

GLOBAL X ETFs RESEARCH

The Next Big Theme: November 2023



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Topic: **Disruptive
Technology, Physical
Environment, People &
Demographics**



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Artificial Intelligence & Technology

OpenAI Hosts Its First DevDay

At the inaugural OpenAI DevDay conference, OpenAI highlighted ChatGPT's rapid progress, shared updates on reaching 100 million weekly users, and unveiled an array of enhancements, including reduced fees.¹ Part of the widespread appeal of ChatGPT is OpenAI's user-friendly approach, and now, they are including the ability to easily create custom GPT bots tailored to specific tasks, a feature extended to enterprises through Custom Models.² Also, the company expects to launch a GPT marketplace by the end of November that can facilitate the purchase and sale of custom GPT bots to foster an open-source and accessible ecosystem.³ Among key updates, the GPT-4 Turbo model will receive a significant information source upgrade that extends its information cutoff from September 2021 to April 2023.⁴ The chatbot's input capability will quadruple in the new Turbo version from 32,000 to a 128,000-context window.⁵

Product initiatives like these set the stage for competitors like Anthropic, Google, and Meta to follow. OpenAI's partnership with Microsoft's was on display at the conference. Notably, Microsoft is leveraging OpenAI's updates to enhance Azure as a compelling platform for AI product and service development. As competition intensifies, we expect it to propel broader industrywide advancements in AI.

Data Centers & Cloud Computing

Developers Focus on Building Digital Foundations

As cloud computing and AI advance, industry leaders such as Alphabet, Meta, Amazon, and Microsoft are investing heavily in essential technical infrastructure, especially servers and data centers.⁶ The symbiotic relationship between cloud computing and AI is particularly beneficial for cloud hyperscalers because it enhances the customer appeal of their platforms. An example of the surging demand for major data center providers is Digital Realty announcing plans for the construction of its fourth local data center in Switzerland, scheduled to begin by 2025.⁷ Boasting a 14-megawatt capacity, this facility will augment Digital Realty's existing trio of data centers and solidify its position as a key player in managing the vast data flow from the cloud portals that Amazon, Microsoft, and Google have in Switzerland.⁸ Contributing to this growth trajectory, MainOne, an Equinix subsidiary, announced the launch of an expanded open-access, carrier-neutral data center in West Africa. The data center meets Uptime Tier III standards, which demand the capability for three days of independent power that is not connected to a power source and no more than 1.6 hours of downtime per year.⁹

U.S. Infrastructure Development

Tracking IIJA Funding Progress in Energy and on the Rails



The Biden administration is strategically channeling significant funds into both the energy and rail sectors. In the energy domain, the Cross-Tie, Southline, and Twin States Clean Energy Link projects secured an initial allocation of \$1.3 billion from a \$2.5 billion investment fund established under the 2021 Infrastructure Investment and Jobs Act (IIJA).¹⁰ Spanning six states, these ventures aim to boost grid capacity by 3.5 gigawatts (GW).¹¹ Also, a groundbreaking \$16.4 billion investment was announced for 25 passenger rail projects along the Northeast Corridor.¹² Representing the most substantial federal funding injection into U.S. passenger rail infrastructure in decades, these grants will help replace, enhance, and expand tunnels, bridges, electrical systems, tracks, and signaling.¹³ Notable projects include upgrading the Hudson River Tunnel and replacing the 150-year-old Baltimore and Potomac Tunnel.¹⁴ These strategic investments align with the Biden administration's vision of modernizing critical infrastructure, driving economic growth, and improving transportation efficiency.

E-commerce & FinTech

Retailers Ready for a Festive Holiday Boost

The National Retail Federation (NRF) forecasts record-breaking U.S. holiday spending. The NRF expects a 3–4% increase from the November–December period in 2022, to between \$957.3 billion and \$966.6 billion in 2023.¹⁵ Fueled by the ongoing shift in consumer behavior, online and non-store sales are projected to rise 7–9% to between \$273.7 billion and \$278.8 billion, surpassing last year's \$255.8 billion.¹⁶ Mobile commerce and buy now, pay later (BNPL) channels are propelling the spending momentum. Inflated prices are making BNPL a particularly attractive and flexible payment option. Globally, BNPL transactions doubled in Q3 2023 and helped drive \$17 billion in U.S. online spending, a 16.9% uptick from 2022's \$14.5 billion.¹⁷ Overall, mobile commerce is set to command 51.2% of all online spending in 2023, surpassing desktop usage.¹⁸ Stimulated by factors like massive discounts and flexible payment methods, e-commerce remains resilient amid economic uncertainties and high interest rates.

