

# Morningstar Global Thematic Funds Landscape 2024

## Morningstar Manager Research

October 2024

### Contents

- 1 Executive Summary
- 2 Introduction
- 4 Defining the Universe of Thematic Funds
- 8 The Global Landscape
- 14 United States
- 21 Europe
- 27 Canada
- 33 Rest of World
- 42 Appendix: Definitions of Themes

Kenneth Lamont  
Senior Research Analyst  
[Kenneth.Lamont@morningstar.com](mailto:Kenneth.Lamont@morningstar.com)

Monika Calay  
Director of Manager Research, UK  
[Monika.Calay@morningstar.com](mailto:Monika.Calay@morningstar.com)

Daisuke Motori  
Director of Manager Research, Japan  
[Daisuke.Motori@morningstar.com](mailto:Daisuke.Motori@morningstar.com)

Madeleine Black  
Research Analyst  
[Madeleine.Black@morningstar.com](mailto:Madeleine.Black@morningstar.com)

### Important Disclosure

The conduct of Morningstar's analysts is governed by Code of Ethics/Code of Conduct Policy, Personal Security Trading Policy (or an equivalent of), and Investment Research Policy. For information regarding conflicts of interest, please visit:  
[global.morningstar.com/equitydisclosures](https://global.morningstar.com/equitydisclosures)

## Executive Summary

Thematic funds have grown in size, number, and prominence in every major fund market globally over the past five years, and despite recent underperformance, they appear to be here to stay.

These funds offer investors the opportunity to capitalize on emerging megatrends such as artificial intelligence, aging populations, and alternative energy while mitigating the concentration risk of individual stock bets. However, these funds often come with higher costs, increased volatility, and unique complexities that require additional due diligence.

Since we published the first installment of this paper in early 2020, asset managers have ramped up the supply of these niche and often gimmicky funds. Investor demand for clarity and guidance has increased commensurately.

In this report, we present our global taxonomy for classifying these funds based on a global dataset. Using this framework, we analyze key trends in the global thematic fund landscape.

## Key Takeaways

- ▶ Despite several years of widespread underperformance, investor interest in thematic funds remains strong globally. In the trailing five years to the end of June 2024, worldwide assets in thematic funds almost doubled to USD 562 billion from USD 269 billion.
- ▶ However, this growth has not been linear. In the bull market after the height of the covid pandemic, global thematic fund assets surged more than threefold to a peak of USD 892 billion before tumbling more than one third following the "tech reckoning."
- ▶ This boom and bust is also reflected in the flows data. Thematic funds attracted USD 360 billion in net flows in the postpandemic recovery period, before losing USD 43 billion in net outflows in the subsequent three and a half years.
- ▶ The number of live thematic funds globally has more than doubled to 2,776 in the trailing five years to the end of June 2024.
- ▶ Following a record-breaking 2021 — when markets peaked and 670 new funds were introduced — global thematic fund launches have steadily declined, and closures have risen. In the first half of 2024, fund closures marginally surpassed new launches globally for the first time since 2013.
- ▶ Europe is the largest market for thematic funds, accounting for half of global thematic fund assets, while the US represents 22%.
- ▶ One key regional difference is the preference for actively managed versus indexed strategies. In Europe, 86% of thematic fund assets are in actively managed funds. In contrast, 81% of US thematic fund assets are in indexed strategies.

- ▶ Broad thematic funds, which invest across many different themes, represent the most popular theme by assets globally. Among this cohort is the largest thematic fund globally, **Pictet-Global Megatrend Select**, which targets several global megatrends including demographics and consumer themes.
- ▶ In total, 70% of thematic funds that plot in the Morningstar Style Box exhibit a growth bias, while just 7% have a value tilt.
- ▶ Eighteen percent of thematic funds in our global universe both survived and outperformed the Morningstar Global Target Market Exposure Index over the trailing year to mid-2024. However, thematic funds' success rate drops to just 9% when we look at the trailing 15-year period. Sixty percent of the thematic funds that were available to investors at the onset of that period have since been closed.

## Introduction

In recent years, the global menu of thematic funds has expanded in number and breadth like never before. These funds attempt to harness secular growth themes ranging from artificial intelligence to Generation Z. The result has been a steady supply of ever more niche and complex investment strategies from asset managers and increased demand from investors for greater clarity with respect to how these funds are built and how they might (or might not) fit within their portfolio.

In this latest edition of our analysis of the thematic funds landscape, we introduce a taxonomy for classifying these funds. We then use these classifications to examine key trends in the global thematic fund market.

## A Brief History of Thematic Funds: The Early Years

The history of thematic funds can be traced back to the end of World War II. In 1948, Chicago-based Television Shares Management Corp. launched The Television Fund. This fund sought profit from the burgeoning television industry at a time when there were about 1 million television sets in the United States and color television was about to make its debut.

In 1950, that fund became the Television-Electronics Fund, a change that signaled an expanded investment scope. This on-the-fly tweaking of funds' investment strategies as themes evolve has been a hallmark of thematic funds through the decades. Kemper acquired the fund in 1970. Its new owner expanded the fund's remit further, rechristening it Kemper Technology. Thus, the fund was even further from its originally narrow thematic focus, a fate shared by many subsequent thematic funds.

