

Next Economy Select

December 31, 2022

Green Alpha[®]

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Investment Philosophy

The greatest growth drivers of today's economy are high-functioning, inventive companies creating and accelerating solutions to system-level risks—the climate crisis, resource degradation, widening inequality, and human disease burdens. Those companies are our best investment opportunity to preserve and grow clients' capital.

Green Alpha's philosophy is simple: seek enterprises creating scalable and rapidly evolving, economically-competitive solutions, rigorously evaluate their fundamentals, and acquire them at reasonable valuations.

Our investments seek to de-risk the global economy (which in turn reduces clients' long-term investment risks) while striving to grow faster than underlying GDP.



Why Invest in Next Economy Select?

- Active research, stock selection, and portfolio mgmt
- Very low minimum purchase of 1 share provides democratized access to institutional-quality investing
- Seeks long-term capital growth to preserve and grow purchasing power
- 45-65 global, market-leading companies developing solutions to core economic and environmental risks

Inception Date: March 31, 2013

Vehicles: AXS Green Alpha ETF (ticker NXTE) and Separately Managed Accounts

Research

Across our portfolios, we seek companies:

- with products and/or services lowering the global economy's risk profile by creating solutions to our most pressing economic and environmental risks
- committing more capital to R&D and owning more intellectual property than their peers
- run by effective, diverse executive teams and boards of directors with track records of increasing revenues and expanding margins, leading to earnings growth
- exhibiting sound financial fundamentals
- trading at compelling valuations relative to proven and anticipated growth, within acceptable levels of risk

Portfolio Construction

The Next Economy Select's objective is long-term capital appreciation via investing in a diverse set of high-conviction, market-leading Next Economy companies that have competitive moats protecting and growing market share.

Green Alpha's Next Economy Select portfolio provides democratized, low-minimum investment access to institutional-quality, innovation-focused investing.

Largest Positions

How the Next Economy Select portfolio is driving progress toward the Next Economy

Vestas Wind Systems (Sector: Energy, Industry: Renewable Energy)

- A front runner in the global energy transition, Vestas is the world's most advanced wind turbine manufacturer, and the global leader in onshore, offshore, and grid-connected installations. Vestas is also a leading service contract provider, furnishing the company with meaningful higher-margin recurring revenue.
- Vestas' order backlog is 49.5 billion Euros and service order backlog is 4.8 billion Euros. While new order intake has slowed as a result of project delays, the service segment continues to gain momentum.
- They have 141 GW under service contracts, with 125 GW located offshore. The average service contract duration is 10 years, providing a long runway of revenue transparency.
- Vestas is targeting carbon neutral operations—without use of carbon offsets—by 2030 and zero-waste wind turbines by 2040.
- The board is 42% female. Women serve on all committees and comprise half of the Nomination & Compensation Committee.

Moderna (Sector: Health Care, Industry: Biotech & Pharma)

- Discovery-to-clinical-stage biotech focused on using messenger RNA to develop and deploy therapies and vaccines. Moderna's revolutionary science has existing and potential applications for many areas, including oncology, infectious and cardiovascular diseases.
- Robust early-and-advanced stage pipeline means future growth may be impressive even excluding revenues from their COVID-19 vaccine, although the vaccine has accelerated their time to profitability as well as their ability to fund further research and trials. Interesting vaccines in their pipeline include those for HIV and CMV. Moderna is not just pioneering new medicines, but *new categories* of medicines, potentially transforming medicine overall.
- The Q4 2022 announcement of a partnership with Merck to develop personalized cancer vaccines is a positive indication of a potential forward revenue driver. In addition, Moderna is running 33 development programs, including 26 in the clinic, showing both broad and deep product potential.
- Moderna's executive team exhibits good diversity, with four female Chief-level officers making up 36% of the group. In addition, the board includes three women, two of whom chair the Audit and Product Development Committees.

