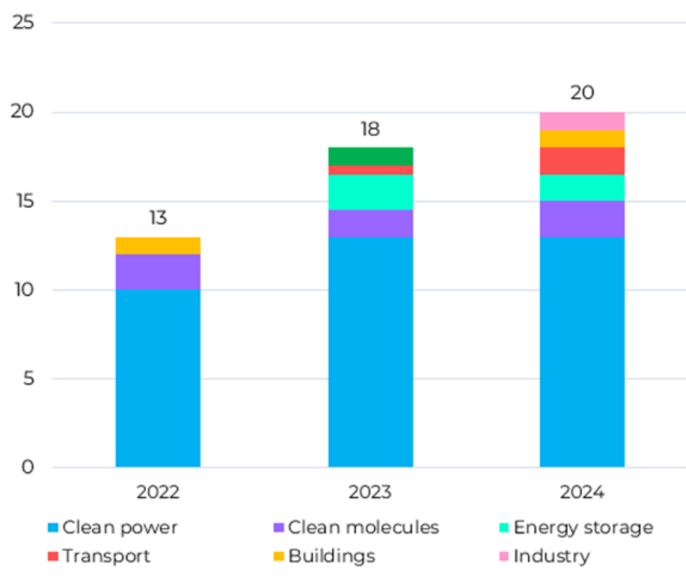
Chart of the Month: Sustainable Energy M&A

Heightened levels of mergers & acquisitions (M&A) activity in the sustainable energy space suggests growing potential value in publicly listed equities. Private companies and private equity investors have been strategically acquiring undervalued assets, signaling their belief that the current downturn in the sector is a temporary, cyclical slowdown.

Corporate of climate-tech M&A deals with a value > $1bn



Source: BNEF. Data as of March 2025.

News

- In a renewed effort to preserve the Inflation Reduction Act's (IRA) clean energy tax credits, 21 House Republicans signed a letter to the House Ways and Means Committee opposing a full repeal of the legislation. This follows a similar letter from last summer, signed by 18 House Republicans, highlighting the credits' importance to their states' economic outlooks. As we noted in our January outlook, we believe Trump will struggle to make significant changes to the IRA since over three-quarters of IRA-related manufacturing projects have been announced in Republican states.
- Nuclear energy continued to gather momentum this month as a coalition of major companies pledged to support the goal of tripling global nuclear capacity by 2050. The latest signatories, which include technology groups such as Amazon and Google alongside oil and gas companies including Occidental and Dow, join the 30 countries that endorsed the initiative in 2023. The move underscores growing interest in nuclear power as a dependable, low-carbon energy source amid rising demand.
- The Trump Administration has moved ahead with its plan to impose broad reciprocal tariffs on trade partners. Under the new policy, a 10% tariff will be levied on all countries, regardless of whether they maintain a trade surplus with the US. Countries with the largest trade deficits will face additional tariffs of up to 49%. The Administration has indicated that these tariffs will remain

in place until the President deems the threat posed by trade imbalances to be adequately addressed. While it is difficult to be precise about exposures and outcomes at present, the tariffs are expected to have the largest impact on the industrial and automotive sectors.

- A report from the Solar Energy Industries Association and Wood Mackenzie revealed that solar and energy storage accounted for 84% of the United States' new electricity generation capacity in 2024. This surge in renewable capacity was largely driven by robust policy support and the IRA. The report noted that 2024 marked the largest annual growth for any energy technology in the US in over two decades. NextEra Energy, the leading US utility and energy provider, emphasized that the integration of renewables and storage is still best positioned to meet rising power demand, citing their immediate availability and cost-effectiveness versus other forms of generation.
- Rising electricity demand forecasts and subdued valuations continued to underpin dealmaking in the sustainable energy sector in March. US private equity firm Apollo agreed to acquire the UK's OEG Energy Group (operator of one of the largest cargo-carrying fleets) in a deal valuing the offshore services provider at more than $1bn. In the US, the start of 2025 has seen a flurry of power sector transactions, namely Constellation Energy's $16.4bn acquisition of Calpine, with 27 deals worth a combined $36.4bn recorded in January and February, according to Reuters.

