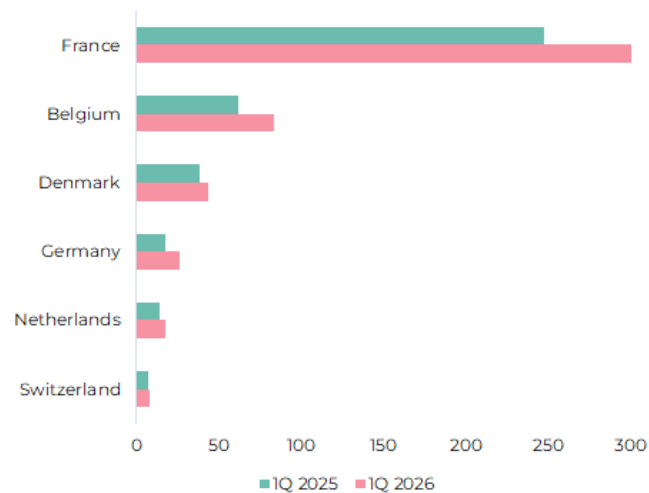


Chart of the Month: EUROPEAN HEAT PUMP SALES

Sales of residential heat pumps across key European markets including France, Belgium, Denmark, Germany, Netherlands, and Switzerland increased by 24% in the first quarter of 2026 on average. The European Heat Pump Association cites rising energy prices and fear of energy insecurity as key reasons for the step up in sales, reflecting the early impact of the Iran war.

Residential Heat pump unit sales ('000)



Source: EHPA, May 2026

News

- US renewable Power Purchase Agreement (PPA) prices moved higher in Q1 2026, reflecting increasingly tight market conditions according to LevelTen. Solar PPA prices rose about 4.7% over the quarter and more than 13% year-on-year, while wind prices increased by around 8% sequentially and close to 24% year-on-year. This strength has been driven by a combination of permitting delays, supply chain constraints and strong demand from large power buyers, particularly data centers, which are competing for a limited pool of new projects. At the same time, buyers are increasingly seeking shorter and more flexible contract structures due to both higher prices and reduced visibility on project delivery timelines.
- In the US, utilities and power generators have announced a cumulative \$1.4 trillion of planned capital expenditure through 2030, according to a report from nonprofit group Powerlines, a 21% increase on the \$1.1 trillion forecast for the equivalent five-year period just 12 months ago. The bulk of this spend is directed at physical grid infrastructure including cables, pylons and transformers, reflecting the scale of network investment required to accommodate structurally rising electricity demand. The trend reinforces the investment case for regulated utilities with visible rate-base growth, including portfolio holding NextEra Energy, and for the suppliers of the grid components that this build-out will require.
- Although the Strait of Hormuz remains closed to all but a few tankers, equity markets have largely looked through the energy price impact, with the S&P 500 and Nasdaq reaching all-time highs and the Nasdaq recording its strongest month since November 2020, up 15%. Markets appear to be pricing in a quick resolution to the conflict

and normalization of energy flows, discounting the risks to growth, inflation, and interest rates from a sustained energy shock.

- Asian and European fuel suppliers have increasingly turned to biodiesel as its price has fallen below traditional diesel, with European biodiesel benchmarks and Asian palm oil futures both trading at a discount to diesel following the Hormuz-driven spike in conventional fuel prices. Policy support has reinforced the shift, with Indonesia, the world's largest palm oil producer, raising its biodiesel blending mandate from 40% to 50%, and Malaysia lifting its mandate from 10% to 15%. The setup is constructive for biofuel feedstock and processing exposure, although we remain mindful that biodiesel economics are highly sensitive to relative crude oil pricing and policy continuity.
- Meta has signed a non-binding letter of intent with space-based solar developer Overview Energy for 1GW of capacity reservation in 2030. The deal is a first for space-based solar and points to the growing demand for power from US hyperscalers. Overview faces material funding and technological hurdles in deploying large-scale orbital solar arrays, which capture solar energy in space and beam it to terrestrial solar panels at higher consistency and intensity than the sun alone can achieve. The agreement follows Caltech's Maple project, which proved wireless orbital energy transmission in 2025, but the technology remains at an early stage of commercial maturity.

Manager's Comments

The Iran war has triggered very significant disruption to global oil and gas markets, prompting a broad-based policy response that is likely to catalyze investment into the energy transition. With the energy shock likely to persist through the rest of 2026, policy makers are increasingly looking to renewables, electrification and energy efficiency as long-term levers to mitigate high energy costs.

