

GLOBAL X ETFs RESEARCH



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The Next Big Theme

A Regular Pulse on Disruptive Trends by Global X ETFs

Lithium & Battery Technology

U.S.' Lithium Battery Pipeline Overtakes Europe's

Propelled by the Inflation Reduction Act (IRA) and a strong commitment to accelerating the clean energy transition, the U.S battery capacity pipeline surpassed Europe's for the first time. Since the IRA's implementation, the U.S. pipeline has grown by 57.9%, adding 436 gigawatt hours (GWh) of battery capacity.¹ During the same period, Europe's pipeline has grown by only 3%, equivalent to 35 GWh.² Projections indicate that the U.S. pipeline reaches 1,190 GWh by 2031.³ In line with this progress, leading lithium producer Albemarle partnered with Ford Motor Company to supply over 100,000 metric tons of battery-grade lithium hydroxide, supporting Ford's electric vehicle (EV) production scaling efforts.⁴ The five-year supply agreement, starting in 2026, aims to provide domestically sourced lithium hydroxide within the United States or from countries covered by a U.S. Free Trade Agreement.⁵ Globally, Chilean lithium producer SQM expects a minimum 20% increase in lithium demand this year, driven by a projected 30% surge in global EV sales.⁶

Metaverse

Apple Takes Headsets to New Realms

Apple unveiled its augmented reality (AR) headset, the Apple Vision Pro, at its Worldwide Developer Conference, WWDC23. With a separate battery pack and intuitive controls via eyes, hands, and voice, Vision Pro is a significant leap forward in the headset market. Priced at \$3,499, it will launch in the United States early next year and other countries thereafter.⁷ Vision Pro is primarily an AR device but can transition to virtual reality (VR) using a dial. Boasting 12 cameras, five sensors, and a 4K display per eye, it leverages passthrough video to overlay 3D objects in the real world.⁸ Apple's entry into the AR/VR market carries weight due to its ecosystem of products and loyal consumer base. AR/VR headset shipments are forecast to increase by 14% in 2023 and grow at a compound annual growth rate (CAGR) of 32.6% from 2023–2027.⁹ Meta's Quest 3, featuring higher resolution and improved integration with the real world supports this upward headset demand trajectory. Its release is slated for later this year.¹⁰

Artificial Intelligence & Data Centers

Chipmakers Race to Power the AI Revolution

The AI revolution has demand for specialized AI chips soaring, with Nvidia paving the way as the leading graphics processing unit (GPU) manufacturer. The AI push propelled Nvidia to the trillion-dollar market capitalization club.¹⁵ To meet demand as companies race to integrate generative AI into many aspects of their products and services, Nvidia significantly increased its chip supply.¹¹ While currently using Taiwan





Semiconductor Manufacturing Company's (TSMC) advanced process nodes, Nvidia remains open to other options should industry supply constraints arise, including Intel.¹² At technology trade show Computex 2023, Nvidia unveiled its GPU roadmap, showcasing the upcoming Hopper-Next chips arriving in 2024.¹³ With unmatched AI computational power, the Hopper series, built for next-gen generative models like ChatGPT, is the world's fastest 4 nanometer (nm) GPU featuring HBM3 memory.¹⁴ Responding to the surging GPU demand, Big Tech companies such as Microsoft, are investing billions in Nvidia-backed startups like CoreWeave to secure the best hardware.

Genomics & Aging Population

Novel Treatments for Melanoma

A promising mid-stage clinical trial involves Moderna and Merck's experimental cancer vaccine and Merck's immunotherapy treatment Keytruda. When combined, the two treatments reduce the risk of melanoma spreading to other parts of the body or causing death by a significant 65%, compared with patients who only received Keytruda.¹⁶ The trial includes a treatment group of 157 stage 3 and stage 4 patients who had their cancer surgically removed. Patients receive Moderna and Merck's vaccine every three weeks for a total of nine doses and infusions of Keytruda every three weeks for approximately a year.¹⁷ In February, the Food and Drug Administration (FDA) granted Moderna and Merck a breakthrough therapy designation to accelerate the development and review process. Similarly, Regeneron's phase 1 study on advanced melanoma patients shows promise with its LAG-3 inhibitor and PD-1 inhibitor combination. In this study, the investigational monoclonal antibody Fianlimab targets the LAG-3 immune checkpoint receptor on T cells when used with Libtayo. It achieved an objective response rate (ORR) of 61% across three cohorts, almost double the historical efficacy of anti-PD-1 monotherapy.¹⁸

FinTech

FedNow Delivers Funds in Real Time

FedNow, scheduled for release in July, is set to revolutionize the U.S. payments system by enabling instant payments through participating financial institutions, including early adopters Fiserv and Fidelity.¹⁹ With the U.S. playing catch-up to countries that already offer real-time payments, such as China and Brazil, FedNow could drive a four-fold increase in real-time payments volume by 2027, from 2.5 billion to 11.5 billiontransactions.²⁰ Fidelity National Information Services is among two dozen companies involved in the final testing stage and expected to participate in the FedNow certification program.²¹ Fidelity anticipates growth in consumer cases and account-to-account (A2A) payments. Also advancing real-time payments through the FedNow pilot is Fiserv and its NOW Gateway network.

U.S. Infrastructure

Government Doles Out IIJA Funds

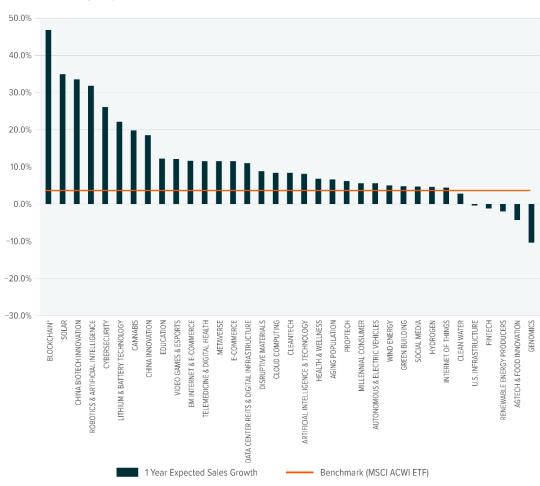
Nearly a year and a half after the Infrastructure Investment and Jobs Act's (IIJA) passage, the White House reported significant progress in deploying the law's \$1.2 trillion for infrastructure projects around the country. Over \$220 billion has been allocated for 32,000 projects nationwide.²² To expedite the allocation of funding, the Biden Administration is accelerating design and construction by partnering with organizations and localities through the Permitting Action Plan. Notably, the recent debt ceiling agreement ensured no impact on IIJA funding. However, the bill requires Congress to pass annual budget appropriations by December 31, 2024, with a 1% spending cut for non-compliance.²³ Unspent COVID-19 relief funds, including \$2 billion for highway infrastructure, will be reclaimed.²⁴





THE NUMBERS

The following charts examine returns and sales growth expectations by theme, based on their corresponding ETFs.