Electric Vehicles

Toyota Drives the EV Race

Toyota's recent \$8 billion investment in Toyota Battery Manufacturing North Carolina (TBMNC) is a pivotal step in the company's global vehicle electrification.¹⁹ Expected to be operational in 2025, the facility will be Toyota's lithium-ion battery production hub in North America.²⁰ With a total commitment of nearly \$13.9 billion and 3,000 new jobs, Toyota's focus is on expanding capacity for battery electric vehicles (BEVs) and plug-in hybrid electric vehicles (PHEVs).²¹ The plan includes eight BEV/PHEV battery production lines to go along with two others previously announced. The plan also includes four lines for Hybrid Electric Vehicles (HEVs) by 2030.²² Aligned with Toyota's ambition to offer electrified options for every Toyota and Lexus model globally by 2025, this investment marks the latest step in the company's electrification.²³

Tesla Aims for Cost Reductions

Tesla plans to introduce a new electric car model priced at around \$25,000, its most affordable offering to date.²⁴ It is unclear whether it will be an entirely new model or a streamlined version of an existing one, but production is expected to take place at Tesla's factory near Berlin.²⁵ Tesla aims to achieve cost reductions through a manufacturing breakthrough that involves casting the underbody of its cars as a single piece. The move positions Tesla to compete with budget EV manufacturers in Europe and China. In particular, the move addresses a growing market for low-cost EVs in the European Union, where competitors like Volkswagen, Renault, and Stellantis already announced plans for affordable electric models.²⁶



Social Media & Artificial Intelligence

Digital Advertising Gets Augmented by AI

Third-quarter advertising revenue increased significantly for major players in the digital ad market, a resurgence primarily attributed to broad consumer strength and AI.²⁷ Meta reported that its Advantage+ tool, which offers ad automation tools that facilitate swift creation and tracking of campaigns, helped boost the company's online sales.²⁸ Google's Performance Max advertiser product, which highlights gains from AI tools, is a central hub for advertising across its network, including Search and YouTube. Also, Google's recent introduction of Demand Gen and Video View further harnesses AI to create highly targeted video and image ads on various platforms. Amazon's advertising division, propelled by strategic investments in machine learning, has been its fastest-growing segment for three consecutive quarters.²⁹ Companies with substantial investments in AI are spending to promote their AI products too, to the tune of \$40 million across diverse channels.³⁰ Reduced ad spending due to economic uncertainties in 2022 have given way to an AI-powered bounce back.