The Middle East conflict two months on

There has been no meaningful progress in restoring energy flows through the Strait of Hormuz, with around 12m b/day of oil and oil products effectively removed from global supply and no viable alternative routes to market. Since the onset of the conflict, we estimate cumulative losses to the market of close to 0.8bn barrels, with this rising by 0.36bn barrels with each additional month of disruption. Even in the event of a near-term resolution, the global oil market is likely to face a sustained supply shortfall through the remainder of 2026. In that context, policymakers are beginning to contend with a higher energy price environment and its implications for the global economy.

While the outcome and duration of the conflict remain uncertain, historical precedent suggests that Middle Eastern energy shocks are rarely resolved quickly. On average, past disruptions have taken eight months for supply to normalize, and the current crisis is larger in scale than those seen previously. Importantly, the recovery in production is likely to lag any resolution. While the IEA estimates that around 80% of affected supply could return within two months, a meaningful portion of capacity (1-2m b/day) may take longer to restore or may not return fully due to reservoir and operational constraints. The longer the disruption persists, the more challenging the restart process becomes. Taken together with the re-emergence of a geopolitical risk premium and the need to rebuild global inventories, this suggests that oil prices are likely to remain elevated for a sustained period, even after the conflict is resolved.

Historical Middle Eastern oil shocks

Maximum changes within 12 months of the crisis

	US-Iran (2026)	Kuwait (1990)	Iran-Iraq (1980)	Iran Rev (1979)	Arab Embargo (1973)	Suez (1956)
Global supply	-14%	-6%	-6%	-4%	-7%	-9%
Regional supply	-42%	-9%	-7%	-5%	-8%	-10%
Oil price (spot)	42%	32%	6%	95%	134%	9%
Oil demand	-3%	-4%	-11%	-1%	-9%	-12%

Figures in bold are the largest responses. Source: Guinness Atkinson, May 2026

The Iran war will fundamentally reshape global energy markets and accelerate the energy transition

The supply shock from the Iran war will be a major catalyst for the energy transition. As we wrote last month, periods of high and volatile energy prices expose the vulnerabilities of energy systems that rely on imported fossil fuels and strengthen the case for a more electrified system, powered by domestic renewables. As seen in Europe's response to the 2022 Russia/Ukraine crisis, policymakers will usually respond to an energy crisis with an "all of the above" approach to energy security, focusing on building greater and more diversified domestic supply. This is increasingly translating into support for more flexible, low-carbon energy solutions which offer both resilience and reduced dependence on imports. We believe the current crisis will reinforce this trend, with policymakers again prioritizing measures that improve energy security while accelerating the transition.

We therefore expect to see a growing focus on:

- **Energy security:** Low-carbon energy systems (renewables, energy storage, grid expansion, nuclear) tend to be distributed and localized. Governments increasingly view the transition to homegrown clean energy as the most effective lever to mitigate the risks of high energy import costs and maritime disruptions; and
- **Energy flexibility:** Flexible energy systems generally have the following characteristics, enabling them to weather future shocks:
 - More **diversity of supply** (many sources of energy): especially renewables, nuclear and liquefied natural gas (LNG) import facilities;
 - More **modularity** (lots of smaller, distributed assets);
 - More **responsiveness** (ability to adjust supply/demand quickly): more storage, greater demand side flexibility (smart grids, smart meters, demand response programs);
 - More **electrification**: an electrified energy system is more flexible as it reduces fuel-specific dependence;
 - More **interconnection**: cross-border electricity interconnectors and integrated power grids also improve flexibility.

This is consistent with commentary from Fatih Birol, head of the IEA, who commented that the war will “profoundly transform” global energy systems and accelerate the switch to low-carbon technologies, with countries accelerating investment in nuclear energy and small modular reactors as well as renewables.

The European Union

We wrote last month about a possible **EU response** to the crisis. On April 22, the European Commission published “AccelerateEU”, its long-term roadmap to strengthened energy resilience. In the report, the Commission states that “the need for transition is not new, but it must be significantly accelerated” to help reduce the bloc’s reliance on imported fossil fuels and shield its economies from rising energy costs. This is particularly relevant for Europe since imported fossil fuels account for a significant proportion of energy consumption (57%), and where the recent price shock has already resulted in an additional €24 billion in fossil fuel spending.

