Social Index

March 31, 2023

Green Alpha®

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
- Industry-leading rigorous gender and social inclusion criteria applied to the Next Economy™ thesis creates a powerful combination of innovative companies led by diverse, empowered teams
- ~99 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 better the long-term results. Diverse teams have stronger 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

Company Name	Ticker	Weight
First Solar	FSLR	3.77%
Pacific Biosciences	PACB	3.65%
NVIDIA Corporation	NVDA	2.16%
Commercial Metals Co.	CMC	2.13%
Cisco Systems	CSCO	1.94%
Vertex Pharmaceuticals	VRTX	1.88%
Universal Display Corp.	OLED	1.85%
Palo Alto Networks	PANW	1.79%
American Water Works	AWK	1.76%
Illumina	ILMN	1.67%
% of Portfolio		20.60%

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. They employ 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.
- Catalysts driving performance results are already-strong order flow and the passage of the Inflation Reduction Act (“IRA”).
  - ✓ Under the IRA, First Solar could earn subsidies as high as 17 cents per watt of capacity, which is more than half of their reported production cost.
- 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.
- 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 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.
- Pacific Biosciences' executive team is 25% women, and the board of directors is 30%, including Chairs of the Compensation and Science & Technology Committees.

***NVIDIA**, **Commercial Metals**, and **Cisco Systems**’ Next Economy attributes are described on the following page.*

Largest Positions *continued*

NVIDIA Corporation *(Sector: Technology, Industry: Semiconductors)*

- NVIDIA specializes in designing and manufacturing graphics processing units (GPUs) and system-on-a-chip units (SoCs).
- NVIDIA's processors are dominant in datacenters, machine learning, and AI. Their processors are used by many of the most advanced companies for hundreds of advanced products and applications. NVIDIA is critical for cloud computing companies AWS, Google Cloud, and Microsoft's Azure, largely because its processors are among the fastest and highest throughput, factors that are key as cloud companies offer more AI-based capabilities.
- Their industry-leading software and hardware technology has made its products among the go-to options for leading edge applications. For example, to run ChatGPT and other AI applications, Microsoft Azure says they use up to "thousands of NVIDIA H100 GPUs interconnected by NVIDIA Quantum-2 InfiniBand networking."
- The company also provides professional-grade GPUs utilized in a wide range of industries, including automotive, aerospace, healthcare, entertainment, and gaming.
- Half of NVIDIA's executives and 25% of the board of directors are women, including the Compensation Committee Chair.

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

- Commercial Metals is an industrial steel manufacturer with a focus on steel for steel-reinforced concrete (plus other products) based on 99% recycled input materials, making the company a waste-to-value leader in any industry, particularly in the difficult-to-decarbonize steel industry.
- CMC is a leading provider of steel and metal products to a variety of industries, including construction, manufacturing, and transportation. Their products are used in buildings, bridges, cars, roadways, and appliances.
- In the United States, it owns 41 scrap metal recycling facilities with a total annual capacity of 4.9 million tons, six electric arc furnace mini mills and two electric arc furnace micro mills and two re-rolling mills with a total annual capacity of 5.4 million tons, and steel fabrication facilities with a total annual capacity of 2.4 million tons.
- CMC's Americas Fabrication division manufactures steel products, including structural steel, plate steel, and pipe and tubing. CMC's International Mill division produces steel products in Poland and China. The company has capacity expansion plans in both North America and Europe
- They are sustainability leadership in other areas as well, including an important 88% water recycling and reuse rate.
- Commercial Metals' five-person executive management team includes three women, including the CEO, Chief Legal Officer and CHRO. The board of directors is composed of nine members, including a majority independent directors and four women, including the Board Chair.

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

- Cisco Systems, Inc. is an American multinational technology conglomerate and the largest networking company in the world, with over 70,000 employees and doing business in more than 160 countries.
- Cisco develops, manufactures, and sells networking hardware, software, telecommunications equipment and other high-technology services and products. Cisco specializes in specific tech markets, such as the Internet of Things (IoT), domain security, videoconferencing, and energy management with leading products including Webex, OpenDNS, Jabber, Duo Security, and Jasper.
- Investments in R&D continually drive Cisco's innovation and patents. Cisco Systems has a large portfolio of intellectual property, including patents, trademarks, copyrights, and trade secrets, covering a wide range of technologies, including networking, security, and collaboration.
- Cisco's executive team boasts five women (33%), and the board of directors is composed of five women (45%), including the Chair of the M&A Committee.

