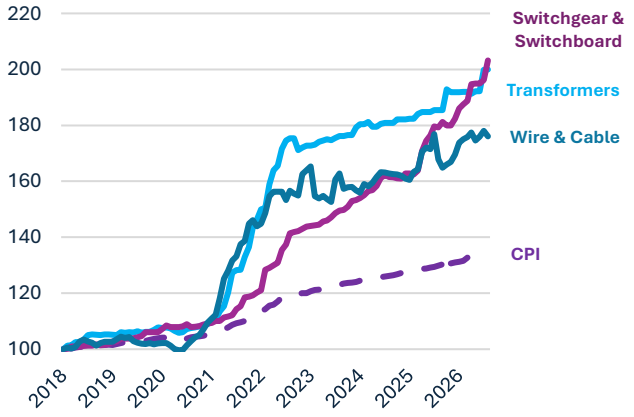
Chart of the Month: 'GRIDFLATION'

The build-out of renewables must be accompanied by grid expansion to allow integration and prevent curtailment. However, prices of grid equipment have risen faster than the US Consumer Price Index as a result of substantial demand, higher copper prices and transformer manufacturing capacity constraints.

Producer price index for grid equipment
(rebased to 100 on 01/01/2018)



Source: JPMorgan, FRED, Guinness Atkinson September 2026

News

- Governments around the world have widened their use of fuel subsidies to protect households and businesses from the energy price shock. According to Financial Times analysis of data from the International Energy Agency (IEA), the number of countries offering direct fuel subsidies more than doubled from 16 to 38 in the four months to early September, while the number offering any form of consumer energy support rose from 56 to 94. The IEA reports that 25 countries have announced new electrification policies since February, the European Commission has set an indicative target for electricity to supply 46% of EU energy use by 2040, and in the UK, newly appointed energy secretary Miatta Fahnbulleh has called for the country to "electrify now".

- Disruptions to global energy supplies and constrained refining capacity have helped drive US diesel and gasoline prices above $6 and $4 per gallon respectively. At the same time, in Rotterdam, rising marine gasoil prices surpassed those of biofuel alternatives. To combat the cost-of-living impact of rising prices, President Trump is considering following Russia by banning the export of diesel from the United States. The majority of US diesel flows into Mexico, Europe and the UK, with a potential export ban consequently placing upward pressure on European fuel prices. As Europeans feel the effect of rising fuel costs, electric vehicles are increasing in popularity, helped by subsidy schemes. EV sales in the European Union grew 36% year-on-year in September, with France reaching a record 41% sales penetration.

- Geothermal company Fervo Energy, which recently had its IPO, announced the largest enhanced geothermal system (EGS) power purchase agreement to date, with Google signing an agreement for 396MW of baseload power. First power generation is expected in 2028 after improvements in drilling techniques and the success of two prior pilot schemes have continue to make EGS's case as a future power source. Unlike conventional geothermal, EGS is not location constrained. At current costs, it is not price competitive with renewables and gas generation, but with standardized designs and continued drilling improvement, Fervo hopes to reduce capital costs to below $3,000/kW – similar to those of current gas turbines. Hyperscalers continue to look favorably on geothermal energy and are prepared to pay a premium for baseload generation.

- Despite being hailed as the solution to all energy needs, experts in nuclear fusion have highlighted this month that the commercial readiness of the future electricity generation source is still a long way off. The sector has attracted large investment from Silicon Valley, including $3.8bn in private funding in the first eight months of 2026. However, the chief scientist of ITER (International Thermonuclear Experimental Reactor) argued that no plant will be connected to the grid within five to 10 years, and Princeton University expert Steven Cowley went further, saying he expects the first pilot plant producing net electricity only in the late 2030s, with commercial plants around 2050.

- Techniques used to anchor oil and gas drill rigs in deep water are being applied to expand the deployment of offshore wind. The majority of global wind resource lies in waters out of depth for fixed-base turbines. The technology is employed by less than 1% of the 91GW of offshore wind running today, but it accounts for 22% of the future pipeline, at nearly 200GW announced. Cost remains the largest hurdle, with floating projects remaining two to four times more expensive than fixed, even in cost leader nation China.

Manager's Comments

Review of 3Q 2026

Sustainable energy equities were weaker in the third quarter of 2026 as rising interest rates led to a rotation away from growth stocks and into value names, weighing on sector performance. This month we revisit renewable project economics and conclude that solar and wind are likely to remain cheaper than fossil fuel power generation even in a higher-rate environment. The pull-back in the sector leaves the Guinness Atkinson Alternative Energy Fund offering comparable earnings growth to the MSCI World at a valuation discount, while offering investors a route to diversify their exposure away from mega-cap tech.

The third quarter saw the MSCI Global Alternative Energy Index down 16.6% giving context for the sustainable energy sector. The Guinness Atkinson Alternative Energy Fund defended reasonably well, falling by 8.77%, but still underperformed the benchmark MSCI World Index (+1.88%) in the quarter.

Rising interest rate expectations were a key driver of sector underperformance. Over the first half of the year, rising government debt, sticky inflation and energy price uncertainty caused expectations for the Federal Reserve's next move to flip from a cut to a hike. This was borne out in September, when the Federal Open Market Committee voted unanimously to raise the Federal Funds target range by 25 basis points (bps) to 3.75-4.00%, the first increase since 2023. Longer-dated yields rose further still: the 10-year Treasury yield climbed by around 75bps from around 4.50% at the end of June to over 5.25% at the end of September, its highest level since 2002, weighing on sentiment towards more rate-sensitive stocks.

US 10-year Treasury yield (%)



Source: Bloomberg. Data as of 30th September 2026

The **market rotation** in the third quarter benefited sectors such as oil and gas (+15.4%) and telecoms (+3.8%), at the expense of more interest-rate sensitive sectors which the Fund is exposed to, such as industrials (-5.6%) and utilities (-9.3%).

The third quarter also saw **underperformance from companies exposed to AI and data centers**. The Goldman Sachs data center index (GSTMTDAT), a basket of hardware stocks associated with the data center theme, fell 15.2% over the quarter, while the Philadelphia Semiconductor Index (SOX) fell 11.2%. The Fund is less exposed to AI than many of its peers, but it does own several electrical equipment manufacturers with material direct exposure such as **Amphenol** (about 40–50% sales) and **Legrand** (about 30% sales). It also holds US utilities and independent power producers (IPPs) that benefit indirectly from rising power demand and higher power prices such as **NextEra Energy** and **Ormat**.

