

Social Index

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 the Social Index?

- Active research and stock selection; passively managed through an annual rebalance
- Aggressively rigorous gender and social inclusion criteria applied to the Next Economy™ thesis creates a powerful combination of innovative companies led by diverse, empowered teams
- ~100 global, market-leading companies

Inception Date: December 31, 2015

Vehicle: 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 Social Index construction is based on the science that the cognitive capacity, execution abilities, and risk management skills of groups exceeds that of individuals. In general, the more diverse the group, the greater the results. Diverse teams have stronger long-term potential.

We set initial weights by market cap., then assign additional weighting to companies where women hold significant decision-making authority, have especially strong representation, and/or those companies with policies that are eminently inclusive of all demographics.

Largest Positions

How the Social Index portfolio is driving progress toward the Next Economy

First Solar (Sector: Energy, Industry: Renewable Energy)

- First Solar manufactures solar panels and provides utility-scale PV power plants and supporting services, including finance, construction, maintenance, and end-of-life panel recycling. FSLR uses rigid thin-film modules for its solar panels and cadmium telluride (CdTe) as a panel semiconductor.
- Unique among large solar manufacturers, First Solar is a U.S.-headquartered company and does not use crystalline silicon (c-Si) semiconductors. That means they have fewer supply chain dependencies than traditional c-Si solar PV makers and avoid dependencies on China, which dominates the c-Si industry.
- The company plans to grow revenues by investing \$1.1 billion in a new, 3.5 GW module factory in Alabama, the company's fourth domestic facility, while an additional \$185 million will add 1 GW of new manufacturing to the company's plant in Ohio.
- Under the recently passed Inflation Reduction Act, First Solar could earn as much as 17 cents per watt in subsidies—the highest in the industry, and more than half of their reported production cost per watt.
- First Solar has a vertically integrated manufacturing process providing the lowest carbon footprint and fastest energy payback time available.
- The board of directors is 25% women, including the Lead Independent Director and Audit Committee Chair. The Chief People & Communications Officer is also female. Importantly, the executive team boasts an above-average age spread of 32 years.

Pacific Biosciences (Sector: Health Care, Industry: Medical Equipment & Devices)

- Pacific Biosciences designs, develops, and manufactures the world's most advanced sequencing systems to address solutions across a broad set of applications including human germline sequencing, plant and animal sciences, infectious disease and microbiology, oncology, and other emerging applications.
- The company offers Single Molecule and Real-Time (SMRT) technology, which enables real-time analysis of biomolecules with single molecule resolution. Their third-generation DNA sequencing technology can map an organism's genome in minutes and their proprietary technology performs fast and inexpensive DNA sequencing. The technology performs highly accurate reads of ultra-long sequences with the ability to simultaneously detect epigenetic changes. PacBio's sequencing machines are designed for use by clinical, commercial, and institutional research laboratories.
- PacBio has recently introduced new products to gain market share and extend their technological leadership. Specifically, the new Revio long-read sequencing system can sequence up to 1,300 human genomes per year at 30-fold coverage for less than \$1,000 per genome.
- Women comprise 31% of their leadership team, including the CFO, Chief Accounting Officer, Chief People Officer, and Senior VP of Research. Importantly, the leadership team is highly age diverse, with an age spread significantly above average at 35 years, and the board is similarly high at 30 years.

Commercial Metals Company, American Water Works, and Cisco Systems' Next Economy attributes are described on the following page.

Company Name	Ticker	Weight
First Solar	FSLR	2.81%
Pacific Biosciences	PACB	2.79%
Commercial Metals Co.	CMC	2.28%
American Water Works	AWK	1.98%
Cisco Systems	CSCO	1.91%
Vertex Pharmaceuticals	VRTX	1.87%
Moderna	MRNA	1.86%
Sunrun	RUN	1.80%
Beam Therapeutics	BEAM	1.67%
Box	BOX	1.61%
% of Portfolio		20.58%

Largest Positions *continued*

Commercial Metals Company *(Sector: Materials, Industry: Steel)*

- CMC is an industrial steel manufacturer with a focus on steel for steel-reinforced concrete (plus other products) based on 98% recycled input materials, making the company a waste-to-value leader in any industry, but particularly in the difficult-to-decarbonize steel industry.
- The fact that they have a 96% water recycling and reuse rate also makes them an environmental leader, in addition to other strong ways they operate their business.
- For fiscal year 2022, CMC revenues grew 32% and earnings increased 195%, indicating growing demand and market penetration for their high-quality, recycled steel produced in a responsible, sustainable manner.
- CMC's executive team and board of directors are both 50% female, including the CEO. In addition, the executive team has a strong age diversity spread of 32 years.