Please see the final page of this document for important disclosures about portfolio, benchmark, and characteristic information.

Macroeconomic Commentary

> In the first quarter of 2023, the global economy continued to be characterized by the key challenges of 2022, including the ongoing COVID-19 pandemic, the war in Ukraine, rising inflation, and interest rate hikes. These challenges have had a significant impact on economic growth, trade, and investment, which has led to continued high market volatility.

For Green Alpha strategies, January 2023 provided double-digit performance gains as some of the above-listed concerns seemed to be easing, and then tougher markets in February and March as some issues seemed to reassert themselves, capped off by a positive rally at quarter-end as markets reverted to a more January-like dynamic. And yet, in context, inflation, interest rate concerns, and even geopolitical conflicts have historically been short-to-medium term sources of market volatility. As always, we endeavor to think about the longer term, and position our portfolios to preserve and grow our clients' purchasing power over multi-cycle periods.

And yes, the global economy is also facing long-term challenges, such as the climate crisis, inequality, and technological change. These challenges will require governments, businesses, and individuals to work together to find solutions, and, in overcoming them, the world will make significant—it is not an exaggeration to say unprecedented—investments in the best of these solutions. The patient, forward-looking investor therefore stands to benefit. To illustrate, let's look at a couple of sectors that saw big changes in Q1.

Carefully Navigating Tech's Rapidly Evolving Landscape

The way we understand the tech economy is changing dramatically. Large language models (LLM) are exponentially improving, seemingly by the week, and traditional search and ad serving businesses are looking less like the indefinite cash cows that they did just last year. The codes for these models are improving so fast, in part, because the models themselves are becoming partially self-recursive in that they produce content not only in natural language but in code itself, meaning software engineers now have very capable "co-pilots" to help them develop the next LLM iteration faster than the last (this is part of why we don't buy the general argument that productivity gains have flatlined). Ultimately, these models will be capable of generating ever-improving versions of themselves without direct human intervention and will be limited only by the capabilities of their underlying hardware.

Speaking of which, we can't let this subject pass without acknowledging a key vulnerability to the global economy: utter dependence on the Taiwan Semiconductor Manufacturing Company (TSMC). According to recent reporting in Wired, TSMC is home to "the world's biggest logic chip manufacturing capacity and produces, by one analysis, a staggering 92 percent of the world's most avant-garde chips…Perhaps more to the point, TSMC makes a third of all the world's silicon chips, notably the ones in iPhones and Macs. Every six months, just one of TSMC's 13 foundries—the redoubtable Fab 18 in Tainan—carves and etches a quintillion transistors for Apple. In the form of these miniature masterpieces, which sit atop microchips, the semiconductor industry churns out more objects in a year than have ever been produced in all the other factories in all the other industries in the history of the world." Unfortunately, this stunning and so far, singular capability resides on one island whose government believes it is a sovereign nation, but that is also claimed as territory by China.

Let's face facts: the wonders we see from the LLMs don't occur in isolation. OpenAI, Microsoft, Google, Nvidia, Apple, and many more tech titans are utterly dependent on this one island with its N-of-One capabilities. The complex code that gives us ChatGPT and its kin have been made possible by the technological achievements at TSMC that brings forth the hardware capable of running these monster programs.

Continued on the following page

Macroeconomic Commentary *continued*

To run ChatGPT and others, Microsoft Azure says they leverage up to "thousands of NVIDIA H100 GPUs interconnected by NVIDIA Quantum-2 InfiniBand networking," all made at TSMC. We're not big on fossil fuel analogies here at Green Alpha but imagine a world where Saudi Arabia has 92%of the world's oil reserves and is at the same time struggling to maintain its independence from a determined world superpower. This overwhelming dependency on TSMC means the world's economy is far more vulnerable to disruption than is generally assumed, and of course also means that TSMC is a significant holding in many Green Alpha investment strategies. Challenge and opportunity, hand-in-hand, as always.

