

GLOBAL X

by Mirae Asset



Thematic ETF Report

Q4 2021



Thematic Investing: Harnessing Disruption in Portfolios

Thematic Investing brings a rigorous and research-driven approach to harnessing **structural changes** around the world. It seeks to identify powerful **macro-level trends** and the **companies that stand to benefit** from the materialization of those trends.

General Process

Top Down

Identify disruptive macro-level trends and select related high-conviction themes



Bottom Up

Select investments highly exposed to those themes and related trends

Characteristics

- **Long-term, growth-focused** strategies
- **Unconstrained** by geographies & sectors
- **Concentrated**, often in tech & new consumer
- **Relatable** concepts that impact our daily lives

For Informational Purposes Only

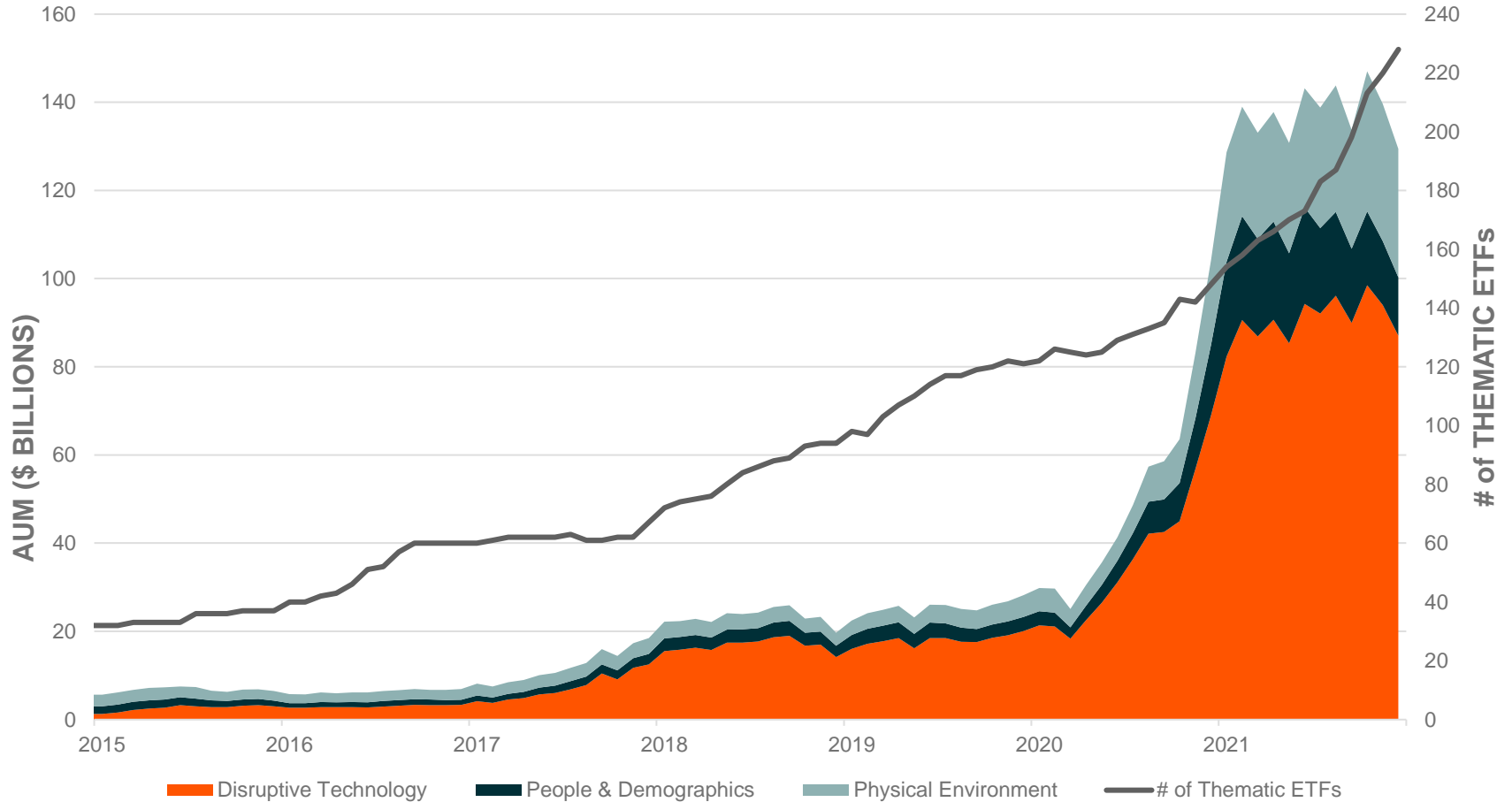
Defining & Categorizing Themes: Global X's Classification System

Category	Mega-Theme	Theme	Sub-Theme
Disruptive Technology	Big Data	Machine/Deep Learning	
		Cybersecurity	
		Quantum Computing	
		Cloud/Edge Computing	Remote Work, MarTech
	Mobility	Autonomous Vehicles	
		Electric Vehicles	Lithium/Batteries
	Digital Experiences	AR/VR	
		Video Games	E-sports
		Social Media	
		Streaming	
	FinTech	Mobile Payments	
		Peer-to-Peer Lending	
		Crowdfunding	
		Blockchain	
	Connectivity	Digital Infrastructure	
		5G/Next Gen Networking	
		Emerging Markets Internet	
Internet of Things		Smart Devices, Smart Cities, IIoT	
Space/Satellite Communications			
Robotics	AI/Automation		
	3D Printing		
	Drones		
People & Demographics	New Consumer	Millennials & Gen Z	
		Emerging Market Consumers	
		Urbanization	
		E-commerce	
		Education	
		Sharing/Gig Economy	
		Safety and Security	
		Cannabis	
		Sports Betting	
		Professional Sports	
		Health	Healthcare Innovation
	Aging Population		Senior Care, Senior Economy
	Health & Wellness		Obesity, Organics
	Emerging Markets Healthcare		
	Physical Environment	Climate Change	CleanTech
Clean & Renewable Energy			Solar, Wind, Hydrogen
		Resource Scarcity	Water, Waste/Recycling, Sustainable Food
Disruptive Materials			
Infrastructure Development			



Thematic ETF Landscape

At the end of Q4 2021, there were 228 thematic ETFs totaling \$129.4B in assets under management (AUM), down 3% from Q3 2021 but still up 24% from Q4 2020.



Source: Global X ETFs, Bloomberg. As of Dec 31, 2021.

Note: AUM includes assets of funds closed until the last month of trading activity.



Q4 2021 Thematic ETF Launches/Closures

In a very active quarter, 32 new thematic ETFs launched – 17 focused on Disruptive Technology, 8 on People & Demographics, and 7 on Physical Infrastructure. Two ETFs closed during the quarter.

Thematic ETF Launches

Ticker	Name	Issuer	Inception Date
KGRO	KraneShares China Innovation ETF	KraneShares	10/7/2021
BLKC	Invesco Alerian Galaxy Blockchain Users and Decentralized Commerce ETF	Invesco	10/7/2021
SATO	Invesco Alerian Galaxy Crypto Economy ETF	Invesco	10/7/2021
FDRV	Fidelity Electric Vehicles and Future Transportation ETF	Fidelity	10/7/2021
FDHT	Fidelity Digital Health ETF	Fidelity	10/7/2021
FCLD	Fidelity Cloud Computing ETF	Fidelity	10/7/2021
FRNW	Fidelity Clean Energy ETF	Fidelity	10/7/2021
PINK	The Simplify Health Care ETF	Simplify Asset Management	10/8/2021
CLNR	IQ Cleaner Transport	New York Life	10/21/2021
OCEN	IQ Clean Oceans ETF	New York Life	10/21/2021
TINT	ProShares Smart Materials ETF	ProShares	10/27/2021
TINY	ProShares Nanotechnology ETF	ProShares	10/27/2021
OND	ProShares On-Demand ETF	ProShares	10/27/2021
BYTE	Roundhill IO Digital Infrastructure ETF	Roundhill Investments	10/28/2021
SUBS	Fount Subscriptions Economy ETF	Fount Investments Co. Ltd	10/28/2021
MTVR	Fount Metaverse ETF	Fount Investments Co. Ltd	10/28/2021
GMET	VanEck Green Metals ETF	VanEck	11/11/2021
GBUY	Goldman Sachs Future Consumer Equity ETF	Goldman Sachs	11/11/2021
GDOC	Goldman Sachs Future Health Care EQ ETF	Goldman Sachs	11/11/2021
GREI	Goldman Sachs FT RL Estt & Infrs Eq ETF	Goldman Sachs	11/11/2021
IBET	iBet Sports Betting & Gaming ETF	Inherent Wealth Fund	11/16/2021
PSDN	AdvisorShares Poseidon Dynamic Cnns ETF	AdvisorShares	11/17/2021
TYNE	Direxion Nanotechnology ETF	Direxion	11/23/2021
INNO	Harbor Disruptive Innovation ETF	Harbor Capital Advisors, Inc.	12/2/2021
NFTZ	Defiance Digital Revolution ETF	Defiance	12/2/2021
YUMY	VanEck Future of Food ETF	VanEck	12/2/2021
WTAI	WisdomTree Artifcl Intlgnrc & Innvtn ETF	WisdomTree	12/9/2021
MSGR	Direxion mRNA ETF	Direxion Funds	12/9/2021
TEMP	JPMorgan Climate Change Solutions ETF	JPMorgan	12/13/2021
BTHM	Blackrock Future US Themes ETF	BlackRock	12/16/2021
ZGEN	Generation Z ETF	Sub-Adviser Alkali Fintech LLC	12/16/2021
EATV	VegTech Plant-based Innovt & Clmt ETF	VegTech Invest	12/27/2021



