower interest rates should improve their cash return spreads and equity valuations.

Lastly, our **building and industrial efficiency**-oriented companies will be key beneficiaries of electrification. In the near term, lower US interest rates would certainly help to boost lagging home starts but longer-term policy commitments and higher electricity prices are leading governments to affect greater efficiency regulations, boosting the payback on efficiency upgrade projects that our companies are exposed to. By 2050, the need for efficiency is clear as electricity consumption from buildings will likely grow by 3.5x and electricity consumption from industry will grow by 4x.

Positive thematic reflected in attractive fund characteristics

In the Guinness Atkinson Alternative Energy portfolio, we believe that we have advantaged exposure to companies within these themes. Our basket of companies is projected on consensus estimates to deliver **good earnings growth** in 2025, in excess of MSCI World. Benefitting from the strong tail wind of the energy transition, the fund has historically delivered EPS (earnings per share) growth in excess of the MSCI World (8.4% pa from 2019-2024 versus the MSCI World at 6.8%pa) and, based on current consensus expectations, it should return to that trend again. Including recent 2Q 2025 results, fund EPS is expected to grow at 13.3%pa to 2026 (reflecting 9% growth in 2025 and 18% in 2026) while the MSCI World is expected to grow at 9.8%pa to 2026 (reflecting 9% growth in 2025 and 11% in 2026).

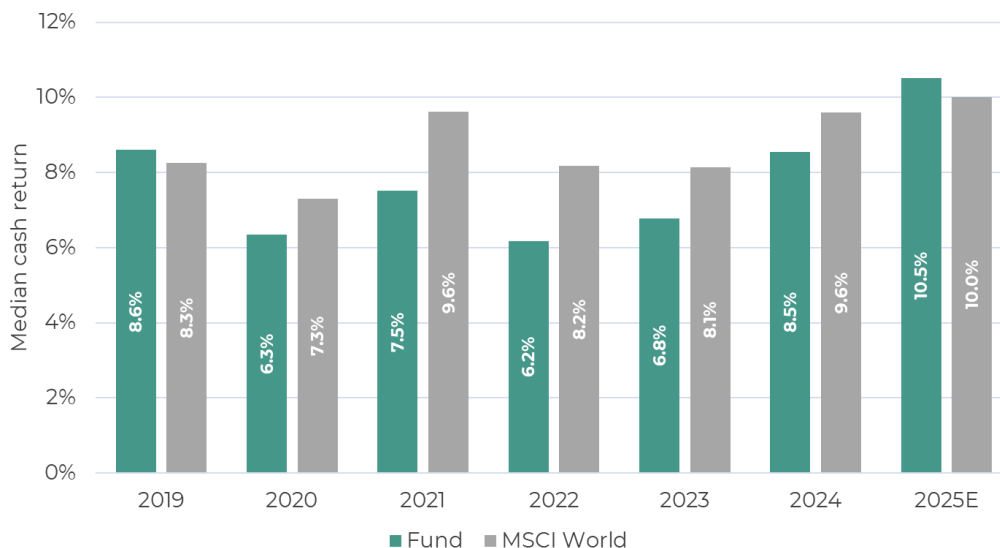
Earnings per share (US\$) for Alternative Energy fund and MSCI World index



Source: company data, Guinness Atkinson estimates, data as of 8.31.2025

The cash return of the fund’s holdings (a measure of real economic return on capital employed) has moved higher over 2024 and 2025 and has now reached 11%, for the median holding at end August 2025. This is result of improvements in the cash returns of various existing investee companies, plus some high grading of the portfolio. Looking back over the fund’s history, **cash returns are now at a peak level** and, for the first time since 2019, they are at a premium to the median cash return of the MSCI World index.

Cash returns for the Alternative Energy fund and median MSCI World index



Source: company data, Guinness Atkinson estimates, HOLT, data as of 8.31.2025

Stock changes that we have made in the portfolio over the last 18 months (and in particular taking advantage of post-“Liberation Day” volatility) have contributed to improved quality and greater end market diversification. This has reduced the historic volatility of the fund’s earnings but without sacrificing its **pureplay clean energy exposure**. Companies in our portfolio at the end of 2024 sold products and services that helped to displace 919 tonnes of CO2e (per \$1m of portfolio assets) compared to the continued use of incumbent fossil fuel technologies. In 2024, the companies in the fund (on a 100% ownership basis) grew their carbon dioxide emissions avoided by 9%, thereby delivering a five year annualized rate of 13%pa. Our analysis of business exposure suggests that the portfolio at the end of July 2025 had over 70% of green revenues (Guinness Atkinson estimate) from clean energy, very similar to the levels estimated for our portfolio from 2019.

Accordingly, the fund continues to pursue a pureplay thematic. Its active share with the MSCI World index remains high, at 98.4%, and the 12-month rolling correlation between the daily performance of the fund and the MSCI World Index sits at 77%; less correlated than history and low in the context of global equity funds more broadly.

Conclusion

We conclude that increasing global electricity demand, a better-than-expected resolution to US policy and supportive policy elsewhere in the world provides a backdrop for our companies that is better than anything seen in the last 24 months. Improvements in quality and diversified exposure to better structured end markets should allow fund earnings to grow in 2025 and 2026 and bring greater confidence in the longer-term earning potential. We believe that our basket of sustainable energy equities provides attractive exposure to earnings growth in excess of the MSCI World at a valuation discount to the MSCI World.

GAAEX: September 2025 Monthly Update

Performance

As of 8/31/2025	YTD	1 Year	3 Years	5 Years	10 Years
GAAEX	19.48%	5.33%	0.99%	6.34%	7.59%
MSCI World Index NR	13.78%	15.68%	18.48%	12.89%	11.64%

As of 6/30/2025	YTD	1 Year	3 Years	5 Years	10 Years
GAAEX	12.13%	2.61%	2.63%	9.88%	4.89%
MSCI World Index NR	9.47%	16.26%	18.29%	14.54%	10.65%

All returns after 1 year annualized.

Inception 03.31.2006 Expense ratio*1.10% (net); 1.76% (gross)

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 1.10% through June 30, 2028. To the extent that the Advisor 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 waived or absorbed, subject to the 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.

Top 10 Fund Holdings as of 8/31/25:

1. Legrand SA	5.17%
2. Siemens AG	4.70%
3. Iberdrola SA	4.42%
4. Hubbell Inc	4.39%
5. Eaton Corp PLC	4.38%
6. Amphenol Corp	4.33%
7. Trane Technologies PLC	4.14%
8. Prysmian SpA	4.07%
9. Schneider Electric SE	4.07%
10. Nextera Energy Inc	3.94%

MSCI World Index captures large and mid cap representation across 23 Developed Markets countries. With 1,546 constituents, the index covers approximately 85% of the free float-adjusted market capitalization in each country.

The MSCI World Index (Net Return) measures the performance of large and mid-sized companies across 23 Developed Markets countries. It reflects both share price movements and dividends, with dividends reinvested after accounting for local withholding taxes.

Capital expenditure (capex) are funds used by a company to acquire, upgrade, and maintain physical assets such as property, plants, buildings, technology, or equipment.

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

One cannot invest directly in an index.

Earnings Growth is not a measure of future performance.

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

The Guinness Atkinson Alternative Energy Fund's investment objectives, risks, charges and expenses must be considered carefully before investing. The statutory and summary prospectuses contain this and other important information and can be obtained by calling 800- 915-6565 or visiting www.gafunds.com. Read and consider it 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 also invests in smaller and mid-cap companies, which will involve additional risks such as limited liquidity and greater volatility than larger companies. 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.

Distributed by Foreside Fund Services, LLC