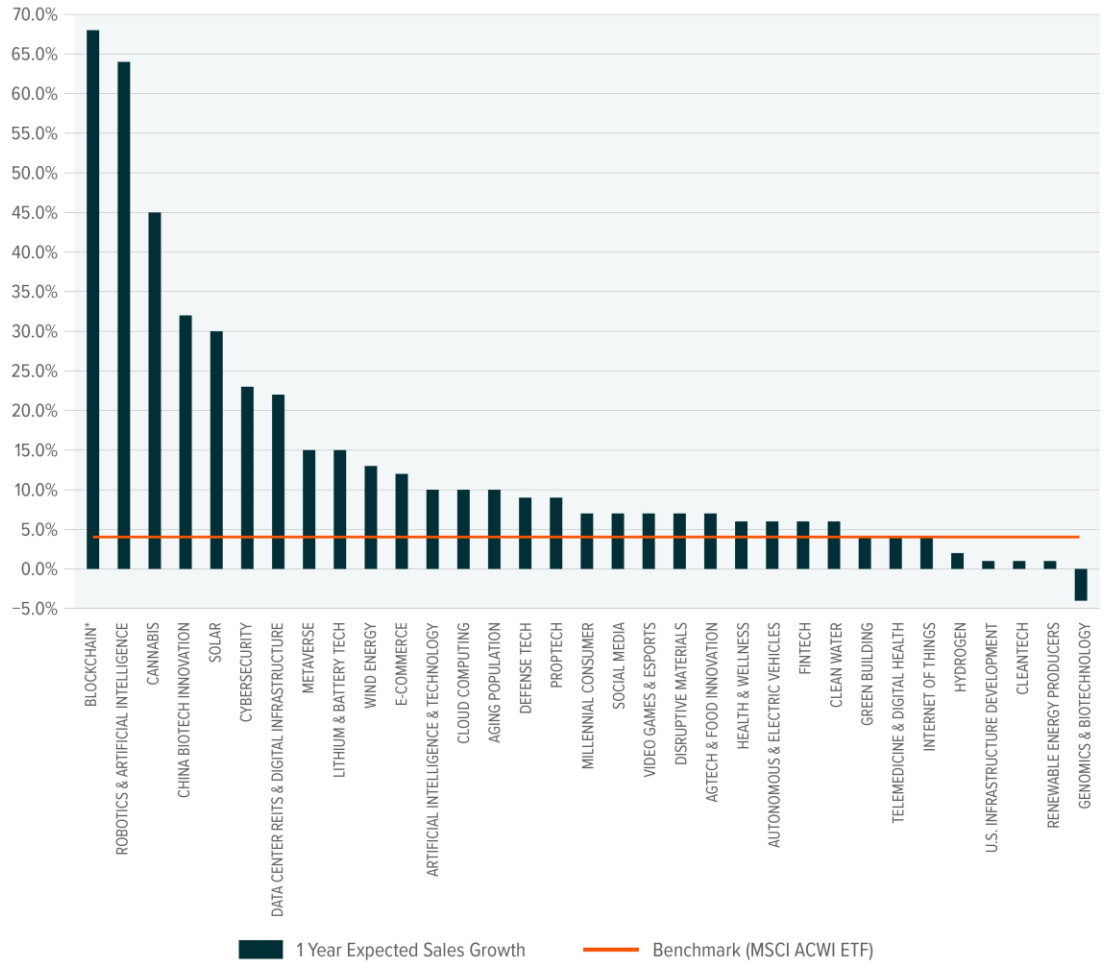


THE NUMBERS

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

THEMATIC EXPECTED SALES GROWTH

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

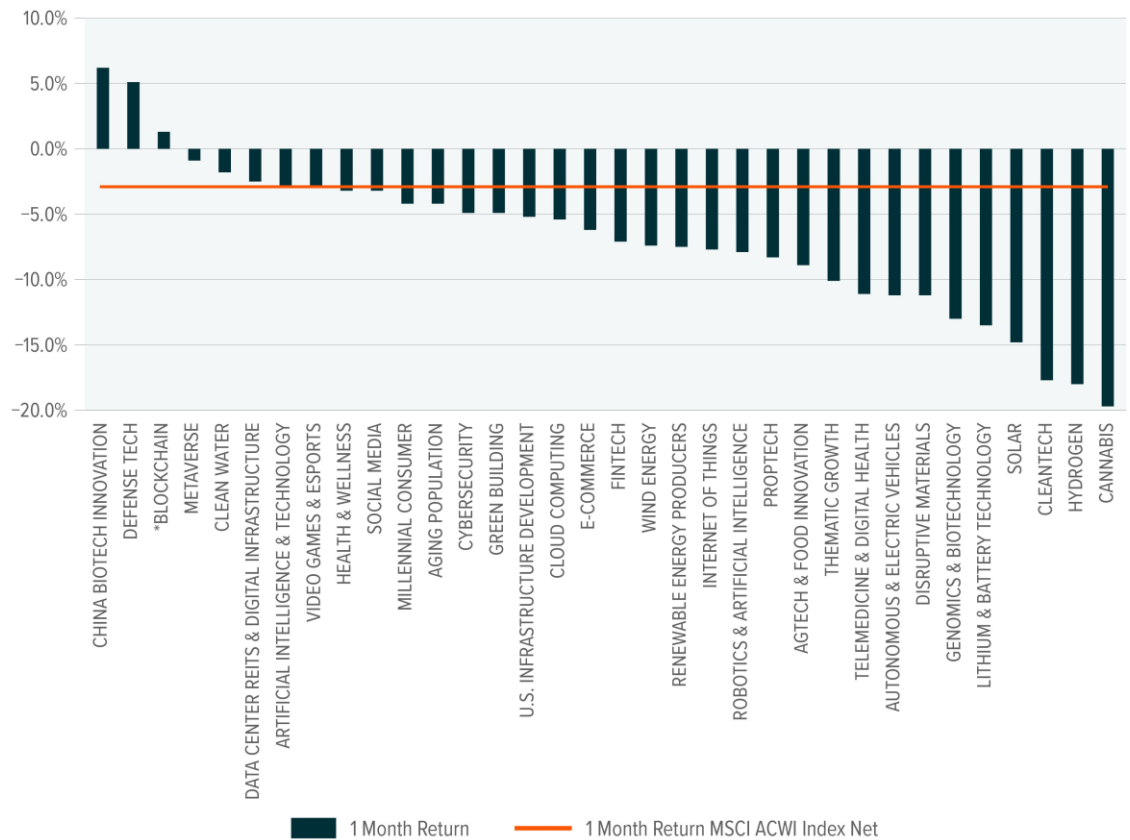


Note: Forward looking based on index data and analysis from 10/31/2023.
1 year annualized forward sales growth is the consensus analyst expectations for total sales growth in the next 12 months.
Refer to Appendix above Footnotes for details on Indices used.