Q4 2021 Thematic ETF Launches/Closures

In a very active quarter, 32 new thematic ETFs launched – 17 focused on Disruptive Technology, 8 on People & Demographics, and 7 on Physical Infrastructure. Two ETFs closed during the quarter.

Thematic ETF Closures

Ticker	Name	Issuer	Closure Date
OLD	Long-Term Care ETF	Janus	10/11/2021
IBBJ	Defiance Next Gen Junior Biotech ETF	Defiance	12/2/2021



Q4 2021 Thematic ETFs Recap

Early-stage themes such as the metaverse, blockchain, and hydrogen received the most inflows during the quarter on a relative basis.

Top/Bottom AUM by %Δ

Ticker	Name	Q4 2021 (\$M)	Q3 2021 (\$M)	%Δ
META	Roundhill Ball Metaverse ETF	\$933.05	\$104.56	792%
BKCH	Global X Blockchain ETF	\$114.16	\$45.59	150%
HYDR	Global X Hydrogen ETF	\$27.34	\$11.97	128%
GK	AdvisorShares Gerber Kawasaki ETF	\$26.76	\$14.59	83%
GSFP	Goldman Sachs Future Planet Equity ETF	\$114.67	\$63.38	81%
THCX	The Cannabis ETF	\$69.97	\$107.39	-35%
CHNA	Loncar China BioPharma ETF	\$9.35	\$15.01	-38%
XBUY	Amplify International Online Retail ETF	\$7.36	\$12.54	-41%
EDOC	Global X Telemedicine & Digital Health ETF	\$301.56	\$585.91	-49%
KFVG	KraneShares CICC China 5G and Technology leaders Index ETF	\$33.28	\$117.58	-72%

Note: Top/bottom ETFs by %Δ are limited to those that started Q4 with AUM > \$10M and excludes fund closures

Top/Bottom AUM by \$Δ (in millions)

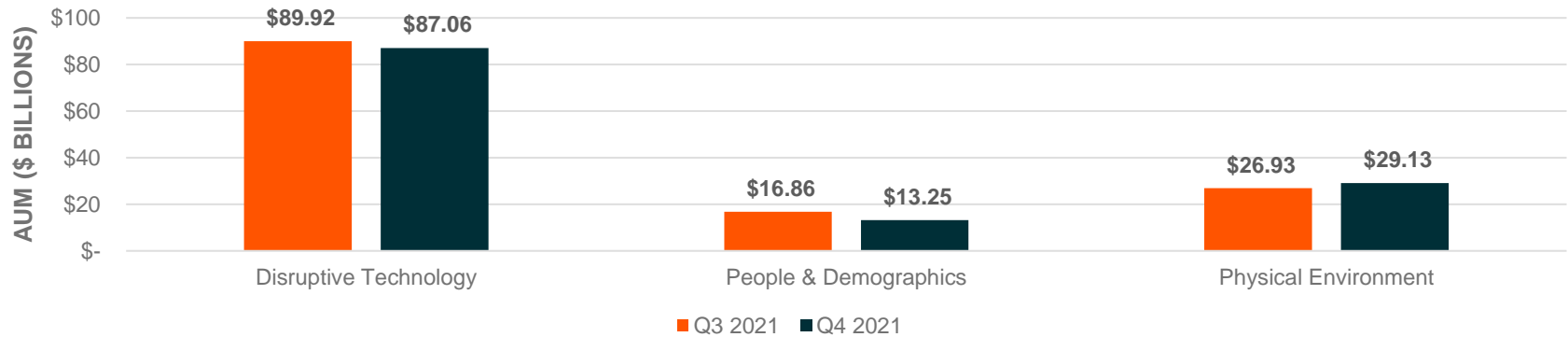
Ticker	Name	Q4 2021 (\$M)	Q3 2021 (\$M)	\$Δ (\$M)
PAVE	Global X U.S. Infrastructure Development ETF	\$5,587.75	\$4,309.14	\$1,279
CIBR	First Trust NASDAQ Cybersecurity ETF	\$5,760.90	\$4,770.06	\$991
META	Roundhill Ball Metaverse ETF	\$933.05	\$104.56	\$828
LIT	Global X Lithium & Battery Tech ETF	\$5,563.59	\$4,769.39	\$794
QCLN	First Trust Nasdaq Clean Edge Green Energy ETF	\$2,823.68	\$2,477.84	\$346
KWEB	KraneShares CSI China Internet ETF	\$6,312.82	\$6,956.87	-\$644
ARKF	Fintech Innovation ETF	\$2,211.89	\$3,228.58	-\$1,017
ARKW	ARK Next Generation Internet ETF	\$3,795.25	\$4,987.24	-\$1,192
ARKG	Genomic Revolution ETF	\$5,027.72	\$7,130.99	-\$2,103
ARKK	ARK Innovation ETF	\$16,079.49	\$19,374.62	-\$3,295



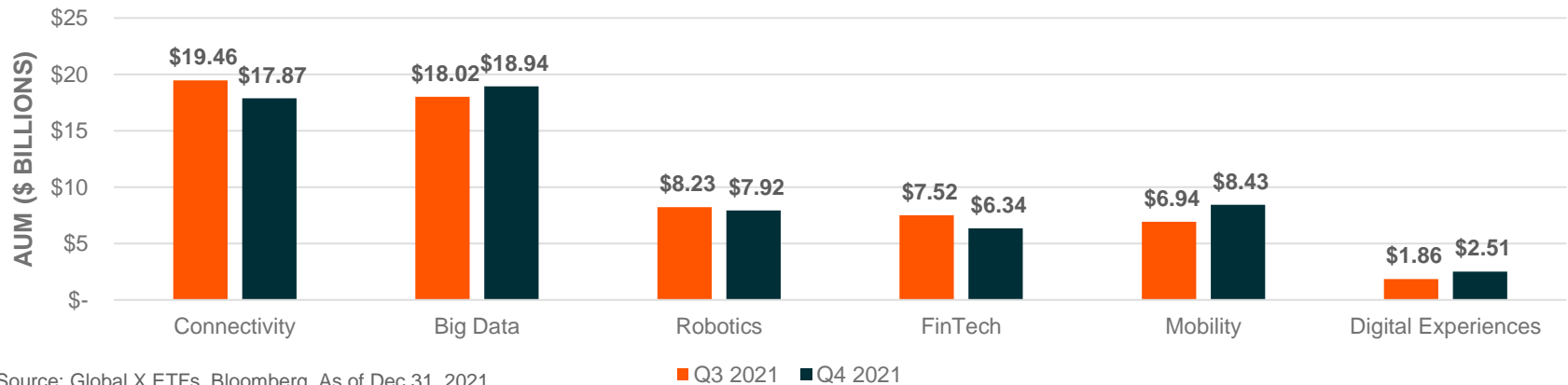
Thematic ETF Landscape

AUM decreased across Disruptive Technology and People & Demographics while Physical Environment saw an increase.

AUM by Category



AUM - Disruptive Technology's Mega-Themes



Source: Global X ETFs, Bloomberg. As of Dec 31, 2021.