Portfolio

After a strong first half, **electrical equipment** names were mixed. **Prysmian** and **Amphenol** posted strong gains in the second quarter's AI rally but gave some back in the third quarter's AI sell-off. Importantly, fundamentals remain strong, with Prysmian reporting its highest-ever quarterly EBITDA (earnings before interest, taxation, depreciation and amortization). It also raised 2026 EBITDA guidance and made a $3.8bn all-cash offer to acquire US cable conduit company Atkore, which we view positively. At the same time, Amphenol reported a broad-based beat across nearly every end market, record orders of $10.7bn, and raised 3Q earnings guidance about 10% higher than consensus estimates. Meanwhile, **Hubbell** shares were weak as concerns over decelerating utility growth outweighed upgraded earnings guidance. More constructively, names with more modest returns in the second quarter offered stronger performance in the third quarter with **TE Connectivity**, **Schneider Electric** and **Eaton** delivering positive returns.

A similar trend was seen in our **power semiconductor** holdings. **Infineon** reported record quarterly revenue, with sequential growth across all divisions, but sold off with the broader semiconductor sector after its shares more than doubled in the second quarter. **NXP Semi** also gave back some of its earlier gains, falling in the third quarter (after rising the second) even though results were broadly in line and forward-looking demand indicators were improving quarter-on-quarter.

Within **clean energy equipment**, solar stocks were an additional source of drag, with **Enphase**, **Canadian Solar** and **First Solar** all falling back from their early-June highs. Higher rates, reduced policy support and the sell-off in semiconductors weighed on all three. First Solar benefited from a favorable Section 232 polysilicon tariff ruling, but Enphase and Canadian Solar posted mixed results, reflecting continued softness in US residential solar demand and uncertainty over module pricing respectively. In contrast, **Vestas** reported a stellar quarter, with strong margins in both onshore and offshore wind and a 67% increase in orders, allowing it to raise its 2026 outlook and announce a €400m buyback.

Within **utilities & IPPs**, US-exposed names were caught up in the AI sell-off and underperformed their international counterparts. **Ormat** fell as investors questioned the sustainability of its storage revenue under a slower data center build-out, and **NextEra** fell as it seeks a regulatory path for its $67bn acquisition of Dominion Energy. In contrast, **SSE** and **China Longyuan** were among the strongest performers, helped by greater clarity on future UK transmission spending and faster collection of clean energy subsidies in China respectively.

Higher rates weighed on **building efficiency** names as the outlook for construction and renovation activity remained weak. US mortgage rates rose sharply, from around 6.5% to over 7.2%, reversing a three-year downward trend and weighing on housing affordability. **Owens Corning** gave back some of the premium that had built up following reports of an unsolicited takeover offer from **Carlisle**, while **AECOM** reported a one-off charge on a legacy project and lowered its full-year guidance.

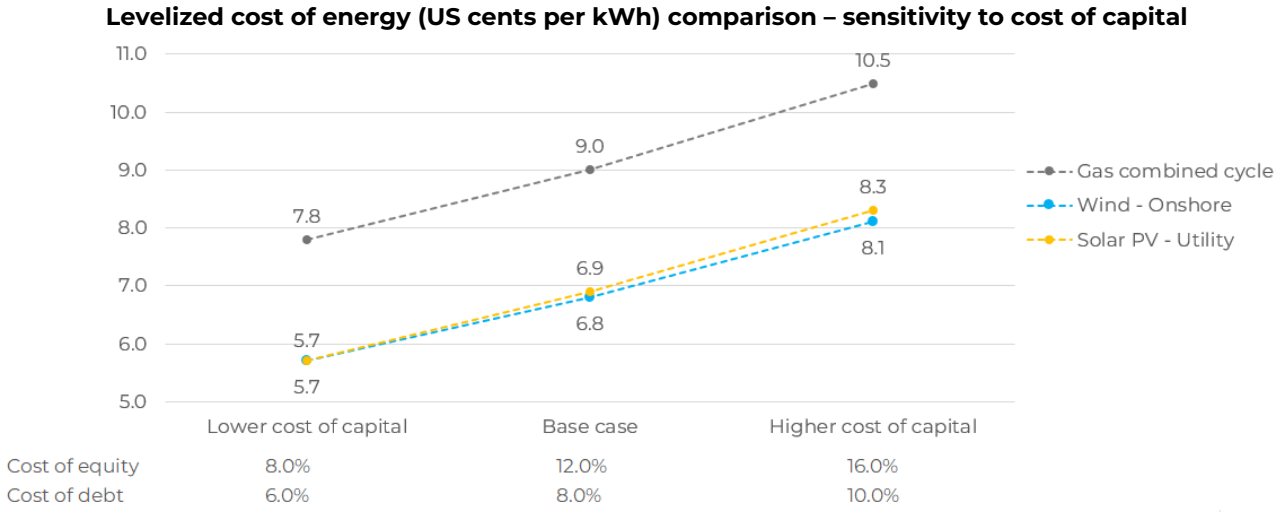
Within our **transportation** names, **Johnson Matthey** performed strongly after completing the sale of its Catalyst Technologies division to Honeywell for £1.325bn and returning £800m to shareholders via a special dividend.

Renewable economics remain compelling under higher rates

When interest rates rise, attention in the sustainable energy sector often turns to the relative economics of renewable power versus fossil fuel alternatives. Compared with fossil fuel power, wind and solar projects incur a larger proportion of their lifetime costs up-front as capital expenditure, with a lower share spent on operating costs over the plant's useful life. Lazard analysis suggests that capital costs make up 85-90% of the levelized cost of electricity (LCOE) for a utility solar or onshore wind project compared to 50-70% for combined-cycle gas. As a result, wind and solar project economics are more sensitive to interest rate increases and up-front capital cost inflation, while fossil fuel projects are more sensitive to long-term fossil fuel price assumptions.

Despite the sharp rise in interest rates between 2020 and 2025, **wind and solar economics remain attractive** on a levelized cost basis. The International Renewable Energy Agency's (IRENA) Renewable Power Generation Costs report suggests that the **global** levelized cost of electricity for onshore wind and solar was 3-4 cents per kilowatt hour in 2025, down by around 70% and 90% respectively since 2010, with further improvements expected out to 2030. By comparison, the cost of new fossil fuel-fired generation has been rising, with a shortage of gas turbines contributing to a near doubling of the capital cost of building a new combined cycle plant. As a result, more than 90% of utility-scale renewable projects commissioned in 2025 were cheaper than the lowest-cost fossil fuel alternative.

Even in the **United States**, which benefits from abundant cheap natural gas and some of the highest renewable equipment costs in the world (30-35c/W for US solar panels vs 10-15c/W internationally), data from Lazard's July 2026 Levelized Cost of Energy Analysis shows that **renewables remain competitive in a high-cost-of-capital environment**. Even at the top of its cost of capital sensitivity range (10% cost of debt, 16% cost of equity), onshore wind and utility-scale solar remain the lowest-cost sources of new-build energy in the US on an unsubsidized basis, at around 8-9c per kilowatt hour compared with around 10-11c for combined cycle gas.