THEMATIC EXPECTED SALES GROWTH

Source: Bloomberg, May 31, 2023, Global X ETFs.

Note: Forward looking based on data and analysis from 5/31/2023.

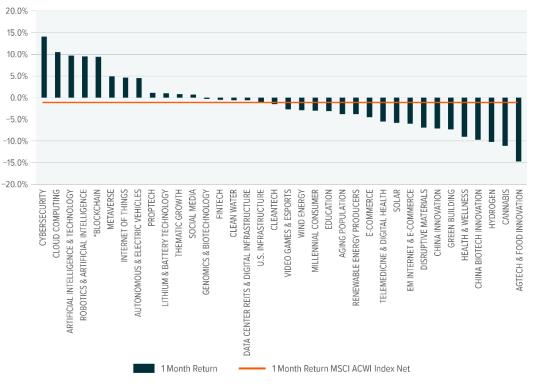
1 year annualized forward sales growth is the consensus analyst expectations for total sales growth in the next 12 months. *Blockchain reflects figures according to BKCH ETF





MAY 2023 THEMATIC ETF RETURNS

Source: Bloomberg, May 31, 2023, Global X ETFs.



Note: The performance data quoted represents past performance and does not guarantee future results. *Blockchain reflects figures according to BKCH ETF

Performance data quoted represents past performance and does not guarantee future results. Investment return and principal value of an investment will fluctuate so that an investors' shares, when sold or redeemed, may be worth more or less than their original cost. Current performance may be higher or lower than the performance quoted. High short-term performance of the fund is unusual and investors should not expect such performance to be repeated. For performance data current to the most recent month end, please call 1-888-493-8631 or visit www.globalxetfs.com.

Standard Performance				Cumulative % Data as of month end (5/31/23)			Avg. Annualized % Data as of quarter end (3/31/23)				
	Expense Ratio		1 Month	3 Month	Since Inception	1 Year	3 Year	5 Year	10 Year	Since Inception	
Debatica & Artificial Intelligence		NAV	10.12%	16.06%	89.75%	-13.17%	11.73%	1.76%	-	9.01%	
Robotics & Artificial Intelligence Inception Date 9/12/2016	0.69%	Market Price	9.51%	15.89%	89.48%	-11.90%	12.15%	1.66%	-	9.12%	
Inception Date 5/12/2010		Index	10.12%	16.02%	94.46%	-12.84%	12.34%	2.00%	-	9.42%	
Fintech		NAV	-0.58%	-1.15%	45.47%	-34.96%	-3.12%	-1.14%	-	5.97%	
Inception Date 9/12/2016	0.68%	Market Price	-0.53%	-0.91%	45.74%	-34.82%	-3.20%	-1.17%	-	5.97%	
Inception Date 9/12/2010		Index	-0.56%	-1.11%	50.63%	-34.89%	-2.75%	-0.65%	-	6.53%	
Internet Of Things	0.68%	NAV	4.73%	-0.46%	125.25%	0.60%	22.65%	11.64%	-	13.82%	
Internet Of Things Inception Date 9/12/2016		Market Price	4.62%	-0.31%	125.60%	0.88%	22.74%	11.61%	-	13.82%	
Inception Date 9/12/2016		Index	4.78%	-0.38%	130.03%	0.84%	23.10%	11.97%	-	14.18%	
Cloud Computing	0.68%	NAV	10.11%	6.93%	25.18%	-16.56%	8.45%	-	-	5.56%	
Cloud Computing Inception Date 4/12/2019		Market Price	10.48%	6.98%	25.88%	-16.55%	8.49%	-	-	5.68%	
Inception Date 4/12/2019		Index	10.22%	7.12%	28.46%	-15.98%	9.13%	-	-	6.22%	
Contal Manta		NAV	0.80%	3.03%	141.83%	-13.29%	7.82%	1.44%	10.50%	8.57%	
Social Media	0.65%	Market Price	0.72%	2.55%	141.42%	-12.59%	7.92%	1.41%	10.55%	8.58%	
Inception Date 11/14/2011		Index	0.80%	3.17%	156.81%	-12.43%	8.32%	2.00%	11.04%	9.13%	
Artificial Intelligence		NAV	9.95%	15.92%	77.92%	-8.79%	16.64%	-	-	11.11%	
& Technology	0.68%	Market Price	9.65%	15.82%	78.34%	-8.47%	16.89%	-	-	11.17%	
Inception Date 5/11/2018		Index	10.04%	16.08%	81.52%	-8.41%	17.18%	-	-	11.55%	