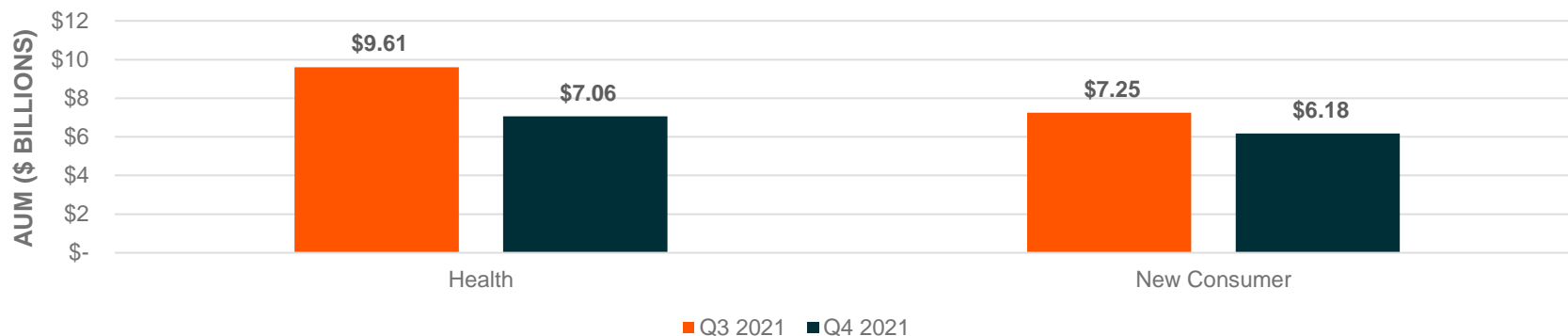
Note: Mega-Themes may or may not add up to the Category AUM given that some ETFs considered are broad and are only classified by its Category.



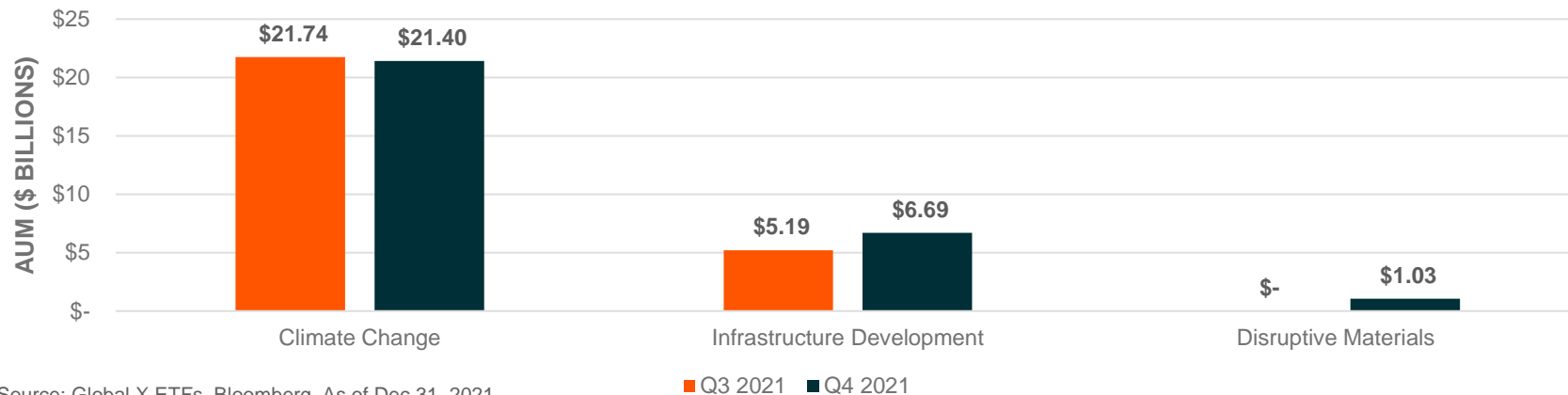
Thematic ETF Landscape

Both mega-themes within People & Demographics saw AUM decreases. Physical Environment’s mega-themes experienced mixed results, with Climate Change slightly down while Infrastructure Development increased. Disruptive Materials is a new mega-theme.

AUM - People & Demographics’ Mega-Themes



AUM - Physical Environment’s Mega-Themes



Source: Global X ETFs, Bloomberg. As of Dec 31, 2021.

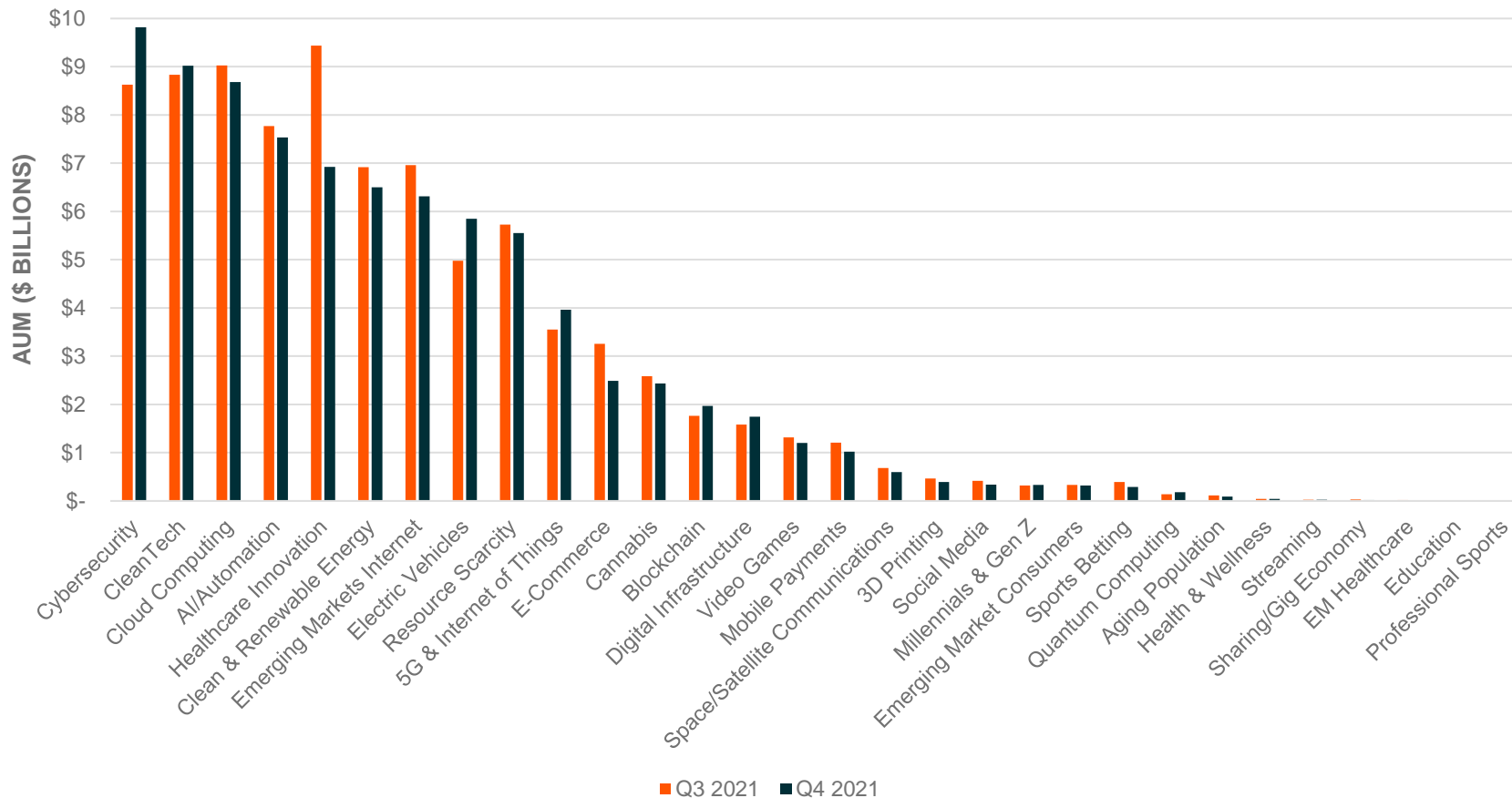
Note: Mega-Themes may or may not add up to the Category AUM given that some ETFs considered are broad and are only classified by its Category.



Thematic ETF Landscape

On a theme level, Cybersecurity and Electric Vehicles led the gains, while Healthcare Innovation saw the largest decrease in AUM.

AUM by Themes



Source: Global X ETFs, Bloomberg. As of Dec 31, 2021.

Note: Themes may or may not add up to the Mega-Themes AUM given that some ETFs considered are broad and are only classified by its Mega-Theme.

Risk Information

The Global X Thematic Classification System is based on the expertise, views, and opinions of the Global X Thematic Classification Committee and are subject to change.

Global X defines thematic investing as the process of identifying powerful disruptive macro-level trends and the underlying investments that stand to benefit from the materialization of those trends. By nature, thematic investing is a long term, growth-oriented strategy, that is typically unconstrained geographically or by traditional sector/industry classifications, has low correlation to other growth strategies, and invests in relatable concepts.