American Water Works *(Sector: Utilities, Industry: Water Utilities)*

- American Water Works provides water and wastewater services to 14 million people in 24 states. They are the most geographically diverse and largest investor-owned U.S. publicly traded water and wastewater utility company.
- They are investing \$28-\$32 billion over the next decade (\$13-14 billion by 2026) in America's critical, aging, failing infrastructure that puts communities at risk. In 2022 alone, they invested \$2.5 billion.
- Their sustainability projects include constructing a net-zero operations center at Hill Air Force Base in Utah, providing zero-emissions water and 585 kWh of clean energy to the grid. Overall, American Water Works' goal is to reduce their GHG emissions 40% by 2025; they are currently at 37%.
- The company's leadership team is 56% women. Top-level C-Suite execs are 63% women, including the CEO, CAO, and COO, continuing the company's history of female CEOs. The board boasts 56% women as well, including the chair of the Nominating and Compensation Committee. Importantly, 58% of transfers and promotions in the organization are filled by diverse individuals.

Cisco Systems *(Sector: Technology, Industry: Tech Hardware)*

- Cisco Systems designs, manufactures, and sells Internet Protocol based networking products and services related to the communications and information technology industry. As such, it is a cornerstone of the data economy.
- With its large customer base and scale, CSCO is looking to grow by increasing its software offering, driving a successful fundamental business transformation. They are well-positioned to benefit from an expected acceleration in enterprise tech spending in the future.
- Investments in R&D are driving innovation and patents.
- Females comprise 46% of executive leadership and 37% of the board of directors. In addition, the executive team has an above-average age spread of 30 years.

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.

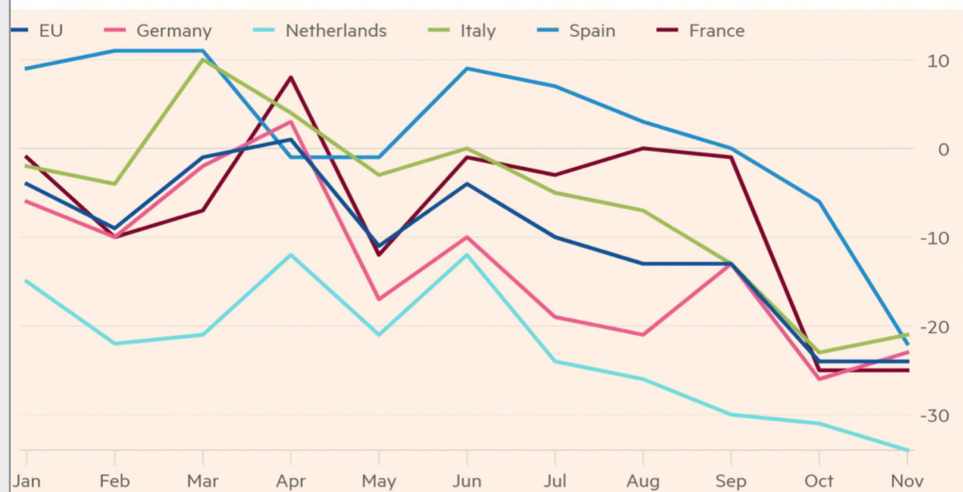
In genomics, 2022 saw [dramatic evidence](#) that one-time therapeutics can treat some types of cancer, a vaccine to prevent malaria became available (and is [already in use](#)), and universal flu and RSV vaccines were developed. 2023 promises more next-gen vaccines.

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.