Manager's Comments: Review of Q1 2025

While tariff uncertainty continues to pressure global equity markets, we believe that clarity over the future of the Inflation Reduction Act (IRA) in the US and increased clean energy investment in Europe could act as key drivers for the sustainable energy sector in 2025. Despite elevated interest rates, energy transition investment continues to reach new highs, driven by surging electricity demand and major power consumers such as data center owners increasingly turning to renewables to secure their long-term power needs. In this report, we discuss macro developments and fund performance from Q1 2025.

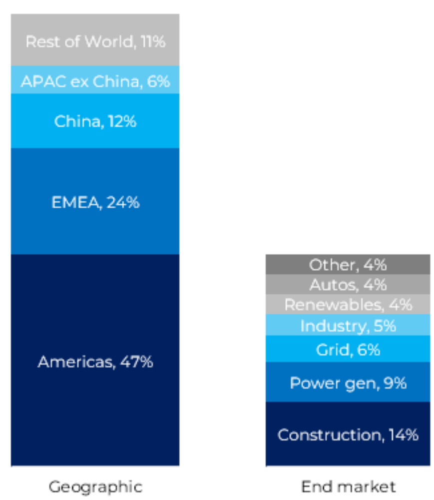
US policy uncertainty (executive orders, tariffs, Inflation Reduction Act) dominated the sector's performance and outlook, causing a further headwind to sentiment. We believe that current valuations appear overly pessimistic and appear to have fallen below private market valuations, spurring a wave of M&A in the sector.

On his first day in office, President Trump signed a flurry of executive orders affecting the energy sector. These included declaring a national energy emergency to relax environmental restrictions and streamline permitting, withdrawing from the Paris Agreement (again), revoking Biden's 2021 electric vehicle (EV) targets, halting unspent government funds for EV charging stations, and suspending new federal leases for offshore wind projects. While the speed and quantum of his executive orders was impressive, the announcements were broadly consistent with his election campaign with few positive or negative surprises. Notably absent from his day one executive orders were any mention of plans to repeal the IRA itself.

Uncertainty over the future of the Inflation Reduction Act remains a key overhang for US renewables. While it would be unwise to provide firm predictions at this stage, we draw confidence from a letter sent by a group of 21 Republican lawmakers to the Ways and Means committee (which influences federal budgets) asking to preserve the IRA's clean energy tax credits. As a reminder, a full-scale repeal of the legislation would require a majority in both houses, which the Republican party holds by only a slim margin. We expect to gain greater clarity on the future of the IRA in the Republicans first budget, thought to be sometime in the second quarter, and continue to believe that any bill where tax credits are not repealed in full is likely to act as a strong firming event for sector sentiment which is currently very depressed.

At the start of April, the US government has introduced broad tariffs, including a 10% universal levy on nearly all imports and additional “reciprocal” tariffs targeting countries with large trade surpluses with the US. While it is difficult to be precise about exposures and outcomes at present, the tariffs are expected to impact the industrial and automotive sectors the most. At the present time, we believe the most instructive analysis is to look at the end-markets of our portfolio by revenue. Our portfolio has around 47% revenue exposure to the US (underweight the MSCI World which is at 51%), of which around 9% is exposed to US industrial and automotive end markets. In mitigation, many of our companies employ “in-region, for-region” manufacturing strategies to minimize cross-border tariff exposure; a sizeable amount of our exposure is via US electrification names which have strong capacity to pass tariff related costs through to end customers thanks to the current supply-demand imbalance; and experience of previous tariff cycles in 2018-2019 provided our companies with a playbook to navigate the current environment.

Guinness Atkinson Alternative Energy Fund
Revenue Exposure by Geography and End Market



Source: Company Reports, Guinness Atkinson Funds, March 2025

Over in Europe, February saw the European Commission introduce the Clean Industrial Deal, a policy aimed at boosting the EU’s clean manufacturing sector and industrial competitiveness. The plan includes adding 100GW of renewable energy capacity annually until 2030 and making €100 billion (approx. $114 bn USD) available to support energy-intensive industries such as steel, metals, and chemicals. The deal also proposes streamlining bureaucratic processes, increasing European Investment Bank-backed guarantees for renewable energy projects, and supporting power grid manufacturers. We will wait to see the results of this proposal, but it’s promising to see the commission take action given the bloc’s tendency to be “long” on targets, but “short” on actual support.