Taiwan Semiconductor (Sector: Technology, Industry: Semiconductors)

- TSM is by far the largest semiconductor foundry in the world with 54% market share overall and 85%+ market share of the world's most advanced chips. It is one of two companies capable of producing advanced 3-nanometer chips, and ahead on the next generation as it prepares to produce 2-nanometer chips in 2023. The company relies solely on internally-generated funds to finance organic growth, capacity expansion, and R&D; never executing buybacks.
- The company features strong fundamentals, with a fortress-like balance sheet and the industry's highest credit ratings.
- Their new Arizona plant will make advanced 3-and-5-nanometer transistors. A relentless competitor, TSM aggressively invests to grow capacity and innovate, resulting in a nearly insurmountable lead in advanced semi manufacturing.

IBM and Applied Materials' Next Economy attributes are described on the following page.

Company Name	Weight
Vestas Wind Systems	6.05%
Moderna	4.61%
Taiwan Semiconductor Manuf.	4.53%
IBM	3.89%
Applied Materials	3.64%
Brookfield Renewable	3.36%
CRISPR Therapeutics	3.01%
ASML Holding	3.01%
Hannon Armstrong Sustainable	2.74%
Lam Research	2.61%
% of Portfolio	34.44%

Largest Positions *continued*

IBM (Sector: Technology, Industry: Software & Tech Services)

- IBM is a world leader in driving innovation to mitigate global risks. Having divested from its legacy managed-infrastructure business, IBM has re-emerged as a Next Economy™ powerhouse. Their primary initiatives include blockchain code and technology, cloud computing, AI and machine learning, and quantum computing. IBM has said these innovations “can exponentially alter the speed and scale at which we can uncover solutions to complex problems. We’ve come to call this accelerated discovery.”
- After filing the most U.S. patents annually for 29 straight years, in 2022 IBM pivoted to create more open-source code and platforms, and so was awarded the 2nd largest number of U.S. patents after Samsung. We view this as positive to IBM’s ability to scale as the data economy evolves. They remain among the largest IP holders across many domains: cloud and cognitive software; quantum computing; enabling distributed ledger; pioneering AI; developing security methods atop lattice cryptography; and advancing nanotechnology.
- Women comprise 33%+ of IBM’s workforce. Women with significant authority include the COO, General Counsel, and CHRO. IBM is a longstanding leader on pay equity for both women and minority populations.

Applied Materials (Sector: Technology, Industry: Semiconductors)

- AMAT is a global leader in materials-engineering solutions used to produce virtually every new chip and all advanced displays worldwide.
- They are the largest semiconductor and display equipment company, and hold more than 17,300 patents.
- Applied Materials has a good chance at remaining the leader in the upstream semiconductor equipment market by growing in tandem with, or possibly faster than, the overall semiconductor industry, which is estimated to grow at a CAGR of 12.2% between 2022-2029.
- Applied Materials is targeting 100% renewable energy use by 2030, with an interim goal of 100% renewable energy use in the U.S. by the end of fiscal 2022.
- Their board of directors is comprised 40% of women, including the chairs of the Audit Committee and the Governance and Nominating Committee.

Macroeconomic Commentary



The world, and economy, were complex and volatile throughout 2022. In Green Alpha's [signature investing style](#)—combining macro trajectory analysis, identification of problem-fixing companies, fundamental data, and active, benchmark-agnostic portfolio construction—we helped our clients gain market exposure to the Next Economy.

Investing in what's next (as opposed to what was) means valuing innovation and extrapolating the world economy as it is today into what it is likely to become over the next five to ten years. Within that longer-term context, it can be a challenge to make sense of current events, from geopolitical flare-ups to stock market turmoil. If one's investing time frame is a year or two, strategies aimed at the growth of the Next Economy may feel volatile. And indeed, most of our strategies underperformed their benchmark index for the year.

Throughout 2022, inflation remained high and interest rates climbed globally. Tied to the looming threat of recession, stocks have been broadly down, and some sectors have been hit harder than others. Many of the sectors in which companies' share prices dropped the most are within our sphere of interest to invest in and benefit from long-term trends and opportunities. Please see page 7 for portfolio-specific attribution results for the year, as well as since-inception performance numbers.

2022 Macroeconomic Highlights

This year proved that people can collectively coordinate to solve real problems. Within Europe, in 2022 alone, natural gas usage was [down between 21% and 35%](#), depending on the country, while [solar generation capacity was up 47%](#). Surely this shows that people and nations *can* come together to more rapidly decarbonize world energy systems, if properly motivated.