The concept of growth investing gained steam in the 1950s. T. Rowe Price launched its Growth Stock mutual fund in 1950. The late Sir John Templeton founded Growth Companies Inc., the ancestor of Templeton Growth, which launched in 1954. An early proponent of growth investing, Phillip Fisher, published the first edition of *Common Stocks and Uncommon Profits*, a core text for growth investors, in 1958.

By the mid-1950s, a string of future technology-focused thematic funds had debuted, including the Atomic Development Mutual Fund; the Science and Nuclear Fund; Nucleonics, Chemistry & Electronics Shares; and the Missiles-Rockets-Jets & Automation Fund.

By the 1960s, other futuristic thematic funds like the Steadman Oceanographic Fund, which invested in companies aiming to farm and build communities underwater, became popular, too. But these funds had limited success in the 1960s.

### 1990s: The Modern Era

One of the earliest thematic funds that survives in its original guise today is **Fidelity New Millennium FMILX**, which launched in 1992. The fund, which now manages more than USD 5.3 billion<sup>1</sup> in assets, aims to outperform by identifying early signs of long-term changes in the marketplace.

In the mid-1990s there was an influx of new funds targeting specific nontechnological themes. For example, Excelsior Aging of America was the first of many thematic funds to specifically target a demographic theme. The fund struggled to raise assets and eventually shuttered in 1997. By the end of the decade, the number of thematic funds listed globally had grown to 95.

### The Rise and Fall of Internet-Themed Funds

In 1995, Japanese asset manager Daiwa launched the first internet-themed fund: Daiwa U.S. Internet Open. As the dot-com bubble inflated, the number of internet- and tech-related thematic fund launches also ballooned. By the turn of the millennium, one in three thematic funds globally was tracking a digital economy theme. However, after the bubble burst, the vast majority of these funds closed. Today, just five of the 50 internet-themed funds launched in that period remain open.

### The Thematic Menu Expands: 2000-10

Between 2000 and 2010, the number of different themes targeted by thematic funds globally jumped to 25 from 14. Older themes, such as those targeting resource management (for example, water funds) were joined by a host of new technological themes like financial technology and robotics. Despite the growing number of thematic funds, asset levels remained low and still represented just a tiny fraction of the global equity fund market.

### The Emergence of Thematic ETFs

At the beginning of 2005, there was just one thematic exchange-traded fund globally. By the dawn of 2010, there were more than 50. The emergence of ETFs as a dominant vehicle for indexing over this period helped fuel product development, first in the US and then in Europe.

But ETFs aren't just for indexing. Indeed, the fund that has become the poster child for the category is a fully transparent actively managed ETF. **ARK Innovation ETF ARKK** is an actively managed thematic fund domiciled in the US that launched in 2014. It places high-conviction bets on stocks exposed to specific tech themes. The fund's aggressive approach led to stellar returns and turned ARK's CEO into a global sensation. The fund's performance attracted piles of money from new investors. At one point in mid-2021, its assets swelled to more than USD 25 billion. The tide has since turned, and the fund's assets under management are now<sup>1</sup> close to one fifth of their peak size.

<sup>1</sup>As of Sept. 30, 2024.

## Defining the Universe of Thematic Funds

For this report, we have defined the universe of thematic funds as those that select holdings based on their exposure to one or more investment themes. These themes may pertain to macroeconomic or structural trends that transcend the traditional business cycle. Examples include demographic shifts or technological advances.

Our definition includes funds like cannabis ETFs, which hope to capitalize on the legalization and commercialization of cannabis globally. We exclude funds that might be useful for making tactical economic calls but lack a cohesive longer-term narrative, such as those that target Japanese exporters.

Although many active managers select investments based on exposure to a theme as part of their investment process, we have isolated a distinct subset of funds that explicitly target these themes. This paper will identify and analyze these funds to help investors better navigate this landscape.

## Building a Framework

Our updated global taxonomy for thematic funds is based on intentionality rather than holdings. Building on the work done in our previous research on this topic, we present an enhanced global thematic fund dataset. By using natural language processing technology to crawl Morningstar's comprehensive global fund database, we have been able to construct an even more complete picture of the global thematic fund market than was previously possible.

To identify intentionality, we have relied on a combination of fund names (a strong indicator of intentionality) and information gleaned from prospectuses, marketing materials, index methodologies (in the case of index funds), and data points available in Morningstar Direct, such as investment objective.

## What's In, What's Out?

Our definition of thematic funds is generally inclusive, but there are some important omissions. We have limited our universe to equity mutual funds and exchange-traded funds—both active and passive. We have excluded other asset classes, most notably fixed-income funds. This is because their investment profile is less suited to capturing the growth potential of emerging themes, and consequently the market for these funds is largely nonexistent.

Sustainable funds are included, provided they seek to capture a specific theme. Alternative energy funds, which aim to capitalize on the transition to a low-carbon economy, are included, but most broad environmental, social, and governance funds, which select a diverse group of stocks based on ESG scores, fall out of scope. Funds like **Generali IS SRI Aging Population**—which tracks a demographics theme and also applies ESG screens—are included.

