

GLOBAL X

by Mirae Asset



European Thematic ETFs Report

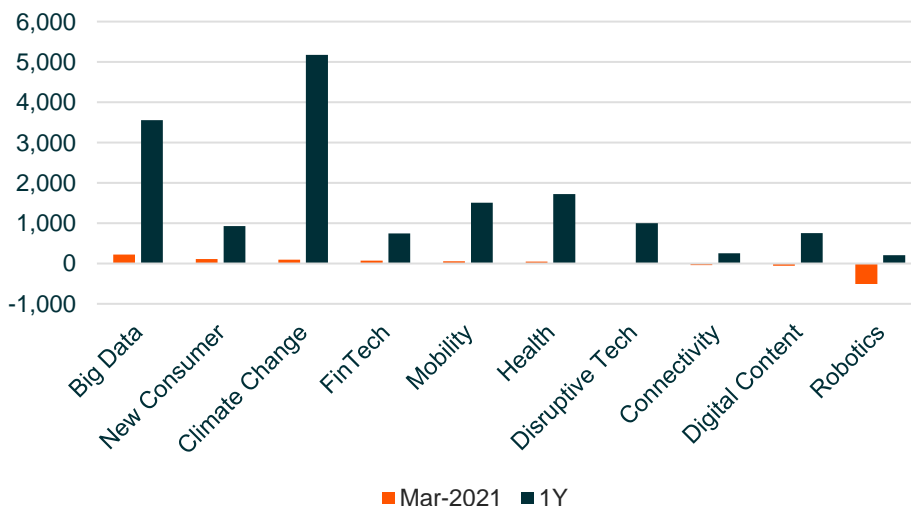
March 2021



European Thematic UCITS ETFs Flow

- In March, UCITS Thematic ETFs saw significantly lower net inflows compared to the previous months, with US\$14.4m of net inflows.
- Big data themes continued to attract the largest net inflows in March (US\$226m), but significantly less than in February. Most of the net new inflows went into machine learning thematic ETFs.
- Flows into e-commerce themes were strong in March (US\$114m), as well as flows into climate change themes (US\$97m) such as resource scarcity themes (US\$78m). US e-commerce grocery sales reached US\$96bn in 2020, representing 12% of all e-commerce sales, according to eMarketer. Following pandemic induced momentum, segment sales are expected to reach US\$188bn by 2024, up 202% from 2019 and representing a 24.7% CAGR.
- Robotics recorded massive net outflows on the month (US\$506m). Macro concerns and the value rotation are driving most of the negative sentiment in Tech.

Top Mega Themes by monthly flows (US\$m)



Top/Bottom 5 UCITS Thematic ETFs by monthly flows

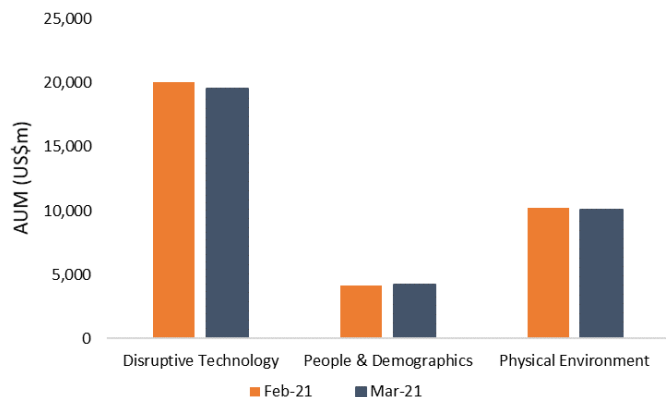
Funds	Mar-2021 (US\$m)
Xtrackers AI & Big Data UCITS ETF	181.8
L&G Hydrogen Economy UCITS ETF	125.9
L&G Ecommerce Logistics UCITS ETF	86.2
Invesco Elwood Global Blockchain UCITS ETF	65.7
Lyxor Robotics & AI UCITS ETF	51.0
iShares Automation & Robotics UCITS ETF	-403.5
L&G ROBO Global Robo. and Automat. UCITS ETF	-153.02
iShares Global Clean Energy UC	-129.92
iShares Digital Security UCITS ETF	-83.45
Vaneck Vectors Video Gaming & eSports UCITS ETF	-73.13

Source: Bloomberg. As of Mar 31, 2021.