Volatility is Unlocking Opportunities: Investing in REITs

Tech isn't the only place where the challenge/opportunity dynamic exists. We can also see it in the more prosaic field of real estate. Real Estate Investment Trusts (REITs) have had a tough time in 2022 and Q1 2023 in the face of unprecedented Federal Reserve rate hikes and the ongoing phenomenon of work-from-home catalyzed by COVID-19. This pair of headwinds has caused even some of the highest quality REITs to be down more than 70% in the trailing year at the end of Q1 '23, and, clearly with some justification. Looking more closely, though, we can see that not all REITs are, by any means, equal. While many mid-tier and lower quality office REITs are reporting occupancy levels not much better than 50%, the highest quality office REITs, with AAA space, great sustainability profiles, and in desirable markets, are more than 90% occupied with relatively strong lease pricing power.

Moreover, specialty REITs like those providing lab space for biotechnology are actively growing. The predilection of traders and algorithms to bid down the entire sector is basically a scorched earth approach that has resulted in some amazing value opportunities among the gems in the space. Benefitting from these low entry points requires patience, but is not, in our opinion, particularly risky for the long-term investor. It's all about waiting for markets to appreciate that not all REITs are created equal, and the quality names have been oversold. Meanwhile, REITs compensate us for this patience with returns in the form of a dividend while we wait. This approach isn't new in investing, it is a straightforward example of time-arbitrage; while we can't be sure if it is or is not too soon to enter the highest-quality REIT space, we know for sure it is not too late. At some point, it will be.

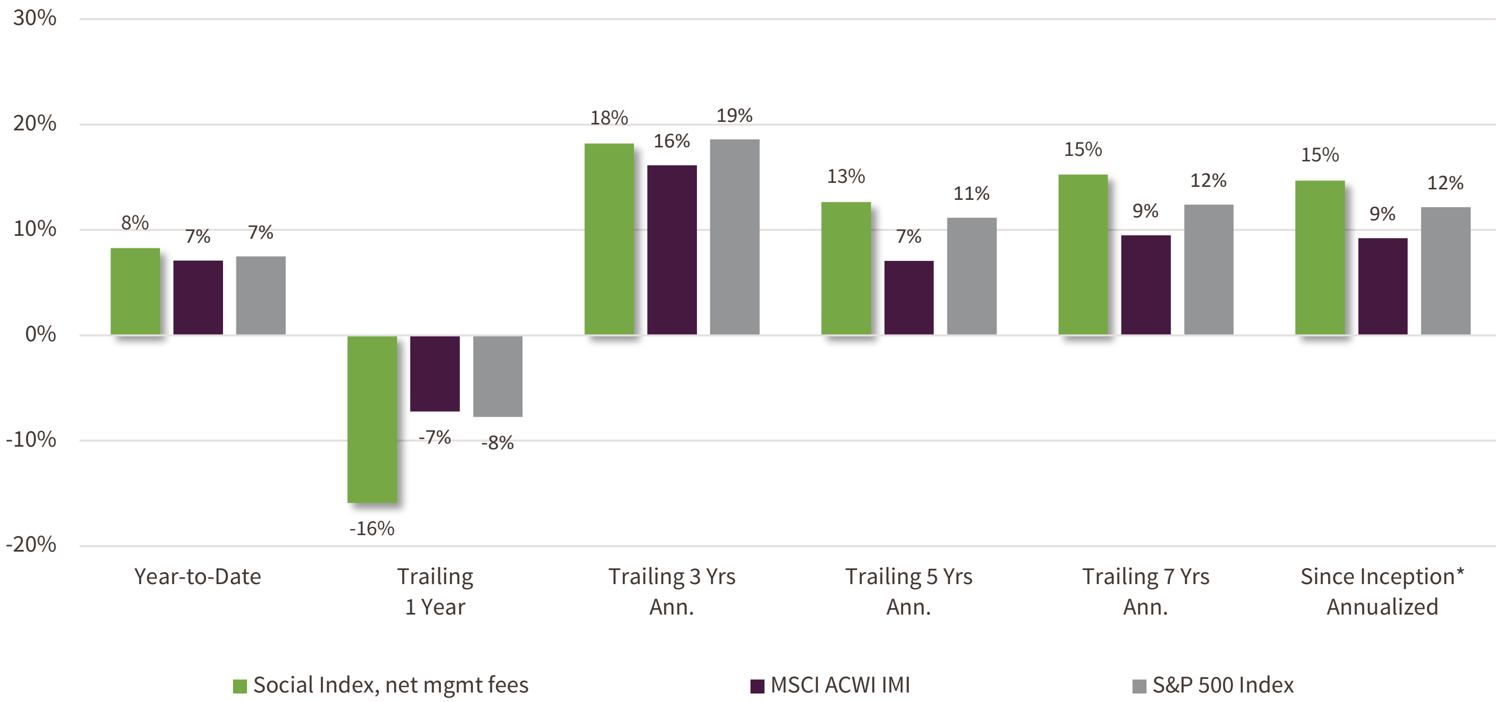
Remain Focused

Tech and REIT stocks are not often particularly correlated. As we've seen, they have very different dynamics, dependencies, and fundamentals; holding both is generally considered wise diversification. And yet, we have seen the global leaders in both industries lose share price value recently, even sometimes when their business results were good and improving.