Others that at first glance appear to be thematic, such as **SPDR MSCI USA Gender Diversity ETF SHE**, are excluded because they are designed to reward a broad set of companies with strong gender diversity metrics rather than attempt to track the trend toward a more equitable society.

A fund that uses artificial intelligence or machine learning in its stock-selection process will be included only if it also selects stocks connected with one or more themes. For example, **Xtrackers Artificial Intelligence and Big Data ETF** XAIX uses artificial intelligence to select stocks that it deems well-positioned to harness its targeted theme.

### Sector or Theme?

The line between sectors and themes can be blurry, especially as sectors' definitions have drifted over time. As a rule of thumb, we have excluded funds that either track standard sector, industry, or subindustry indexes or closely resemble mainline sector funds from our definition of thematic funds.

To help separate these groups as cleanly as possible, we have referenced the Industry Classification Benchmark, the Global Industry Classification Standard, and the Morningstar Global Equity Classification Structure.

Perhaps the most challenging distinction to make is between tech sector funds and those that track one or more tech-related themes. To be included in our taxonomy for thematic funds, broad technology funds must explicitly target one or more tech themes, such as disruptive or next-generation technologies.

### Evolving Themes

What is considered a theme can change over time. For example, at its launch in 2009, **Pictet Agriculture** focused on meeting the expected food needs of a growing global population. Since then, technological advances have helped boost global food production, and global food scarcity has become a less pressing issue. In response, the Pictet fund pivoted toward a broader "nutrition" theme and now targets firms that it deems key to improving nutrition profiles in addition to those improving efficiencies within the food value chain.

Some funds began as thematic before outgrowing the label. For example, **American Funds New Economy** ANEFX, which launched in 1983, initially aimed to capitalize on the shift from a manufacturing-dominated economy to one based on services and information companies. The fund has subsequently broadened its remit and now resembles a more traditional growth fund. As such, it is outside the scope of our framework for classifying thematic funds.

### Mapping the Universe

To make sense of the diverse universe of thematic funds offered to investors around the world, we have developed a three-tier taxonomy, visualized in Exhibit 1.

At first glance, it appears that thematic funds tend to resist rigid categorization. However, after assessing the global universe of these funds, we found that themes do cluster into distinct groups. For example, funds tracking smart car, next-generation automobile, hybrid car, and automated driving themes can all be comfortably collected under the umbrella of future mobility. This in turn can be grouped with other themes under a broader theme—in this case, technology.

## Broad Themes

Our framework first arranges the universe into four broad buckets: technology, physical world, social, and broad thematic.

Technology themes, as the name suggests, target the disruptive growth potential of technological change. These include themes like financial technology, robotics and automation, and battery technology.

Physical world themes address the management of physical resources. Included in this bucket are funds that facilitate the transition to a low-carbon world, such as alternative energy funds.

Themes in the social bucket deal with structural changes in society. These themes may be politically oriented or focus on demographic changes.

Finally, those funds that track multiple themes belonging to any of the above buckets are grouped under the broad thematic umbrella.

## Themes

Collected under each of these broad themes are more-granular theme groupings. For example, the technology broad theme includes the fintech theme, which brings together fintech but also the more specific financial innovation, blockchain, and digital payments subthemes.

As a further example, the social broad theme includes the political theme, which in turn gathers funds targeting the New Silk Road, structural reform, and even Korean unification.

## Definitions

The global thematic fund taxonomy is presented in Exhibit 1. The definitions of broad themes can be found in the Appendix.

Through this framework, we hope to shine a light on the fast-growing world of thematic investing. By grouping funds in this way, investors can more readily compare them.