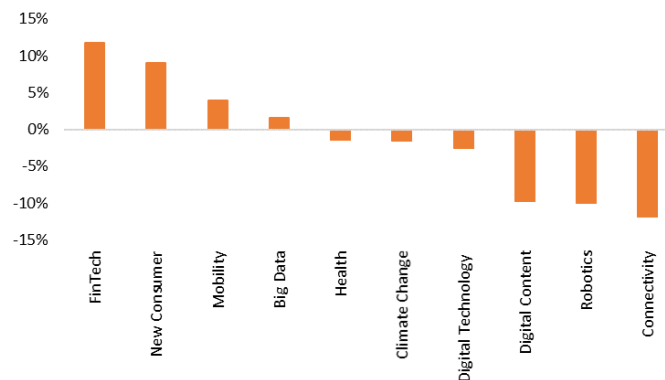


European Thematic UCITS ETFs AUM

Categories



Mega Themes by AUM growth (monthly % chg.)



Top 10 UCITS Thematic ETFs by AUM growth

Funds	AUM (monthly % chg.)
First Trust Indxx NextG UCITS ETF	209%
Global X Video Games & Esports UCITS ETF	87%
L&G Hydrogen Economy UCITS ETF	74%
First Trust Nasdaq Cl. Edge Green Eng. UCITS ETF	64%
Rize Sustainable Future of Food UCITS ETF	54%
Xtrackers AI & Big Data UCITS ETF	46%
L&G Clean Water UCITS ETF	27%
L&G Ecommerce Logistics UCITS ETF	26%
Xtrackers Future Mobility UCITS ETF	24%
Global X Telemedicine & Digital Health UCITS ETF	24%