OCTOBER 2023 THEMATIC ETF RETURNS

Source: Bloomberg, October 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 (10/31/23)			Avg. Annualized % Data as of quarter end (09/30/23)					
	Expense Ratio		1 Month	3 Month	Since Inception	1 Year	3 Year	5 Year	10 Year	Since Inception
ROBOTICS & ARTIFICIAL INTELLIGENCE Inception Date 9/12/2016	0.69%	NAV	-8.68%	-22.52%	57.34%	36.68%	-3.62%	2.20%	-	8.02%
		Market Price	-7.89%	-21.86%	58.46%	36.98%	-3.76%	2.20%	-	8.00%
		Index	-8.67%	-22.45%	61.39%	37.15%	-3.10%	2.60%	-	8.41%
FINTECH Inception Date 9/12/2016	0.68%	NAV	-6.95%	-24.31%	31.94%	-0.80%	-17.50%	-5.77%	-	5.08%
		Market Price	-7.10%	-24.31%	31.72%	-0.45%	-17.53%	-5.76%	-	5.08%
		Index	-6.90%	-24.24%	36.88%	-0.60%	-17.21%	-5.34%	-	5.62%
INTERNET OF THINGS Inception Date 9/12/2016	0.68%	NAV	-7.94%	-19.31%	99.11%	24.63%	6.09%	9.53%	-	11.56%
		Market Price	-7.74%	-19.07%	98.90%	24.33%	5.86%	9.51%	-	11.51%
		Index	-7.92%	-19.25%	103.74%	25.08%	6.46%	9.87%	-	11.92%
CLOUD COMPUTING Inception Date 4/12/2019	0.68%	NAV	-5.42%	-16.23%	20.38%	18.13%	-7.08%	-	-	5.54%
		Market Price	-5.36%	-16.14%	20.93%	17.98%	-7.08%	-	-	5.64%
		Index	-5.36%	-16.11%	23.83%	18.86%	-6.48%	-	-	6.20%



