

GLOBAL X

by Mirae Asset

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European Thematic ETFs Report

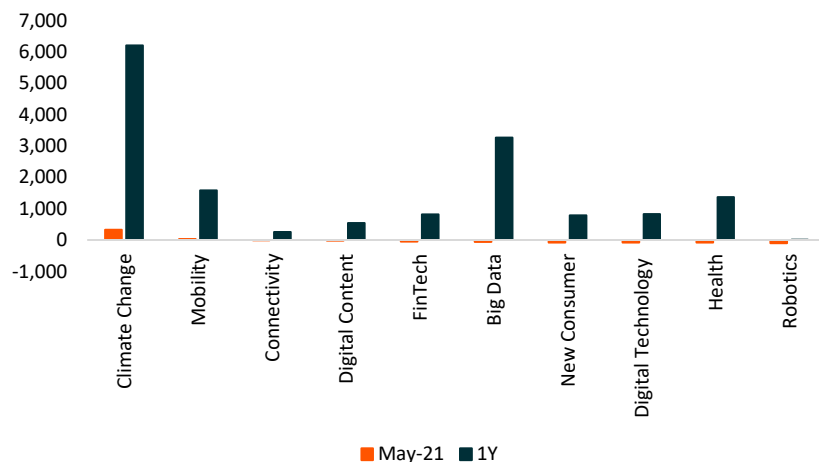
May 2021



European Thematic UCITS ETFs Flow

- In May, UCITS Thematic ETFs recorded US\$112m of net outflows after US\$1.2bn of net inflows in April.
- Climate change related themes attracted the largest net inflows in May with US\$332m (vs. US\$825m in April). Most of the net new inflows went into clean and renewable energy thematic ETFs (US\$138m) and resource scarcity thematic ETFs (US\$192m). In May, the European Parliament approved a 17.5 billion of euros fund to help coal dependent EU regions shift to be climate neutral. The funds will be directed to renewables, energy efficiency, sustainable transport and digital innovation.
- Digital technologies and Robotics recorded significant net outflows on the month, with US\$80m and US\$98m respectively, amid the sell-off in the technology stocks over the past few months led by rising interest rates.
- Health related themes also recorded net outflows in May (US\$81m), particularly healthcare innovations. Healthcare companies, specifically pharmaceuticals, were negatively impacted by discussions around waiving vaccine intellectual property (IP) led by the Biden Administration at the beginning of May.

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



Top/Bottom 5 UCITS Thematic ETFs by monthly flows

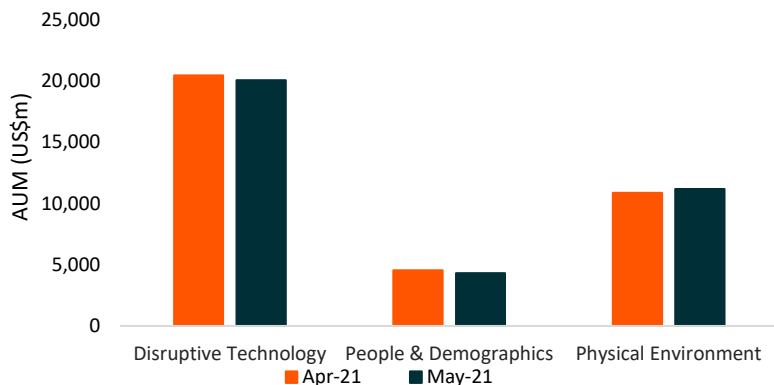
Funds	Apr-2021 (US\$m)
iShares Global Water UCITS ETF	75.2
L&G Clean Water UCITS ETF	64.2
L&G Hydrogen Economy UCITS ETF	41.6
L&G Clean Energy UCITS ETF	29.5
iShares Global Clean Energy UC	28.1
iShares Digitalisation UCITS ETF	-83.6
iShares Healthcare Innovation UCITS ETF	-57.5
L&G Healthcare Breakthrough UCITS ETF	-51.3
Invesco Elwood Global Blockchain UCITS ETF	-50.2
L&G Cyber Security UCITS ETF	-44.4

Source: Bloomberg. As of May 31, 2021.