The best thing an investor can do in volatile environments like these is maintain thesis conviction and convert the nearer term challenges into long-term opportunities via a carefully curated basket of securities. Near-term challenges create volatility, long-term challenges show us where to look for growth.

If you are a Green Alpha client, contact betsy@greenalphaadvisors.com to inquire whether your account(s) holds any of the securities listed in this macroeconomic commentary. At the time this commentary was written, Green Alpha held shares in Taiwan Semiconductor Manufacturing Co (TSM), NVIDIA (NVDA), and Apple (AAPL) in some client accounts. No Green Alpha client accounts held shares in Microsoft (MSFT) or Google (GOOG) at the time of authorship. Please see the final page of this document for additional related disclosures.

Portfolio Performance & Commentary



For Q1 2023, Green Alpha's Social Index strategy returned 8.27% net of management fees, versus its benchmark, the MSCI All Country World Investable Market Index (MSCI ACWI IMI), which returned 7.09%.

The strategy's best performing sectors were Technology and Industrials.

- Within Technology, the semiconductor value chain contributed most to returns, including gains from foundry manufacturing, front-end capital equipment makers, and chip designers. Catalysts for semiconductors included early implementation of the CHIPS Act, growing recognition of the importance of semis to the global economy, and multiple announcements related to expansion of global production capacity. Within the technology hardware industry, communications equipment and display componentry contributed to gains. Contributions were also provided by exposure to security and engineering software.
- In the Industrials sector, the industrial products industry was the main contributor, with water infrastructure, factory automation equipment, and smart meter makers gaining in the quarter. Within the industrial services industry, leading American and European steel recycling added to returns, as did a transportation logistics company.

The sectors detracting the most from the strategy's returns in the quarter were Consumer Discretionary and Health Care.

- In the Consumer Discretionary sector, electric vehicles and a recycled flooring maker led declines; however, losses were partially offset by a sustainable office furnishings provider. Within EVs, the companies with less production capacity and operating leverage were down, although EV sales overall set a record high in the quarter.
- Within Health Care, losses were from the biotech industry, with three leading companies working to provide gene therapies adding to losses along with a leading mRNA vaccine provider. However, these losses were partially offset by gains in genomics equipment providers and a leading gene-editing therapeutics maker. Finally, gains were provided by the acquisition announcement of a genomics-based cancer treatment 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