OUR ETFs RESEARCH

utonomous & Electric Vehicles		NAV	4.92%	0.17%	66.03%	-12.79%	29.63%	-	-	11.10%
Autonomous & Electric Vehicles Inception Date 4/13/2018	0.68%	Market Price	4.51%	0.13%	65.75%	-12.46%	29.87%	-	-	11.11%
		Index	4.88%	0.15%	67.44%	-12.56%		-	-	11.29%
		NAV	1.53%	-4.40%	133.19%	-17.27%		15.50%	10.14%	7.20%
Lithium and Battery Tech Inception Date 7/22/2010	0.75%	Market Price	1.01%	-4.58%	132.22%	-16.65%		15.43%	10.22%	7.23%
	••	Index	1.58%	-4.28%	147.75%		44.00%	15.66%	10.65%	7.71%
Genomics and Biotechnology Inception Date 4/5/2019		NAV	-0.41%	-3.10%	-20.02%	-18.18%	-0.88%	-	-	-5.27%
	0.50%	Market Price	-0.33%	-3.25%	-18.40%	-18.03%	-0.77%	_	_	-4.77%
	0.50%	Index	0.00%	-2.62%	-18.70%	-18.38%	-0.66%	-	_	-4.98%
			-2.95%		101.39%				-	
Millennial Consumer	0 5 00/	NAV Maxicat Driag		1.38%		-17.73%	14.46%	8.72%		10.96% 10.85%
Inception Date 5/4/2016	0.50%	Market Price	-3.01%	1.35%	100.65%	-17.92%	14.33%	8.63%	-	
		Index	-2.89%	1.50%	108.13%	-17.42%	15.03%	9.25%	-	11.47%
Aging Population		NAV	-3.72%	3.66%	87.62%	-5.77%	10.49%	7.13%	-	9.37%
Inception Date 5/09/2016	0.50%	Market Price	-3.80%	3.59%	91.08%	-6.05%	10.40%	6.99%	-	9.65%
		Index	-3.69%	3.70%	90.95%	-5.58%	10.73%	7.35%	-	9.64%
lealth and Wellness Inception		NAV	-9.35%	-5.50%	49.21%	-1.67%	14.93%	6.78%	-	7.55%
Date 5/9/2016	0.50%	Market Price	-9.03%	-4.86%	50.62%	-1.52%	14.69%	6.46%	-	7.58%
2410 3/3/2010		Index	-9.31%	-5.42%	53.43%	-1.33%	15.36%	7.14%	-	7.98%
E-Commerce		NAV	-4.78%	-7.76%	12.05%	-18.49%	6.67%	-	-	4.78%
	0.50%	Market Price	-4.51%	-7.60%	12.05%	-18.67%	6.52%	-	-	4.73%
Inception Date 11/27/2018		Index	-4.71%	-7.64%	14.29%	-18.12%	7.06%	-	-	5.25%
In Information Day, 1		NAV	-1.20%	-6.58%	88.95%	1.17%	32.59%	12.82%	-	11.75%
Js Infrastucture Development	0.47%	Market Price	-1.12%	-6.54%	88.95%	1.13%	32.61%	12.78%	-	11.76%
Inception Date 3/6/2017		Index	-1.15%	-6.50%	94.97%	1.65%	33.34%		-	12.32%
		NAV	-11.92%	-32.59%	-94.39%	-71.48%	-42.79%	-	-	-52.83%
Cannabis Inception Date 9/17/2019	0.51%	Market Price	-11.10%	-32.25%	-94.49%	-71.54%	-43.07%	-		-53.11%
	0.01/0	Index	-11.84%	-33.41%	-95.29%			-	_	-55.06%
		NAV	-2.34%	3.75%	33.60%	-19.14%	8.03%	-	-	9.86%
Video Games & Esports	0.50%	Market Price	-2.68%	3.82%	33.00%	-19.14%	7.95%	-	-	9.88%
Inception Date 10/25/2019	0.00%		-2.68% -2.34%	3.82%			7.95% 8.58%		-	
		Index NAV	-2.34%		35.84%	-18.77%		-	-	10.39%
Cybersecurity Inception Date 10/25/2019	0 540/			7.79%	64.44%	-24.34%	17.44%	-	-	14.30%
	0.51%	Market Price	14.06%	7.94%	67.32%	-24.20%		-	-	14.92%
		Index	14.11%	7.92%	67.04%	-23.88%		-	-	14.80%
Thematic Growth Inception Date 10/25/2019	0.50%	NAV	1.12%	0.60%	3.82%	-30.49%	5.89%	-	-	1.38%
		Market Price	0.80%	0.20%	4.77%	-30.23%		-	-	1.64%
		Index	1.12%	0.59%	2.91%	-30.63%	5.61%	-	-	1.12%
Education		NAV	-3.32%	-9.88%	-56.57%	-12.91%	-	-	-	-24.64%
Education Inception Date 7/10/2020	0.50%	Market Price	-3.08%	-9.59%	-56.57%	-12.67%	-	-	-	-24.60%
inception Date 7/10/2020		Index	-3.20%	-9.74%	-55.89%	-12.32%	-	-	-	-24.24%
	0.68%	NAV	-5.43%	-5.19%	-26.83%	-18.91%	-	-	-	-9.13%
Telemedicine & Digital Health		Market Price	-5.45%	-4.80%	-27.09%	-19.39%	-	-	-	-9.33%
Inception Date 7/29/2020		Index	-5.41%	-5.05%	-25.96%	-18.81%	-	-	-	-8.75%
		NAV	-9.99%	-15.90%	-45.56%	-21.62%	-	-		-18.02%
China Biotech Innovation	0.65%	Market Price	-9.71%	-16.36%	-45.69%	-21.52%	-	-	-	-18.34%
Inception Date 9/22/2020	0.0070	Index	-9.80%	-15.66%	-44.52%	-21.04%	-	_	-	-17.45%
		NAV	-1.58%	-7.38%	-4.49%	-3.89%	-	-	-	2.80%
Cleantech	0 50%									
Inception Date 10/27/2020	0.50%	Market Price	-1.52%	-7.72%	-4.96%	-3.85%	-	-		2.56%
		Index	-1.50%	-7.43%	-5.96%	-3.43%	-	-	-	2.12%
Data Center Reits	0 5 000	NAV	-0.54%	1.80%	-9.73%	-17.73%	-	-	-	-3.59%
& Digital Infrastructure	0.50%	Market Price	-0.62%	1.18%	-10.27%	-17.68%	-	-	-	-3.64%
		Index	-0.54%	1.76%	-9.95%	-17.98%	-	-	-	-3.68%
Inception Date 10/27/2020										
Emerging Markets Internet		NAV	-5.70%	-8.33%	-54.72%	-2.67%	-	-	-	
Emerging Markets Internet & E-Commerce	0.65%	Market Price	-5.98%	-8.66%	-54.72% -54.45%	-2.67% -0.89%	-	-	-	-23.95%