At the same time, there has been a renewed focus on ramping up defense spending in Europe. We would argue that energy remains one of Russia's most powerful geopolitical weapons to use against Europe and we see the development of sustainable energy forms in the EU as enhancing energy security, supporting economic competitiveness and driving decarbonization. These strategic priorities were reflected in Germany's recent debt brake reform, unlocking approximately €1 trillion (approx. $1.140 trn USD) in additional investment into defense, infrastructure and energy transition projects over the next decade.

Global energy transition investment reached a new record high of $2.1 trillion in 2024, an 11% increase from the previous year. According to Bloomberg New Energy Finance, spending on clean energy projects has more than doubled since 2020 and is now nearly twice the level of fossil fuel investments. Growth was driven by investments in power grids, renewable energy, and electrified transport. China led the way with $818 billion in energy transition spending, while significant investments were also seen in the EU and the US. Notably, this surge occurred despite higher interest rates, demonstrating that electricity generated from renewable sources like onshore wind and solar remains cost-effective versus fossil fuels.

IEA estimates for global electricity demand have been revised upwards in the first quarter of 2025. Having grown at 2.8%pa between 2000-23, electricity consumption grew by an estimated 4.3% in 2024 and is expected to maintain a higher level of growth going forwards, averaging ~4%pa until 2027. Emerging markets account for 85% of this growth, with China leading the expansion. The electrification of buildings, transportation, and data centers continues to drive electricity consumption, with electricity projected to account for 27% of total energy demand by 2030, up from 23% in 2023 and 18% in 2015. With this in mind, we believe the investment opportunity for the electrification of energy demand and the supply of sustainable energy will be significant for years to come.

Datacenter owners are increasingly looking to renewables to meet their growing electricity needs, helping to drive global corporate power purchase agreement (PPA) volumes to new highs. According to Bloomberg New Energy Finance, total signed agreements exceeded 62 gigawatts (GW) in 2024, up 35% year-on-year. The top four buyers—Amazon, Google, Meta, and Microsoft—accounted for 40% of the total demand. Approximately 95% of these agreements were for onshore wind and solar, with predictable operating costs making them well suited for long-term contracts, offering hyperscalers with long term price visibility, a distinct advantage over fossil fuels. The increased demand has driven US PPA prices from $25/MWh (megawatt hours) in 2019 to over $60/MWh today, with prices exceeding $100/MWh for some geothermal contracts.

The Guinness Atkinson Alternative Energy Fund

Within the portfolio, our best performing segments were our power generation and electrical equipment names while underperforming segments included our electric vehicles, displacement, and solar equipment manufacturers.

The quarter saw a rotation out of US equities for multiple reasons including the launch of DeepSeek in China leading to a reassessment of US technology valuations and concerns over potential US trade tariffs. A shift in Europe towards defense and infrastructure spending and a relaxation of the German fiscal debt brake (freeing up an estimated €1 trillion of additional spending capacity) were positive catalysts for a shift towards Europe. As a result, the top 7 contributors over the period were European listed companies, while 9 of the 10 weakest contributors were listed in the US.

The Generation subsector was the strongest in the quarter with Iberdrola, Ormat, and China Suntien performing well as the sector benefitted from its safe haven status in uncertain times, rising global electricity demand and rising renewable power prices. Iberdrola delivered a 19% return in the quarter after delivering strong full year results and upgrading guidance following its acquisitions of ENW in the UK and Avangrid in the US.