Source: Lazard, Guinness Atkinson, Data as of 30th September 2026

However, as we have previously highlighted, **cost per kWh is no longer the only consideration**. Grid operators increasingly need flexible capacity that can ramp up and down at short notice (gas peakers, batteries, interconnectors). Data centers need resources with a fast time-to-power (renewables, storage, fuel cells). Policymakers worldwide are seeking to improve energy security by reducing reliance on fossil fuel imports (renewables, nuclear). No single technology meets all of these needs, but we believe renewables plus storage offers a versatile solution to many of them.

Battery storage can be used to help firm the intermittency of renewable output. We estimate that adding battery storage to new clean energy projects generally adds between 1-5c/kWh to the project's LCOE. Even in the US, which benefits from low domestic gas prices, renewables plus storage offer LCOEs that are competitive with combined cycle gas while also benefiting from a faster time to power.

Furthermore, we see evidence that **returns on US renewable projects are improving**. Although the cost of capital has risen, LevelTen data suggests that North American clean energy power purchase agreement (PPA) prices have more than doubled, from around $30/MWh in 2020 to over $70/MWh in 2026. Goldman Sachs believes that this better pricing has translated into higher returns for US renewables, with after-tax project internal rates of return (IRRs) rising from 5-6% at the 2018-2020 lows to 10-11% in 2026. Against a backdrop of rising US power demand, reduced competition from oil majors and data center customers willing to pay higher power prices, the United States continues to provide a supportive environment for clean energy generators.

Portfolio holdings as at the end of September 2026

Key Themes

Our portfolio is typically allocated across 30 broadly equally weighted equities, providing exposure across the value chain of sustainable energy.

A key theme in the portfolio is that of electrical equipment (covering both grid equipment and electrical equipment classifications), where we own a number of companies that facilitate the electrification of energy demand and the build-out of the electrical grid. Holdings such as Eaton, Schneider Electric, Amphenol, TE Connectivity and Legrand participate in various niches in the design, manufacturing and servicing of electrical products across low, medium and high-voltage applications, for a wide range of end markets. Hubbell holds a particular specialty in high-voltage grid equipment while MasTec specializes in grid construction, especially in the United States. Prysmian manufactures the cable used in high-voltage interconnectors and connections to new supply sources. Lastly, Itron has a heritage in manufacturing smart meters and is increasingly providing services and consulting to utilities around this installed base to enable more efficient use of the grid.

The electrification and efficiency of buildings, industrial activities, and transportation represent are split as follows:

- In terms of **transportation** exposure, the portfolio holds five names in the electric vehicle sub-category, giving it exposure to companies that provide semiconductors, electronics, components and software/services to the growing EV and autonomous vehicle industry. Infineon and NXP Semi are providers of power semiconductors and microcontrollers that are a necessity for higher-voltage electric vehicles to become competitive with ICE (internal combustion engine) vehicles, while Sensata and TE Connectivity are component manufacturers and service providers that should benefit from the ever-increasing amount of electronics present in electric vehicles. We hold one lithium-ion battery manufacturer, LG Chem, which is a Korean chemicals company and one of the largest lithium-ion battery manufacturers in the world.

- Our **buildings** exposure comes via pure-play quality exposure to heating and cooling industries (via commercial HVAC manufacturer Trane Technologies) as well as high-quality roofing manufacturer Carlisle Companies. We also own Owens Corning, a manufacturer of insulation (and associated products). Our final holdings here are SPIE, a French electrical engineering company that provides services for building maintenance predominantly in France and Germany, and AECOM, a US-focused design & engineering business with exposure to building efficiency and the renewable energy build-out.

- Our **industrial** efficiency and electrification exposure comes from two positions, in Siemens and Atlas Copco. Siemens provides us with exposure to efficiency and electrification across a wide range of end markets, while Atlas Copco offers exposure to the efficient use of air (often referred to as the fourth utility) in manufacturing processes, via compressors and vacuum technology.

In terms of the **generation** of sustainable energy, utilities and independent power producers. China Longyuan is a pure-play Chinese wind power producer and represents one of our two independent power producer (IPP) holdings.

The remaining exposure comes in the form of geothermal via Ormat, the world's only integrated producer and equipment manufacturer for geothermal projects. We also have broad-based wind/solar renewable energy generation through NextEra Energy (the largest producer of renewable energy in the world), and utility exposure through Iberdrola and SSE, with a particular focus on electricity networks.

We hold exposure to the **solar and wind** equipment and manufacturing value chains. Xinyi Solar is the world's largest supplier of the glass used in solar cell modules, and Enphase manufactures the inverters required to convert DC solar power into consumable AC electricity. Canadian Solar and First Solar give integrated exposure to the solar cell and module manufacturing process, covering both the standard polysilicon manufacturing process (via Canadian Solar) as well as the specialist cadmium telluride process used by First Solar. Wind turbine manufacturer Vestas provides broad exposure to the strong growth that we expect in the onshore and offshore wind markets. Lastly, we have some exposure to bioenergy (and a broader range of energy efficiency projects) via Ameresco, a US-listed clean energy project developer.

Buys/Sells

The Fund purchased shares in MasTec Inc in September. MasTec is a leading engineering, procurement and construction company exposed to clean energy and grid infrastructure investment while benefiting from the data center build-out. With all four operating segments in potential upcycles, in MasTec the Fund has added a quality business, on a comparatively cheap multiple versus its history, with compelling earnings growth driven by structural themes.

Outlook

Policy support, investment and economics

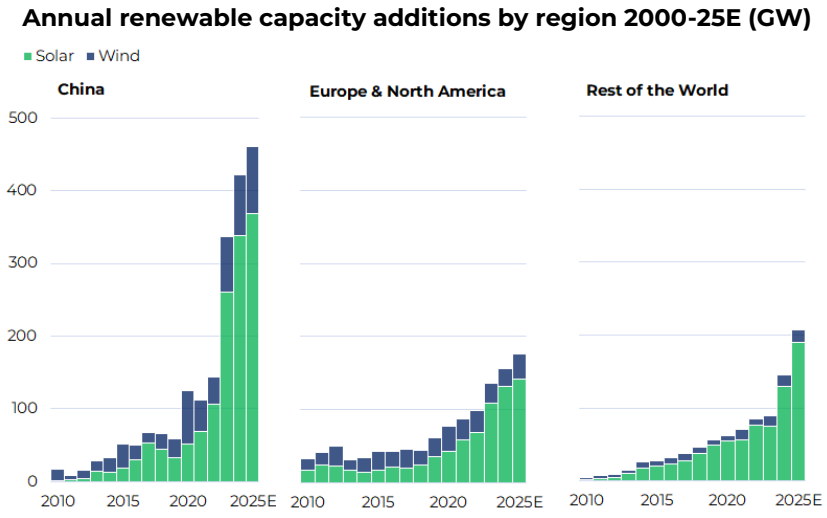
Energy transition policy has been increasingly shaped in recent years by energy security, affordability and industrial competitiveness, against a backdrop of rising power demand. Policy approaches have diverged across regions: the United States has seen a reduction in federal support for some low carbon energy technologies but has boosted others; China has continued to consolidate its structural advantages in clean-energy deployment and manufacturing; and Europe has maintained broadly supportive policies while seeking to strengthen industrial resilience.