**Exhibit 1** Morningstar Global Thematic Fund Classification System

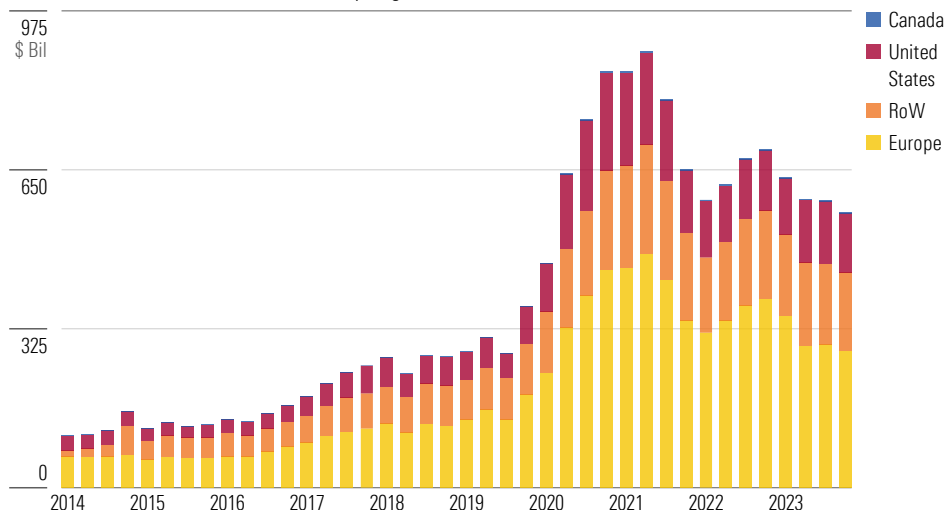
<b>Physical World</b> <b>Energy Transition</b> Alternative Energy Carbon Transition Clean Energy Clean Tech Climate Solutions Energy Transition Green Energy Green Tech Hydrogen Economy New Energy Nuclear Renewable Energy Renewable Infrastructure Smart Energy Solar Sustainable Disruptors Wind <b>Food</b> Agribusiness AgriTech Fishing Food Food Security Food Tech Future of Food Livestock Breeding Nutrition Regenerative Agriculture <b>Logistics + Transportation</b> Jets Logistics Shipping Transport <b>Multiple Physical World Themes</b> Clean Economy Environmental Opportunities <b>Resource Management</b> Blue Economy Circular Economy Ecology Future Resources Green Metals Rare Resources Resource Technology Timber Upstream Natural Resources Uranium Water <b>Other</b> Disaster Recovery Future Infrastructure Smart Construction	<b>Social</b> <b>Cannabis</b> Cannabis Psychedelics <b>Consumer</b> Alcohol Brands Changing Lifestyles Consumer Consumer Electronics Consumer Finance Consumer Health Consumer Joy Consumer Tech Cosmetics EM Consumption Entertainment Future Consumer Generation z Household Appliances KPOP Leisure Luxury Millennials Next Generation Consumer Pets Retail and Commerce Sports Subscription Economy Sustainable Consumer <b>Demographics</b> Aging Population Demographics Future of Humans Urbanization <b>Political</b> China Policy Energy Independence Infrastructure Spending Korea New Deal Korea Unification National Industrial Improvements New Silk Road Policy driven Regional Development State-Owned Enterprises Strategic Infrastructure Structural Reform US Policy <b>Post-Corona</b> Airlines, Hotels, Cruise Lines Hotel Restaurants Tourism Work From Home	<b>Security</b> National Security Safety Security <b>Wellness</b> Alternative Health Better Health Education Healthy Living Korean Culture Obesity Self Development/Fulfillment Traditional Medicine Wellness <b>Other</b> Vice <b>Technology</b> <b>Artificial Intelligence + Big Data</b> Artificial Intelligence Artificial Intelligence of Things Big Data Data Centers <b>Battery Technology</b> Battery Technology Lithium Producers Next Gen Fuel Cell <b>Cloud Computing</b> Cloud Computing <b>Cyber Security</b> Cyber Security <b>Digital Economy</b> Advertising + Marketing Tech Connectivity Convergence Technology Data Economy Data Sharing Digital Economy Digital Media Digital Opportunities Digitalisation Disruptive Commerce E-commerce Entertainment Film and Television Information Industry Internet Internet of Things Multimedia Online Consumption Pop and Media Sharing Economy	Smart Commerce Smart Equipment Smart Home Social Media Tech Platforms Web x.0 Webtoons and Drama <b>Fintech</b> Blockchain Digital Payments Digital Trading ETF Industry Financial Innovation Fintech Pay Infrastructure <b>Future Mobility</b> Automated Driving Cleaner Transport Disruptive Automation Electric Vehicle Future Mobility Green Vehicles Hybrid Car Internet of Vehicle New Energy Vehicles Next Gen Auto Smart Mobility <b>Life Sciences</b> Biotech Biothreat Brand Name Drugs Cancer Digital Health Genomics Health Innovation Immunology Medical Devices Medtech Neuroscience New Drugs Public Health Sustainable Health Telemedicine + Digital Health Treatments Testing Advancements Virology <b>Multiple Tech Themes</b> 4th Industrial Revolution Early Stage Innovation Electric Vehicle + Battery Emerging Industry Exponential Tech Metaverse Moonshot Tech	<b>Nano Technology + New Materials</b> Disruptive Materials Nano Tech New Materials Smart Materials <b>Next Gen Communications + Digital Infrastructure</b> 5G Digital Infrastructure Mobile Internet Next Gen Communications Smart Cities Smart Connectivity Smart Grid Wearables Wireless <b>Robotics + Automation</b> 3D Printing Advanced Manufacturing Automation Drones High-End Equipment Hi-Tech Manufacturing Optical Technology Robotics + Automation Smart Industrial Technology <b>Space</b> Space <b>Virtual Reality and Gaming</b> Digital Entertainment ESports Gaming + Esports K-Game Virtual Reality <b>Other</b> Integrated Circuits New Economy Real Estate Real Estate Tech <b>Broad Thematic</b> <b>Broad Thematic</b> Broad Thematic
---	---	--	---	--

Source: Morningstar Research. Data as of June 30, 2024.

## The Global Landscape

Global assets in thematic funds doubled from USD 269 billion to USD 562 billion over the five years ended in June 2024. During this period, the number of active thematic funds in our global dataset increased to 2,776, up from 1,201.

**Exhibit 2** Global Thematic AUM Growth by Region (USD Billion)



Source: Morningstar Research. Data as of June 30, 2024.

This growth figure does not capture the dramatic rise and subsequent decline experienced by thematic funds globally during that period, which began with the postpandemic market boom. Between the first quarter of 2020 and the end of 2021, global thematic fund assets surged more than threefold to a peak of USD 892 billion before plummeting by a third to USD 588 billion over the next nine months.