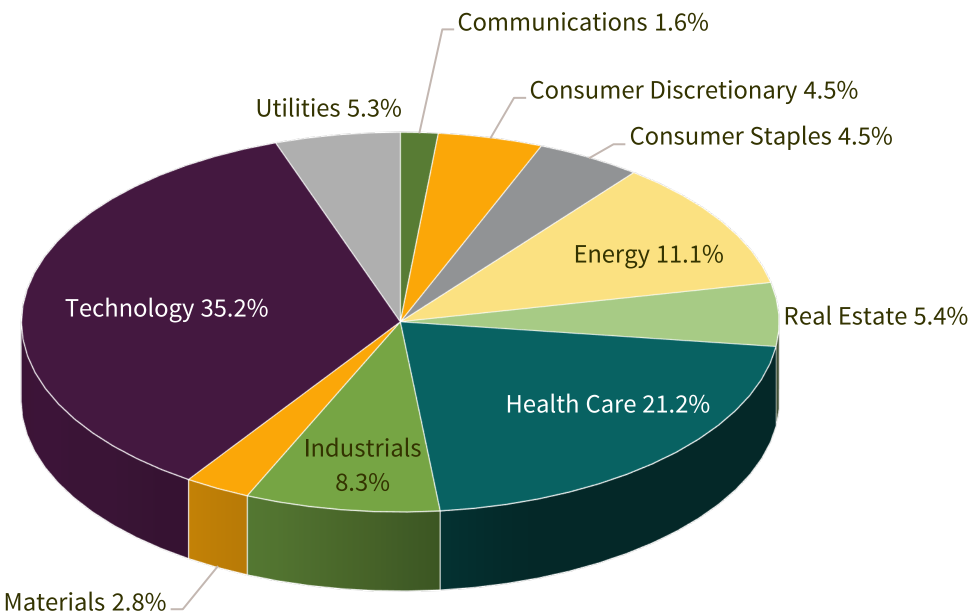
Characteristics	Social Index	Benchmark: MSCI ACWI IMI (SPGM)	Next Economy Index	Next Economy Select	Growth & Income	Sierra Club Green Alpha	DiversiTerra
# of Securities	99	2,488	142	63	35	47	57
Active Share	94%	-	93%	96%	97%	96%	95%
Sales Growth, Trailing 3-Yr	57%	14%	47%	42%	23%	45%	53%
P/E, Current	21.0	16.1	19.8	16.0	15.9	18.7	19.9
P/E, 1-Year Forward	22.1	15.4	20.3	17.0	16.0	19.8	21.7
Price/Sales	2.0	1.6	2.1	1.6	1.6	1.2	1.9
Price/Book	2.8	2.4	3.0	2.1	1.7	2.4	2.6
LT Debt/Equity	92%	138%	105%	93%	63%	95%	97%
Current Ratio	3.8	2.0	3.2	4.0	2.7	2.7	3.2
Dividend Yield	1.10%	2.29%	1.19%	1.96%	4.42%	1.46%	1.46%
Market Cap., Wtd Avg ($B)	$86.65	$326.62	$88.08	$103.96	$84.35	$104.71	$109.88
Market Cap., Median ($B)	$7.76	$2.53	$8.06	$3.79	$29.04	$12.65	$7.41
Turnover, Trailing 2-Yr Avg	43%	Not Available	12%	12%	18%	21%	32%
Beta, Trailing 2-Yrs	1.30	1.00	1.26	1.26	1.20	1.28	1.26
U.S.-Domiciled Companies	84%	57%	76%	65%	66%	68%	80%
% Revenue Derived in U.S.	53%	43%	48%	43%	45%	45%	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.

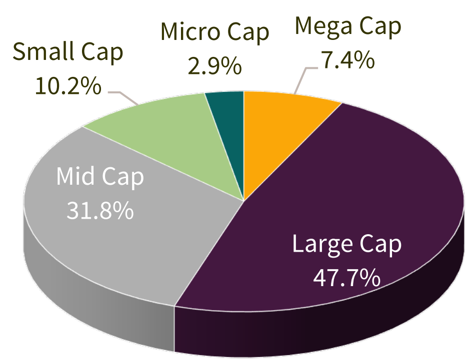
Portfolio Allocations

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.

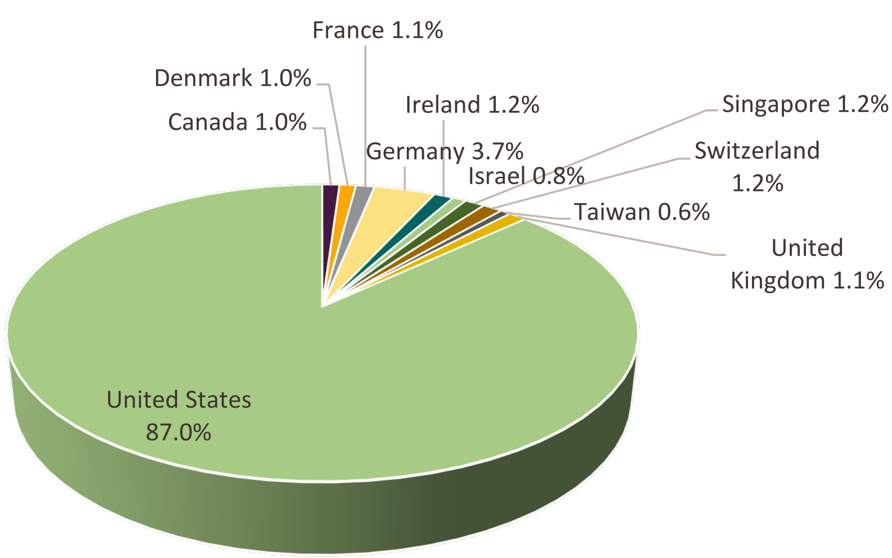
Economic Sectors



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.

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- 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.
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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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