The specter in the **United States** of President Trump's second term in office loomed large over the clean energy sector. Indeed, many of the executive orders from January 20 2025, the first day of President Trump's new term, related to the energy sector. Some were specific to the fossil fuel industry while others reflected the broader need for greater access to cheap energy to satisfy estimates of growing demand. Specifically in the realm of energy transition, Trump ordered

a withdrawal from the Paris Agreement, a revoking of President Biden's 2021 electric vehicle targets and a suspension of new federal offshore wind leasing. However, it was also clear coming into 2025 that surging US electricity demand (as a result of the growth of artificial intelligence querying and data centers as well as the wider trend of electrification) was a critical issue. It was imperative for Trump to deal with this if he wanted to win the 'AI arms race', requiring him to oversee significant grid upgrades and near-term growth in both renewable and natural gas-based power generation.

In the event, the budget reconciliation bill of May 2025 initially proposed fewer changes to President Biden's Inflation Reduction Act (IRA) than expected following President Trump's election. However, amendments by the House of Representatives in late May reduced the value of IRA credits, raising approximately $570bn. The resulting One Big Beautiful Bill Act ("OBBBA") eliminated electric vehicle and certain residential solar tax credits and accelerated the phase-out of utility-scale solar and wind ITC and PTC tax credits. Subsequent clarifications issued in August 2025 materially improved the outlook for developers by extending the time periods over which projects can qualify for these production tax credits. Separately, manufacturing tax credits for battery and solar equipment were retained through 2032 (beyond prior expectations), while wind-related manufacturing credits remain scheduled to end in 2027. With this hurdle now cleared, we have seen a resumption and acceleration of activity in the US, as the country's power crisis becomes the dominant issue.

China continues to reap the benefits of decades of investment in sustainable energy technologies, extending its dominance across the clean-tech value chain. Independent tracking suggests China produced 80-85% of all solar modules in 2025, around 70% of all wind turbines and around 70% of all battery electric vehicles. In the second half of the year, China pursued anti-involution efforts to remove excess manufacturing capacity, eradicate aggressive pricing and improve profitability for manufacturers, thereby improving the country's competitive positioning.



Source: BNEF; Guinness Atkinson

European policy remains supportive of the Energy Transition. In February 2025, the European Commission introduced the Clean Industrial Deal, a policy aimed at boosting the EU's clean manufacturing sector and industrial competitiveness by adding 100GW of renewable energy capacity annually until 2030 and making €100bn 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. In addition, Germany's debt brake reform (Feb'25), unlocks approximately €1trn in additional investment into defense, infrastructure and energy transition projects over the next decade.

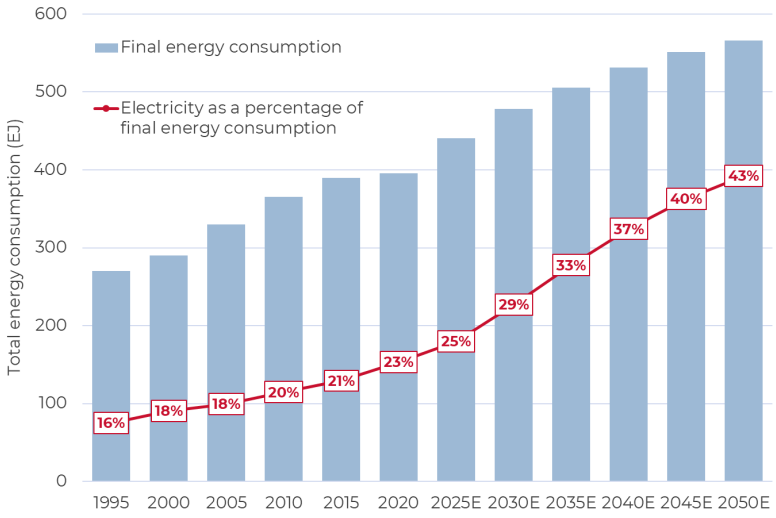
Overall, **global investment in clean technologies** continues to grow and is likely to have hit nearly $2.2trn in 2025 according to the IEA, up by around 10% versus 2024 and twice the spend on coal, oil and gas in the year. Globally, spending on low-emission power generation has almost doubled over the past five years, led by solar PV.

Research from the International Renewable Energy Agency (IRENA) in 2025 supports the view that renewable electricity is the cheapest form of new electricity supply in most situations. According to their Levelized Cost of Electricity (LCOE) estimates, the cost of wind and solar projects commissioned in 2024 (most recent data) ranged from $0.03-0.11/kWh, well below the fossil fuel cost range of $0.08-0.17/kWh. The LCOE of solar and wind remained broadly flat versus 2023 data, as the impacts of higher interest rates, plus the 2022/23 inflation cycle, were offset by greater economies of scale. These technologies are now competitive with the cheapest new fossil-fuel generation, which also produces power at roughly $0.08/kWh, although inflation in gas turbine costs likely biases these estimates higher for projects commissioned in 2025 and 2026.

The electrification of demand

The global economy is in the early stages of a secular energy transition, marked by rapid growth in renewable and low-carbon energy sources and the **electrification** of global energy demand. The electrification of the world energy system is driving substantial upward revisions to power demand, and we expect annual growth of around 4% per year from 2025 to 2040, meaning that electricity will ultimately account for 43% of total final energy consumption by 2050. The scale of this demand growth, nearly 90EJ or nearly the size of current global power generation capacity, poses considerable challenges for governments and countries, many of which have historically planned for stagnant or only modestly rising demand.