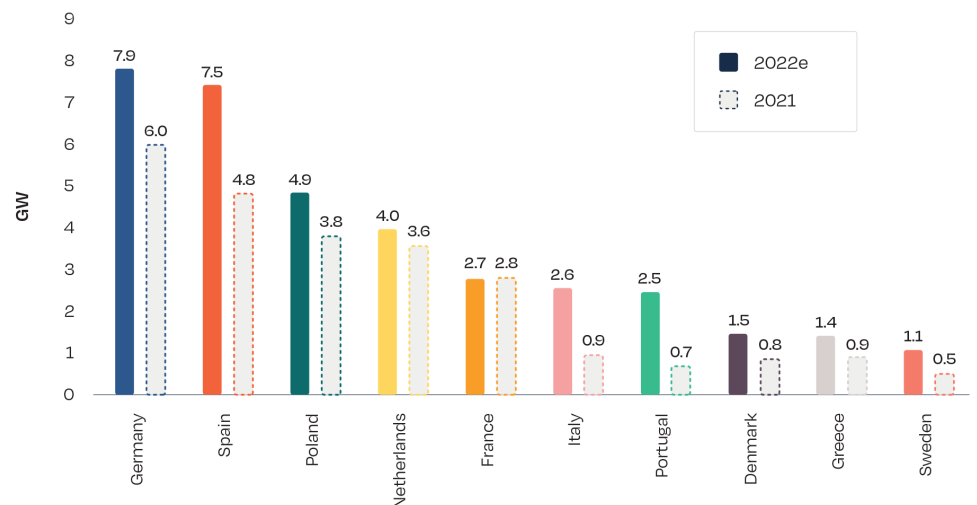
Green Alpha Investments in 2022

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*

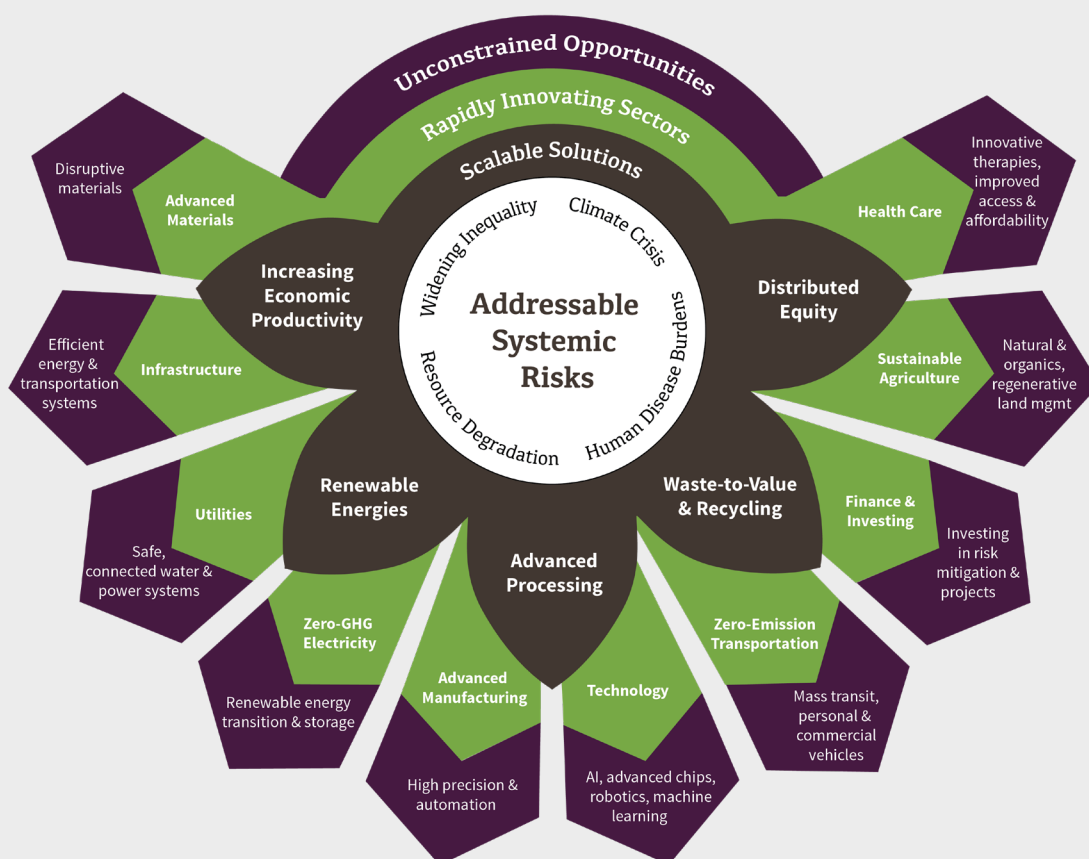
is in many ways still failing to affect sustainability transitions rapidly enough to prevent irreversible, deleterious outcomes. Within those dynamics, we look for opportunities to invest for long-term growth and maximum impact.