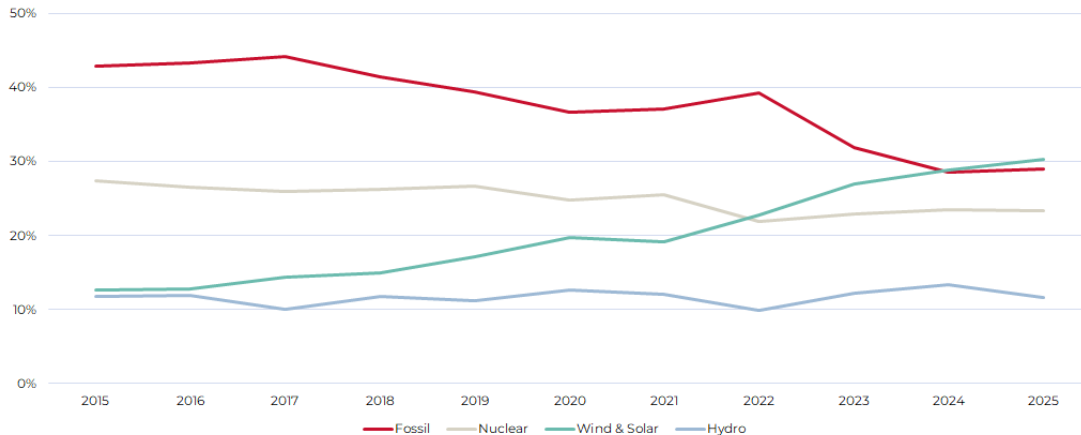
AccelerateEU builds on the REPowerEU framework, which was initially focused on reducing dependence on Russian gas through increased investment in wind, solar, storage and energy efficiency. The new plan broadens this approach beyond a single supply shock, reflecting a more structural shift towards energy security and strategic autonomy. The emphasis is now on reducing overall import dependence, strengthening system resilience and scaling domestic energy supply. The strategy is organized around five key pillars:

- **‘Closer EU coordination’:** Both internally and with suppliers to support actions such as filling gas storage facilities, strategic oil releases, and national policy responses.
- **‘Protecting consumers and businesses:** Proposed measures include targeted income support, energy vouchers and temporary electricity tax reductions to shield households and industry from price spikes. This includes the mobilization of €100bn through the Industrial Decarbonization Bank and an Investment Booster funded by the EU emissions trading scheme (ETS) allowance.
- **‘More homegrown clean energy’:** Reduce oil and gas imports by encouraging investment into renewables and skills, supported by electrification targets and the removal of barriers to electrification across industry, transport, and buildings. By summer, the Commission will present an **Electrified Action Plan**.
- **‘Stepping up our energy systems:** Upgrading and transforming energy systems to ensure the full implementation of current rules, accelerate the negotiations on the EU Grids package, and advancing ‘Energy Highways’ projects.
- **‘Boosting investments’:** Mobilizing public funding at both the EU and national level to support the scaling up of private capital, alongside initiatives such as the Clean Energy Transition Investment Forum and a Clean Energy Summit. An estimated €660bn in annual investment through 2030 to facilitate the energy transition.

The final three pillars highlight the structural nature of the shift underway in European energy policy. AccelerateEU aims to accelerate domestic renewable deployment, upgrade grid infrastructure and mobilize capital to address longstanding bottlenecks to build-out. In doing so, it is likely to support both stronger electricity demand and a faster expansion of renewable supply across Europe.

It is worth highlighting the scale of the shift in Europe's generation mix since 2022. REPowerEU catalyzed a meaningful acceleration in renewable deployment, with 2025 marking the first year in which wind and solar generation exceeded that of fossil fuels. Solar output reached a new high, growing by more than 20% for the fourth consecutive year and accounting for around 13% of EU electricity generation.

Share of electricity generation in the EU 2015-2025



Source: Ember, May 2026

National policy responses

Alongside the coordinated regional response, the crisis is also beginning to drive more concrete action at the national level. **France** is a notable example, having published a detailed roadmap outlining its pathway to reduce fossil fuel dependence and strengthen energy security. France has outlined explicit end-of-consumption targets for coal (by 2030), oil (by 2045) and fossil gas (by 2050). These milestones fall under a larger target of reducing the fossil share of final consumption to 40% by 2030 and 30% by 2035, before reaching carbon neutrality by 2050.