Total final energy consumption (1990-2040E)



Source: IEA, Guinness estimates, January 2026

The drivers of this electrification trend are broad, and include:

- The electrification of heating and cooling in buildings and manufacturing processes in industry
- The electrification of transportation
- Surging electricity demand from AI and data centers (especially in the United States)

In the near term, the IEA expect global power demand to rise by 3.3% in 2025 and 3.7% in 2026, well above the 2.6% average annual growth seen between 2015-2023. Growth is driven by rising industrial activity, continued electrification, expanding use of appliances and air conditioning, and accelerating demand from data centers, with heatwaves adding further pressure in many regions. As a result, electricity demand is expected to rise at more than twice the rate of total energy demand in both years, underscoring the secular growth of electricity demand. Investment in efficiency-related activities, to help offset the strong demand growth drivers, is expected to have grown 6% in 2025, reaching almost $800bn (a 70% increase since 2015 and reflective of a step-change in spending committed to improving efficiency).

Data centers: heaping near-term pressure on power markets, especially in the US

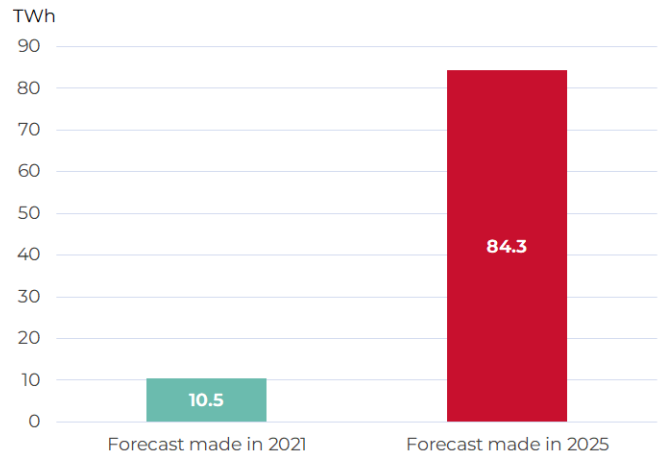
The build out of AI infrastructure and data centers requires vast amounts of electricity and is causing a particular near term issue in the United States. AI data centers run continuously and are growing in scale and complexity; in 2025 alone, the largest hyperscalers are expected to spend $350bn on AI capex. While forecasting demand growth is challenging due to rapid advances in both hardware efficiency and the scale of AI workloads, we see data centers growing from 4-5% of US power demand to about 12% by 2030, largely driven by AI servers which are 3-5x more energy intensive than traditional servers.

AI demand is also being compounded by the onshoring of manufacturing and the wider electrification of transport, buildings and industry. Investment in new US manufacturing facilities has surged 184% since 2020, driven by semiconductors, batteries, and advanced materials, with the CHIPS Act and IRA spurring over $500bn in private investment since 2021.

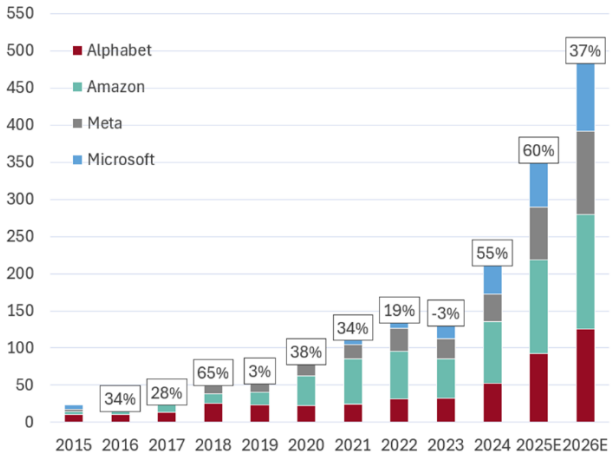
Looking longer term, the outlook for annual power demand growth to 2040 in the US has increased by almost 8x since 2021 (according to Nextera Energy). To meet this demand growth and reverse a trend of stagnant growth and improved efficiency, the US must rapidly expand generation capacity and address emerging supply constraints.

Annual increase in US electricity demand to 2040

as forecasted by NextEra Energy



Capital expenditure of US hyperscalers (USD$bn)

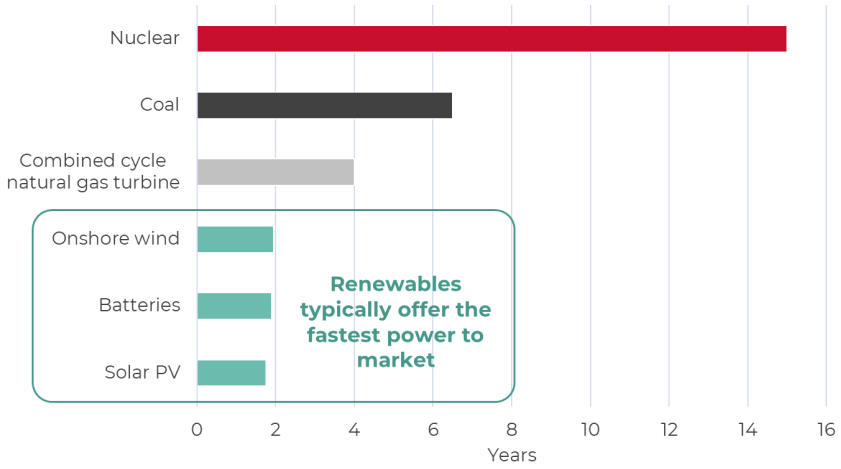


Source: NextEra, Bloomberg, January 2026

As laid out by NextEra, the US's largest electricity provider, the US needs to increase investment in almost all forms of generation. In the short-term, given their speed to market, flexibility, and cost advantages, a combination of renewables and storage are best positioned to deliver new power.

NextEra see "firmed" generation (intermittent renewables backed by storage), as having the lowest levelized cost of generation in 2030. The company reports an estimated cost of $25-$50/MWh for new onshore wind (including storage) and $35-$75/MWh for new solar (including storage). This is considerably cheaper than new natural gas combined cycle at $85-$115/MWh and a small modular reactor (in 2035) at $130-$150/MWh.