SOCIAL MEDIA Inception Date 11/14/2011	0.65%	NAV	-3.71%	-14.28%	140.87%	30.36%	-9.25%	2.60%	6.56%	8.02%
		Market Price	-3.24%	-14.83%	140.46%	29.91%	-9.60%	2.52%	6.46%	7.96%
		Index	-3.71%	-14.19%	156.44%	31.27%	-8.82%	3.12%	7.08%	8.59%
ARTIFICIAL INTELLIGENCE & TECHNOLOGY Inception Date 5/11/2018	0.68%	NAV	-3.04%	-11.70%	78.39%	41.17%	5.15%	11.74%	-	11.97%
		Market Price	-2.79%	-11.71%	78.74%	40.92%	5.02%	11.71%	-	11.96%
		Index	-3.03%	-11.54%	82.61%	42.07%	5.70%	12.22%	-	12.46%
AUTONOMOUS & ELECTRIC VEHICLES Inception Date 4/13/2018	0.68%	NAV	-11.70%	-25.05%	48.42%	18.23%	12.71%	11.39%	-	9.96%
		Market Price	-11.20%	-24.86%	48.71%	18.37%	12.48%	11.25%	-	9.89%
		Index	-11.73%	-25.09%	49.58%	18.22%	12.97%	11.59%	-	10.13%
LITHIUM AND BATTERY TECH Inception Date 7/22/2010	0.75%	NAV	-14.66%	-29.07%	81.26%	-15.47%	12.42%	12.46%	9.03%	5.87%
		Market Price	-13.47%	-28.39%	82.81%	-15.52%	11.90%	12.32%	8.99%	5.83%
		Index	-14.64%	-29.08%	92.78%	-15.04%	12.95%	12.73%	9.56%	6.37%
GENOMICS AND BIOTECHNOLOGY Inception Date 4/5/2019	0.50%	NAV	-12.71%	-27.67%	-41.92%	-18.93%	-17.18%	-	-	-8.67%
		Market Price	-12.98%	-27.87%	-40.90%	-18.96%	-17.24%	-	-	-8.26%
		Index	-12.66%	-27.45%	-40.69%	-18.65%	-16.88%	-	-	-8.26%
MILLENNIAL CONSUMER Inception Date 5/4/2016	0.50%	NAV	-3.92%	-13.92%	100.52%	18.51%	-0.68%	5.38%	-	10.44%
		Market Price	-4.18%	-14.12%	99.58%	18.90%	-0.64%	5.41%	-	10.41%
		Index	-3.92%	-13.86%	107.57%	19.11%	-0.20%	5.90%	-	10.95%
AGING POPULATION Inception Date 5/09/2016	0.50%	NAV	-4.48%	-10.99%	73.04%	11.72%	1.24%	3.89%	-	8.36%
		Market Price	-4.19%	-10.65%	76.55%	11.43%	1.12%	3.71%	-	8.61%
		Index	-4.48%	-10.93%	76.38%	12.03%	1.47%	4.10%	-	8.64%
HEALTH AND WELLNESS Inception Date 5/9/2016	0.50%	NAV	-3.19%	-12.68%	44.07%	15.85%	-0.66%	2.09%	-	5.52%
		Market Price	-3.15%	-12.42%	45.16%	16.77%	-0.80%	2.03%	-	5.62%
		Index	-3.10%	-12.57%	48.43%	16.24%	-0.33%	2.44%	-	5.93%
E-COMMERCE Inception Date 11/27/2018	0.50%	NAV	-6.66%	-18.58%	14.97%	19.34%	-12.19%	-	-	4.40%
		Market Price	-6.19%	-18.57%	15.04%	19.36%	-12.38%	-	-	4.30%
		Index	-6.63%	-18.52%	17.45%	19.82%	-11.84%	-	-	4.85%
US INFRASTRUCTURE DEVELOPMENT Inception Date 3/6/2017	0.47%	NAV	-5.17%	-11.09%	99.92%	32.69%	22.51%	12.87%	-	12.02%
		Market Price	-5.20%	-11.08%	99.99%	32.78%	22.48%	12.91%	-	12.03%
		Index	-5.12%	-10.97%	106.83%	33.43%	23.20%	13.45%	-	12.59%
CANNABIS Inception Date 9/17/2019	0.51%	NAV	-19.61%	-24.79%	-95.71%	-49.11%	-44.51%	-	-	-51.59%
		Market Price	-19.70%	-25.63%	-95.84%	-49.59%	-44.80%	-	-	-51.95%
		Index	-19.73%	-25.36%	-96.44%	-5.09%	-46.15%	-	-	-53.76%
VIDEO GAMES & ESPORTS Inception Date 10/25/2019	0.50%	NAV	-3.38%	-16.08%	22.61%	4.71%	-11.16%	-	-	6.24%
		Market Price	-2.84%	-15.49%	23.28%	4.89%	-11.24%	-	-	6.24%
		Index	-3.41%	-16.11%	24.77%	5.12%	-10.77%	-	-	6.72%
CYBERSECURITY Inception Date 10/25/2019	0.51%	NAV	-4.78%	-9.08%	56.13%	2.70%	4.48%	-	-	13.39%
		Market Price	-4.90%	-9.09%	58.79%	2.61%	4.51%	-	-	13.92%
		Index	-4.74%	-8.97%	58.90%	3.34%	4.89%	-	-	13.89%
THEMATIC GROWTH Inception Date 10/25/2019	0.50%	NAV	-10.14%	-26.75%	-12.45%	-7.70%	-10.25%	-	-	-0.66%
		Market Price	-10.13%	-26.77%	-11.94%	-7.73%	-10.39%	-	-	-0.52%
		Index	-10.19%	-26.79%	-13.28%	-7.78%	-10.50%	-	-	-0.89%
TELEMEDICINE & DIGITAL HEALTH Inception Date 7/29/2020	0.68%	NAV	-10.99%	-32.00%	-46.27%	-18.82%	-18.16%	-	-	-14.71%
		Market Price	-11.11%	-31.94%	-46.40%	-18.76%	-18.30%	-	-	-14.74%
		Index	-10.99%	-31.91%	-45.51%	-18.32%	-17.79%	-	-	-14.33%
CHINA BIOTECH INNOVATION Inception Date 9/22/2020	0.65%	NAV	6.60%	1.38%	-46.10%	-10.60%	-20.73%	-	-	-20.20%
		Market Price	6.22%	1.01%	-46.43%	-9.45%	-21.02%	-	-	-20.27%
		Index	6.70%	1.65%	-44.93%	-9.99%	-20.19%	-	-	-19.66%
CLEANTECH Inception Date 10/27/2020	0.50%	NAV	-17.67%	-39.53%	-39.62%	-21.32%	-	-	-	-10.06%
		Market Price	-17.73%	-39.48%	-39.89%	-21.21%	-	-	-	-10.17%
		Index	-17.66%	-39.59%	-40.55%	-21.02%	-	-	-	-10.53%
DATA CENTER REITS & DIGITAL INFRASTRUCTURE Inception Date 10/27/2020	0.50%	NAV	-2.13%	-10.38%	-13.06%	6.05%	-	-	-	-3.97%
		Market Price	-2.52%	-10.60%	-13.25%	6.25%	-	-	-	-3.91%
		Index	-2.07%	-10.37%	-13.20%	5.82%	-	-	-	-4.04%
RENEWABLE ENERGY PRODUCERS Inception Date 05/27/2015	0.66%	NAV	-7.55%	-23.65%	-19.29%	-21.01%	-10.58%	-1.29%	-	-1.61%
		Market Price	-7.50%	-23.74%	-19.80%	-21.17%	-10.80%	-1.33%	-	-1.69%
		Index	-7.55%	-23.59%	-16.74%	-20.76%	-10.23%	-0.85%	-	-1.20%
CLEAN WATER Inception Date 04/08/2021	0.50%	NAV	-1.97%	-12.36%	-4.30%	16.28%	-	-	-	-0.96%
		Market Price	-1.83%	-12.03%	-3.82%	16.12%	-	-	-	-0.82%
		Index	-1.93%	-12.29%	-3.58%	16.55%	-	-	-	-0.68%
AGTECH AND FOOD INNOVATION Inception Date 07/12/2021	0.50%	NAV	-8.39%	-22.18%	-60.08%	-23.43%	-	-	-	-31.22%
		Market Price	-8.88%	-22.08%	-60.00%	-23.61%	-	-	-	-31.00%
		Index	-8.37%	-22.11%	-59.75%	-23.19%	-	-	-	-30.98%
HYDROGEN Inception Date 07/12/2021	0.50%	NAV	-18.29%	-42.24%	-75.90%	-33.87%	-	-	-	-42.32%
		Market Price	-18.00%	-42.01%	-75.78%	-33.78%	-	-	-	-42.28%
		Index	-18.29%	-42.18%	-75.60%	-33.19%	-	-	-	-42.00%
BLOCKCHAIN Inception Date 07/12/2021	0.50%	NAV	1.77%	-38.43%	-75.02%	-0.09%	-	-	-	-46.90%
		Market Price	1.29%	-38.57%	-75.06%	0.08%	-	-	-	-46.82%
		Index	1.75%	-38.49%	-75.88%	-2.10%	-	-	-	-47.72%
SOLAR Inception Date 09/08/2021	0.51%	NAV	-15.01%	-34.63%	-52.70%	-33.73%	-	-	-	-24.76%
		Market Price	-14.81%	-34.29%	-52.45%	-33.43%	-	-	-	-24.65%
		Index	-15.02%	-34.64%	-52.17%	-33.38%	-	-	-	-24.34%