The process of identifying themes consists of three inexorable principles:

- 1) There must be high conviction that the theme will materialize and have a meaningful impact on segments of the economy or markets. Often this is due to observable structural changes in technology, demographics, consumer behavior, or the physical environment, but can also be influenced by other factors.
- 2) A theme must be investable, meaning there are publicly traded companies that provide exposure to the concept. Ideally, the group of companies is broad, have high liquidity, and attribute a substantial portion of their business operations (revenues, assets, research & development) to the theme.
- 3) A theme must be expected to express itself over a medium to long-term time horizon, generally considered to be five years or longer. A longer-term time horizon makes market timing less of a factor in the success of identifying a theme.

Notably, and taking into consideration the principles above, thematic investing does not consist of ESG, values-based, or policy-driven strategies, unless they otherwise represent a disruptive structural trend (e.g. climate change). Further, funds that adhere to traditional sector or industry classifications, or that are used primarily to gain exposure to cyclical trends (e.g. currencies, valuations, inflation) are not considered thematic. Finally, alternative asset classes, such as listed infrastructure, MLPs, and ubiquitous commodities are not considered thematic. We recognize that these exclusions may differ from other third-party definitions of thematic investing, but it is consistent with, and core to, Global X's thematic classification system and process.

Based on the definition and principles of thematic investing above, Global X has established a thematic classification system that seeks to identify powerful themes and organize them by common traits and drivers. The system consists of four layers of classifications: 1) Categories; 2) Mega-Themes; 3) Themes; and 4) Sub-Themes, with each layer becoming sequentially narrower in its focus.

'Categories' is the broadest layer and represents three fundamental drivers of disruption: exponential advancements in technology (Disruptive Technology), changing consumer habits and demographics (People & Demographics), and the evolving physical landscape (Physical Environment). One layer down are 'Mega-Themes,' which serve as a foundation to multiple transformative forces that are causing substantial changes in a common area. Conceptually, Mega-Themes are a collection of more narrowly targeted Themes. For example, Big Data is a Mega-Theme that consists of Machine/Deep Learning, Cybersecurity, Quantum Computing, and Cloud/Edge Computing. Further down, we identify 'Themes' as the specific areas of transformational disruption that are driving technology forward, changing consumer demands, or impacting the environment. 'Sub-Themes' are more niche areas, such as specific applications of themes or upstream forces that are driving themes forward.

The number and categories, mega-themes, themes, and sub-themes is expected to evolve over time as new drivers of structural changes emerge or fade. Such decisions will be made by the Global X Thematic Classification Committee ("the committee") and take into account internal and external research and data about potential themes.

Risk Information

The ETF industry consists of many funds seeking to provide exposure to categories, mega-themes, themes, or sub-themes identified within the thematic classification system. The Global X Thematic Classification Committee first evaluates the entire universe of US-listed ETFs to identify which qualify as thematic ETFs, based on Global X's definition of thematic investing and the stated objectives, methodology, and holdings of each ETF. Next, the committee identifies the best fit for each thematic ETF within the classification system, by further analyzing a fund's methodology, holdings, and stated objectives. When a new ETF launches or an existing ETF changes its strategy, its classification is evaluated promptly by the committee, and any changes are published in the next quarterly Thematic ETF Report.

While occasionally an ETF may engage in multiple mega-themes, themes, or sub-themes, its classification is determined based on the definition that most closely describes the true nature of the ETF.

While an ETF may be classified within a certain category, mega-theme, theme, or sub-theme, Global X does not give any assurances that the ETF provides good and accurate exposure to the specific theme it is targeting. For example, an ETF may target a particular theme, but have very broad exposure, including firms that have low relevance or economic exposure to the specified theme.

The thematic classification system is reviewed quarterly by the Global X Thematic Classification committee to consider new potential categories, mega-themes, themes, or sub-themes. Changes in the classification will be announced at the time of release of the following quarterly Thematic ETF Report. As a new ETF launches or changes its strategy, its classification is evaluated promptly by the committee, and published at the time of release of the Thematic ETF Report. In the case of change in an ETF strategy/methodology, holdings, or stated objectives, the thematic classification system will promptly incorporate or drop the ETF in regards into its respective classification, maintaining the history of assets under management (AUM) of the Fund.

These materials have been prepared solely for informational purposes based upon information generally available to the public and from sources believed to be reliable. The completeness of the Global X Thematic ETF Report is done on a best efforts basis at the point in time with the data available to Global X as of the time of its publication. The inclusion of a Fund in this framework reflects the view of Global X alone. Global X makes no guarantee that this framework is complete nor inclusive of all ETFs in their view of their respective issuer.

Global X accepts requests for reviews or appeals for any ETFs. Please contact Global X at research@globalxetfs.com, and the appeal will be considered in a timely manner. There are no guarantees that an appeal will result in a change in the ETF's classification.

The Thematic ETF Report, including its thematic classification system, fall under the supervision of the Global X Thematic Classification committee. This committee consists of members from Global X's research and product teams who have extensive knowledge and familiarity with thematic investing and the ETF industry. The objective of the committee is to ensure, in a best efforts basis, a definition, classification, and identification of the universe of thematic ETFs. The committee meets at least quarterly to review the classification system, as well as on an ad-hoc basis to review new ETF launches or ETFs that change their strategy.

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For more information on Global X, please contact research@globalxetfs.com. For access to *Global X Thematic Classification System – Methodology* please click [here](#).

Investing involves risk, including the possible loss of principal. Narrowly focused investments may be subject to higher volatility. This information is not intended to be individual or personalized investment or tax advice and should not be used for trading purposes. Please consult a financial advisor or tax professional for more information regarding your investment and/or tax situation.

Appendix – Classification of Thematic ETFs

Ticker	Name	Q4 2021 (\$M)	Q3 2021 (\$M)	Qtr Flows (\$M)	Category	Mega-Theme	Theme	Sub-Theme
QTUM	Defiance Quantum ETF	\$178.42	\$135.27	\$30.18	Disruptive Technology	Big Data	Quantum Computing	
AIQ	Global X Future Analytics Tech ETF	\$188.66	\$176.24	\$3.30	Disruptive Technology	Big Data		
THNQ	ROBO Global® Artificial Intelligence ETF	\$41.52	\$40.61	\$0.07	Disruptive Technology	Big Data		
XDAT	Franklin Exponential Data ETF	\$4.13	\$4.07	\$0.00	Disruptive Technology	Big Data		
VCLO	Simplify Volt Cloud and Cybersecurity Disruption ETF	\$15.97	\$8.25	\$8.84	Disruptive Technology	Big Data		
BIGY	Defiance Next Gen Big Data ETF	\$2.35	\$2.60	\$0.00	Disruptive Technology	Big Data		
DAT	ProShares Big Data Refineres ETF	\$3.89	\$4.04	-\$0.14	Disruptive Technology	Big Data		
WTAI	WisdomTree Artfcl Intlgn & Innvntn ETF	\$1.24	\$0.00	\$0.00	Disruptive Technology	Big Data	Machine/Deep Learning	
MRAD	Advertising and Marketing Technology ETF	\$2.69	\$2.78	\$0.00	Disruptive Technology	Big Data	Cloud Computing	MarTech
SKYY	First Trust Cloud Computing ETF	\$6,129.57	\$6,239.14	-\$49.15	Disruptive Technology	Big Data	Cloud Computing	
WCLD	WisdomTree Cloud Computing Fund	\$1,165.01	\$1,284.15	\$37.66	Disruptive Technology	Big Data	Cloud Computing	
CLOU	Global X Cloud Computing ETF	\$1,205.41	\$1,328.19	\$0.40	Disruptive Technology	Big Data	Cloud Computing	
WFH	Direxion Work From Home ETF	\$103.90	\$109.11	-\$5.55	Disruptive Technology	Big Data	Cloud Computing	Remote Work
IWFH	iShares Virtual Work and Life Multisector ETF	\$6.67	\$5.25	\$2.21	Disruptive Technology	Big Data	Cloud Computing	
FCLD	Fidelity Cloud Computing ETF	\$19.98	\$0.00	\$16.04	Disruptive Technology	Big Data	Cloud Computing	
IVES	Wedbush ETFMG Global Cloud Technology ETF	\$48.38	\$54.16	-\$2.50	Disruptive Technology	Big Data	Cloud Computing	
BUG	Global X Cybersecurity ETF	\$1,139.82	\$850.57	\$266.69	Disruptive Technology	Big Data	Cybersecurity	
HACK	ETFMG Prime Cyber Security ETF	\$2,241.93	\$2,307.65	-\$85.18	Disruptive Technology	Big Data	Cybersecurity	
IHAK	iShares Cybersecurity and Tech ETF	\$606.54	\$636.07	-\$43.25	Disruptive Technology	Big Data	Cybersecurity	
CIBR	First Trust NASDAQ Cybersecurity ETF	\$5,760.90	\$4,770.06	\$619.57	Disruptive Technology	Big Data	Cybersecurity	
WCBR	WisdomTree Cybersecurity ETF	\$40.95	\$35.25	\$6.02	Disruptive Technology	Big Data	Cybersecurity	
FITE	SPDR Kensho Future Security ETF	\$27.25	\$23.46	\$3.24	Disruptive Technology	Big Data	Cybersecurity	
DRIV	Global X Autonomous & Electric Vehicles ETF	\$1,414.25	\$1,076.16	\$225.74	Disruptive Technology	Mobility		
CLNR	IQ Cleaner Transport	\$6.44	\$0.00	\$1.31	Disruptive Technology	Mobility		
EKAR	Innovation Shares NextGen Vehicles & Technology ETF	\$11.60	\$11.12	\$0.00	Disruptive Technology	Mobility		
MOTO	The SmartETFs Smart Transportation & Technology ETF	\$16.61	\$14.48	\$1.23	Disruptive Technology	Mobility		
KARS	KraneShares Electric Vehicles and Future Mobility Index ETF	\$336.34	\$262.58	\$80.04	Disruptive Technology	Mobility		
VCAR	Simplify Volt RoboCar Disruption ETF	\$8.91	\$1.74	\$7.28	Disruptive Technology	Mobility		
FDRV	Fidelity Electric Vehicles and Future Transportation ETF	\$47.66	\$0.00	\$43.08	Disruptive Technology	Mobility	Electric Vehicles	
BATT	Amplify Advanced Battery Metals and Materials ETF	\$234.24	\$205.94	\$22.66	Disruptive Technology	Mobility	Electric Vehicles	Lithium/Batteries

