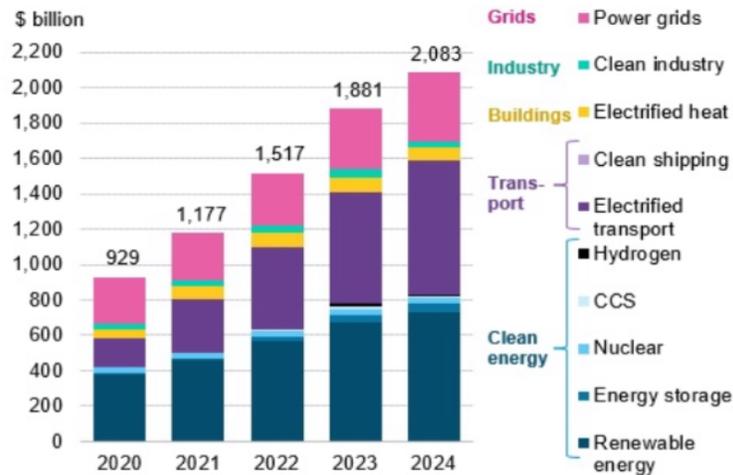


Chart of the Month: Global Energy Transition Investment, by Sector

Data from BNEF shows that global investments into the energy transition grew 11% in 2024, reaching a record \$2 trillion. Growth was driven by power grids, renewable energy, and electrified transport, all of which attracted record investment. Investment in China reached \$818 bn in the year, with impressive growth also seen in the EU and US.

Global Energy Transition Investment, by Sector



Source: BNEF. Data as of January 2025.

News

- Analysts from LSEG, the Centre for Research on Energy and Clean Air, and a US Bank have forecast that China's fossil fuel consumption for power, which is primarily coal-based thermal power generation, is set to fall for the first time in a decade. This follows the hottest year on record in 2024, highlighting the importance of continued investment into the energy transition. China's power sector accounts for 60% of the country's emissions, and significant investment into renewables is required to meet the country's internal goal of peak emissions before 2030 and net zero by 2060. In 2024, China broke its own record for new wind and solar power installations, growing 45.2% and 18% respectively.
- Global electric vehicle (EV) sales rose 25% in 2024, according to Rho Motion, with 17.1 million units sold. China continues to see the fastest rate of adoption with CPCA data indicating that 11 million EVs were sold in 2024, increasing 40% year-over-year and representing a penetration rate of 48%. European EV volumes fell 3% in 2024 due to the withdrawal of government support in key markets. However, 2025 is expected to be better due to a step up in EU emissions standards. Meanwhile, plug-in sales in the US & Canada reached 1.8 million in 2024, growing 10% on the back of consumer related subsidies. Penetration was highest in Norway at 89%, driven by generous and consistent subsidies, and the country aims to ban internal combustion engine (ICE) sales in 2025.
- The Trump administration announced up to \$500 billion in private investments into datacenters and artificial intelligence (AI) infrastructure, with the first \$100 billion committed for immediate deployment. The adoption of AI alongside reshoring and electrification is expected to deliver a

step change in US power demand. Goldman Sachs estimate that datacenters will account for as much as 8% of US power demand by 2030, up from 2-3% today, and will result in electricity consumption increasing from 0-0.5% to 2-3% per annum until 2030. The recently announced funding is expected to target generation and transmission investment in order to meet this growing demand.

- Comments from President Trump have weighed on the near-term outlook for the US wind sector, hurting sentiment in the space and impacting the wind exposed names in our portfolio, namely Orsted and Vestas. Despite what is likely to be a near term slowdown in the US, on the other side of the Atlantic we continue to see progress being made with the announcement from the Portuguese government of their intention to create a cluster of wind farms of the coast with capacity of up to 10 gigawatts.
- In January, we continued to see significant mergers & acquisitions (M&A) activity within the sustainable energy space. Constellation Energy agreed to purchase Calpine Corp for \$16.4 billion, creating the largest coast-to-coast power generator in the country. Constellation will now have almost 60 gigawatts of zero or low-carbon nuclear, geothermal and natural gas generation capacity. In China, Zijin Mining agreed to purchase 25% of lithium miner Zangge Mining for \$1.9 billion. Oversupply has resulted in low lithium prices, leading to a period of consolidation in the sector. These follow a series of transactions last year that include Brookfield's purchase of Neon and KKR's offer for Encavis.

Manager's Comments

One month into his presidency, Donald Trump is already having an impact on global energy markets. This month, we review the executive orders that he announced on his first day in office and how the recent news from Deepseek might affect the outlook for AI-related power supply and the need for significant grid upgrades.