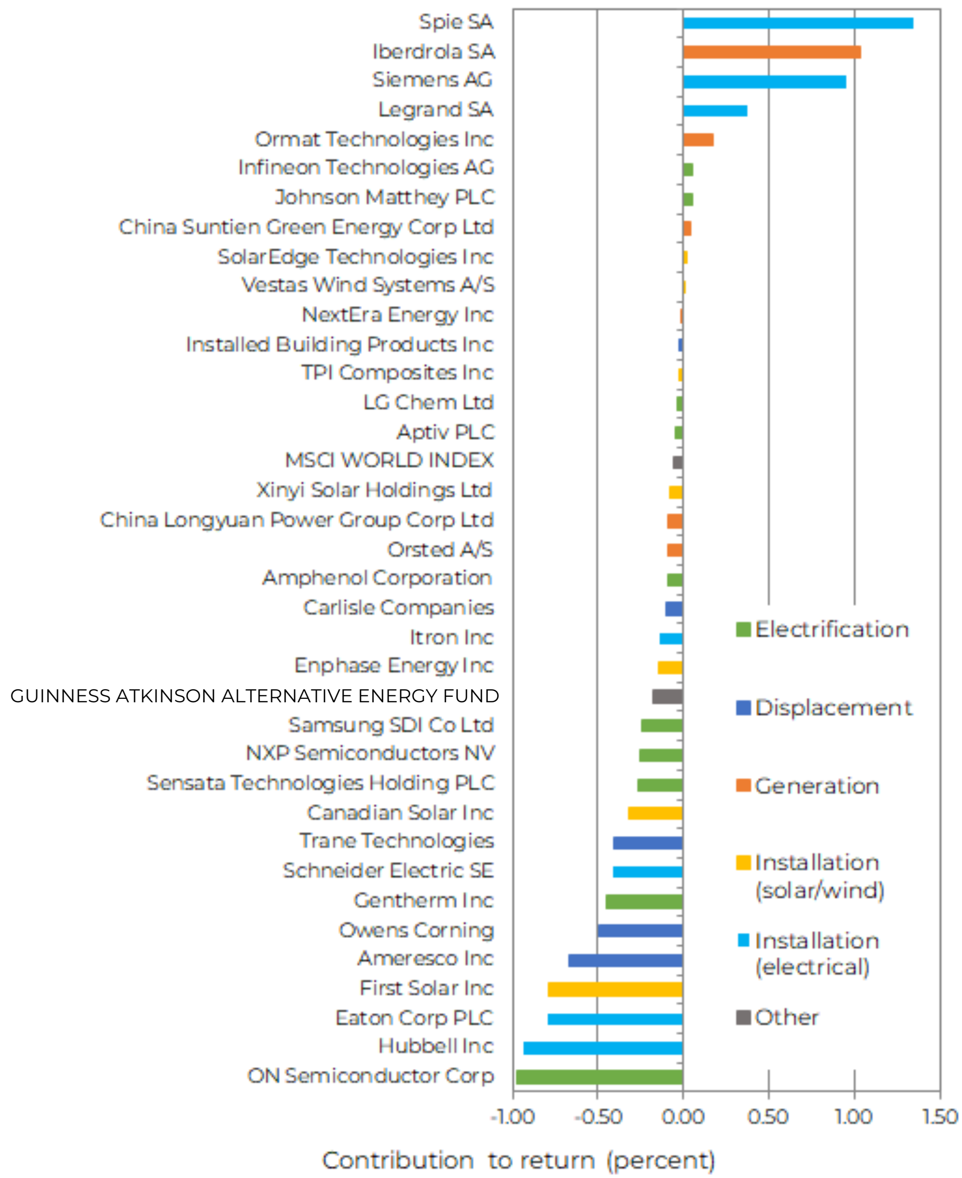
Within our electrical equipment and grid exposed names, European names (SPIE, Siemens, Legrand) outperformed their US peers (Hubbell, Eaton). SPIE was the fund's top contributor in the quarter, initially benefitting from upgraded guidance at its capital markets day, followed by expectations of faster growth thanks to higher German infrastructure spending.

A number of our displacement companies delivered a negative contribution as macro uncertainty weighed on the construction sector. Ameresco was weak in the quarter after management noted some uncertainty around federal government projects in its guidance after seeing one project cancelled and two others paused so far this year. Despite a strong $2.5 billion backlog of contracted projects, and continued efforts to diversify into higher margin energy assets, the market is concerned about the company's federal exposure.

As a key beneficiary of US tax credits, First Solar delivered the weakest contribution thanks to declining sentiment towards IRA-exposed names alongside delivering lower than expected margins due to a warranty charge associated with its Series 7 modules.

The electrification subsector was the weakest in the quarter. Onsemi and Gentherm delivered negative contribution after offering softer-than-expected guidance as a result of inventory digestion at Chinese customers and lower light vehicle production respectively. Bucking the trend of generally weaker electrification performance, Infineon delivered positive contribution in the quarter thanks to share gain in automotive microcontrollers and continued demand strength from AI.