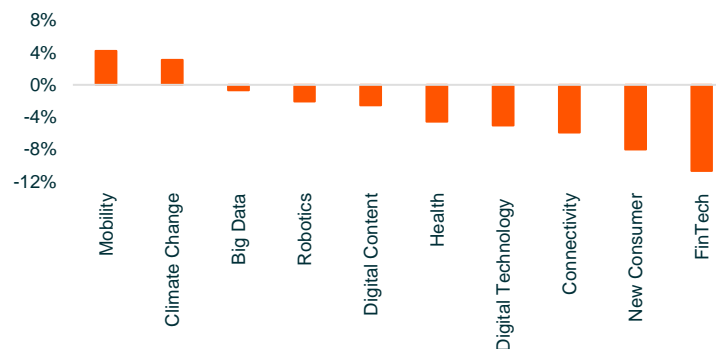


European Thematic UCITS ETFs AUM

Categories



Mega Themes by AUM growth (monthly % chg.)



Top 10 UCITS Thematic ETFs by AUM growth

Funds	AUM (monthly % chg.)
L&G Clean Water UCITS ETF	49%
L&G Clean Energy UCITS ETF	42%
Ossiam Food For Biodiversity UCITS ETF	38%
Vaneck Vectors Hydrogen Economy UCITS ETF	36%
Invesco Global Clean Energy UCITS ETF	32%
Global Online Retail UCITS ETF	29%
WisdomTree Cybersecurity UCITS ETF	29%
First Trust Nasdaq Cybersecurity UCITS ETF	17%
First Trust Nasdaq Clean Edge Green Ener. UCITS ETF	16%
L&G Hydrogen Economy UCITS ETF	11%

Bottom 10 UCITS Thematic ETFs by AUM growth

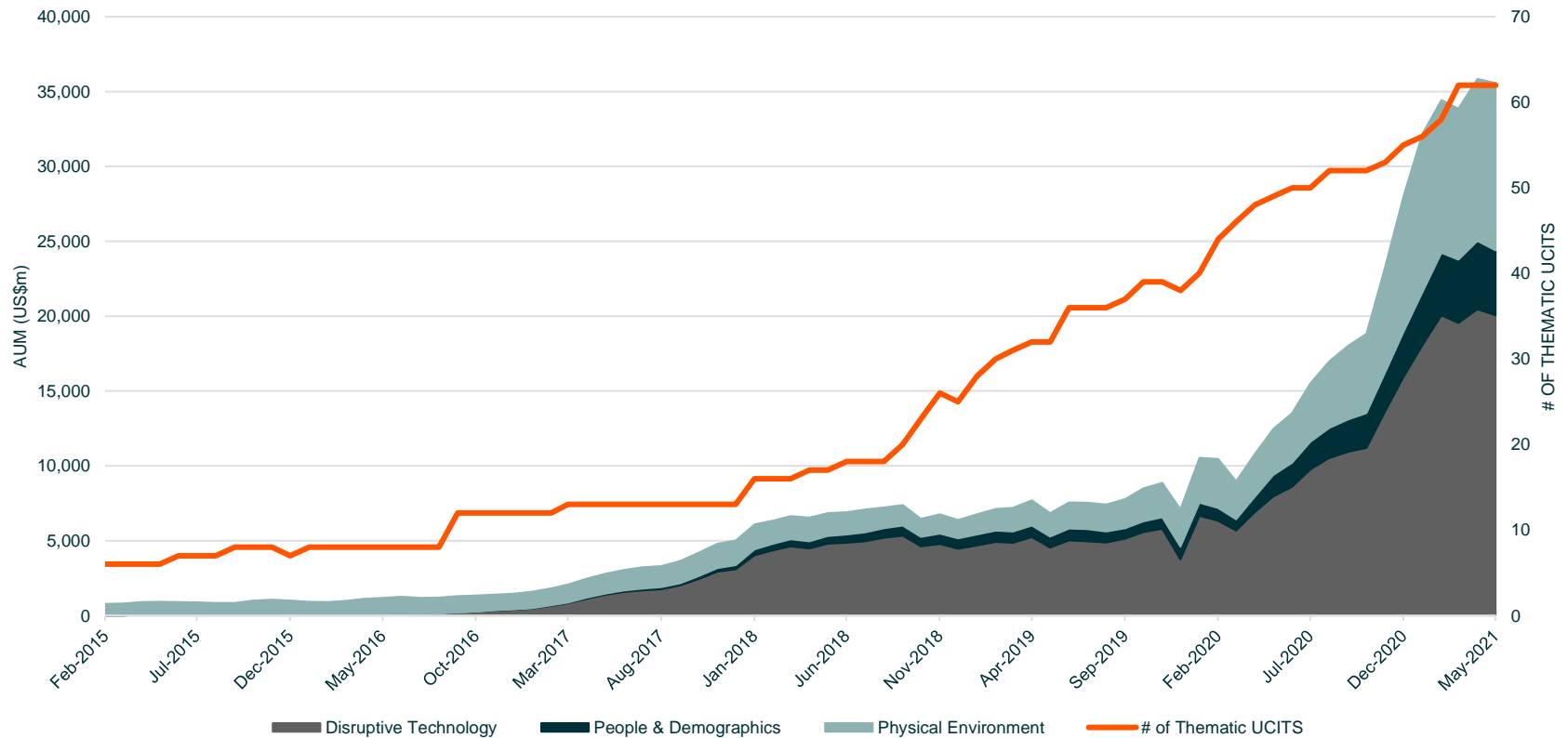
Funds	AUM (monthly % chg.)
Lyxor MSCI Millennials ESG Filtered DR UCITS ETF	-37%
L&G Healthcare Breakthrough UCITS ETF	-26%
Amundi Smart City UCITS ETF	-21%
EMQQ EM Internet & Ecommerce UCITS ETF	-15%
Invesco Elwood Global Blockchain UCITS ETF	-13%
Digital Infrastructure & Connectivity UCITS ETF	-11%
Amundi Smart Factory UCITS ETF	-10%
Medical Cannabis & Wellness UCITS ETF	-9%
Rize Education Tech & Digital Learning UCITS ETF	-7%
Lyxor MSCI Digital Economy ESG UCITS ETF	-7%