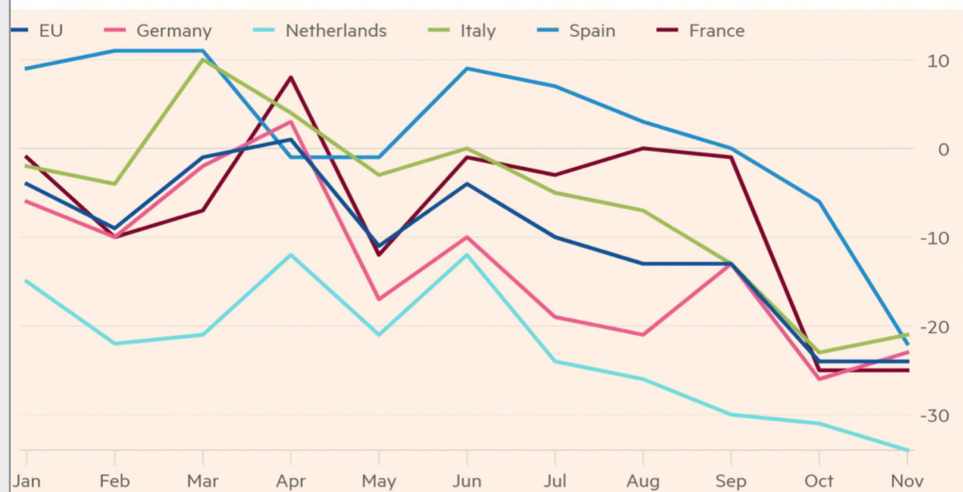
In genomics, 2022 saw [dramatic evidence](#) that one-time therapeutics can treat some types of cancer, a vaccine to prevent malaria became available (and is [already in use](#)), and universal flu and RSV vaccines were developed. 2023 promises more next-gen vaccines.

In space, the James Webb Telescope and the Double Asteroid Redirection Test ([DART](#)) mission were historic advancements in human capabilities and research processes. Artificial intelligence [advanced its capabilities](#) dramatically with clear implications for large-scale problem solving and economic productivity acceleration. Quantum computing, as it has the last several years, continued to make progress toward more generalized usefulness and commercial applications.

Gas demand in Europe drops



Reduction vs five-year average %



Source: Financial Times via <https://www.exponentialview.co/>

Macroeconomic Commentary *continued*

The ultimate synergies that will emerge between AI, machine learning, and quantum computing could make this year's headlines around [Chat GPT](#) and [DALL·E 2](#) seem relatively minor.

So, innovation is accelerating, renewable energies are proliferating, medicine is in unprecedented territory, AI is becoming more powerful, and the groundwork is being laid to set the stage for ever more dramatic and rapid progress.

And yet, these accomplishments are not equaled in the realm of policy. In spite of ambitious agreements signed at 27 COPs, 2022 saw a historic, [new record](#) level high of carbon emissions. [According to the IPCC](#), whose language must be unanimously approved by a very conservative group of [195](#) nations, “policies currently in place point to a 2.8°C temperature rise by the end of the century. Implementation of the current pledges will only reduce this to a 2.4-2.6°C temperature rise by the end of the century.” If we ask ourselves why the mismatch between political ambition and reality, it comes down to investments. Not enough capital has been directed toward the fixes to the climate crisis, and too much continues to be poured into fossil fuels-oriented sectors and companies.