Q1 2025 contribution for Guinness Atkinson Alternative Energy Fund



Source: Bloomberg, Guinness Atkinson Funds. Data as of March 31, 2025.

In this recent quarter, M&A was focused on renewables producers and network companies mostly. Constellation Energy agreed to purchase Calpine Corp for $16.4 billion, creating the largest coast-to-coast power generator in the country, Brookfield agreed to acquire National Grid's US onshore renewables business for $1.74 billion and Canadian Institutional investor CDPQ agreed to acquire IPP Innergex Renewable Energy for $6.9 billion.

Clarity on the future of the IRA is likely to be a key catalyst in the year ahead as would any funding announcements related to the EU Green Deal or European energy security. The sector would also be a beneficiary of looser monetary policy, lower inflation and lower US treasury yields while higher fossil fuel prices would further improve the relative economics of renewable technologies. We expect investor interest in sustainable energy equities to recover in 2025 reflecting these catalysts and we expect that the current attractive valuation level will act as a catalyst as well. We believe that the Guinness Sustainable Energy portfolio, chosen from our universe of around 250 companies, provides concentrated exposure to the theme at attractive valuation levels that are particularly attractive relative to consensus earnings growth expectations.

Buys & Sells

Buys

- Amphenol is one of the world's largest designers, manufacturers and marketers of electronic connectors and sensors, selling into a range of fast-growing markets such as IT Datacom and Industrials and benefitting from the broader trends of electrification. The company has an excellent track record of capital allocation, backed by a decentralized and entrepreneurial management culture that is hyper-focused on reducing costs throughout the business. Relative to peers, Amphenol has demonstrated superior execution, higher margins, and better organic growth.
- Carlisle Cos is a US building products company that primarily manufactures advanced, energy efficient roofing membranes for commercial customers. We find the business offers compelling value for growth in a consolidated market with a considerable installed base. We are encouraged to see that the business derives the majority of its revenues from replacement demand and is able to pass efficiently pass through costs, helping to reduce cyclicality in the business. Carlisle is a highly free-cash flow generative business with a management team that has demonstrated impressive capital allocation capabilities and a culture of cost management.

Sells

- We sold our final small residual weighting in TPI Composites after concluding that the industrial and financial challenges facing the third-party wind blade manufacturer were too great and that little value would accrete to the existing equity holders. We switched our remaining holding in SolarEdge into EnPhase and exited Samsung SDI as we have become increasingly concerned about competition from lower cost, LFP-focused Chinese battery manufacturers.

GUINNESS ATKINSON FUNDS

Performance

As of 3/31/2025	YTD	1 Year	3 Years	5 Years	10 Years
GAAEX	-4.97%	-15.78%	-7.63%	12.75%	3.08%
MSCI World Index NR	-1.79%	7.04%	7.57%	16.12%	9.49%

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 3/31/25:

1. Iberdrola SA 5.57%
2. Nextera Energy Inc 4.96%
3. Legrand SA 4.87%
4. Siemens AG 4.84%
5. Schneider Electric SE 4.74%
6. Trane Technologies PLC 4.64%
7. Eaton Corp PLC 4.18%
8. Hubbell Inc 4.14%
9. Itron Inc 3.80%
10. Spie SA 3.77%

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.

COP29, or the 29th Conference of the Parties of the United Nations Climate Change Conference, is an annual United Nations Climate Change Conference that brings together world leaders an negotiators from nearly every country to negotiate global goals for tackling climate change, present their countries' plans for contributing to those goals, report on their progress, and agree on actions to address the climate crisis.

Minimum Capital Ratios is a requirement that an organization must meet to ensure it has enough assets to satisfy creditor claims in the event of financial instability or insolvency. The minimum capital ratio is also known as the capital requirement in banking and financial regulation.

Reshoring is the process of returning the production and manufacturing of goods back to the company's original country.

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

Tier 1 manufacturers directly provide components, materials, or services to an Original Equipment Manufacturer without a middleman, unlike Tier 2 or Tier 3 suppliers, who supply Tier 1 suppliers.

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