WIND ENERGY Inception date 09/08/2021	0.50%	NAV	-7.63%	-24.79%	-51.55%	-20.86%	-	-	-	-26.89%
		Market Price	-7.36%	-24.83%	-51.63%	-20.65%	-	-	-	-27.06%
		Index	-7.59%	-24.77%	-51.13%	-20.61%	-	-	-	-26.60%
DISRUPTIVE MATERIALS Inception date 01/24/22	0.59%	NAV	-11.17%	-25.54%	-38.35%	-9.34%	-	-	-	-19.52%
		Market Price	-11.22%	-25.68%	-38.31%	-8.16%	-	-	-	-19.46%
		Index	-11.13%	-25.49%	-37.91%	-8.96%	-	-	-	-19.20%
GREEN BUILDING Inception date 04/11/22	0.45%	NAV	-5.61%	-13.81%	-20.56%	14.26%	-	-	-	-11.06%
		Market Price	-4.94%	-13.36%	-20.11%	14.91%	-	-	-	-11.15%
		Index	-5.59%	-13.75%	-20.37%	14.85%	-	-	-	-10.93%
METAVERSE Inception date 04/26/22	0.50%	NAV	-1.34%	-15.50%	-3.60%	27.20%	-	-	-	-1.60%
		Market Price	-0.93%	-15.31%	-3.21%	27.18%	-	-	-	-1.62%
		Index	-1.29%	-15.42%	-3.05%	27.69%	-	-	-	-1.25%
PROPTECH Inception date 04/11/23	0.50%	NAV	-8.30%	-17.74%	-2.58%	-	-	-	-	-
		Market Price	-8.28%	-17.80%	-2.42%	-	-	-	-	-
		Index	-8.25%	-17.63%	-2.42%	-	-	-	-	-
CARBON CREDITS STRATEGY Inception date 05/24/23	0.39%	NAV	-1.61%	-9.34%	-7.09%	-	-	-	-	-
		Market Price	-1.13%	-9.49%	-7.12%	-	-	-	-	-
		Index	-1.61%	-9.34%	-4.63%	-	-	-	-	-
DEFENSE TECH Inception date 09/11/23	0.50%	NAV	4.94%	-	2.62%	-	-	-	-	-
		Market Price	5.14%	-	3.06%	-	-	-	-	-
		Index	-	-	2.67%	-	-	-	-	-



P/S AND EV/S

Source: Bloomberg, data is as of 10/31/23 and 9/30/23, Global X ETFs.