Bottom 10 UCITS Thematic ETFs by AUM growth

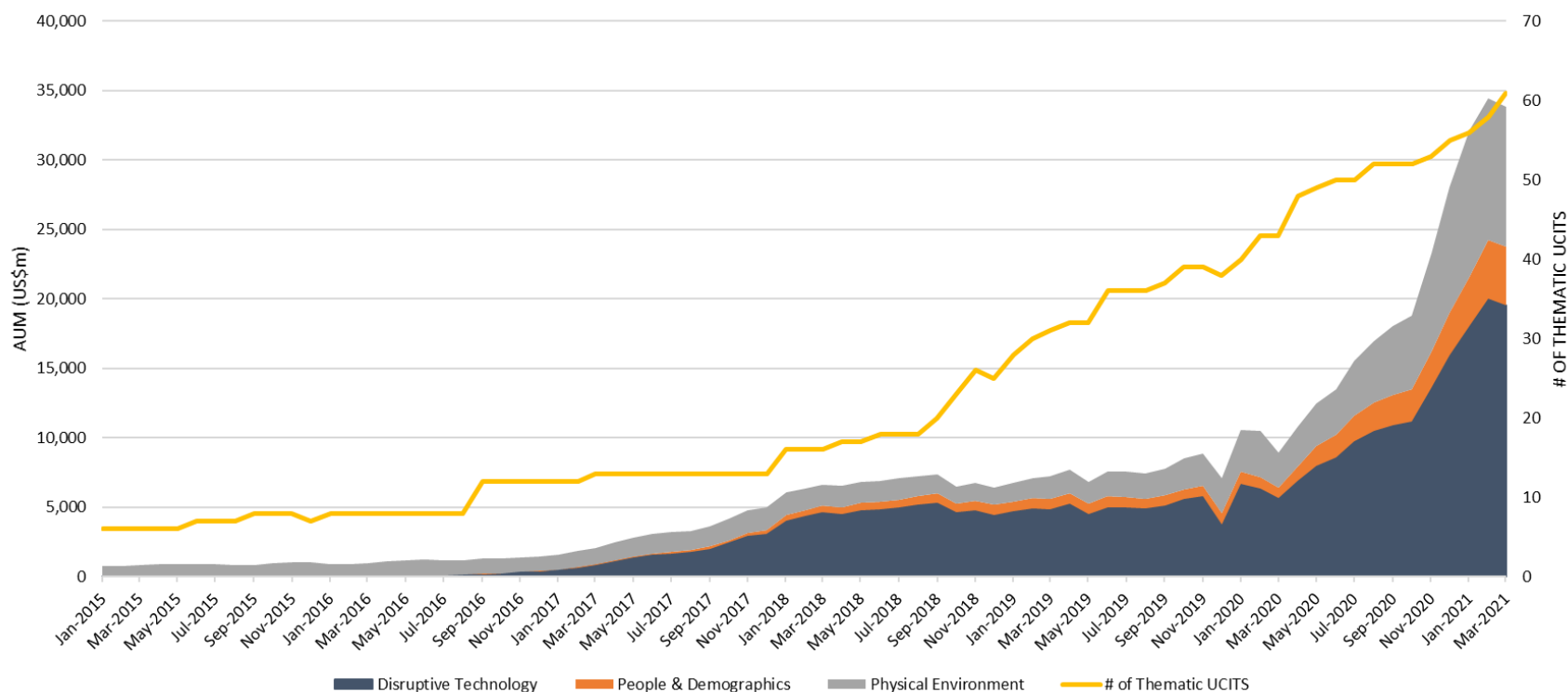
Funds	AUM (monthly % chg.)
Amundi Smart Factory UCITS ETF	-35%
HAN-GINS Cloud Technology UCITS ETF	-18%
KraneShares CSI China Internet UCITS ETF	-15%
L&G ROBO Glob. Robo. and Auto. UCITS ETF	-13%
Vaneck Vectors Video Gaming&eSports UCITS ETF	-12%
iShares Automation & Robotics UCITS ETF	-11%
iShares Global Clean Energy UC	-10%
L&G Artificial Intelligence UCITS ETF	-8%
WisdomTree Artificial Intelligence UCITS ETF	-8%
Lyxor MSCI Millennials ESG Filtered UCITS ETF	-7%

Source: Bloomberg. As of Mar 31, 2021.



European Thematic UCITS ETFs AUM

At the end of March 2021, there were 61 thematic UCITS ETFs totalling US\$33.8bn in assets under management (AUM), declining by 2% on the month. The overall monthly decline in UCITS thematic ETFs was led by the disruptive technologies and physical environment categories, while the AUMs in the changing demographic category rose slightly on the month (1%).



Source: Bloomberg. As of Mar 31, 2021.

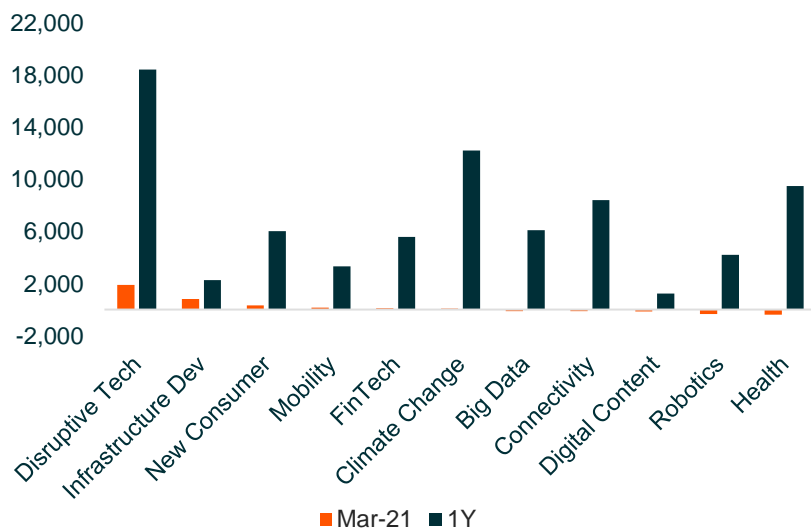
Note: Themes may or may not add up to the Mega-Themes AUM given that some ETFs considered are broad and are only classified by its Mega-Theme.