Average US power plant development timeline (from concept to operation)



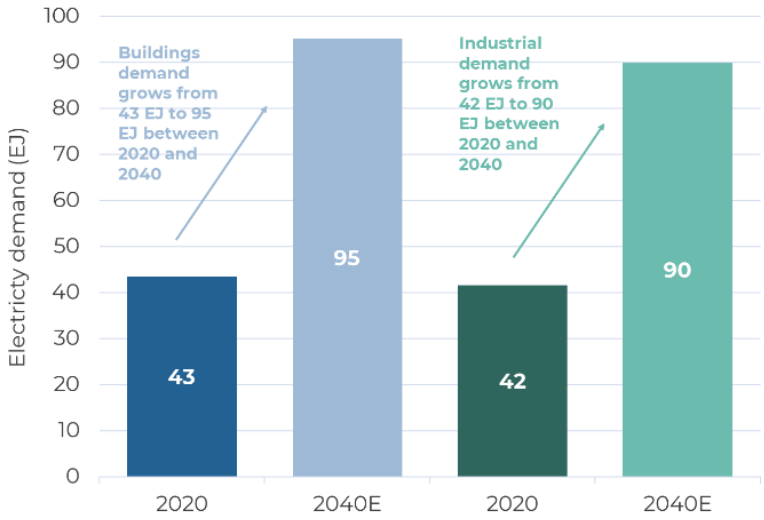
Source: NextEra, August 2025

Despite the urgent need for more electricity, the US has found it increasingly difficult to bring new generation online. Although renewables represent more than 90% of the interconnection queue, an outdated interconnect process means that wait times have grown 70% in the last decade, with key markets seeing wait times of over 7 years. In practice, much of this queue won't translate into real projects as it doesn't take into account grid constraints such as the availability of power equipment and turbines and includes speculative applications from developers looking to reserve places on the grid.

Buildings & industry: electrifying the largest consumers of energy

Buildings and industry are two of the largest consumers of energy, together accounting for almost 70% of final energy demand in 2024. Given the vast existing stock of homes, commercial buildings and industrial facilities, the scope for electrification is enormous, as is the potential for efficiency improvements that can moderate future demand growth. It's worth noting that in our base-case scenario, we assume that significant energy efficiency gains drive energy demand growth of around 1% per year, half the historic rate of nearly 2% per year. Given their size, a substantial share of these efficiency gains will need to come from the buildings and industrial sectors.

Electricity consumption in buildings and industry: 2020 vs 2040 (Exajoules)



Source: IEA, Guinness Atkinson, January 2026

Buildings

The global buildings sector, covering both residential and commercial properties, accounts for around 28% of final energy demand and demand is set to grow further as a growing population drives new housing needs, economic expansion adds commercial floor space, and rising incomes drive demand for heating, cooling, and household appliances.

We see electricity demand increasing by about 2.2x by 2040, growing at an average of 4%pa, with growth driven by heat pumps, heating/cooling and digitalization.

Industry

The industrial sector is the largest single consumer of energy globally, accounting for around 40% of final energy demand, and demand will continue to rise as populations expand and economies grow. Today, fossil fuels supply close to 60% of the energy used in emissions-intensive industries such as aluminium, cement, steel and chemicals, underscoring the scale of the electrification opportunity. In these hard-to-abate sectors, large-scale policy frameworks will be essential to displace fossil fuels, with a combination of strong incentives and tighter regulation required to tilt the economics of industrial processes toward cleaner forms of energy.

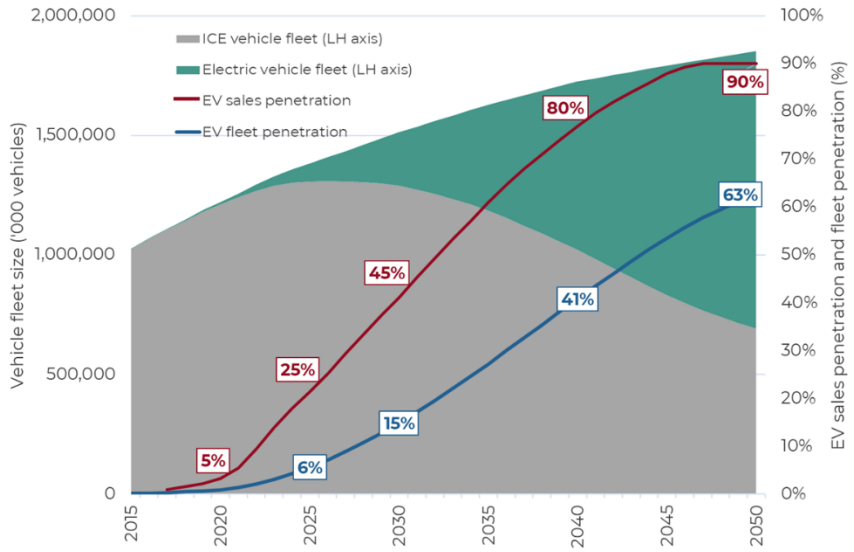
Within industry, the electrification of heat represents the most significant driver of future electricity demand, supported by the growing automation of production processes and broader uptake of electric motor systems. Tangible progress is already underway across several key technologies including industrial motor systems (pumps, fans, compressors and drives) as well as electric arc furnaces and electric boilers.

Transportation: falling battery costs make electrified transport more economic

The electrification of transport, led by the rapid adoption of electric vehicles (EVs), represents the final major driver of electricity demand growth. EV sales have expanded significantly over the past decade, from roughly 0.5m units in 2015 to 17.5m in 2024, yet the sector remains overwhelmingly reliant on fossil fuels. We expect a >50x increase in the number of EVs on the road in 2040 versus 2020 levels and that transportation's share of world electricity demand will increase. In 2024, transport accounted for 28% of global final energy use but contributed only 2% of global electricity demand, highlighting the substantial runway for electrification ahead.

EV sales have continued to grow at a healthy pace, albeit slower than was expected a few years ago. Plug-in sales grew by around 20% in 2025, with EVs making up one in every four cars sold and annual sales reaching about 21m units. In the long-term, we believe that EV penetration will increase (reaching 45% by 2030 and >80% by 2050) as falling battery costs improve affordability, and technology improvements enhance performance and safety.

Global auto, ICE and EV population to 2050



Source: US DoE (actual), Guinness Atkinson (estimates) as of January 2026

A key pillar of our forecast for rising EV penetration is the continued decline in battery costs and the resulting improvement in EV relative economics. Battery prices (at $108/kWh in 2025) have already fallen by 93% since 2010 and are expected to fall below $100/kWh as early as 2026, a milestone widely seen as enabling cost parity with internal combustion engines. As the industry continues to scale and technology improves, battery costs are projected to decline even further, reaching around $70/kWh by 2030.