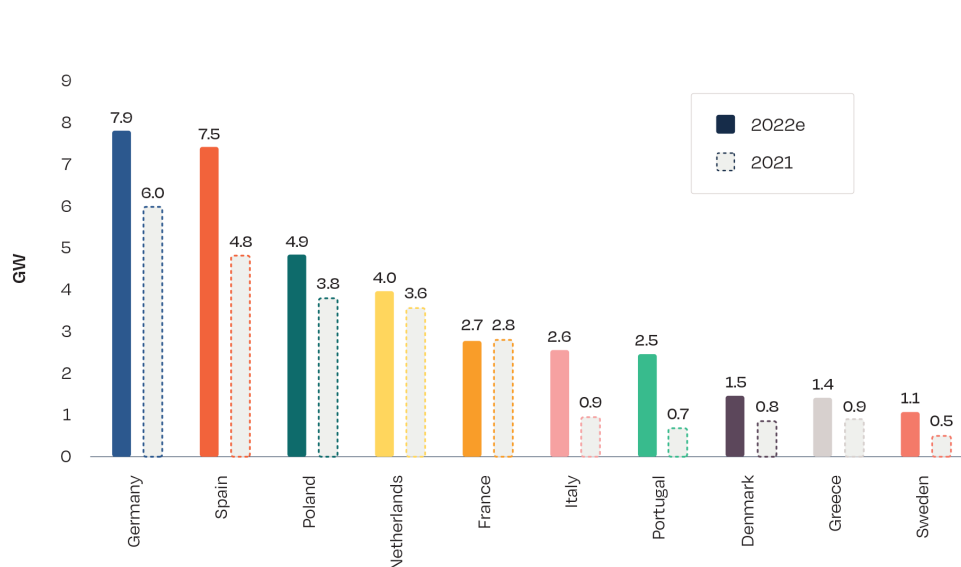
Green Alpha Investments in 2022

The world today is a constantly, rapidly, and dynamically changing environment; and therefore, Green Alpha is continually evolving our portfolio strategies to ensure best alignment with our thesis. This year, we continued to refine our methodologies and approach to address concepts, such as, but not limited to, more emphasis on social cohesion, equity, equality, and diversity of leadership. We also worked to improve our understanding of and exposure to food systems, from farms and manufacturing to packaging and grocery store distribution. We continued our focus on identifying leaders in advanced biotech, with the understanding that this is a [truly transformative](#) moment in that field, and for the global economy. Property development and management have always posed investment challenges for us; this year we renewed our focus on finding and investing in the REITs that are doing more to solve sustainability challenges than to cause them, while exhibiting excellent fundamentals and returning an above-market dividend. The application of our thesis is refined continually as we hone our objectives and turn those into investment actions.

Green Alpha Investments in 2023 and Beyond

For 2023, Green Alpha is evaluating economic conditions based on first, clear evidence that innovation is increasing both economic productivity and environmental sustainability, and second, with the sober awareness that the world

EU27 TOP 10 SOLAR PV MARKETS 2021-2022



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Macroeconomic Commentary *continued*

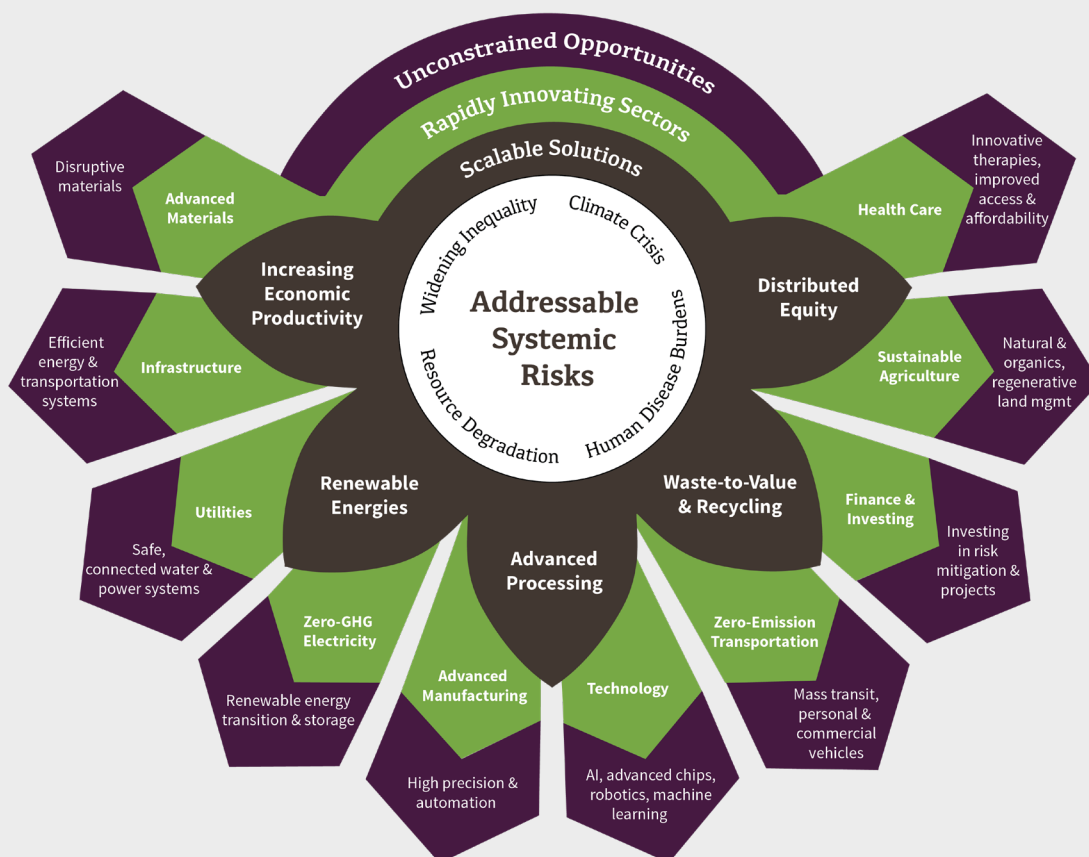
is in many ways still failing to affect sustainability transitions rapidly enough to prevent irreversible, deleterious outcomes. Within those dynamics, we look for opportunities to invest for long-term growth and maximum impact.