Source: Bloomberg. As of May 31, 2021.



European Thematic UCITS ETFs AUM

At the end of May 2021, there were 61 thematic UCITS ETFs totalling US\$35.6bn in assets under management (AUM), declining by 0.8% on the month. Disruptive Technologies and People & Demographics recorded a monthly decrease of AUMs in May, -2% and -5% respectively, while Physical Environment thematic UCITS ETFs saw a 3% increase.



Source: Bloomberg. As of May 31, 2021.

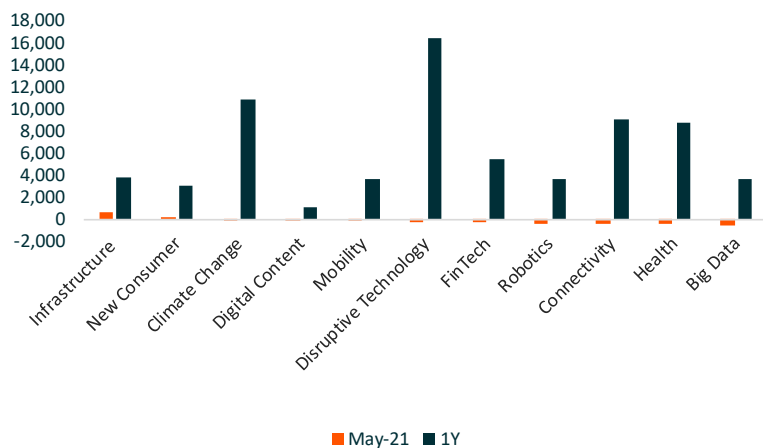
Note: Themes may or may not add up to the Mega-Themes AUM given that some ETFs considered are broad and are only classified by its Mega-Theme.



US Thematic ETFs Flow

- In May, US Thematic ETFs recorded US\$1.9bn of net outflows after US\$3.2bn of net inflows in April.
- Only the infrastructure development themes saw significant net inflows on the month (US\$593m) and the largest AUM increase (18%).
- Like for the UCITS Thematic market, disruptive technologies including robotics recorded net outflows last month (US\$2.2bn).
- Among disruptive technologies, cybersecurity saw US\$280m of net outflows in May, amid the cyberattack of the US insurance firm CNA Financial that paid hackers US\$40m to decrypt parts of their digital infrastructure they were locked out of. In our view, cyber attacks can negatively impact cybersecurity companies in the short-term, but they strengthen the long-term investment case. At present, cybersecurity will not be able to eliminate all attacks, but will seek to prevent existing threats and outpace new ones.