Net asset flows into thematic funds globally during the same time frame also highlight this shift in fortune. From the end of the first quarter of 2020 to the end of 2021, thematic funds saw USD 360 billion in net inflows, but over the following three and a half years, they faced USD 43 billion in net outflows. Strong inflows (USD 20 billion) in the "rest of the world" regions over this period helped stem losses elsewhere.

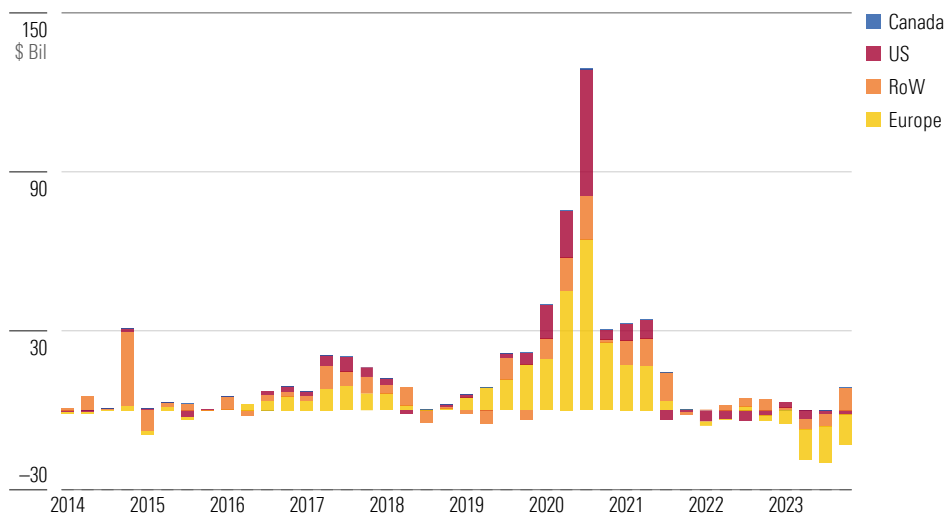
This is especially true in Europe, where USD 42 billion exited funds with a physical world theme in the year leading up to June 2024 alone. This underscores the waning interest in sustainability-related investment themes in the region.

### Europe Is the Largest Thematic Fund Market

As of the end of June 2024, Europe held half of the world's thematic fund assets.

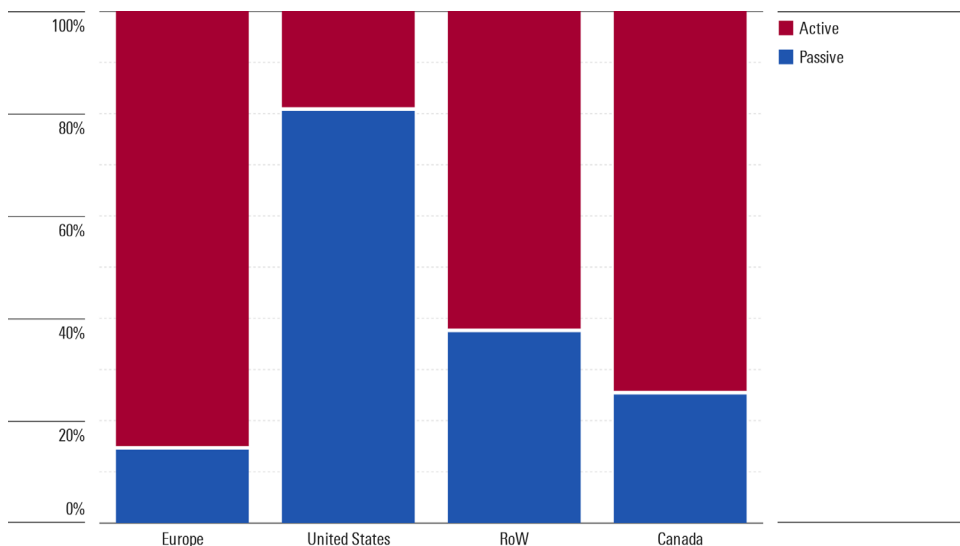
Despite the US being home to the largest equity fund market and, until recently, the largest global thematic fund (ARK Innovation ETF), its thematic fund market represents just 22% of the global total.



**Exhibit 3** Global Net Asset Flows by Region (USD Billion)

Source: Morningstar Research. Data as of June 30, 2024.

While most regional thematic markets have experienced a "boom and bust" cycle driven by similar macroeconomic factors—with market shares rising and falling largely in sync, as reflected in Exhibit 2—India, included in the rest of the world grouping, stands out. Over the past three years, thematic fund assets in India have surged threefold to USD 10 billion while other markets have contracted.

**Exhibit 4** Active vs. Passive Regional Thematic AUM

Source: Morningstar Research. Data as of June 30, 2024.

One key regional difference is the preference for actively managed versus indexed strategies. In Europe, 86% of thematic fund assets are in actively managed funds, a trend echoed in Canada and Japan. In contrast, 81% of US thematic fund assets are in indexed strategies, a preference for passive is also seen in China, South Korea, and Australia.