As an industry, asset management continues to be overwhelmingly backward-looking, investing in industries that have been important historically, but have far less relevance now and in the future. The desire to change and update the status quo is the source of our long-term competitive track records and is also one of the reasons we founded Green Alpha. The general idea that the economy 10 years hence will essentially be the same economy of 10 years ago is a major market inefficiency. The market of the last 1.5 years, sometimes called a “risk-off market environment,” is a manifestation of that inefficiency, wherein things like potential cures for disease and limitless, very cheap energy have been oversold, in deference to fossil fuels and other 19th century technologies.

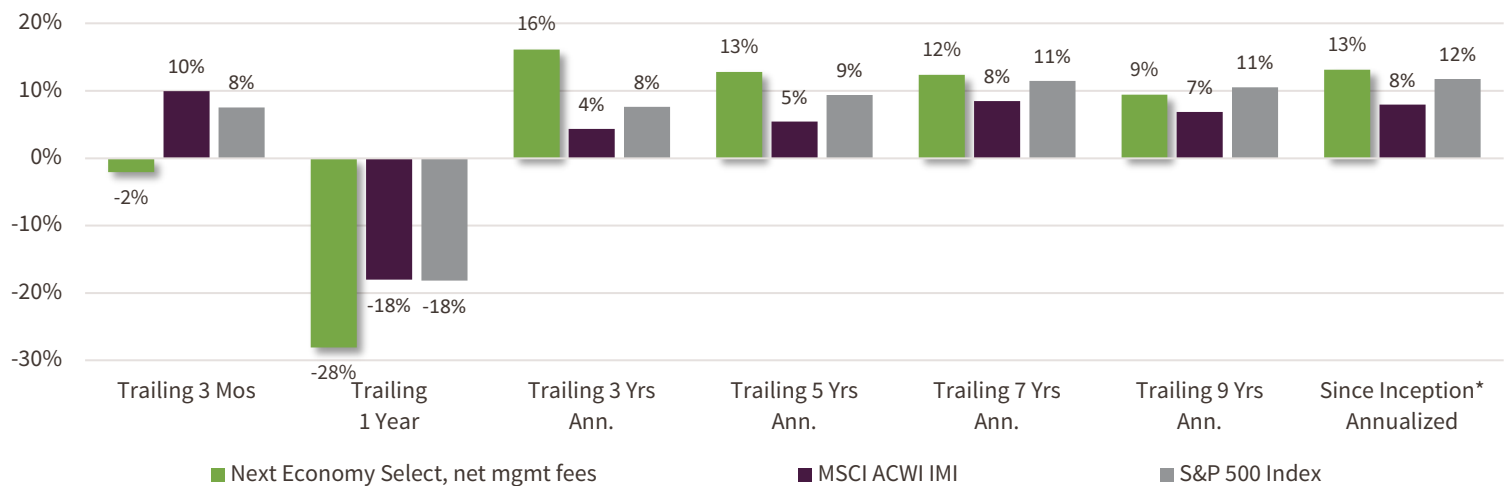
Green Alpha’s Investment Philosophy in Action

We believe that, over time, a company with superior outcomes will see those results reflected in their market returns. Therefore, we refuse to change direction or wander into style drift in the face of downward volatility. On the contrary, we understand that the best time to buy high conviction companies is when they are trading at a discount.