Ticker	Name	P/S		EV/S	
		10/31/23	9/30/23	10/31/23	9/30/23
BUG	Global X Cybersecurity ETF	5.30	5.57	4.99	5.26
CHB	Global X China Biotech Innovation ETF	4.80	4.40	4.46	4.14
GNOM	Global X Genomics & Biotechnology ETF	4.71	5.40	4.14	4.84
VR	Global X Metaverse ETF	4.08	4.15	4.11	4.23
VPN	Global X Data Center REITs & Digital Infrastructure ETF	3.97	3.98	6.41	6.39
CLOU	Global X Cloud Computing ETF	3.63	3.86	3.88	4.10
BOTZ	Global X Robotics & Artificial Intelligence ETF	3.52	3.80	3.89	4.25
BKCH	Global X Blockchain ETF	3.28	3.31	3.99	3.95
AGNG	Global X Aging Population ETF	3.15	3.30	3.79	3.96
AIQ	Global X Artificial Intelligence & Technology ETF	3.01	3.10	3.15	3.24
SOCL	Global X Social Media ETF	2.83	2.95	2.69	2.83
HERO	Global X Video Games & Esports ETF	2.68	2.88	2.62	2.91
FINX	Global X FinTech ETF	2.52	2.72	3.31	3.45
HYDR	Global X Hydrogen ETF	2.38	2.93	2.29	2.86
SNSR	Global X Internet of Things ETF	2.33	2.51	2.62	2.82
SPY	S&P 500 ETF	2.30	2.37	2.65	2.70
GRNR	Global X Green Building ETF	2.19	2.32	4.11	4.16
AQWA	Global X Clean Water ETF	2.17	2.22	3.15	3.21
EDOC	Global X Telemedicine & Digital Health ETF	1.98	2.23	2.04	2.28
RNRG	Global X Renewable Energy Producers ETF	1.75	1.91	4.27	4.46
MILN	Global X Millennial Consumer ETF	1.74	1.87	2.08	2.20
ACWI	MSCI ACWI ETF	1.68	1.74	2.01	2.07
SHLD	Global X Defense Tech ETF	1.42	1.37	1.69	1.64
LIT	Global X Lithium and Battery Tech ETF	1.41	1.62	1.48	1.72
PAVE	Global X U.S. Infrastructure ETF	1.41	1.46	1.69	1.75
PTEC	Global X PropTech ETF	1.40	1.54	2.63	2.89
RAYX	Global X Solar ETF	1.33	1.53	1.95	2.10
WNDY	Global X Wind Energy ETF	1.25	1.35	2.69	2.74
DMAT	Global X Disruptive Materials ETF	1.22	1.41	1.51	1.75
POTX	Global X Cannabis ETF	1.17	1.45	1.40	1.70
BFIT	Global X Health & Wellness ETF	1.17	1.20	1.36	1.40
EBIZ	Global X E-commerce ETF	0.92	0.98	0.78	0.85
KROP	Global X AgTech & Food Innovation ETF	0.84	0.91	1.19	1.27
CTEC	Global X Cleantech ETF	0.76	0.93	1.09	1.29
DRIV	Global X Autonomous & Electric Vehicles ETF	0.71	0.81	0.83	0.93

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 10/31/23 and 9/30/23, Global X ETFs.