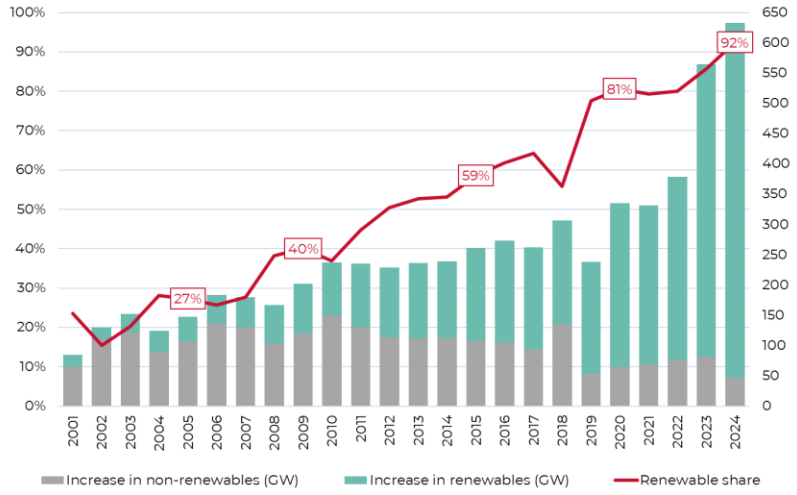
In China, falling battery costs mean that over two-thirds of electric vehicles are cheaper than their internal combustion counterparts. In fact, electric cars have been cheaper in China, on average, than comparable combustion cars since 2023 and, as battery prices fall in other regions, we would expect to see a similar increase in penetration rates.

Renewable energy supply and power grids

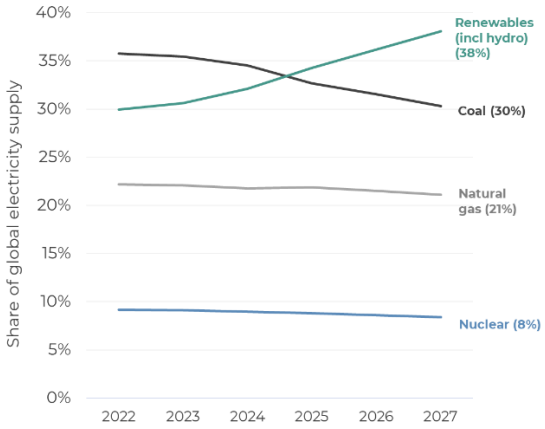
Having considered electrification, the key driver of demand, we now turn to the drivers of renewable supply and consider solar, wind and the need for upgrading of the global power grid.

The relative economics of renewable power continue to improve and underpin their continued penetration of the global electricity mix. With 91% of utility-scale projects commissioned in 2024 producing electricity more cheaply than new fossil-fuel alternatives, renewables are now cost-competitive across most major markets. Their share of global capacity additions has risen accordingly, climbing from about 40% in 2010 to more than 90% in 2024. This structural shift is accelerating, and 2025 is expected to mark the point at which renewables (including hydropower) overtake coal as the leading source of global electricity generation.

Renewable share of power capacity additions



Renewable share of electricity mix (2027 vs. 2022)



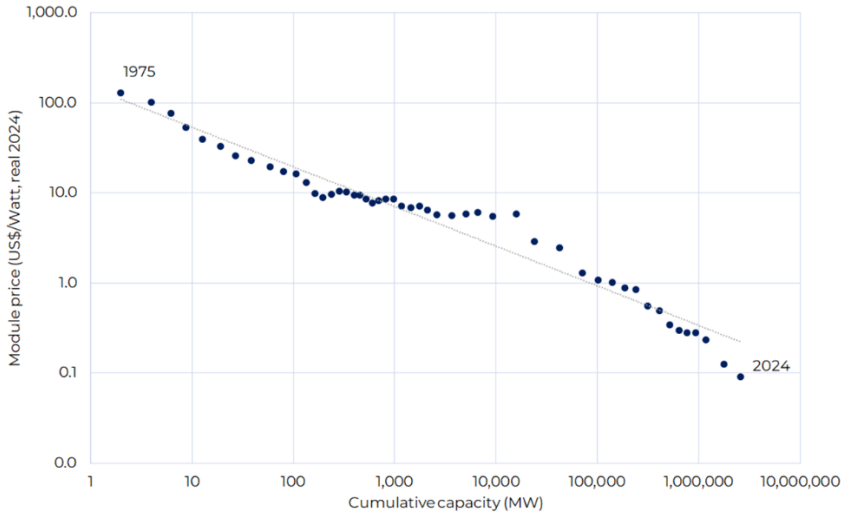
Source: IEA, IRENA, Guinness Global Investors estimates, January 2026

Solar: at the bottom end of the cost curve and growing rapidly

Solar has grown rapidly over the last decade, with annual installations rising more than tenfold. This expansion has undoubtedly been driven by a collapse in systems costs (down over 95% since 2010) and improvements in technology (solar module efficiency has improved 5x over recent decades). The decline in costs has been the result of large-scale manufacturing investment, particularly in China, and the development of a global industrial supply chain that has enabled low-cost solar deployment at unprecedented volumes.

Solar's attractive economics, with average LCOE's of around $0.04/kWh, leave it at the bottom of the global power-generation cost curve, making it, more often than not, the cheapest source of new electricity. Beyond its cost advantage, solar also benefits from design simplicity and rapid build-out times and, when paired with increasingly affordable storage, offers a pathway to competitively priced, "firmed" renewable power.

Solar module prices (1976 – 2024)



Source: BNEF, Maycock, Guinness Atkinson, January 2026

Thinking long-term, solar is likely to remain the fastest growing source of renewable energy. We expect to see annual solar installations grow medium-to-high single digits per year over the next decade with much of the incremental growth coming from emerging markets, where electricity demand is accelerating and where solar's cost advantage is most pronounced. Power markets such as India, the Middle East, and Southeast Asia remain undeveloped and continue to build project pipelines, pointing to their role in future demand growth.

Wind: record global installations in 2025 with China being dominant

The wind sector has seen more moderate growth over the last decade, with installations almost doubling between 2015-2024. Over this period, larger turbines, higher capacity factors and improved offshore technologies have materially lowered costs and improved reliability, supporting continued demand growth. However, wind projects tend to be larger and more complex than solar; they are more capital intensive, have longer lead times, and can be more exposed to permitting delays and supply chain disruptions. As a result, the industry has grown more slowly than solar, despite having comparable LCOE profiles. Over the past 5 years, much of the industry's growth has been supported by the large-scale build out of capacity in mainland China, accounting for about 50% of the industry total installed base as of 2024. This is set to continue with China adding 66% of annual global installations in 2025.

The outlook for global wind demand near term will largely depend upon how China adjusts to its new market-based power regime. The country has replaced fixed feed-in tariffs with liberalized market trading, meaning that renewables are competing head-on with fossil fuels. While this will likely introduce short-term headwinds and lower expectations for installations in 2026, we are encouraged by the announcement of updated targets to install 120 GW of new capacity every year between now and 2030, including 15 GW of offshore capacity. Outside of China, the global wind market is increasingly diversifying with strong contributions from India, Europe and parts of Southeast Asia. The offshore market is set for a step up in 2026, with project completions due across a range of markets such as the UK, Vietnam and France. In the longer term, we expect wind installations to grow at 6-7% per year through 2030, with the smaller offshore market growing at a higher rate of around 20%.