Emerging Markets Internet	0.65%				-54.72%	-2.67%				-23.95%
Emerging Markets Internet & E-Commerce	0.65%	Market Price	-5.98%	-8.66%	-54.72% -54.45%	-2.67% -0.89%	-	-		-23.95%
Emerging Markets Internet & E-Commerce Inception Date 11/09/2020	0.65%	Market Price Index	-5.98% -5.63%	-8.66% -8.12%	-54.72% -54.45% -54.03%	-2.67% -0.89% -1.47%	-	-	-	-23.95% -23.75%
Emerging Markets Internet & E-Commerce Inception Date 11/09/2020 Renewable Energy		Market Price Index NAV	-5.98% -5.63% -4.32%	-8.66% -8.12% -5.32%	-54.72% -54.45% -54.03% 1.21%	-2.67% -0.89% -1.47% -22.50%	- 2.56%	- - 3.91%	- -	-23.95% -23.75% 0.91%
Emerging Markets Internet & E-Commerce Inception Date 11/09/2020 Renewable Energy Producers Inception Date 05/27/2015		Market Price Index NAV Market Price Index	-5.98% -5.63% -4.32% -3.84% -4.26%	-8.66% -8.12% -5.32% -4.39% -5.19%	-54.72% -54.45% -54.03% 1.21% 1.29% 4.32%	-2.67% -0.89% -1.47% -22.50% -22.45%	- 2.56% 2.13%	- 3.91% 3.75%		-23.95% -23.75% 0.91% 0.83% 1.29%
Emerging Markets Internet & E-Commerce Inception Date 11/09/2020 Renewable Energy Producers Inception Date 05/27/2015 China Innovation	0.66%	Market Price Index NAV Market Price Index NAV	-5.98% -5.63% -4.32% -3.84% -4.26% -6.71%	-8.66% -8.12% -5.32% -4.39% -5.19% -10.54%	-54.72% -54.45% -54.03% 1.21% 1.29% 4.32% -55.42%	-2.67% -0.89% -1.47% -22.50% -22.45% -21.89% -11.74%	- 2.56% 2.13% 2.96%	- 3.91% 3.75% 4.33%	-	-23.95% -23.75% 0.91% 0.83% 1.29% -27.50%
Emerging Markets Internet & E-Commerce Inception Date 11/09/2020 Renewable Energy Producers Inception Date 05/27/2015		Market Price Index NAV Market Price Index NAV Market Price	-5.98% -5.63% -4.32% -3.84% -4.26%	-8.66% -8.12% -5.32% -4.39% -5.19%	-54.72% -54.45% -54.03% 1.21% 1.29% 4.32%	-2.67% -0.89% -1.47% -22.50% -22.45% -21.89%	- 2.56% 2.13% 2.96% - -	- 3.91% 3.75% 4.33% -	-	-23.95% -23.75% 0.91% 0.83% 1.29% -27.50%
Emerging Markets Internet & E-Commerce Inception Date 11/09/2020 Renewable Energy Producers Inception Date 05/27/2015 China Innovation	0.66%	Market Price Index NAV Market Price Index NAV Market Price Index	-5.98% -5.63% -4.32% -3.84% -4.26% -6.71% -7.06%	-8.66% -8.12% -5.32% -4.39% -5.19% -10.54% -10.45% -	-54.72% -54.45% -54.03% 1.21% 1.29% 4.32% -55.42% -55.66%	-2.67% -0.89% -1.47% -22.50% -22.45% -21.89% -11.74% -10.82% -	- 2.56% 2.13% 2.96% -	- 3.91% 3.75% 4.33% - -	-	-23.959 -23.75% 0.91% 0.83% 1.29% -27.50% -27.77%
Emerging Markets Internet & E-Commerce Inception Date 11/09/2020 Renewable Energy Producers Inception Date 05/27/2015 China Innovation	0.66%	Market Price Index NAV Market Price Index NAV Market Price Index NAV	-5.98% -5.63% -4.32% -3.84% -4.26% -6.71% -7.06% - - -0.89%	-8.66% -8.12% -5.32% -4.39% -5.19% -10.54% -10.45% - 0.34%	-54.72% -54.45% -54.03% 1.21% 1.29% 4.32% -55.42% -55.66% - - -0.52%	-2.67% -0.89% -1.47% -22.50% -22.45% -21.89% -11.74% -10.82% - - -2.42%	- 2.56% 2.13% 2.96% - - - -	- 3.91% 3.75% 4.33% - - - -	- - - - - - - - -	-23.95% -23.75% 0.91% 0.83% 1.29% -27.50% -27.77% - -0.02%
Emerging Markets Internet & E-Commerce Inception Date 11/09/2020 Renewable Energy Producers Inception Date 05/27/2015 China Innovation Inception Date 02/22/2021	0.66%	Market Price Index NAV Market Price Index NAV Market Price Index NAV Market Price	-5.98% -5.63% -4.32% -3.84% -4.26% -6.71% -7.06% - - -0.89% -0.55%	-8.66% -8.12% -5.32% -4.39% -5.19% -10.54% -10.45% - 0.34% 0.62%	-54.72% -54.45% -54.03% 1.21% 1.29% 4.32% -55.42% -55.66% - - -0.52% -0.45%	-2.67% -0.89% -1.47% -22.50% -22.45% -21.89% -11.74% -10.82% - - -2.42% -2.75%	- 2.56% 2.13% 2.96% - - - - - -	- 3.91% 3.75% 4.33% - - - - - -		-23.95% -23.75% 0.91% 0.83% -27.50% -27.75% - -0.02% -0.13%