US Thematic ETFs Flow

- In March, US Thematic ETFs saw significantly lower net inflows (US\$2.3bn) similarly to the European UCITS thematic ETFs.
- US infrastructure ETFs recorded the second largest net inflows in March (US\$832m) and the largest AUM increase (55%). President Biden’s infrastructure-focused “Build Back Better” plan could total more than US\$3tn, including US\$1.4tn for physical infrastructure; US\$600bn for clean tech and renewables infrastructure, US\$300bn for electrical vehicles, 5G, artificial intelligence, and other tech.
- While the disruptive technology category saw positive net inflows on the month, big data, connectivity, digital content and robotics themes saw significant outflows.
- Within new consumer themes, Cannabis ETFs saw the largest net inflows again this month although much smaller than in February with US\$168m against US\$816m. New York became the 17th US state to legalise recreational cannabis and a Gallup poll in February showed 68% of Americans supported legalising cannabis, providing further tailwind to the theme.

Top Mega Themes by monthly flows (US\$m)



Top/Bottom 5 Thematic ETFs by monthly flows

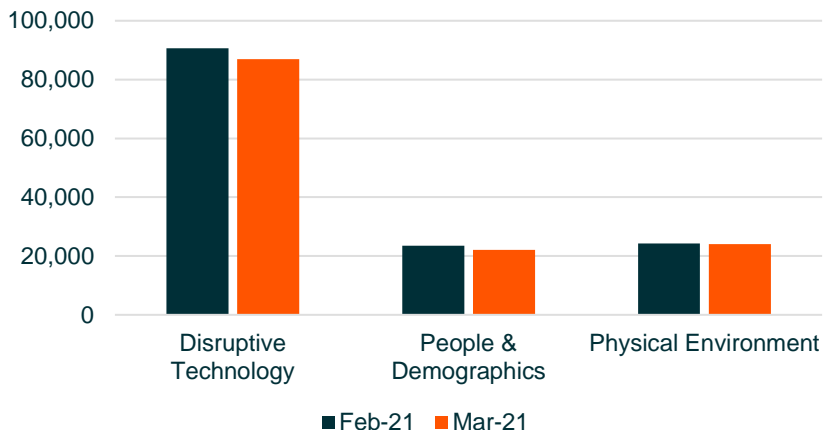
Funds	Flows in Mar-2021 (US\$m)
ARK Innovation ETF	1,667
Global X U.S. Infrastructure Development ETF	651
Ark Space Exploration	281
iShares Global Clean Energy ETF	247
iShares U.S. Infrastructure ETF	122
ARK Next Generation Internet ETF	-500
Genomic Revolution ETF	-414
Invesco Solar ETF	-211
ARK Autonomous Technology & Robotics ETF	-161
Global X Video Games & Esports ETF	-161

Source: Bloomberg. As of Mar 31, 2021.

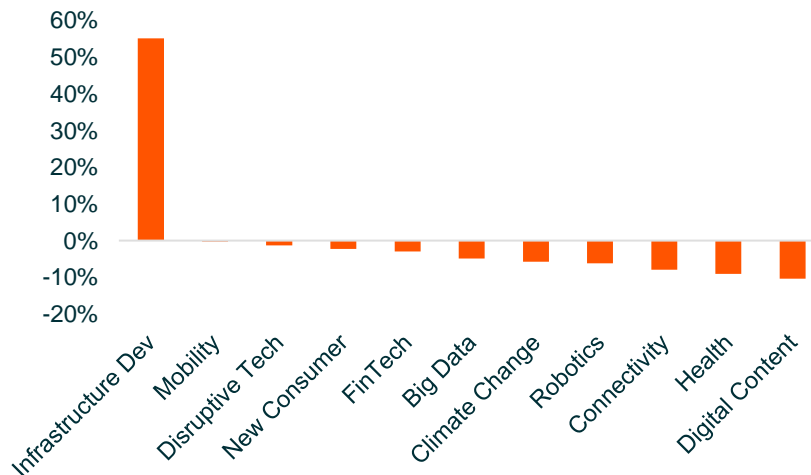


US Thematic ETFs AUM

Categories (AUM, US\$m)



Mega Themes by AUM growth (monthly % chg.)