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.

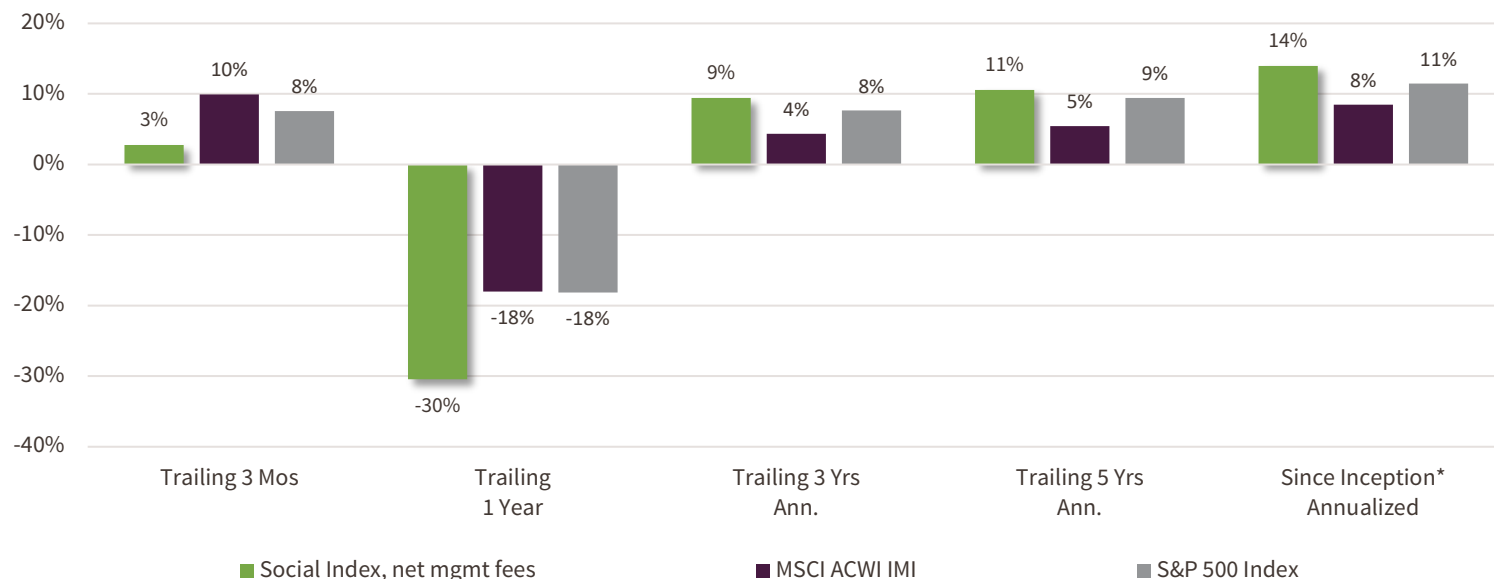
Green Alpha’s Investment Philosophy in Action

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 Social Index returned -30.5% net of management fees, versus its benchmark, the MSCI All Country World Investable Market Index (MSCI ACWI IMI), which returned -18.0%. In short, 2022 was a classic manifestation of a "risk-off market environment," which does not favor Green Alpha's investment style of focusing on innovation as the key to solving problems, growing the economy, and raising standards of living.

The sectors diminishing returns the most were Technology and Health Care.

- Technology was responsible for more than half of total portfolio-level losses. In general, the Technology sector suffered in 2022 as growth and innovation-oriented stocks were out of favor. Industries detracting the most were software and technology services, followed by technology hardware and semiconductors. Application, infrastructure, and engineering software, front-end capital equipment, integrated circuit makers, and foundry services all declined.
- Health Care losses were led by the biotechnology and pharmaceuticals industry, followed by medical equipment and devices manufacturing, and health care facilities and services. 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. Within the medical equipment and devices industry, losses were from makers of genomic sequencing hardware.