Emerging Markets Internet & E-Commerce Inception Date 11/09/2020 Renewable Energy Producers Inception Date 05/27/2015 China Innovation Inception Date 02/22/2021 Clean Water	0.66%	Market Price Index NAV Market Price Index NAV Market Price Index NAV Market Price Index	-5.98% -5.63% -4.32% -3.84% -4.26% -6.71% -7.06% - -0.89% -0.55% -0.86%	-8.66% -8.12% -5.32% -4.39% -5.19% -10.54% -10.45% - 0.34% 0.62% 0.44%	-54.72% -54.45% -54.03% 1.21% 1.29% 4.32% -55.42% -55.42% -55.66% - -0.52% -0.45% 0.10%	-2.67% -0.89% -1.47% -22.50% -22.45% -21.89% -11.74% -10.82% - - 2.42% -2.75% -2.16%	- 2.56% 2.13% 2.96% - - - -	- 3.91% 3.75% 4.33% - - - -	- - - - - - - - -	-23.95% -23.75% 0.91% 0.83% 1.29% -27.50% -27.77% - -0.02% -0.13% 0.28%
Emerging Markets Internet & E-Commerce Inception Date 11/09/2020 Renewable Energy Producers Inception Date 05/27/2015 China Innovation Inception Date 02/22/2021 Clean Water	0.66% 0.75% 0.50%	Market Price Index NAV Market Price Index NAV Market Price Index NAV Market Price	-5.98% -5.63% -4.32% -3.84% -4.26% -6.71% -7.06% -0.89% -0.55% -0.86% -14.81%	-8.66% -8.12% -5.32% -4.39% -5.19% -10.54% -10.45% - 0.34% 0.62% 0.44% -22.59%	-54.72% -54.45% -54.03% 1.21% 1.29% 4.32% -55.42% -55.42% -0.52% -0.45% 0.10% -52.16%	-2.67% -0.89% -1.47% -22.50% -22.45% -21.89% -11.74% -10.82% - -2.42% -2.75% -2.16% -25.94%	- 2.56% 2.13% 2.96% - - - - - -	- 3.91% 3.75% 4.33% - - - - - -		-23.95% -23.75% 0.91% 0.83% 1.29% -27.50% -27.77% - 0.02% -0.02% -0.13% 0.28% -26.94%
Emerging Markets Internet & E-Commerce Inception Date 11/09/2020 Renewable Energy Producers Inception Date 05/27/2015 China Innovation Inception Date 02/22/2021 Clean Water Inception Date 04/08/2021 Agtech and Food Innovation ETF	0.66%	Market Price Index NAV Market Price Index NAV Market Price Index NAV Market Price Index	-5.98% -5.63% -4.32% -3.84% -4.26% -6.71% -7.06% - -0.89% -0.55% -0.86%	-8.66% -8.12% -5.32% -4.39% -5.19% -10.54% -10.45% - 0.34% 0.62% 0.44%	-54.72% -54.45% -54.03% 1.21% 1.29% 4.32% -55.42% -55.42% -55.66% - -0.52% -0.45% 0.10%	-2.67% -0.89% -1.47% -22.50% -22.45% -21.89% -11.74% -10.82% - - 2.42% -2.75% -2.16%	- 2.56% 2.13% 2.96% - - - - - -	- 3.91% 3.75% 4.33% - - - - - -		-23.95% -23.75% 0.91% 0.83% 1.29% -27.50% -27.77% - 0.02% -0.02% -0.13% 0.28% -26.94%
Emerging Markets Internet & E-Commerce Inception Date 11/09/2020 Renewable Energy Producers Inception Date 05/27/2015 China Innovation Inception Date 02/22/2021 Clean Water Inception Date 04/08/2021 Agtech and Food	0.66% 0.75% 0.50%	Market Price Index NAV Market Price Index NAV Market Price Index NAV Market Price Index NAV	-5.98% -5.63% -4.32% -3.84% -4.26% -6.71% -7.06% - 0.89% -0.55% -0.86% -14.81%	-8.66% -8.12% -5.32% -4.39% -5.19% -10.54% -10.45% - 0.34% 0.62% 0.44% -22.59%	-54.72% -54.45% -54.03% 1.21% 1.29% 4.32% -55.42% -55.42% -0.52% -0.45% 0.10% -52.16%	-2.67% -0.89% -1.47% -22.50% -22.45% -21.89% -11.74% -10.82% - -2.42% -2.75% -2.16% -25.94%	- 2.56% 2.13% 2.96% - - - - - - - - -	3.91% 3.75% 4.33% - - - - - - - - -	- - - - - - - - - - - - - -	-23.95% -23.75% 0.91% 0.83% 1.29% -27.50% -27.77% -0.02% -0.02% -0.13% 0.28% -26.94% -27.20%
Emerging Markets Internet & E-Commerce Inception Date 11/09/2020 Renewable Energy Producers Inception Date 05/27/2015 China Innovation Inception Date 02/22/2021 Clean Water Inception Date 04/08/2021 Agtech and Food Innovation ETF Inception Date 07/12/2021	0.66% 0.75% 0.50%	Market Price Index NAV Market Price Index NAV Market Price Index NAV Market Price Index NAV Market Price	-5.98% -5.63% -4.32% -3.84% -4.26% -6.71% -7.06% - -0.89% -0.55% -0.86% -14.81% -14.66%	-8.66% -8.12% -5.32% -4.39% -5.19% -10.54% -10.45% -0.34% 0.62% 0.44% -22.59% -22.74%	-54.72% -54.45% -54.03% 1.21% 1.29% 4.32% -55.42% -55.42% -55.42% -0.52% -0.45% 0.10% -52.16% -52.04%	-2.67% -0.89% -1.47% -22.50% -22.45% -21.89% -11.74% -10.82% -2.42% -2.75% -2.42% -2.75% -2.16% -25.94% -26.55%	- 2.56% 2.13% 2.96% - - - - - - - - - - - - -	- 3.91% 3.75% 4.33% - - - - - - - - - - - -	- - - - - - - - - - - - - - - - - - -	-23.95% -23.75% 0.91% 0.83% 1.29% -27.50% -27.75% -0.02% -0.13% 0.28% -26.94% -27.20% -26.66%