Stocks benefitting from multiple tailwinds, and trading at reasonable prices, will continue to be our focus, even though—and even because—this does not correlate with today’s short-term market orientation. The time horizon mismatch between our investment approach and the markets’ is ultimately okay: we are simultaneously disappointed in a year of underperformance and excited by the opportunity to invest in compelling Next Economy companies at steep discounts relative to the future results we expect from them. To our clients and partners who share our vision, please accept our sincere appreciation. See you in 2023.



Portfolio Performance & Commentary



For the full year 2022, Green Alpha's Next Economy Select strategy returned -28.1% net of management fees, versus its benchmark, the MSCI All Country World Investable Market Index (MSCI ACWI IMI), which returned -18.0%.

The companies minimizing returns the most over 2022 were from a wide variety of sectors and industries. If there is a common thread, it is that they are predominantly characterized as growing innovators, which, as a class, were out of favor. Illustrating the breadth of the companies detracting from the portfolio's returns, the largest losses came from:

- The world's largest EV auto manufacturer, as a combination of worries over a distracted CEO, demand, political risks, and recession fears weighted on the stock,
- The most advanced semiconductor manufacturer, as supply chain and political concerns were prevalent narratives, and
- A global leader in front-end capital equipment manufacturing within the semiconductor industry.

The companies contributing the most to returns over 2022 were an equally diverse group. The top contributors were:

- A U.S.-based manufacturer of solar modules, which stands to benefit from the Inflation Reduction Act ("IRA"),
- The leading manufacturer of solar micro inverters, battery storage, and EV charging stations, and
- A 100% renewables-powered data center company that was purchased at a premium and taken private in Q4.

Focusing specifically on Q4 2022, the strategy was down 1.8%, net of management fees versus the MSCI ACWI IMI up 9.9%. The sectors detracting the most from the strategy's returns were Consumer Discretionary and Health Care.

- Within the Consumer Discretionary sector, automotive manufacturing detracted the most with losses partially offset by gains in office furniture manufacturing.
- Health Care losses were led by the biotechnology and pharmaceutical industry. Biotech exposure in the portfolio represents some of the most promising and innovative companies on the frontiers of genetic medicines; however, these companies were aggressively sold off in the risk averse market environment of 2022, including Q4. Losses were partially offset by gains in medical equipment and devices.

The strategy's best performing sectors for the quarter were Technology and Financials.

- The Technology sector contributed to returns as semiconductors experienced a Q4 rebound from an otherwise difficult year. Front-end capital equipment and foundry services rallied in Q4 as did software and technology services.
- Within Financials, a leading provider of venture debt financing announced positive Q3 results during Q4, catalyzing a rally in the shares.

**Composite Inception: March 31, 2013. All returns presented above that are greater than 1 year in length have been annualized. Performance data quoted represents past performance. Past performance does not guarantee future results and current performance may be lower or higher than the data quoted. Please see the final page of this document for additional important disclosures.*

Next Economy Select

How our portfolios compare to their benchmark, the MSCI All Country World Investible Market Index

Characteristics

- **Highest conviction stocks, two investment vehicles:** democratizing access to leading Next Economy companies via a mutual fund and separately managed accounts, providing clients of all shapes and sizes with institutional-quality options
- **Fundamentals-driven:** the underlying quality of companies and the price paid for their shares are key drivers of LT returns
 - ✓ **High growth:** indicated by Sales Growth, and a decrease from Current P/E to Forward P/E as revenue and earnings grow
 - ✓ **Compelling valuation:** demonstrated by Price/Sales and Price/Book metrics relative to growth expectations
 - ✓ **Strong balance sheet and management execution:** conveyed by capital stewardship, LT Debt/Equity, and Current Ratio
- **Fossil fuel free since inception:** we have never invested in companies that prospect, extract, refine, or transport fossil fuels, nor in fossil-fired utilities or internal combustion engine manufacturers
- **Diversified – we seek solutions wherever we can find them:** across the globe, in companies of all sizes, and every industry
- **Public equities, long-only:** most investors' largest asset class; largest opportunity for impact