The French roadmap targets:

- **Transport and Mobility:** targeting 66% sales penetration for EVs and a 25% increase in public transport use by 2030;
- **Building and real assets:** 85% reduction in oil-fired boilers in tertiary buildings, and a 60% reduction in the residential sector as parts of a wider goal to phase out oil for heating by 2035
- **Industry, Power and Infrastructure:** phase out fossil fuels and increase wind (15 GW of offshore by 2035, and 1.3 GW of onshore each year), solar (3x capacity by 2035), nuclear power (new EPR2 reactors and lifetime extensions), hydrogen and biogas (6x production increase by 2035), and alternative fuels.

Like Europe, many **Southeast Asian** economies are highly exposed to rising energy prices and the conflict has forced energy security to re-emerge as a core priority and for governments to reassess their energy mix. This exposure is particularly acute in the current crisis, given that roughly 80% of oil transiting the Strait of Hormuz is destined for Asian markets. In response, there is now a more assertive policy reaction across the region:

- **South Korea** is heavily reliant on imported fossil fuels and generated 55% of its power from coal and gas in 2025. In response to the crisis, the country has pledged to increase its renewable energy capacity from 37 GW to 100 GW by 2030 and is expected to increase its support for nuclear energy. In order to meet these ambitious targets, the country is set to mandate the installation of solar panels on the rooftops of new factories. At the same time, the country is looking to cut its demand further by incentivizing electric vehicle adoption, targeting 40% sales penetration over the same period.
- **Japan** imports 95% of its crude and 6% of its LNG from the Middle East, most of which passes through the Strait. The conflict is accelerating a long-term re-evaluation of the energy mix, specifically in the context of restarting nuclear power plants and increasing investment in renewable infrastructure to reduce structural vulnerability.
- Elsewhere in the region, **Indonesia** plans to accelerate the roll-out of its mandatory biodiesel mandates to cut its diesel imports; **Malaysia** is encouraging wider adoption of rooftop solar; and **Cambodia** has reduced import taxes related to EVs, renewables, and electric stoves to encourage adoption.

Multilateral agreements

The policy response to the crisis has extended beyond national and regional initiatives, spurring the first multilateral conference dedicated specifically to transitioning away from fossil fuels. The **Colombia Conference** brought together almost 60 countries representing roughly one-third of the global economy and focused on the practical implementation of the transition, including national phase-out roadmaps, electrification, financing and the reduction of fossil fuel dependence, reflecting a growing recognition that energy security and long-term economic resilience are increasingly aligned with the transition to low-carbon energy systems.

While it remains at an early stage and produced no binding commitments, the conference nevertheless represents a notable shift in the global policy landscape and a further indication that the current crisis is likely to have lasting implications for global energy market.

Conclusion

The Iran war has triggered a material energy shock and prompted a broad-based policy response. In addressing their dependence on imported fossil fuels, policymakers are placing greater emphasis on energy security and system flexibility, supporting increased investment across the energy transition. There will be a further focus on low-carbon and electrified energy systems, which are typically more distributed, localized and flexible, and therefore better positioned to withstand supply disruptions.

Performance

The Guinness Atkinson Alternative Energy Fund delivered a return of 12.68% (in USD) in April, outperforming the MSCI World Index, which returned 9.6%. Markets rebounded strongly in the month as energy prices stabilized and risk sentiment improved. Among the fund's top performers were power semiconductor manufacturers Infineon and NXP, which benefited from improved sentiment in auto end markets. Enphase and Xinyi Solar were among the weaker performers, reflecting softer underlying demand conditions

As of 4/30/2026	YTD	1 Year	3 Years	5 Years	10 Years
GAAEX	11.97%	46.77%	5.33%	2.63%	9.95%
MSCI World Index NR	5.68%	29.16%	19.68%	11.28%	12.65%

As of 3/31/2026	YTD	1 Year	3 Years	5 Years	10 Years
GAAEX	-0.63%	32.44%	-0.28%	0.24%	8.57%
MSCI World Index NR	-3.57%	18.90%	16.75%	10.26%	11.79%

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 4/30/26:

1. Prysmian SpA	4.98%
2. Eaton Corp PLC	4.78%
3. Iberdrola SA	4.75%
4. Infineon Technologies AG	4.71%
5. Nextera Energy Inc	4.71%
6. Legrand SA	4.66%
7. Amphenol Corp	4.48%

8. Trane Technologies PLC	4.47%
9. Schneider Electric SE	4.42%
10. Hubbell Inc	4.41%

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.

A power purchase agreement (PPA) is an arrangement in which a third-party developer installs, owns, and operates an energy system on a customer's property.

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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