Emerging Markets Internet & E-Commerce Inception Date 11/09/2020 Renewable Energy Producers Inception Date 05/27/2015 China Innovation Inception Date 02/22/2021 Clean Water Inception Date 04/08/2021 Agtech and Food Innovation ETF Inception Date 07/12/2021 Hydrogen	0.66% 0.75% 0.50%	Market Price Index NAV Market Price Index NAV Market Price Index NAV Market Price Index NAV Market Price Index NAV	-5.98% -5.63% -4.32% -3.84% -4.26% -6.71% -7.06% -0.89% -0.55% -0.86% -14.81% -14.66% -14.84% -10.52%	-8.66% -8.12% -5.32% -4.39% -5.19% -10.54% -10.45% - 0.34% 0.62% 0.44% -22.59% -22.74% -22.51% -28.09%	-54.72% -54.45% -54.03% 1.21% 1.29% 4.32% -55.42% -55.42% -0.52% -0.45% 0.10% -52.16% -52.04% -51.81% -65.32%	-2.67% -0.89% -1.47% -22.50% -22.45% -21.89% -11.74% -10.82% -2.42% -2.75% -2.42% -2.75% -2.16% -25.94% -26.55% -25.61%	- 2.56% 2.13% 2.96% - - - - - - - - - - - - - -	- 3.91% 3.75% 4.33% - - - - - - - - - - - - - - -	- - - - - - - - - - - - - - - - - - -	-23.95% -23.75% 0.91% 0.83% 1.29% -27.50% -27.75% -0.02% -0.13% 0.28% -26.94% -27.20% -26.66% -38.26%
Emerging Markets Internet & E-Commerce Inception Date 11/09/2020 Renewable Energy Producers Inception Date 05/27/2015 China Innovation Inception Date 02/22/2021 Clean Water Inception Date 04/08/2021 Agtech and Food Innovation ETF Inception Date 07/12/2021	0.66% 0.75% 0.50% 0.50%	Market Price Index NAV Market Price Index NAV Market Price Index NAV Market Price Index NAV Market Price	-5.98% -5.63% -4.32% -3.84% -4.26% -6.71% -7.06% -0.86% -0.55% -0.86% -14.81% -14.66% -14.84% -10.52% -10.21%	-8.66% -8.12% -5.32% -4.39% -5.19% -10.54% -10.54% -10.45% -0.34% 0.62% 0.44% -22.59% -22.74% -22.51% -28.09% -28.14%	-54.72% -54.45% -54.03% 1.21% 1.29% 4.32% -55.66% - - -0.52% -0.45% 0.10% -52.16% -52.04% -51.81% -65.32% -65.20%	-2.67% -0.89% -1.47% -22.50% -22.45% -21.89% -11.74% -10.82% - -2.42% -2.75% -2.16% -2.56% -25.61% -25.61% -42.56%	- 2.56% 2.13% 2.96% - - - - - - - - - - - - - - - - - - -	3.91% 3.75% 4.33% - - - - - - - - - - - - - - - - - -	- - - - - - - - - - - - - - - - - - -	0.83% 1.29% -27.50% -27.77% -0.02% -0.13% 0.28% -26.94% -27.20% -26.66% -38.26% -38.23%
Emerging Markets Internet & E-Commerce Inception Date 11/09/2020 Renewable Energy Producers Inception Date 05/27/2015 China Innovation Inception Date 02/22/2021 Clean Water Inception Date 04/08/2021 Agtech and Food Innovation ETF Inception Date 07/12/2021 Hydrogen	0.66% 0.75% 0.50% 0.50%	Market Price Index NAV Market Price Index NAV Market Price Index NAV Market Price Index NAV Market Price Index NAV Market Price Index	-5.98% -5.63% -4.32% -3.84% -4.26% -6.71% -7.06% -0.65% -0.86% -14.81% -14.86% -14.84% -10.52% -10.21% -10.55%	-8.66% -8.12% -5.32% -4.39% -10.54% -10.45% -0.34% 0.62% 0.44% -22.59% -22.74% -22.51% -28.09% -28.14% -28.09%	-54.72% -54.45% -54.03% 1.21% 1.29% 4.32% -55.42% -55.66% - - -0.52% -0.45% 0.10% -52.16%	-2.67% -0.89% -1.47% -22.50% -22.45% -21.89% -11.74% -10.82% -2.42% -2.75% -2.16% -25.94% -25.61% -42.56% -42.90% -42.44%	- 2.56% 2.13% 2.96% - - - - - - - - - - - - - - - - - - -	- 3.91% 3.75% 4.33% - - - - - - - - - - - - - - - - - -		-23.95% -23.75% 0.91% 0.83% 1.29% -27.50% -27.77% -0.02% -0.13% 0.28% -26.94% -27.20% -26.694% -38.26% -38.23% -38.23%
Emerging Markets Internet & E-Commerce Inception Date 11/09/2020 Renewable Energy Producers Inception Date 05/27/2015 China Innovation Inception Date 02/22/2021 Clean Water Inception Date 04/08/2021 Agtech and Food Innovation ETF Inception Date 07/12/2021 Hydrogen	0.66% 0.75% 0.50% 0.50%	Market Price Index NAV Market Price Index NAV Market Price Index NAV Market Price Index NAV Market Price	-5.98% -5.63% -4.32% -3.84% -4.26% -6.71% -7.06% -0.86% -0.55% -0.86% -14.81% -14.66% -14.84% -10.52% -10.21%	-8.66% -8.12% -5.32% -4.39% -5.19% -10.54% -10.54% -10.45% -0.34% 0.62% 0.44% -22.59% -22.74% -22.51% -28.09% -28.14%	-54.72% -54.45% -54.03% 1.21% 1.29% 4.32% -55.66% - - -0.52% -0.45% 0.10% -52.16% -52.04% -51.81% -65.32% -65.20%	-2.67% -0.89% -1.47% -22.50% -22.45% -21.89% -11.74% -10.82% - -2.42% -2.75% -2.16% -2.56% -25.61% -25.61% -42.56%	- 2.56% 2.13% 2.96% - - - - - - - - - - - - - - - - - - -	3.91% 3.75% 4.33% - - - - - - - - - - - - - - - - - -		-23.95% -23.75% 0.91% 0.83% 1.29% -27.50% -27.75% -0.02% -0.13% 0.28% -26.94% -27.20% -26.66% -38.26% -38.23%