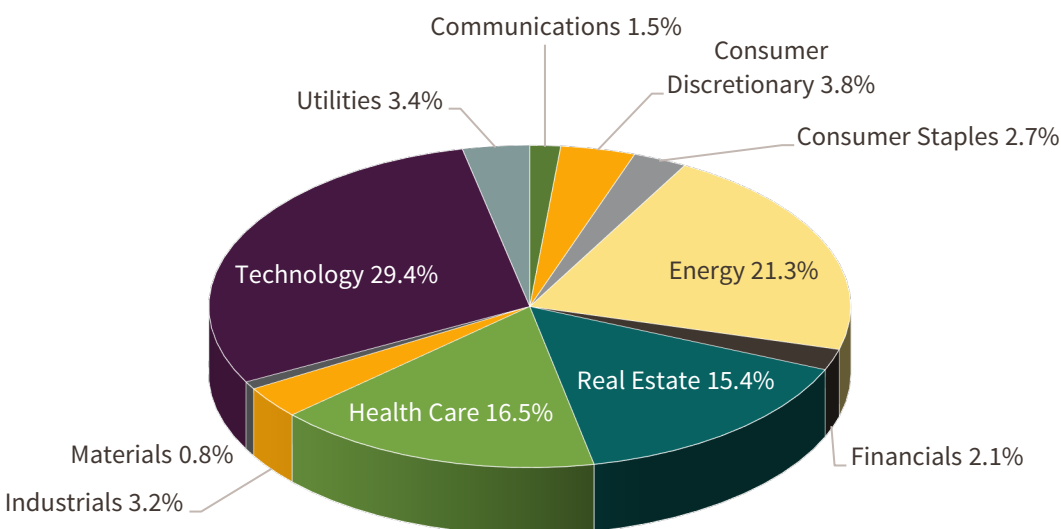
Characteristics	Next Economy Select	Benchmark: MSCI ACWI IMI (SPGM)	Next Economy Index	Social Index	Growth & Income	Sierra Club Green Alpha	DiversiTerra
# of Securities	62	2,488	142	100	35	47	57
Active Share	97%	-	94%	95%	97%	97%	96%
Sales Growth, Trailing 3-Yr	43%	10%	36%	30%	23%	44%	43%
P/E, Current	15.3	14.2	16.1	17.5	14.8	18.8	18.1
P/E, 1-Year Forward	14.2	13.8	16.5	19.0	15.3	17.7	18.6
Price/Sales	1.7	1.7	2.0	2.0	1.6	1.3	1.9
Price/Book	2.1	2.3	2.7	2.6	1.7	2.3	2.7
LT Debt/Equity	71%	169%	120%	101%	59%	70%	124%
Current Ratio	4.5	2.4	3.4	3.8	2.9	2.8	3.2
Dividend Yield	2.07%	2.37%	1.31%	1.20%	4.59%	1.61%	1.50%
Market Cap., Wtd Avg (\$B)	\$75.53	\$261.38	\$60.81	\$59.18	\$66.85	\$73.44	\$78.74
Market Cap., Median (\$B)	\$4.59	\$2.06	\$8.34	\$8.56	\$29.07	\$9.96	\$5.68
Turnover, Trailing 2-Yr Avg	17%	Not Available	32%	39%	19%	20%	31%
Beta, Trailing 2-Yrs	1.11	1.00	1.15	1.21	1.16	1.12	1.15
U.S.-Domiciled Companies	68%	57%	76%	85%	70%	69%	81%
% Revenue Derived in U.S.	47%	43%	49%	55%	48%	47%	58%

All characteristics are sourced from FactSet, are based on a representative account and include cash. Please see the final page of this document for additional important disclosures.