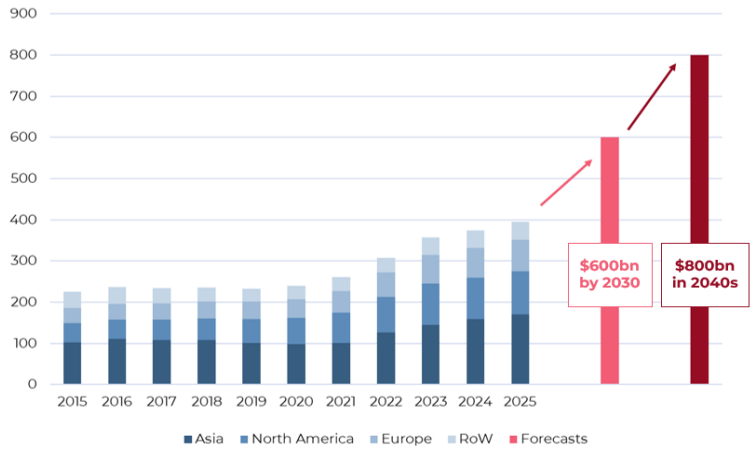
Power grids: a multi-year expansion, replacement and digitalization cycle ahead

The global power grid requires substantial and sustained investment to integrate an ever-growing pipeline of renewables and support the rising demands of an electrified world. Put simply, the grid needs to be larger, smarter and more resilient to enable the energy transition to continue at pace. Long-term growth drivers include expansion, replacement, digitalization and load growth improvements.

Looking ahead, Bloomberg New Energy Finance (BNEF) expect average global capex growth of 11% per year between 2025-2027, levels that are structurally higher than recent years. In the US, utilities companies have laid out multi-year investment plans in response to data center demand, with five companies alone expected to spend $255bn by 2029. In Europe, planned spending is set to grow from around $26bn in 2024, to around $70bn in 2028. China will continue to lead spending growth in Asia, with preliminary plans suggesting spending will grow 11% per year between 2022-2027.

While grid spending appears to have entered a period of structurally higher growth, it still falls below the spending level required to connect new renewables, unblock interconnect queues, and meet the level of forecast demand growth. Annual investment will need to reach over $600bn per year by 2030 to put spending on track, growing further to average $800bn per year through the 2040s.

Global power grid investment by region ($'bn)

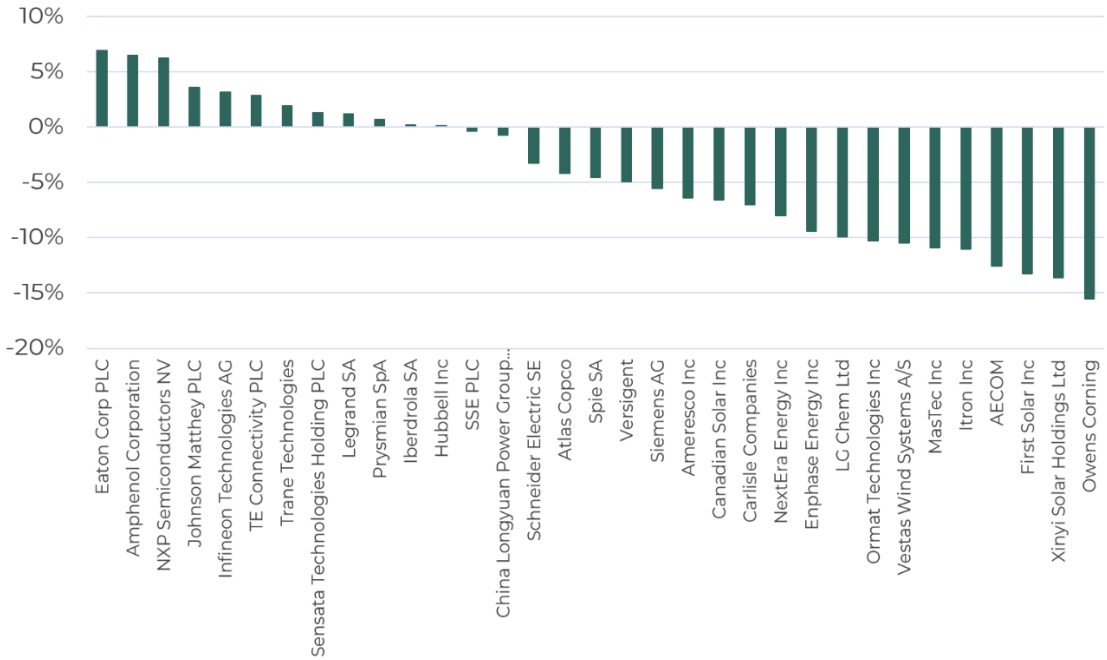


Source: Rystad, IEA; September 2025

Performance

Within the Fund, the strongest performers were Eaton Corp PLC, Amphenol Corporation, NXP Semiconductors NV, Johnson Matthey PLC and Infineon Technologies AG while the weakest performers were Owens Corning, Xinyi Solar Holdings Ltd, First Solar Inc, AECOM and Itron Inc.

Stock by Stock performance over the month in USD



Source: Bloomberg. Data as of 09.30.2026

As of 09/30/2026	YTD	1 Year	3 Years	5 Years	10 Years
GAAEX	4.88%	7.08%	8.19%	0.45%	9.35%
MSCI World Index NR	11.75%	15.24%	21.38%	11.88%	12.80%

All returns after 1 year annualized.

Inception 03.31.2006 Expense ratio* 1.11% (net); 1.89% (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, 2029. 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 9/30/26:

1.	Iberdrola SA	4.78%
2.	Eaton Corp PLC	4.66%
3.	Amphenol Corp	4.65%
4.	Schneider Electric SE	4.54%
5.	Legrand SA	4.50%
6.	Siemens AG	4.42%
7.	Hubbell Inc	4.23%
8.	Trane Technologies PLC	4.20%
9.	SSE PLC	3.97%
10.	Nextera Energy Inc	3.92%

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.

(MW) megawatt is a unit of power that equals one million watts (1,000 kilowatts)

1 GWh equates to 1 billion watt-hours (Wh)

Terawatt-hour (TWh) is a unit of energy representing one trillion watt hours

Levelized cost of electricity (LCOE) measures lifetime costs divided by energy production

The cost of capital is the minimum return a company must earn to justify an investment.

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

The price-to-earnings (P/E) ratio compares a company's share price with its earnings per share (EPS). Analysts and investors use this to determine the relative value of a company's shares in side-by-side comparisons.

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.

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