Source: Global X ETFs, Bloomberg. Q3 2021 as of 09/30/2021; Q4 2021 as of 12/31/2021.

Appendix – Classification of Thematic ETFs

Ticker	Name	Q4 2021 (\$M)	Q3 2021 (\$M)	Qtr Flows (\$M)	Category	Mega-Theme	Theme	Sub-Theme
LIT	Global X Lithium & Battery Tech ETF	\$5,563.59	\$4,769.39	\$719.75	Disruptive Technology	Mobility	Electric Vehicles	Lithium/Batteries
HAIL	SPDR Kensho Smart Mobility ETF	\$172.40	\$177.10	-\$8.36	Disruptive Technology	Mobility		
IDRV	iShares Self-Driving EV and Tech ETF	\$622.48	\$417.54	\$151.94	Disruptive Technology	Mobility		
SUBS	Fount Subscriptions Economy ETF	\$7.77	\$0.00	\$7.59	Disruptive Technology	Digital Experiences		
MTVR	Fount Metaverse ETF	\$14.10	\$0.00	\$13.89	Disruptive Technology	Digital Experiences		
META	Roundhill Ball Metaverse ETF	\$933.05	\$104.56	\$871.85	Disruptive Technology	Digital Experiences		
HERO	Global X Video Games & Esports ETF	\$428.90	\$509.22	-\$83.19	Disruptive Technology	Digital Experiences	Video Games	Esports
GAMR	ETFMG Video Game Tech ETF	\$101.32	\$100.43	-\$4.53	Disruptive Technology	Digital Experiences	Video Games	
ESPO	Video Gaming and eSports ETF	\$606.44	\$631.00	-\$37.12	Disruptive Technology	Digital Experiences	Video Games	Esports
NERD	Roundhill BITKRAFT Esports & Digital Entertainment ETF	\$62.48	\$72.87	-\$8.27	Disruptive Technology	Digital Experiences	Video Games	Esports
SUBZ	Roundhill Streaming Services & Technology ETF	\$17.91	\$24.19	-\$4.09	Disruptive Technology	Digital Experiences	Streaming	
OND	ProShares On-Demand ETF	\$4.21	\$0.00	\$0.96	Disruptive Technology	Digital Experiences	Streaming	
SOCL	Global X Social Media ETF	\$337.38	\$414.28	-\$31.48	Disruptive Technology	Digital Experiences	Social Media	
BKCH	Global X Blockchain ETF	\$114.16	\$45.59	\$97.77	Disruptive Technology	FinTech	Blockchain	
NFTZ	Defiance Digital Revolution ETF	\$9.91	\$0.00	\$11.02	Disruptive Technology	FinTech	Blockchain	
SATO	Invesco Alerian Galaxy Crypto Economy ETF	\$8.39	\$0.00	\$5.36	Disruptive Technology	FinTech	Blockchain	
BLKC	Invesco Alerian Galaxy Blockchain Users and Decentralized Commerce ETF	\$4.64	\$0.00	\$0.00	Disruptive Technology	FinTech	Blockchain	
DAPP	VanEck Vectors Digital Transformation ETF	\$49.96	\$45.61	\$17.61	Disruptive Technology	FinTech	Blockchain	
BITQ	Bitwise Crypto Industry Innovators ETF	\$121.41	\$68.26	\$70.70	Disruptive Technology	FinTech	Blockchain	
KOIN	Innovation Shares NextGen Protocol ETF	\$30.25	\$29.39	\$0.00	Disruptive Technology	FinTech	Blockchain	
BLOK	Amplify Transformational Data Sharing ETF	\$1,157.27	\$1,156.44	\$181.52	Disruptive Technology	FinTech	Blockchain	
LEGR	First Trust Indxx Innovative Transaction & Process ETF	\$149.68	\$132.47	\$12.96	Disruptive Technology	FinTech	Blockchain	
BLCN	Reality Shares Nasdaq NexGen Economy ETF	\$262.89	\$269.48	\$5.93	Disruptive Technology	FinTech	Blockchain	
RIGZ	Viridi Cleaner Energy Crypto-Mining & Semiconductor ETF	\$14.46	\$9.80	\$9.53	Disruptive Technology	FinTech	Blockchain	
CRPT	First Trust SkyBridge Crypto Industry and Digital Economy ETF	\$45.43	\$6.44	\$52.69	Disruptive Technology	FinTech	Blockchain	
IPAY	ETFMG Prime Mobile Payments ETF	\$1,007.18	\$1,193.64	-\$14.06	Disruptive Technology	FinTech	Mobile Payments	
TPAY	Tortoise Digital Payments Infrastructure Fund	\$11.27	\$13.31	\$0.05	Disruptive Technology	FinTech	Mobile Payments	
VFIN	Simplify Volt Fintech Disruption ETF	\$2.12	\$2.58	\$0.40	Disruptive Technology	FinTech		
FINX	Global X FinTech ETF	\$1,137.50	\$1,318.74	\$50.00	Disruptive Technology	FinTech		
ARKF	Fintech Innovation ETF	\$2,211.89	\$3,228.58	-\$515.36	Disruptive Technology	FinTech		

Source: Global X ETFs, Bloomberg. Q3 2021 as of 09/30/2021; Q4 2021 as of 12/31/2021.