Executive orders relating to energy

Many of the executive orders from January 20th, 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 in order to satisfy estimates of growing demand. We provide a summary here of some of the key executive orders for the sustainable energy sector:

- **Declaring a national energy emergency**
This order calls for using emergency powers to facilitate the leasing, siting, production, transportation, refining and generation of energy. In essence, Trump is seeking the authority to i) reduce environmental restrictions on existing energy infrastructure and ii) ease permitting for new transmission and pipeline infrastructure in order to expedite the completion of infrastructure and natural resource projects. The order specifically refers to the need for "swift and decisive action" to remedy an "increasingly unreliable grid".
- **A withdrawal from the Paris Agreement**
The withdrawal from Paris was much expected and was indeed a repeat of the withdrawal made in his first term. Trump has previously called climate change a hoax, and says the accord puts the United States at a competitive disadvantage to geopolitical rivals like China. Trump said, "I'm immediately withdrawing from the unfair, one-sided Paris climate accord rip-off," and "The United States will not sabotage its own industries while China pollutes with impunity."

- **Revoking Biden’s 2021 electric vehicle (EV) targets**

The revocation of EV targets was also widely expected and was accompanied by a halting of unspent government funds (from a \$5bn government fund) for vehicle charging stations and the removal of a waiver which allows certain states (California and 11 others) to adopt zero-emission vehicle rules by 2035. Trump also said his administration would consider ending EV tax credits.

- **Offshore wind suspension**

This order suspends new federal offshore wind leasing pending an environmental and economic review. Trump described wind turbines as “ugly, expensive” and “harmful to wildlife”.

Many of his energy related executive orders targeted the fossil fuel sector more so than they did the sustainable energy sector. Fossil fuel related orders included a repeal of Biden's efforts to block oil drilling in the Arctic, a plan to fully refill the US Strategic Petroleum Reserve (SPR), and an order to resume liquefied natural gas (LNG) export permit applications from new LNG projects supplying Asia and Europe. In fact, we felt that sustainable energy activities were notably absent from his day one executive orders and, bar the suspension of some IRA-related loans, there was no mention of plans to repeal the Inflation Reduction Act itself.

The likely impact of Trump’s executive orders

In summary, it is clear from his executive orders that Trump is seeking to rapidly develop the potentially abundant and cheap energy resources of the United States, with the aim of achieving complete energy independence and energy security. Easing the development of oil and gas resources could provide high quality upstream employment and would facilitate growing manufacturing industries that would create further jobs and support economic growth. These aims are quite clearly being prioritized over environmental concerns as his focus remains on improving competitiveness and finding ways to fund tax cuts rather than delivering decarbonization.

We see increasing urgency over these issues and we stress 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) is a critical issue. It is imperative for Trump to deal with this if he is 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, as referred to in his “energy emergency” executive order.

The impact of Deepseek on AI power demand growth

A few days after Trump’s inauguration, Chinese startup DeepSeek announced significant computational and energy efficiency improvements in its latest AI model, causing market concerns around the long-term outlook for AI energy demand. The Deepseek news implies that language learning (AI training) could potentially be significantly less energy intensive than anticipated, with knock on effects for global AI related power demand. We believe that there are two factors to consider here in thinking about the longer-term implications:

- Firstly, **the relative importance of AI training within overall AI power demand**. We understand that the vast majority of forecast US data center computational and power demand is for the use of AI (AI inference) as opposed to AI training. We note that some analysts, for example Cushman & Wakefield, indicate that 90% of capacity will be used for inference although many

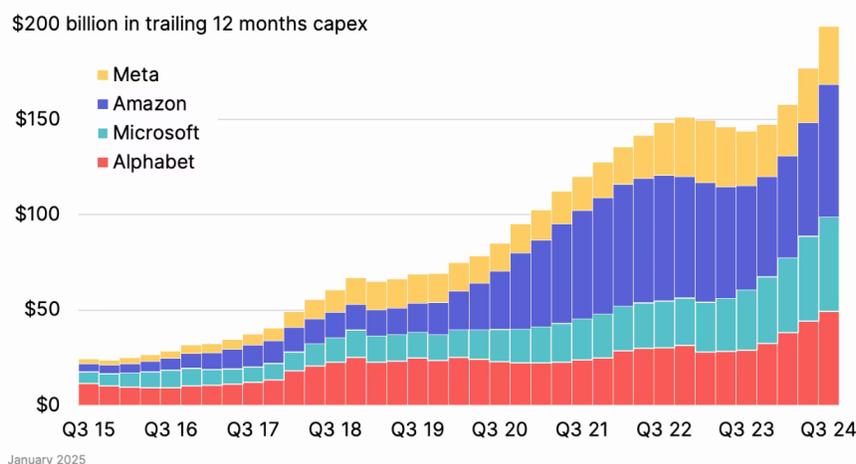
commentators suggest a level more like 75%. Thus, significant efficiency improvements in training (which Deepseek claim, and which represent a small relative share of power demand) would not have a material impact on data center capacity or power consumption.