The strategy's best performing sectors were Energy and Communications.

- Gains in the Energy sector came from renewable energy equipment manufacturing, specifically thin film module manufacturing and solar tracking technologies. In addition, balance-of-systems technologies—such as solar inverters and storage-related technologies—also contributed to gains. These were partially offset by losses in commercial and residential solar installers.
- Within Communications, returns were provided by a leading sustainably-run data center and a data and telecommunications network company.

**Portfolio Inception: December 31, 2015. 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.*

Social Index

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

Characteristics

- **Next Economy innovators, diversity leaders** – harnessing the performance enhancing and risk reducing potential offered by diverse teams, we apply rigorous gender and social inclusion criteria to our Next Economy universe
- **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

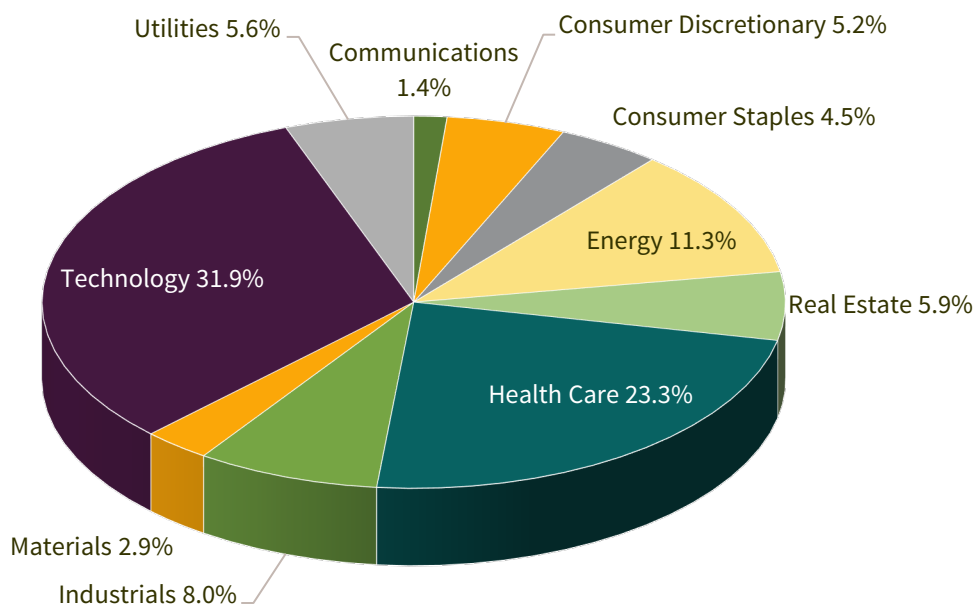
Characteristics	Social Index	Benchmark: MSCI ACWI IMI (SPGM)	Next Economy Index	Next Economy Select	Growth & Income	Sierra Club Green Alpha	DiversiTerra
# of Securities	100	2,488	142	62	35	47	57
Active Share	95%	-	94%	97%	97%	97%	96%
Sales Growth, Trailing 3-Yr	30%	10%	36%	43%	23%	44%	43%
P/E, Current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