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



Top/Bottom 5 Thematic ETFs by monthly flows

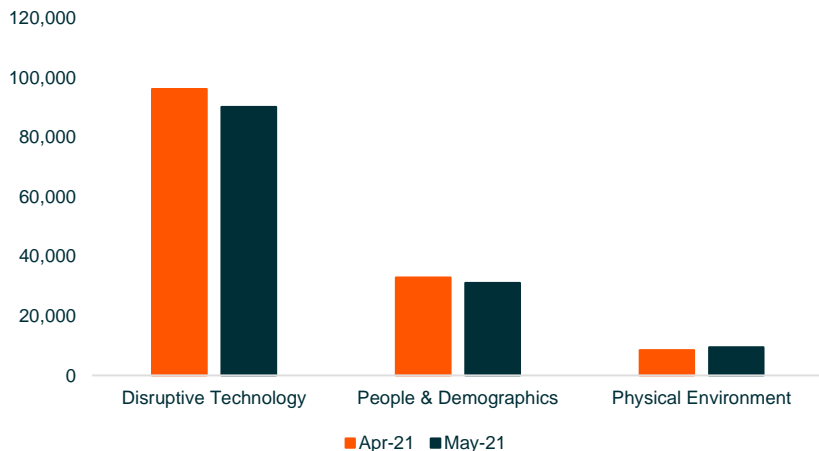
Funds	Apr-2021 (US\$m)
Global X U.S. Infrastructure Development ETF	495.7
KraneShares CSI China Internet ETF	248.7
ETFMG Alternative Harvest ETF	214.7
iShares Global Clean Energy ETF	171.3
iShares U.S. Infrastructure ETF	68.8
ARK Next Generation Internet ETF	-596.9
Genomic Revolution ETF	-520.4
Global X Cybersecurity ETF	-313.1
Fintech Innovation ETF	-301.7
ARK Autonomous Technology & Robotics ETF	-255.3

Source: Bloomberg. As of May 31, 2021.

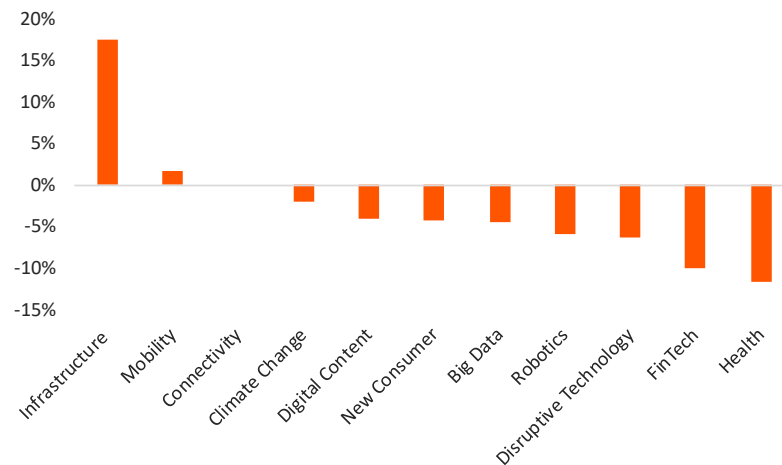


US Thematic ETFs AUM

Categories (AUM, US\$m)



Mega Themes by AUM growth (monthly % chg.)



Top 5 Thematic ETFs by AUM growth

Funds	AUM (monthly % chg.)
Simplify Volt Cloud and Cybersecurity Disruption ETF	30%
Global X U.S. Infrastructure Development ETF	18%
Principal Millennials Index ETF	18%
First Trust Indxx Innovative Transact.& Process ETF	17%
Global X Data Center REITs & Digital Infra. ETF	16%

Bottom 5 Thematic ETFs by AUM growth

Funds	AUM (monthly % chg.)
Global X Cybersecurity ETF	-47%
Simplify Volt RoboCar Disruption ETF	-34%
Amplify Online Retail ETF	-19%
Amplify Transformational Data Sharing ETF	-19%
ARK Next Generation Internet ETF	-17%

Source: Bloomberg. As of May 31, 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	
Physical Environment	Climate Change	Emerging Markets Healthcare	
		Clean Energy	Cleantech, Solar, Wind
	Infrastructure Development	Resource Scarcity	Water, Waste/Recycling, Rare Earth, Sustainable Food

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