- Secondly, **the potential for vast latent demand for AI** in the event that it becomes cheaper and more accessible. This is often referred to as the Jevons Paradox (or the rebound effect) which states that increases in efficiency can lead to an increase in consumption, thereby offsetting the gains made by the efficiency improvements. The step change announced by Deepseek could simply pull forward the opportunity set for deploying AI across a wider range of industries and demand cases. This would clearly be a net positive for the majority of power demand that is related to inference, potentially leading to much greater overall power demand.

Net, we see good chance that energy demand for AI **increases** following the Deepseek news. This will likely place more pressure on the US administration to facilitate greater, more diverse forms of electricity supply and to more rapidly build a stable power grid.

Since the Deepseek news, several US tech companies have reported full year results and provided 2025 guidance. So far, it seems that AI investments continue to accelerate sharply with capex from the four leading US tech companies (Microsoft, Alphabet, Amazon and Meta) likely to be \$320bn in 2025, up 30% from \$246bn in 2024 and more than double the spend delivered in 2023. Since the start of 2024, cloud capex forecasts for 2025 have been revised higher by around 60% as the companies fight to maintain their positions at the forefront of AI large language model research.

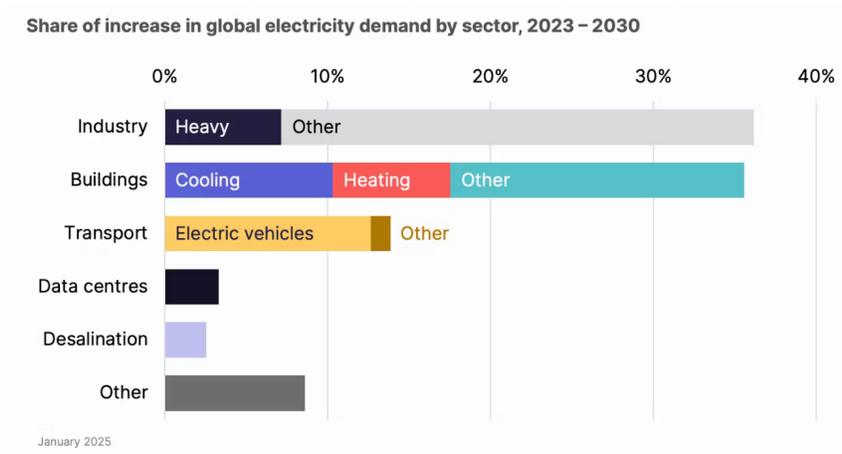
Capital expenditure of US hyperscalers



Source: Nat Bullard, 2024

On balance, it seems that a sharp slowdown in AI development seems unlikely, meaning that new power sources and grid upgrades remain just as critical as before. While the outlook for AI power demand growth might be volatile around such news flow, we note that ~60% of our forecasted US power demand growth comes from non-AI drivers (onshoring of manufacturing, electrification, electric vehicles, etc.) which are not impacted by this recent news flow.

Increase in US electricity demand (2023-2030) split by source of demand



Source: Nat Bullard, 2024

With respect to sustainable energy and electrification, it is clear that Trump’s executive orders indicate a focus on delivering cost competitive new power and investing to build a more stable grid. News from Deepseek does not appear to have derailed the strong demand outlook and, after 20 years of flat electricity consumption, we see demand growth of around 2-3% per year due to data centers, AI querying, reindustrialization, and electrification. There is an urgency for Trump to resolve these issues and we would expect this action to provide some positive relief for the sustainable energy sector.

GAAEX: February 2025 Monthly Update

Performance

As of 1/31/2025	YTD	1 Year	3 Years	5 Years	10 Years
GAAEX	-0.40%	-3.04%	-5.33%	9.16%	4.52%
MSCI World Index NR	3.53%	21.40%	9.53%	12.06%	10.52%

As of 12/31/2024	YTD	1 Year	3 Years	5 Years	10 Years
GAAEX	-11.85%	-11.85%	-9.08%	8.72%	4.00%
MSCI World Index NR	18.67%	18.67%	6.33%	11.15%	9.94%

All returns after 1 year annualized.

Inception 03.31.2006 Expense ratio* 1.10% (net); 1.79% (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, 2027. 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 1/31/25:

1.	Iberdrola SA	5.41%
2.	Siemens AG	5.28%
3.	Schneider Electric SE	5.21%
4.	Hubbell Inc	5.01%
5.	Nextera Energy Inc	4.92%
6.	Eaton Corp PLC	4.75%
7.	Legrand SA	4.74%
8.	Trane Technologies PLC	4.73%
9.	Itron Inc	4.10%
10.	Owens Corning	4.09%

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 and 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.

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.

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