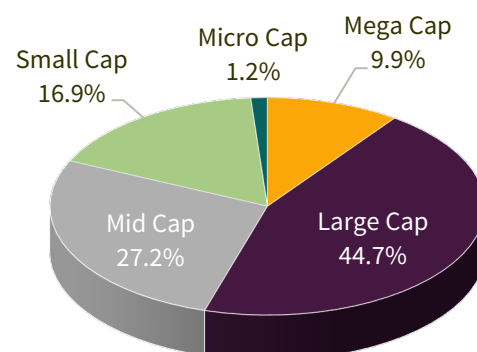
Portfolio Allocations

Our search for Next Economy companies is unconstrained. For the Next Economy Select portfolio, we seek solutions to systemic risks wherever they exist – across sectors, market caps, and geographies.

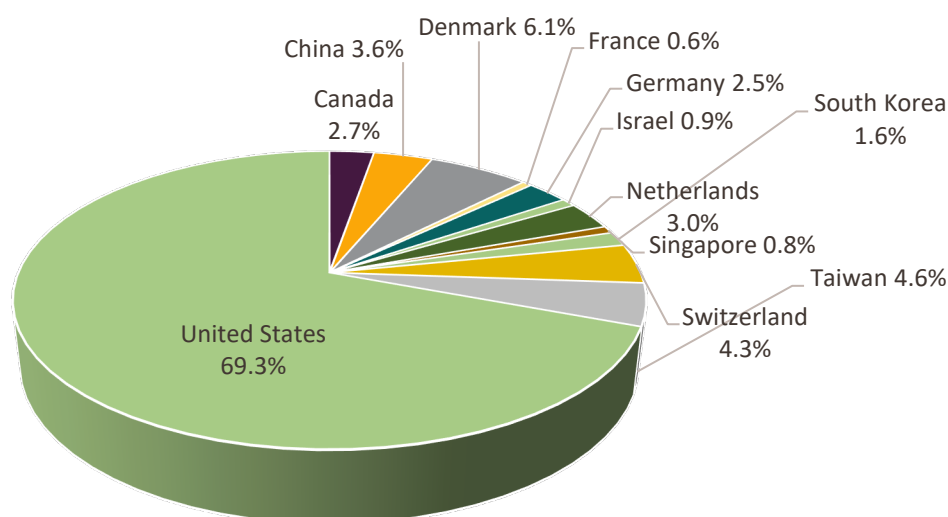
Economic Sectors



Market Capitalizations



Companies' Main Headquarters



Allocation data is sourced from FactSet and is based on a representative account. The exception is the sector chart, which utilizes the Bloomberg Industry Classification Standard from Bloomberg. All charts on this page are shown as percent of equity. Please see the final page of this document for additional important disclosures.

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- Next Economy Select performance results reflect actual performance for a composite, net of actual management fees and transaction costs. Some assets managed in the Next Economy Select strategy within the composite receive a reduced fee from the standard fee schedule. Actual client returns experienced will vary from the composite returns based on a variety of factors, and we encourage you to ask about specific factors. Accounts are included in the composite for full-month periods under management with Green Alpha Investments. Next Economy Select performance results do not reflect the reinvestment of dividends and interest. Extreme periods of underperformance or outperformance are due to the concentrated nature of the strategy and the impact of specific security selection. Such results may not be repeatable.
- From the strategy’s inception through June 30, 2021, performance data are sourced from Bloomberg Finance L.P. Beginning June 30, 2021, the composite and all performance results are maintained and calculated by Green Alpha’s portfolio accounting system Advent APX.
- Actual advisory fees may vary among clients with the same investment strategy. Green Alpha’s standard fee schedules are available within Form ADV Part 2. For those details and additional legal information, please see information and files here: <http://greenalphaadvisors.com/about-us/legal-disclaimers/>.
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- The MSCI All Country World Investable Market Index (ACWI IMI) captures large, mid, and small cap representation across 23 developed markets and 27 emerging markets countries. With more than 8,750 constituents, the index is comprehensive, covering approximately 99% of the global equity investment opportunity set. Investors cannot invest directly in this index.
- The SPDR MSCI Global Stock Market ETF (ticker: SPGM) seeks to provide investment results that, before expenses, correspond generally to the price and yield performance of the MSCI ACWI IMI. Investors can invest directly in SPGM.
- The S&P 500 Index is an unmanaged index of 500 common stocks chosen for market size, liquidity, and industry group representation. It is market-value weighted. The S&P 500 Index figures do not reflect any fees, expenses, or taxes. Investors cannot invest directly in this index.
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