Appendix – Classification of Thematic ETFs

Ticker	Name	Q4 2021 (\$M)	Q3 2021 (\$M)	Qtr Flows (\$M)	Category	Mega-Theme	Theme	Sub-Theme
BIDS	Amplify Digital and Online Trading ETF	\$0.61	\$0.63	\$0.00	Disruptive Technology	FinTech		
VPN	Global X Data Center REITs & Digital Infrastructure ETF	\$80.79	\$64.39	\$8.96	Disruptive Technology	Connectivity	Digital Infrastructure	
SRVR	Pacer Benchmark Data & Infrastructure Real Estate SCTR ETF	\$1,653.52	\$1,518.13	-\$29.47	Disruptive Technology	Connectivity	Digital Infrastructure	
GREI	Goldman Sachs FT RL Estt & Infrs Eq ETF	\$10.47	\$0.00	\$6.00	Disruptive Technology	Connectivity	Digital Infrastructure	
BYTE	Roundhill IO Digital Infrastructure ETF	\$1.88	\$0.00	\$0.36	Disruptive Technology	Connectivity	Digital Infrastructure	
KFVG	KraneShares CICC China 5G and Technology leaders Index ETF	\$33.28	\$117.58	-\$87.93	Disruptive Technology	Connectivity	5G & Internet of Things	
GRID	First Trust Nasdaq Clean Edge Smart GRID Infrastructure Index	\$821.96	\$550.23	\$209.92	Disruptive Technology	Connectivity	5G & Internet of Things	Smart Cities
SIMS	SPDR Kensho Intelligent Structure ETF	\$56.48	\$51.72	\$2.58	Disruptive Technology	Connectivity	5G & Internet of Things	Smart Cities
FIVG	Defiance Next Gen Connectivity ETF	\$1,383.73	\$1,234.38	-\$28.79	Disruptive Technology	Connectivity	5G & Internet of Things	
NXTG	First Trust Indxx NextG ETF	\$1,081.37	\$1,081.60	-\$71.74	Disruptive Technology	Connectivity	5G & Internet of Things	
WUGI	Esoterica NextG Economy ETF	\$45.76	\$41.44	-\$0.03	Disruptive Technology	Connectivity	5G & Internet of Things	
SNSR	Global X Internet of Things ETF	\$538.82	\$474.81	\$25.02	Disruptive Technology	Connectivity	5G & Internet of Things	
KWEB	KraneShares CSI China Internet ETF	\$6,312.82	\$6,956.87	\$1,511.72	Disruptive Technology	Connectivity	Emerging Markets Internet	
PNQI	Invesco NASDAQ Internet ETF	\$934.45	\$1,033.95	-\$0.66	Disruptive Technology	Connectivity		
ARKW	ARK Next Generation Internet ETF	\$3,795.25	\$4,987.24	-\$545.20	Disruptive Technology	Connectivity		
XWEB	SPDR S&P Internet ETF	\$39.90	\$56.18	-\$11.45	Disruptive Technology	Connectivity		
OGIG	O'Shares Global Internet Giants ETF	\$486.14	\$606.69	-\$82.97	Disruptive Technology	Connectivity		
ROKT	SPDR Kensho Final Frontiers ETF	\$21.24	\$21.30	-\$0.01	Disruptive Technology	Connectivity	Space/Satellite Communications	
UFO	Procore Space ETF	\$104.39	\$120.58	-\$3.15	Disruptive Technology	Connectivity	Space/Satellite Communications	
ARKX	Ark Space Exploration	\$468.91	\$541.44	-\$54.30	Disruptive Technology	Connectivity	Space/Satellite Communications	
PRNT	3D Printing ETF	\$394.40	\$461.53	-\$51.93	Disruptive Technology	Robotics	3D Printing	
ARKQ	ARK Autonomous Technology & Robotics ETF	\$2,148.86	\$2,494.80	-\$327.46	Disruptive Technology	Robotics	AI/Automation	
BOTZ	Global X Robotics & Artificial Intelligence ETF	\$2,678.20	\$2,752.64	-\$13.41	Disruptive Technology	Robotics	AI/Automation	
ROBO	ROBO Global Robotics and Automation Index ETF	\$1,956.14	\$1,812.40	-\$4.68	Disruptive Technology	Robotics	AI/Automation	
ROBT	First Trust Nasdaq Artificial Intelligence and Robotics ETF	\$297.08	\$266.49	\$22.36	Disruptive Technology	Robotics	AI/Automation	
IRBO	iShares Robotics and Artificial Intelligence ETF	\$431.74	\$424.26	\$18.01	Disruptive Technology	Robotics	AI/Automation	
IQM	Franklin Intelligent Machines ETF	\$13.55	\$12.11	\$0.00	Disruptive Technology	Robotics	AI/Automation	
MAKX	ProShares S&P Kensho Smart Factories ETF	\$4.13	\$3.98	\$0.00	Disruptive Technology	Robotics	AI/Automation	
XT	iShares Exponential Technologies ETF	\$4,245.85	\$3,929.89	\$101.25	Disruptive Technology			
XITK	SPDR FactSet Innovative Technology ETF	\$264.49	\$328.45	-\$26.79	Disruptive Technology			

Source: Global X ETFs, Bloomberg. Q3 2021 as of 09/30/2021; Q4 2021 as of 12/31/2021.

Appendix – Classification of Thematic ETFs

Ticker	Name	Q4 2021 (\$M)	Q3 2021 (\$M)	Qtr Flows (\$M)	Category	Mega-Theme	Theme	Sub-Theme
DTEC	ALPS Disruptive Technologies ETF	\$242.86	\$233.61	\$9.82	Disruptive Technology			
LOUP	Innovator Loup Frontier Tech ETF	\$75.08	\$76.89	-\$5.07	Disruptive Technology			
ARKK	ARK Innovation ETF	\$16,079.49	\$19,374.62	-\$629.49	Disruptive Technology			
KOMP	SPDR Kensho New Economies Composite ETF	\$2,059.94	\$1,998.34	\$130.74	Disruptive Technology			
IZRL	ARK Israel Innovative Technology ETF	\$216.00	\$260.86	-\$38.39	Disruptive Technology			
IETC	iShares Evolved U.S. Technology ETF	\$159.05	\$139.25	\$5.82	Disruptive Technology			
PLAT	WisdomTree Growth Leaders ETF	\$18.32	\$15.98	\$3.11	Disruptive Technology			
TECB	iShares US Tech Breakthrough Multisector ETF	\$435.35	\$435.26	-\$8.00	Disruptive Technology			
GINN	Goldman Sachs Innovate Equity ETF	\$482.72	\$464.67	\$9.51	Disruptive Technology			
MOON	Direxion Moonshot Technologies ETF	\$104.40	\$146.14	-\$22.78	Disruptive Technology			
BTEK	BlackRock Future Tech ETF	\$19.38	\$19.67	-\$0.30	Disruptive Technology			
BFTR	BlackRock Future Innovators ETF	\$16.58	\$22.99	-\$4.22	Disruptive Technology			
ANEW	MSCI Transformational Changes ETF	\$40.65	\$45.81	-\$5.49	Disruptive Technology			
TMAT	Main Thematic Innovation ETF	\$76.47	\$70.89	\$10.12	Disruptive Technology			
GGRW	Gabelli Funds' Growth Innovators ETF	\$4.10	\$3.82	\$0.14	Disruptive Technology			
IDAT	iShares Cloud 5G and Tech ETF	\$9.60	\$8.24	\$0.05	Disruptive Technology			
ILDR	First Trust Innovation Leaders ETF	\$3.26	\$3.25	\$0.00	Disruptive Technology			
MVPS	Amplify Thematic All-Stars ETF	\$14.63	\$8.66	\$5.95	Disruptive Technology			
SPRX	Spear Alpha ETF	\$4.88	\$3.98	\$0.57	Disruptive Technology			
JFWD	Jacob Forward ETF	\$6.57	\$7.43	-\$0.17	Disruptive Technology			
GK	AdvisorShares Gerber Kawasaki ETF	\$26.76	\$14.59	\$11.22	Disruptive Technology			
FFND	The Future Fund Active ETF	\$16.03	\$11.26	\$5.40	Disruptive Technology			
GTEK	Goldman Sachs Future Tech Leaders Equity ETF	\$281.22	\$172.04	\$106.83	Disruptive Technology			
TINY	ProShares Nanotechnology ETF	\$4.32	\$0.00	-\$0.03	Disruptive Technology			
KGRO	KraneShares China Innovation ETF	\$2.43	\$0.00	\$0.00	Disruptive Technology			
TYNE	Direxion Nanotechnology ETF	\$2.35	\$0.00	\$0.00	Disruptive Technology			
INNO	Harbor Disruptive Innovation ETF	\$6.47	\$0.00	\$3.96	Disruptive Technology			
BTHM	Blackrock Future US Themes ETF	\$5.09	\$0.00	\$0.00	Disruptive Technology			
KEJI	Global X China Disruption ETF	\$3.63	\$3.74	\$0.00	Disruptive Technology			
GXTG	Global X Thematic Growth ETF	\$110.06	\$104.53	\$17.56	Disruptive Technology			

Source: Global X ETFs, Bloomberg. Q3 2021 as of 09/30/2021; Q4 2021 as of 12/31/2021.