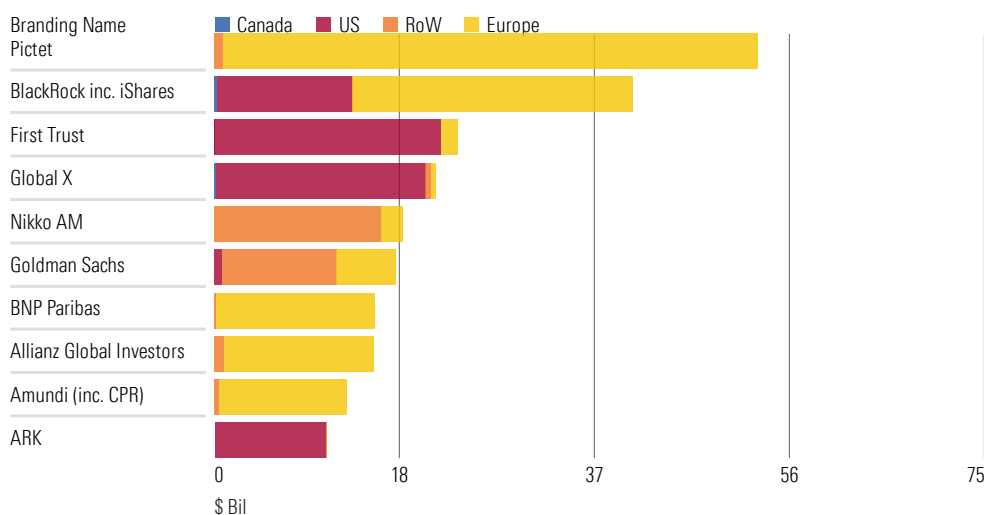
If we consider that indexed thematic strategies essentially codify active decisions of how to define and track a given theme, this difference reflects less active vs. passive preference than the relative popularity of ETFs in a given region.

### No Thematic Asset Manager Is Dominant Globally

Exhibit 5 illustrates the regional nature of the global thematic fund market. No asset manager is dominant in all regions. Most are major players in only a single region.

Europe-focused thematic specialist Pictet Asset Management remains the largest thematic fund provider globally, with AUM of USD 53 billion. The firm's success has been built over many years and is founded on a measured approach to selecting and tracking long-term themes. In a market where both fund launch and closure rates run high, Pictet has scored reassuringly low on both counts.

**Exhibit 5** Global Thematic AUM by Provider (USD Billion)



Source: Morningstar Research. Data as of June 30, 2024.

With a handful of sizable active thematic funds in Europe and a suite of passive iShares-branded thematic ETFs in both the US and Europe, fund giant BlackRock is the second-largest global thematic fund provider with USD 41 billion in assets under management as of the end of June 2024.

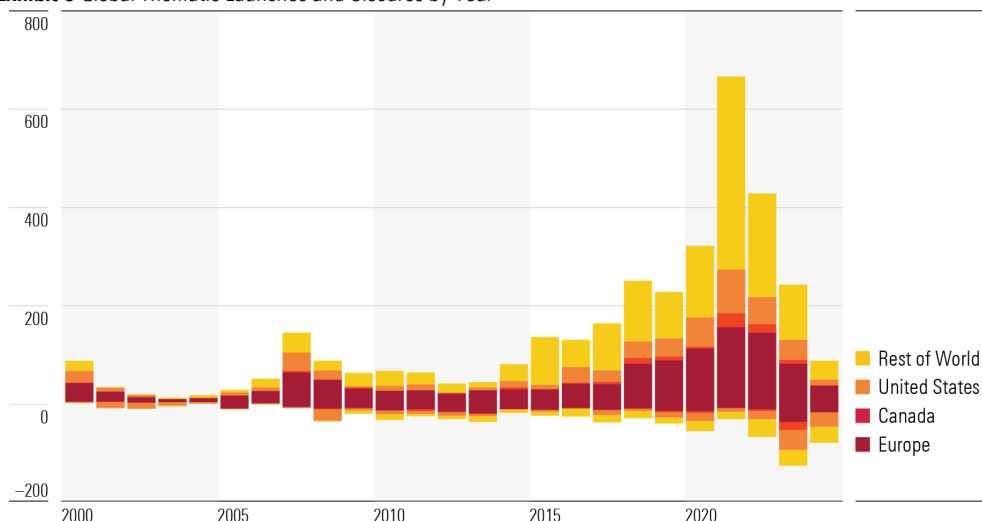
First Trust takes third place globally with its US-focused range of popular thematic ETFs. The suite is dominated by several large ETFs tracking technology themes including cybersecurity, cloud computing, and the internet.

### Closures Outnumber Launches for the First Time Since 2013

Launches and closures of thematic funds have followed a highly cyclical pattern. New strategies peak during periods of strong performance, such as the early 2000s and mid-2000s, but tend to slow down during market downturns. Similarly, fund closures tend to spike during these downturns.

The growing appeal of thematic investing is evident in the increasingly large launch cycles.

**Exhibit 6** Global Thematic Launches and Closures by Year



Source: Morningstar Research. Data as of June 30, 2024.

Following a record-breaking 2021—when markets peaked and 670 new funds were introduced—global thematic fund launches have steadily declined, while closures have risen. By mid-2024, fund closures marginally surpassed new launches globally for the first time since 2013, reflecting the prolonged period of underperformance faced by thematic funds since early 2022.