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ABOUT



Solar Inception Date 09/08/2021	0.51%	NAV	-6.14%	-15.14%	-26.07%	-2.48%	-	-	-	-9.19%
		Market Price	-5.84%	-14.71%	-25.95%	-2.16%	-	-	-	-9.11%
		Index	-6.11%	-15.11%	-25.35%	-1.87%	-	-	-	-8.65%
		NAV	-2.91%	-7.33%	-33.76%	-18.34%	-	-	-	-19.79%
Wind Energy	0.50%	Market Price	-2.92%	-6.97%	-33.92%	-18.47%	-	-	-	-20.09%
nception Date 09/08/2021		Index	-2.89%	-7.26%	-33.23%	-17.96%	-	-	-	-19.41%
		NAV	-7.24%	-12.04%	-24.08%	-26.03%	-	-	-	-14.40%
Disruptive Materials	0.59%	Market Price	-6.85%	-11.83%	-23.47%	-26.29%	-	-	-	-14.18%
Inception Date 01/24/22		Index	-7.23%	-11.95%	-23.59%	-25.67%	-	-	-	-13.99%
	0.45%	NAV	-6.92%	-7.84%	-20.44%	-	-	-	-	-
Green Building		Market Price	-7.27%	-7.62%	-20.40%	-	-	-	-	-
Inception Date 04/11/22		Index	-6.93%	-7.73%	-20.41%	-	-	-	-	-
Metaverse	0.50%	NAV	5.59%	14.72%	0.14%	-	-	-	-	-
Inception Date 04/26/22		Market Price	4.94%	14.87%	-0.12%	-	-	-	-	-
		Index	5.60%	14.80%	0.51%	-	-	-	-	-
Proptech		NAV	1.08%	-	0.96%	-	-	-	-	-
Inception Date 04/11/23	0.50%	Market Price	1.12%	-	1.24%	-	-	-	-	-
		Index	1.13%	-	1.04%	-	-	-	-	-
Carbon Cradita Stratomy		NAV	-	-	-3.41%	-	-	-	-	-
Carbon Credits Strategy Inception Date 05/24/23	0.39%	Market Price	-	-	-3.50%	-	-	-	-	-
inception Date 05/24/25		Index	-	-	-	-	-	-	-	-



P/S AND EV/S

Source: Bloomberg, data is as of 5/31/23 and 4/30/23, Global X ETFs.

Ticker	Name	F	P/S	EV/S		
		5/31/23	4/30/23	5/31/23	4/30/23	
GNOM	Global X Genomics & Biotechnology ETF	6.26	6.20	5.61	5.71	
BUG	Global X Cybersecurity ETF	5.81	5.24	5.50	4.99	
СНВ	Global X China Biotech Innovation ETF	4.68	4.86	4.38	4.62	
VR	Global X Metaverse ETF	4.56	4.41	4.56	4.26	
BOTZ	Global X Robotics & Artifical Intelligence ETF	4.24	3.84	4.59	4.07	
CLOU	Global X Cloud Computing ETF	3.86	3.72	4.10	3.99	
BKCH	Global X Blockchain ETF	3.73	2.76	5.23	3.69	
VPN	Global X Data Center REITs & Digital Infrastructure ETF	3.68	3.69	6.54	6.61	
HYDR	Global X Hydrogen ETF	3.66	4.29	3.16	3.56	
AGNG	Global X Aging Population ETF	3.39	3.58	4.06	4.26	
AIQ	Global X Artificial Intelligence & Technology ETF	3.28	3.03	3.40	3.12	
HERO	Global X Video Games & Esports ETF	3.08	3.27	3.15	3.21	
FINX	Global X FinTech ETF	2.94	3.19	3.41	3.69	
SOCL	Global X Social Media ETF	2.87	3.03	2.80	2.83	
EDOC	Global X Telemedicine & Digital Health ETF	2.72	2.90	2.75	2.96	
SNSR	Global X Internet of Things ETF	2.62	2.53	2.92	2.79	
SPX	S&P 500 Index	2.34	2.35	2.65	2.67	
AQWA	Global X Clean Water ETF	2.33	2.43	3.23	3.32	
RNRG	Global X Renewable Energy Producers ETF	2.21	2.41	4.44	4.36	
EWEB	Global X Emerging Markets Internet & E-commerce ETF	2.14	2.39	2.07	2.22	
GRNR	Global X Green Building ETF	2.09	2.28	3.92	4.06	
RAYS	Global X Solar ETF	2.00	2.06	2.58	2.64	
KEJI	Global X China Innovation ETF	1.94	2.10	1.56	1.66	
LIT	Global X Lithium and Battery Tech ETF	1.82	1.72	1.96	1.82	
MILN	Global X Millennial Consumer ETF	1.81	1.86	2.13	2.18	
ACWI	MSCI ACWI Index	1.74	1.79	2.04	2.07	
WNDY	Global X Wind Energy ETF	1.72	1.82	3.23	3.04	
EDUT	Global X Education ETF	1.68	1.68	1.74	1.71	
PTEC	Global X PropTech ETF	1.66	1.48	2.69	2.50	
DMAT	Global X Disruptive Materials ETF	1.49	1.61	1.81	1.90	
PAVE	Global X U.S. Infrastructure ETF	1.31	1.35	1.61	1.63	
POTX	Global X Cannabis ETF	1.27	1.47	1.69	1.70	
BFIT	Global X Health & Wellness ETF	1.23	1.36	1.41	1.53	
CTEC	Global X Cleantech ETF	1.11	1.10	1.48	1.45	
EBIZ	Global X E-commerce ETF	0.99	1.05	0.92	0.88	
KROP	Global X AgTech & Food Innovation ETF	0.90	1.04	1.28	1.37	
DRIV	Global X Autonomous & Electric Vehicles ETF	0.89	0.89	1.04	0.99	

Note: P/S and EV/S refer to price-to-sales and enterprise value-to-sales, respectively.



F12M SALES GROWTH, PSG, AND EVSG

Source: Bloomberg, data is as of 5/31/23 and 4/30/23, Global X ETFs.