Appendix – Classification of Thematic ETFs

Ticker	Name	Q4 2021 (\$M)	Q3 2021 (\$M)	Qtr Flows (\$M)	Category	Mega-Theme	Theme	Sub-Theme
GBUY	Goldman Sachs Future Consumer Equity ETF	\$11.35	\$0.00	\$7.82	People & Demographics	New Consumer		
VPOP	Simplify Volt Pop Culture Disruption ETF	\$1.13	\$1.51	-\$0.35	People & Demographics	New Consumer		
AWAY	ETFMG Travel Tech ETF	\$260.54	\$321.96	-\$11.17	People & Demographics	New Consumer		
LIV	Emles @Home ETF	\$3.32	\$3.35	\$0.00	People & Demographics	New Consumer		
MVP	The Pro Sports ETF	\$4.96	\$8.56	-\$3.05	People & Demographics	New Consumer	Professional Sports	
iBET	iBet Sprts Betting & Gaming ETF	\$0.26	\$0.00	\$0.00	People & Demographics	New Consumer	Sports Betting	
BETZ	Roundhill Sports Betting & iGaming ETF	\$290.51	\$393.07	-\$30.68	People & Demographics	New Consumer	Sports Betting	
BUYZ	Franklin Disruptive Commerce ETF	\$28.88	\$37.05	-\$2.35	People & Demographics	New Consumer	E-Commerce	
IBUY	Amplify Online Retail ETF	\$629.84	\$924.00	-\$132.23	People & Demographics	New Consumer	E-Commerce	
ONLN	ProShares Online Retail ETF	\$617.38	\$835.52	-\$118.25	People & Demographics	New Consumer	E-Commerce	
EBIZ	Global X E-commerce ETF	\$170.40	\$196.47	-\$9.42	People & Demographics	New Consumer	E-Commerce	
XBUY	Amplify International Online Retail ETF	\$7.36	\$12.54	-\$2.94	People & Demographics	New Consumer	E-Commerce	
EWEB	Global X Emerging Markets E-commerce & Internet ETF	\$3.78	\$4.47	\$0.00	People & Demographics	New Consumer	E-Commerce	
EMQQ	Emerging Markets Internet & Ecommerce ETF	\$1,022.64	\$1,242.76	-\$60.42	People & Demographics	New Consumer	E-Commerce	
FMQQ	The Next Frontier Internet & Ecommerce ETF	\$10.54	\$0.63	\$11.29	People & Demographics	New Consumer	E-Commerce	
KEMQ	KraneShares Emerging Markets Consumer Technology Index ETF	\$89.14	\$87.94	\$15.80	People & Demographics	New Consumer	Emerging Market Consumers	
ECON	Columbia Emerging Markets Consumer ETF	\$133.13	\$141.51	-\$2.46	People & Demographics	New Consumer	Emerging Market Consumers	
INCO	Columbia India Consumer ETF	\$97.37	\$100.68	\$1.68	People & Demographics	New Consumer	Emerging Market Consumers	
MILN	Global X Millennials Thematic ETF	\$224.45	\$222.64	\$4.21	People & Demographics	New Consumer	Millennials & Gen Z	
ZGEN	Generation Z ETF	\$5.17	\$0.00	\$5.21	People & Demographics	New Consumer	Millennials & Gen Z	
GENY	Principal Millennials Index ETF	\$104.68	\$97.01	\$14.88	People & Demographics	New Consumer	Millennials & Gen Z	
EDUT	Global X Education ETF	\$6.13	\$7.49	\$0.00	People & Demographics	New Consumer	Education	
GIGE	SoFi Gig Economy ETF	\$20.13	\$29.28	-\$4.59	People & Demographics	New Consumer	Sharing/Gig Economy	
POTX	Global X Cannabis ETF	\$93.69	\$126.06	\$13.81	People & Demographics	New Consumer	Cannabis	
YOLO	AdvisorShares Pure Cannabis ET	\$191.91	\$252.81	-\$8.95	People & Demographics	New Consumer	Cannabis	
MJUS	ETFMG U.S. Alternative Harvest ETF	\$6.99	\$6.10	\$2.27	People & Demographics	New Consumer	Cannabis	
MJ	ETFMG Alternative Harvest ETF	\$809.76	\$1,067.58	-\$10.67	People & Demographics	New Consumer	Cannabis	
THCX	The Cannabis ETF	\$69.97	\$107.39	-\$3.20	People & Demographics	New Consumer	Cannabis	
TOKE	Cambria Cannabis ETF	\$24.89	\$29.97	-\$2.09	People & Demographics	New Consumer	Cannabis	

Source: Global X ETFs, Bloomberg. Q3 2021 as of 09/30/2021; Q4 2021 as of 12/31/2021.

Appendix – Classification of Thematic ETFs

Ticker	Name	Q4 2021 (\$M)	Q3 2021 (\$M)	Qtr Flows (\$M)	Category	Mega-Theme	Theme	Sub-Theme
CNBS	Amplify Seymour Cannabis ETF	\$84.38	\$115.21	-\$0.07	People & Demographics	New Consumer	Cannabis	
MSOS	AdvisorShares Pure US Cannabis ETF	\$1,143.72	\$873.18	\$509.64	People & Demographics	New Consumer	Cannabis	
BUDX	Cannabis Growth ETF	\$4.22	\$3.97	\$1.50	People & Demographics	New Consumer	Cannabis	
PSDN	AdvisorShares Poseidon Dynamic Cnbs ETF	\$6.85	\$0.00	\$6.95	People & Demographics	New Consumer	Cannabis	
GDOC	Goldman Sachs Future Health Care EQ ETF	\$14.19	\$0.00	\$10.48	People & Demographics	Health	Healthcare Innovation	
PINK	The Simplify Health Care ETF	\$15.36	\$0.00	\$11.94	People & Demographics	Health	Healthcare Innovation	
WDNA	WisdomTree BioRevolution ETF	\$4.28	\$2.54	\$1.84	People & Demographics	Health	Healthcare Innovation	
HART	IQ Healthy Hearts ETF	\$7.30	\$6.81	\$0.03	People & Demographics	Health	Healthcare Innovation	
VIRS	Pacer BioThreat ETF	\$8.69	\$4.86	\$3.39	People & Demographics	Health	Healthcare Innovation	Public Health
ARKG	Genomic Revolution ETF	\$5,027.72	\$7,130.99	-\$890.56	People & Demographics	Health	Healthcare Innovation	Genomics
GNOM	Global X Genomics & Biotechnology ETF	\$247.80	\$274.20	\$2.82	People & Demographics	Health	Healthcare Innovation	Genomics
MSGR	Direxion mRNA ETF	\$2.96	\$0.00	\$0.59	People & Demographics	Health	Healthcare Innovation	Genomics
IDNA	iShares Genomics Immunology and Healthcare ETF	\$328.63	\$352.02	\$29.13	People & Demographics	Health	Healthcare Innovation	Genomics
PBE	Invesco Dynamic Biotechnology & Genome ETF	\$277.04	\$291.60	-\$0.65	People & Demographics	Health	Healthcare Innovation	Genomics
HELX	Franklin Genomic Discovery ETF	\$26.66	\$33.98	-\$5.01	People & Demographics	Health	Healthcare Innovation	Genomics
CNCR	Loncar Cancer Immunotherapy ETF	\$29.63	\$42.58	-\$4.17	People & Demographics	Health	Healthcare Innovation	Immunotherapy
EDOC	Global X Telemedicine & Digital Health ETF	\$301.56	\$585.91	-\$247.67	People & Demographics	Health	Healthcare Innovation	Telemedicine & Digital Health
FDHT	Fidelity Digital Health ETF	\$11.30	\$0.00	\$6.54	People & Demographics	Health	Healthcare Innovation	Telemedicine & Digital Health
CHB	Global X China Biotech Innovation ETF	\$3.88	\$5.03	-\$0.65	People & Demographics	Health	Healthcare Innovation	
GERM	ETFMG Treatments, Testing and Advancements ETF	\$49.98	\$63.48	-\$5.80	People & Demographics	Health	Healthcare Innovation	
SBIO	ALPS Medical Breakthroughs ETF	\$188.43	\$208.81	-\$10.13	People & Demographics	Health	Healthcare Innovation	
BTEC	Principal Healthcare Innovators Index ETF	\$92.42	\$136.64	-\$29.57	People & Demographics	Health	Healthcare Innovation	
IEIH	iShares Evolved U.S. Innovative Healthcare ETF	\$42.56	\$42.11	\$0.00	People & Demographics	Health	Healthcare Innovation	
HTEC	ROBO Global Healthcare Technology & Innovation	\$219.06	\$229.83	-\$0.21	People & Demographics	Health	Healthcare Innovation	
BMED	BlackRock Future Health ETF	\$9.23	\$7.03	\$2.25	People & Demographics	Health	Healthcare Innovation	
PSY	Defiance Next Gen Altered Experience ETF	\$8.26	\$10.40	\$2.35	People & Demographics	Health	Healthcare Innovation	Alternative Medicine
PSIL	AdvisorShares Psychedelics ETF	\$6.70	\$2.12	\$7.86	People & Demographics	Health	Healthcare Innovation	Alternative Medicine
BFIT	Global X Health & Wellness Thematic ETF	\$40.22	\$39.76	\$1.64	People & Demographics	Health	Health & Wellness	
AGNG	Global X Longevity Thematic ETF	\$62.85	\$61.92	\$1.79	People & Demographics	Health	Aging Population	
HLGE	The Hartford Longevity Economy ETF	\$26.84	\$25.32	\$0.00	People & Demographics	Health	Aging Population	

Source: Global X ETFs, Bloomberg. Q3 2021 as of 09/30/2021; Q4 2021 as of 12/31/2021.