Ticker	Name	F12M Sales (%)		PSG		EVSG	
		10/31/23	9/30/23	10/31/23	9/30/23	10/31/23	9/30/23
BKCH	Global X Blockchain ETF	68.0%	65.1%	0.05	0.05	0.06	0.06
BOTZ	Global X Robotics & Artificial Intelligence ETF	64.1%	60.6%	0.05	0.06	0.06	0.07
POTX	Global X Cannabis ETF	44.6%	44.1%	0.03	0.03	0.03	0.04
CHB	Global X China Biotech Innovation ETF	31.8%	34.6%	0.15	0.13	0.14	0.12
RAYS	Global X Solar ETF	30.3%	31.2%	0.04	0.05	0.06	0.07
BUG	Global X Cybersecurity ETF	22.6%	20.8%	0.23	0.27	0.22	0.25
VPN	Global X Data Center REITs & Digital Infrastructure ETF	22.2%	20.6%	0.18	0.19	0.29	0.31
VR	Global X Metaverse ETF	15.3%	16.1%	0.27	0.26	0.27	0.26
LIT	Global X Lithium and Battery Tech ETF	14.5%	19.0%	0.10	0.09	0.10	0.09
WNDY	Global X Wind Energy ETF	13.2%	11.0%	0.10	0.12	0.20	0.25
EBIZ	Global X E-commerce ETF	12.2%	13.4%	0.07	0.07	0.06	0.06
AIQ	Global X Artificial Intelligence & Technology ETF	10.4%	10.6%	0.29	0.29	0.30	0.30
CLOU	Global X Cloud Computing ETF	10.3%	11.2%	0.35	0.34	0.38	0.37
AGNG	Global X Aging Population ETF	9.6%	7.3%	0.33	0.45	0.39	0.54
SHLD	Global X Defense Tech ETF	8.7%	7.7%	0.16	0.18	0.19	0.21
PTEC	Global X PropTech ETF	8.6%	7.8%	0.16	0.20	0.31	0.37
MILN	Global X Millennial Consumer ETF	7.4%	8.5%	0.23	0.22	0.28	0.26
SOCL	Global X Social Media ETF	7.3%	8.8%	0.39	0.33	0.37	0.32
HERO	Global X Video Games & Esports ETF	6.8%	7.4%	0.40	0.39	0.39	0.39
DMAT	Global X Disruptive Materials ETF	6.7%	9.2%	0.18	0.15	0.22	0.19
KROP	Global X AgTech & Food Innovation ETF	6.5%	5.2%	0.13	0.17	0.18	0.24
BFIT	Global X Health & Wellness ETF	6.4%	6.7%	0.18	0.18	0.21	0.21
DRIV	Global X Autonomous & Electric Vehicles ETF	6.0%	6.5%	0.12	0.12	0.14	0.14
FINX	Global X FinTech ETF	5.8%	5.9%	0.44	0.46	0.57	0.58
AQWA	Global X Clean Water ETF	5.7%	6.9%	0.38	0.32	0.56	0.47
SPY	S&P 500 ETF	5.3%	5.5%	0.43	0.43	0.50	0.49
ACWI	MSCI ACWI ETF	4.6%	4.6%	0.36	0.38	0.43	0.45
GRNR	Global X Green Building ETF	4.2%	5.1%	0.52	0.45	0.97	0.82
EDOC	Global X Telemedicine & Digital Health ETF	4.1%	3.8%	0.49	0.59	0.50	0.61
SNSR	Global X Internet of Things ETF	3.7%	4.1%	0.64	0.61	0.72	0.69
HYDR	Global X Hydrogen ETF	1.7%	2.6%	1.37	1.14	1.31	1.11
PAVE	Global X U.S. Infrastructure Development ETF	1.2%	0.2%	1.17	6.09	1.41	7.28
CTEC	Global X Cleantech ETF	1.1%	4.9%	0.72	0.19	1.03	0.27
RNRG	Global X Renewable Energy Producers ETF	-2.9%	-3.2%	-0.60	-0.59	-1.47	-1.38
GNOM	Global X Genomics & Biotechnology ETF	-4.2%	-3.8%	-1.13	-1.44	-0.99	-1.29

Note: F12M Growth is calculated using consensus analyst expectations for total sales in the next 12 months and weighted average trailing 12 month revenue.

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.

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- **Multi-Theme:** [Thematic Growth ETF \(GXTG\)](#)

Appendix: Thematic Expected Sales Growth Graph Indices

AgTech & Food Innovation: *Solactive AgTech & Food Innovation Index*

Aging Population: *Indxx Aging Population Thematic Index*

Artificial Intelligence & Technology: *Indxx Artificial Intelligence & Big Data Index*

Autonomous & Electric Vehicles: *Solactive Autonomous & Electric Vehicles Index*

Blockchain: *Solactive Blockchain Index*

Cannabis: *Cannabis Index*

China Biotech Innovation: *Solactive China Biotech Innovation Index*

Clean Water: *Solactive Global Clean Water Industry Index*

CleanTech: *Indxx Global CleanTech Index*

Cloud Computing: *Indxx Global Cloud Computing Index*

Cybersecurity: *Indxx Cybersecurity Index*

Data Center REITs & Digital Infrastructure: *Solactive Data Center REITs & Digital Infrastructure Index*



Defense Tech: *Global X Defense Tech Index*
Disruptive Materials: *Solactive Disruptive Materials Index*
E-Commerce: *Solactive E-commerce Index*
FinTech: *Indxx Global FinTech Thematic Index*
Genomics: *Solactive Genomics Index*
Green Building: *Solactive Green Building Index*
Health & Wellness: *Indxx Global Health & Wellness Thematic Index*
Hydrogen: *Solactive Global Hydrogen Index*
Internet Of Things: *Indxx Global Internet of Things Thematic Index*
Lithium & Battery Technology: *Solactive Global Lithium Index*
Metaverse: *Global X Metaverse Index*
Millennial Consumer: *Indxx Millennials Thematic Index*
PropTech: *Global X PropTech Index*
Renewable Energy Producers: *Indxx Renewable Energy Producers Index*
Robotics & Artificial Intelligence: *Indxx Global Robotics & Artificial Intelligence Thematic Index*
Social Media: *Solactive Social Media Total Return Index*
Solar: *Solactive Solar Index*
Telemedicine & Digital Health: *Solactive Telemedicine & Digital Health Index*
U.S. Infrastructure: *Indxx U.S. Infrastructure Development Index*
Video Games & Esports: *Solactive Video Games & Esports Index*
Wind Energy: *Solactive Wind Energy Index*

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