### Broad Thematic Tops Alternative Energy as the Most Popular Theme

Broad thematic funds, which invest across many different themes, hold USD 69 billion, making it the most popular theme by assets globally. Among this cohort is the largest thematic fund globally, Pictet-Global Megatrend Select, which targets several global megatrends including demographics and consumer themes.

These funds have proved popular with investors for whom the volatility associated with investing in single themes can be too much. A multi-theme approach is attractive to those who prefer to spread their chips across multiple themes in the hopes of retaining thematic upside while smoothing the ride.

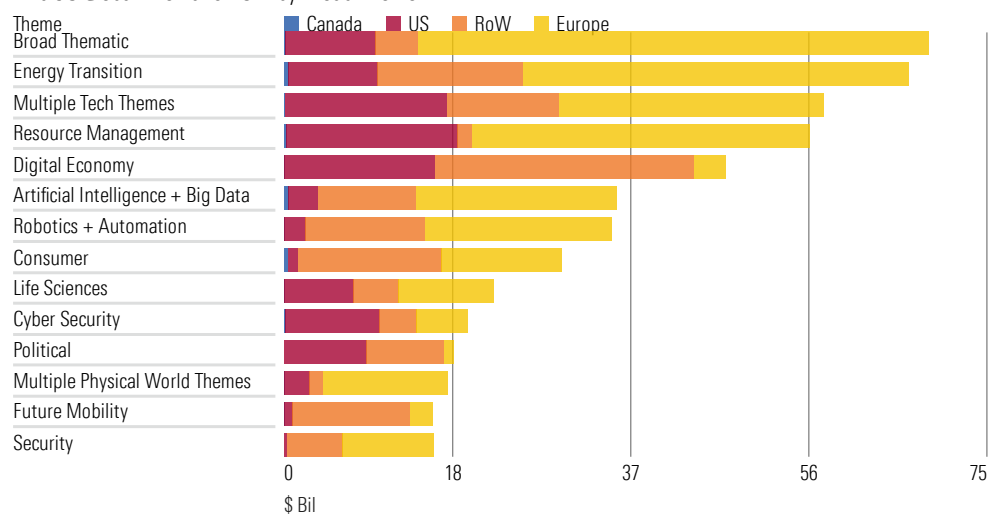
Energy transition had USD 67 billion in assets and was the second-most-popular theme globally at the end of June 2024. The grouping, largely populated by alternative energy funds, got a huge boost in late 2020 when newly elected US President Joe Biden pledged billions of dollars of government support for green infrastructure. Since then, waning enthusiasm for sustainable investments has contributed to falling assets and significant net outflows, particularly in the year ended June 2024.

**Exhibit 7** Largest Thematic Funds Globally

Fund Name	Domicile	Inception Date	Broad Theme	Theme	Size (USD Billions)
Pictet-Global Megatrend Sel I USD	Luxembourg	31/10/2008	Broad Thematic	Broad Thematic	12.08
Pictet - Robotics I dy EUR	Luxembourg	07/10/2015	Robotics + Automation	Robotics	10.21
Pictet-Water I EUR	Luxembourg	19/01/2000	Resource Management	Water	8.82
Pictet - Global Envir Opps I USD	Luxembourg	10/09/2010	Multiple Physical World Themes	Environmental Opportunities	8.20
Allianz Global Artfcl Intlgc W EUR	Luxembourg	31/03/2017	Artificial Intelligence + Big Data	Artificial Intelligence	7.85
GS netWIN GS Technology Eq Fd B UnHdg	Japan	29/11/1999	Digital Economy	Internet	7.47
Global X US Infrastructure Dev ETF	United States	06/03/2017	Political	Infrastructure Spending	7.39
First Trust NASDAQ Cybersecurity ETF	United States	07/07/2015	Cyber Security	Cyber Security	6.56
Deka-Industrie 4.0 CF	Luxembourg	20/12/2016	Multiple Tech Themes	4th Industrial Revolution	6.26
ARK Innovation ETF	United States	31/10/2014	Multiple Tech Themes	Innovative Technology	6.04

Source: Morningstar Research. Data as of June 30, 2024.

Funds tracking multiple technology themes represent the third most popular thematic grouping globally with USD 58 billion in assets. Funds in this cohort include the one-time largest thematic fund globally: ARK Innovation ETF. This once dazzlingly popular actively managed ETF targets a range of technology themes including genomics, fintech, and next-generation internet.

**Exhibit 8** Global Thematic AUM by Broad Theme

Source: Morningstar Research. Data as of June 30, 2024.

**Most Thematic Funds Display a Growth Tilt**

Exhibit 9 shows where the funds in the thematic universe plot on the Morningstar Style Box. In total, 70% of thematic funds with a style box placement globally exhibit a growth bias. This compares with just 7% that have a value tilt. This shouldn't be a surprise, as most thematic funds are seeking to tap emerging themes with well-known growth potential, such as technological advances.

**Exhibit 9** Global Thematic Funds Style Box (% of Funds)

	Value	Blend	Growth
Large	4	11	49
Mid	2	9	19
Small	1	2	2

Source: Morningstar Research. Data as of June 30, 2024.