Top 5 Thematic ETFs by AUM growth

Funds	AUM (monthly % chg.)
Main Thematic Innovation ETF	161%
Global X Data Center REITs & Digital Infrastr. ETF	154%
Global X China Disruption ETF	77%
iShares U.S. Infrastructure ETF	64%
Global X U.S. Infrastructure Development ETF	54%

Bottom 5 Thematic ETFs by AUM growth

Funds	AUM (monthly % chg.)
Simplify Volt RoboCar Disruption ETF	-41%
Simplify Volt Fintech Disruption ETF	-31%
KraneShares MSCI China Environment ETF	-26%
KraneShares CICC China 5G & Tech. leaders Index ETF	-23%
Global X Video Games & Esports ETF	-23%

Source: Bloomberg. As of Feb 28, 2021.



Disruptive Trends

Category	Description
Disruptive Technology	<ul style="list-style-type: none"> • Connectivity (IoT) drives the digitisation of the economy and enables new disruptive technologies that are profoundly changing the way we live and work • Digitisation is changing business models and empowers companies to modernise in order to meet the new demand • The Digital Economy generated almost half of value added and half of the new employment in G20 economies between 2006 and 2017, according to OECD estimates
People & Demographics	<ul style="list-style-type: none"> • Millennials' increased wealth from peak working years and inheritance makes them targeted consumer demographic • Rising middle-class consumers in Emerging Markets • Urbanisation and on-demand purchasing favour E-commerce retail channels and next generation products and services • Heightened focus on longevity and quality of life, coupled with rising health care costs are driving people to engage in physical activity, healthy eating, and embrace health technologies • Desire for personalised medicine is giving rise to genomics, while efforts to improve convenience, patient outcomes, cost efficiency are driving towards telemedicine and digital health
Physical Environment	<ul style="list-style-type: none"> • 2020 was one of the hottest years on record • Over 75% of warming comes from carbon dioxide emissions (CO2) and humans are responsible for a 47% increase of such emissions since the start of the industrial revolution • In 2020, most of advanced and developing nations have renewed their commitments to transition to a carbon neutral global economy by 2030-2050 • Clean technologies are essential to making carbon neutrality a reality • Falling costs and rising production of lithium-ion batteries catalyses shift to renewable energy and electric vehicles

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 materialisation 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 materialise 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 recognise 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 organise 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.

Thematic ETF Landscape

Global X's classification system establishes a consistent framework for identifying and categorising the growing thematic ETF space.

Category	Mega-Theme	Theme	Sub-Theme
Disruptive Technology	Big Data	Machine/Deep Learning	
		Cybersecurity	
		Quantum Computing	
		Cloud/Edge Computing	Remote Work
	Mobility	Autonomous Vehicles	
		Electric Vehicles	Lithium/Batteries
	Digital Content	AR/VR	
		Video Games	E-sports
		Social Media	
	FinTech	Mobile Payments	
		Peer-to-Peer Lending	
		Crowdfunding	
		Blockchain	
	Connectivity	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		
	Health	Healthcare Innovation	Telemedicine, Digital Health, Genomics, Immunotherapy, Public Health
		Longevity	Senior Care, Senior Economy
Health & Wellness		Obesity, Organics	
Emerging Markets Healthcare			
Physical Environment	Climate Change	Clean Energy	Cleantech, Solar, Wind
		Resource Scarcity	Water, Waste/Recycling, Rare Earth, Sustainable Food
	Infrastructure Development		

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