Appendix – Classification of Thematic ETFs

Ticker	Name	Q4 2021 (\$M)	Q3 2021 (\$M)	Qtr Flows (\$M)	Category	Mega-Theme	Theme	Sub-Theme
CHNA	Loncar China BioPharma ETF	\$9.35	\$15.01	-\$1.65	People & Demographics	Health	EM Healthcare	
CTEC	Global X CleanTech ETF	\$125.45	\$160.23	-\$25.08	Physical Environment	Climate Change	CleanTech	
QCLN	First Trust Nasdaq Clean Edge Green Energy ETF	\$2,823.68	\$2,477.84	\$164.56	Physical Environment	Climate Change	CleanTech	
ICLN	iShares Global Clean Energy ETF	\$5,605.46	\$5,787.96	-\$45.21	Physical Environment	Climate Change	CleanTech	
ERTH	Invesco Cleantech ETF	\$458.79	\$396.52	\$44.70	Physical Environment	Climate Change	CleanTech	
SULR	Sustainable Energy II ETF	\$0.00	\$0.00	\$0.71	Physical Environment	Climate Change	CleanTech	
CTEX	ProShares S&P Kensho Cleantech ETF	\$3.80	\$4.07	-\$0.02	Physical Environment	Climate Change	CleanTech	
RNRG	Global X Renewable Energy Producers ETF	\$132.06	\$136.85	-\$4.68	Physical Environment	Climate Change	Clean & Renewable Energy	
VCLN	Virtus Duff & Phelps Clean Energy ETF	\$3.66	\$3.66	\$0.00	Physical Environment	Climate Change	Clean & Renewable Energy	
FRNW	Fidelity Clean Energy ETF	\$19.92	\$0.00	\$16.70	Physical Environment	Climate Change	Clean & Renewable Energy	
CLMA	iClima Distributed Renewable Energy ETF	\$1.51	\$0.98	\$0.53	Physical Environment	Climate Change	Clean & Renewable Energy	
BNE	Blue Horizon New Energy Economy ETF	\$8.60	\$8.27	\$0.00	Physical Environment	Climate Change	Clean & Renewable Energy	
CNRG	SPDR Kensho Clean Power ETF	\$357.14	\$359.63	\$12.73	Physical Environment	Climate Change	Clean & Renewable Energy	
PBW	Invesco WilderHill Clean Energy ETF	\$1,563.58	\$1,786.55	-\$82.52	Physical Environment	Climate Change	Clean & Renewable Energy	
SMOG	VanEck Vectors Global Alternative Energy ETF	\$300.75	\$280.92	\$0.00	Physical Environment	Climate Change	Clean & Renewable Energy	
ACES	ALPS Clean Energy ETF	\$892.45	\$909.18	\$2.44	Physical Environment	Climate Change	Clean & Renewable Energy	
HYDR	Global X Hydrogen ETF	\$27.34	\$11.97	\$19.82	Physical Environment	Climate Change	Clean & Renewable Energy	Hydrogen
HJEN	Direxion Hydrogen ETF	\$34.85	\$32.39	\$3.42	Physical Environment	Climate Change	Clean & Renewable Energy	Hydrogen
HDRO	Defiance Next Gen H2 ETF	\$65.88	\$39.74	\$33.38	Physical Environment	Climate Change	Clean & Renewable Energy	Hydrogen
RAYS	Global X Solar ETF	\$10.02	\$2.35	\$8.39	Physical Environment	Climate Change	Clean & Renewable Energy	Solar
TAN	Invesco Solar ETF	\$2,728.79	\$2,956.31	-\$105.11	Physical Environment	Climate Change	Clean & Renewable Energy	Solar
WNDY	Global X Wind Energy ETF	\$4.43	\$2.49	\$2.25	Physical Environment	Climate Change	Clean & Renewable Energy	Wind
FAN	First Trust ISE Global Wind Energy Index Fund	\$347.92	\$385.94	-\$27.01	Physical Environment	Climate Change	Clean & Renewable Energy	Wind
KROP	Global X AgTech & Food Innovation ETF	\$5.91	\$3.27	\$3.19	Physical Environment	Climate Change	Resource Scarcity	Sustainable Food
YUMY	VanEck Future of Food ETF	\$2.47	\$0.00	\$0.00	Physical Environment	Climate Change	Resource Scarcity	Sustainable Food
EATV	VegTech Plant-based Innovt & Clmt ETF	\$2.24	\$0.00	\$1.87	Physical Environment	Climate Change	Resource Scarcity	Sustainable Food
EVX	Environmental Services ETF	\$82.69	\$67.29	\$10.69	Physical Environment	Climate Change	Resource Scarcity	Waste/Recycling
WWOW	Direxion World Without Waste ETF	\$5.81	\$5.60	\$0.78	Physical Environment	Climate Change	Resource Scarcity	Waste/Recycling
AQWA	Global X Clean Water ETF	\$9.10	\$8.33	\$0.00	Physical Environment	Climate Change	Resource Scarcity	Water
EBLU	Ecofin Global Water ESG Fund	\$67.71	\$54.31	\$7.36	Physical Environment	Climate Change	Resource Scarcity	Water

Source: Global X ETFs, Bloomberg. Q3 2021 as of 09/30/2021; Q4 2021 as of 12/31/2021.

Appendix – Classification of Thematic ETFs

Ticker	Name	Q4 2021 (\$M)	Q3 2021 (\$M)	Qtr Flows (\$M)	Category	Mega-Theme	Theme	Sub-Theme
PHO	Invesco Water Resources ETF	\$2,134.98	\$1,917.97	\$7.14	Physical Environment	Climate Change	Resource Scarcity	Water
CGW	Invesco S&P Global Water Index ETF	\$1,266.04	\$1,124.19	\$42.97	Physical Environment	Climate Change	Resource Scarcity	Water
FIW	First Trust Water ETF	\$1,605.72	\$1,288.93	\$172.30	Physical Environment	Climate Change	Resource Scarcity	Water
PIO	Invesco Global Water ETF	\$362.87	\$305.41	\$27.33	Physical Environment	Climate Change	Resource Scarcity	Water
OCEN	IQ Clean Oceans ETF	\$5.21	\$0.00	\$0.02	Physical Environment	Climate Change	Resource Scarcity	
KGRN	KraneShares MSCI China Environment ETF	\$184.53	\$185.64	-\$9.84	Physical Environment	Climate Change		
GSFP	Goldman Sachs Future Planet Equity ETF	\$114.67	\$63.38	\$51.38	Physical Environment	Climate Change		
BECO	BlackRock Future Climate and Sustainable Economy ETF	\$5.12	\$4.76	\$0.00	Physical Environment	Climate Change		
SHFT	iClima Global Decarbonization Enablers ETF	\$2.05	\$2.00	\$0.00	Physical Environment	Climate Change		
DTOX	Amplify Cleaner Living ETF	\$1.03	\$1.11	\$0.00	Physical Environment	Climate Change		
GBLD	Invesco MSCI Green Building ETF	\$4.70	\$4.63	\$0.00	Physical Environment	Climate Change		
TEMP	JPMorgan Climate Change Solutions ETF	\$25.13	\$0.00	-\$22.43	Physical Environment	Climate Change		
REMX	VanEck Vectors Rare Earth/Strategic Metals ETF	\$1,013.85	\$950.06	-\$8.54	Physical Environment	Disruptive Materials		
GMET	VanEck Green Metals ETF	\$15.66	\$0.00	\$12.01	Physical Environment	Disruptive Materials		
TINT	ProShares Smart Materials ETF	\$4.15	\$0.00	-\$0.01	Physical Environment	Disruptive Materials		
PAVE	Global X U.S. Infrastructure Development ETF	\$5,587.75	\$4,309.14	\$706.41	Physical Environment	Infrastructure Development		
IFRA	iShares U.S. Infrastructure ETF	\$834.99	\$650.50	\$102.10	Physical Environment	Infrastructure Development		
AIRR	First Trust RBA American Industrial Renaissance ETF	\$261.32	\$220.55	\$18.51	Physical Environment	Infrastructure Development		
OBOR	KraneShares MSCI One Belt One Road ETF	\$9.17	\$10.75	-\$1.56	Physical Environment	Infrastructure Development		

Source: Global X ETFs, Bloomberg. Q3 2021 as of 09/30/2021; Q4 2021 as of 12/31/2021.

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