Ticker	Name	F12M Sa	ales (%)	PS	5G	EVSG		
		5/31/23	4/30/23	5/31/23	4/30/23	5/31/23	4/30/23	
BKCH	Global X Blockchain ETF	46.8%	31.8%	0.08	0.09	0.11	0.12	
RAYS	Global X Solar ETF	34.9%	34.0%	0.06	0.06	0.07	0.08	
CHB	Global X China Biotech Innovation ETF	33.5%	35.8%	0.14	0.14	0.13	0.13	
BOTZ	Global X Robotics & Artificial Intelligence ETF	31.8%	10.2%	0.13	0.38	0.14	0.40	
BUG	Global X Cybersecurity ETF	26.1%	28.1%	0.22	0.19	0.21	0.18	
LIT	Global X Lithium and Battery Tech ETF	22.1%	23.7%	0.08	0.07	0.09	0.08	
POTX	Global X Cannabis ETF	19.8%	20.0%	0.06	0.07	0.09	0.09	
KEJI	Global X China Innovation ETF	18.5%	19.8%	0.10	0.11	0.08	0.08	
EDUT	Global X Education ETF	12.2%	14.5%	0.14	0.12	0.14	0.12	
HERO	Global X Video Games & Esports ETF	12.1%	13.3%	0.25	0.25	0.26	0.24	
EWEB	Global X Emerging Markets Internet & E-commerce ETF	11.6%	13.7%	0.18	0.17	0.18	0.16	
EDOC	Global X Telemedicine & Digital Health ETF	11.5%	11.3%	0.24	0.26	0.24	0.26	
VR	Global X Metaverse ETF	11.5%	8.6%	0.40	0.51	0.40	0.49	
EBIZ	Global X E-commerce ETF	11.5%	11.1%	0.09	0.09	0.08	0.08	
VPN	Global X Data Center REITs & Digital Infrastructure ETF	11.0%	4.0%	0.34	0.92	0.60	1.65	
DMAT	Global X Disruptive Materials ETF	8.8%	10.6%	0.17	0.15	0.21	0.18	
CLOU	Global X Cloud Computing ETF	8.4%	8.5%	0.46	0.44	0.49	0.47	
CTEC	Global X Cleantech ETF	8.4%	9.4%	0.13	0.12	0.18	0.15	
AIQ	Global X Artificial Intelligence & Technology ETF	8.1%	7.1%	0.41	0.43	0.42	0.44	
BFIT	Global X Health & Wellness ETF	6.8%	7.2%	0.18	0.19	0.21	0.21	
AGNG	Global X Aging Population ETF	6.6%	6.8%	0.52	0.53	0.62	0.63	
PTEC	Global X PropTech ETF	6.2%	3.4%	0.27	0.44	0.43	0.73	
MILN	Global X Millennial Consumer ETF	5.6%	6.0%	0.32	0.31	0.38	0.36	
DRIV	Global X Autonomous & Electric Vehicles ETF	5.6%	6.1%	0.16	0.14	0.19	0.16	
WNDY	Global X Wind Energy ETF	5.0%	3.6%	0.34	0.51	0.65	0.85	
GRNR	Global X Green Building ETF	4.8%	5.3%	0.44	0.43	0.81	0.76	
SOCL	Global X Social Media ETF	4.7%	7.6%	0.60	0.40	0.59	0.37	
SPX	S&P 500 Index	4.6%	4.7%	0.51	0.50	0.58	0.56	
HYDR	Global X Hydrogen ETF	4.6%	6.5%	0.80	0.66	0.69	0.54	
SNSR	Global X Internet of Things ETF	4.4%	5.2%	0.59	0.49	0.66	0.54	
ACWI	MSCI ACWI Index	3.8%	4.0%	0.46	0.44	0.54	0.51	
AQWA	Global X Clean Water ETF	2.8%	4.9%	0.82	0.49	1.14	0.67	
PAVE	Global X U.S. Infrastructure Development ETF	-0.4%	0.7%	-3.60	1.80	-4.43	2.18	
FINX	Global X FinTech ETF	-1.2%	-0.5%	-2.51	-6.87	-2.91	-7.93	
RNRG	Global X Renewable Energy Producers ETF	-2.0%	-2.6%	-1.08	-0.91	-2.17	-1.65	
KROP	Global X AgTech & Food Innovation ETF	-4.3%	-2.9%	-0.21	-0.36	-0.30	-0.48	
GNOM	Global X Genomics & Biotechnology ETF	-10.4%	-15.8%	-0.60	-0.39	-0.54	-0.33	

Note: F12 Sales Growth refers to the consensus analyst expectations for total sales growth in the next 12 months. *Please note that substantial month-over-month variations in F12M Sales may be the result of Bloomberg coverage and estimates of underlying securities.

PSG and EVSG refer to Price-to-Sales over F12 Sales Growth and Enterprise Value over F12 Sales Growth, respectively. N/As reflect a negative growth number in the denominator and similar to traditional PEG ratios aren't typically displayed as such (hence the N/A).

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- People and Demographics: <u>Cannabis ETF (POTX)</u>, <u>Millennial Consumer ETF (MILN)</u>, <u>Health &</u> Wellness ETF (BFIT), <u>E-Commerce ETF (EBIZ)</u>, <u>Genomics & Biotechnology ETF (GNOM)</u>, <u>Aging</u> <u>Population ETF (AGNG)</u>, <u>Telemedicine & Digital Health ETF (EDOC)</u>, <u>Education ETF (EDUT)</u>
- Physical Environment: U.S. Infrastructure Development ETF (PAVE), CleanTech ETF (CTEC), Renewable Energy Producers (RNRG), Clean Water ETF (AQWA), Hydrogen ETF (HYDR), Solar ETF (RAYS), Wind Energy ETF (WNDY), Disruptive Materials ETF (DMAT), Green Building ETF (GRNR), Carbon Credits Strategy ETF (NTRL)
- Multi-Theme: <u>Thematic Growth ETF (GXTG)</u>, China Innovation ETF (KEJI)

Footnotes

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Investing involves risk, including the possible loss of principal. International investments may involve risk of capital loss from unfavorable fluctuation in currency values, from differences in generally accepted accounting principles or from economic or political instability in other nations. Emerging markets involve heightened risks related to the same factors as well as increased volatility and lower trading volume. Narrowly focused investments may be subject to higher volatility. The funds are non-diversified.

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