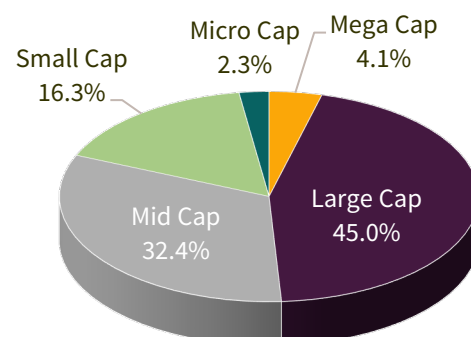
Portfolio Allocations

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

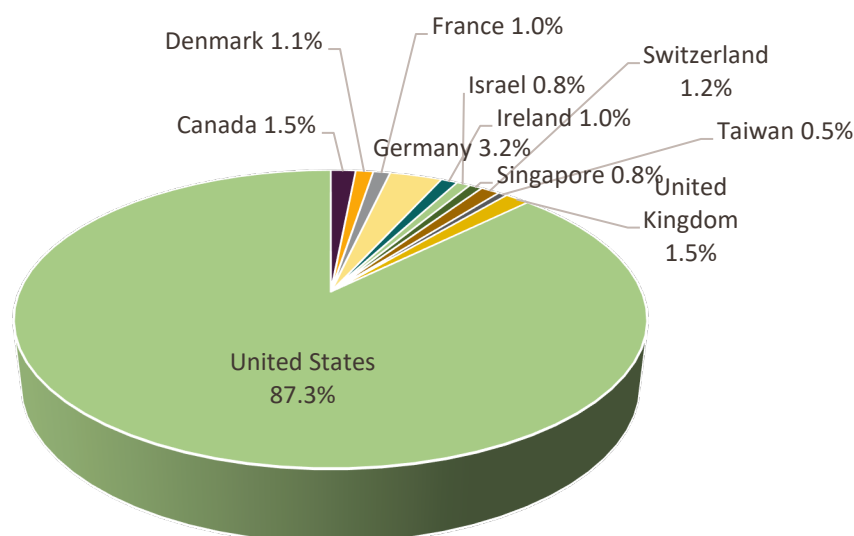
Economic Sectors



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, and is based on a model portfolio. All charts on this page are shown as percent of equity. Please see the final page of this document for additional important disclosures.

Important Disclosures

- Green Alpha Advisors, LLC is a registered investment advisor. Registration as an investment advisor does not imply any certain level of skill or training.
- Green Alpha Investments is a trade name of Green Alpha Advisors, LLC. Green Alpha is a registered trademark of Green Alpha Advisors, LLC. Green Alpha Advisors also owns the trademarks to “Next Economy,” “Next Economics,” “Next Economy Portfolio Theory,” “Investing in the Next Economy,” and “Investing for the Next Economy.”
- Performance quoted throughout this document represent past performance. Past performance does not guarantee future results, and current performance may be lower or higher than the data quoted. Investment returns and principal will fluctuate with market and economic conditions, and investors may have a gain or loss when shares are sold.
- Beginning July 31, 2021, the Social Index performance results are a composite of discretionary client accounts invested in the Social Index strategy on specific custodial platforms. Green Alpha’s discretionary client accounts that are not included in the composite are those custodied at Folio Institutional due to operational limitations of Folio’s data feeds to Green Alpha’s portfolio accounting system Advent APX. The Social Index composite performance results reflect actual performance for a composite of discretionary client accounts. Net-of-fee returns reflect the deduction of actual management fees and transaction costs. Some assets managed in the Social Index strategy within the composite receive a reduced fee from the standard management fee schedule. Actual client returns experienced will vary from the returns presented 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. Social Index composite performance results do not reflect the reinvestment of dividends and interest.
- Prior to July 31, 2021, the Social Index performance results represent a single account managed to the strategy. The performance results shown are not materially higher than if all related accounts were included prior to August 2021. Please contact Green Alpha for information about the representative account selection process.
- 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/>.
- The Social Index strategy contains stocks that are managed with a view towards capital appreciation. 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.
- Green Alpha portfolios may invest in companies with small and medium market capitalizations, which may have more limited product lines, markets, and financial resources than larger companies. In addition, their securities may trade less frequently and in more limited volume than those of larger companies. Small or mid-cap stocks may be more volatile than those of larger companies and, where trading volume is thin, the ability to dispose of such securities may be more limited. Green Alpha portfolios may also invest in foreign domiciled companies. Investing in foreign securities may involve additional risks, including exchange-rate fluctuations, limited liquidity, high levels of volatility, social and political instability, and reduced regulation. Emerging markets are often more volatile than developed markets and investing in emerging markets involves greater risks. International investing may not be suitable for everyone. An investment in Green Alpha portfolios should be considered a long-term investment.
- The holdings identified throughout this document do not represent all the securities purchased, sold, or recommended for advisory clients. You may request a list of all recommendations made by Green Alpha in the past year by emailing a request to info@greenalphaadvisors.com. It should not be assumed that the recommendations made in the past or future were or will be profitable or will equal the performance of the securities cited as examples in this document.
- 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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