**Most Thematic Funds Don't Beat Global Equities Over Longer Periods**

While there have been short periods in which thematic funds have chalked up eye-catching returns, most notably in the postpandemic bull market, performance over other periods hasn't been nearly as compelling.

Exhibit 10 shows the chances of picking a thematic fund that survives and outperforms the global equity markets as proxied by the Morningstar Global Target Market Exposure Index over various time frames.

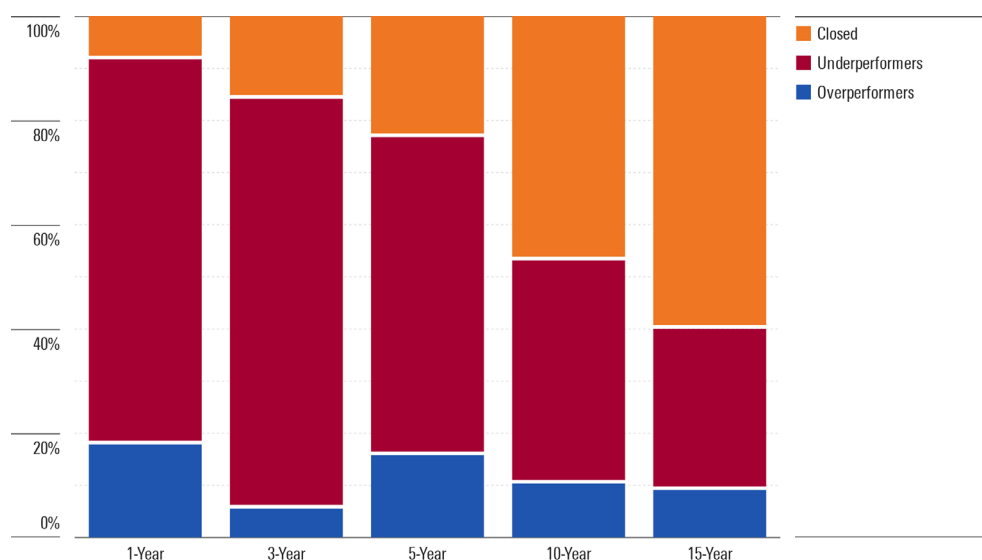
The dismal performance over the three-year period where just one in 20 thematic funds survived and outperformed reflects the travails of thematic funds since the "tech reckoning" at the end of 2021. When we stretch our observation window out to include the trailing five, 10, and 15 years, success rates improve to around 16% before sliding to less than 10%.

The relatively high fees associated with thematic funds, when compounded over many years, create a significant obstacle—especially when compared with a no-fee index. This contributes to the consistently low success rates of these funds.

Although these success rates are low, they fall within what we might find when looking at the performance of actively managed funds in some regions.<sup>2</sup>

Over the 15 years leading up to June 2024, 60% of thematic funds closed, and only 9% both survived and outperformed a global equity benchmark.

<sup>2</sup> For more information on the success of actively managed funds please see the latest version of the Morningstar Active/Passive Barometer.

**Exhibit 10** Global Thematic Fund Survival and Success Rates vs. Global Equities

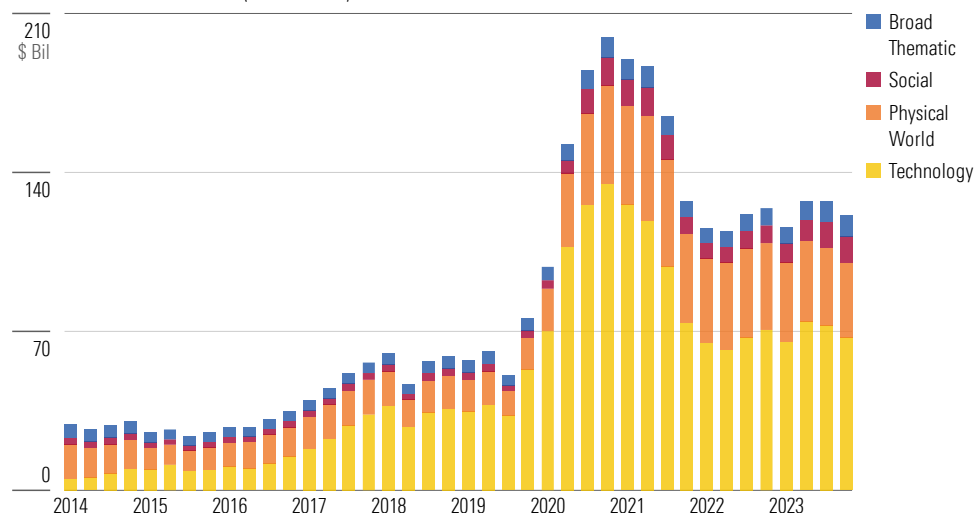
Source: Morningstar Research. Returns calculated to June 30, 2024. Fund performance is measured against the Morningstar Global TME GR Index.

These figures paint a bleak picture for investors. They suggest that the odds of picking a thematic fund that survives and outperforms global equities over longer periods are firmly stacked against them.

### United States

As of June 30, 2024, there were 344 thematic funds domiciled in the region, accounting for 22% of all assets in thematic funds globally.

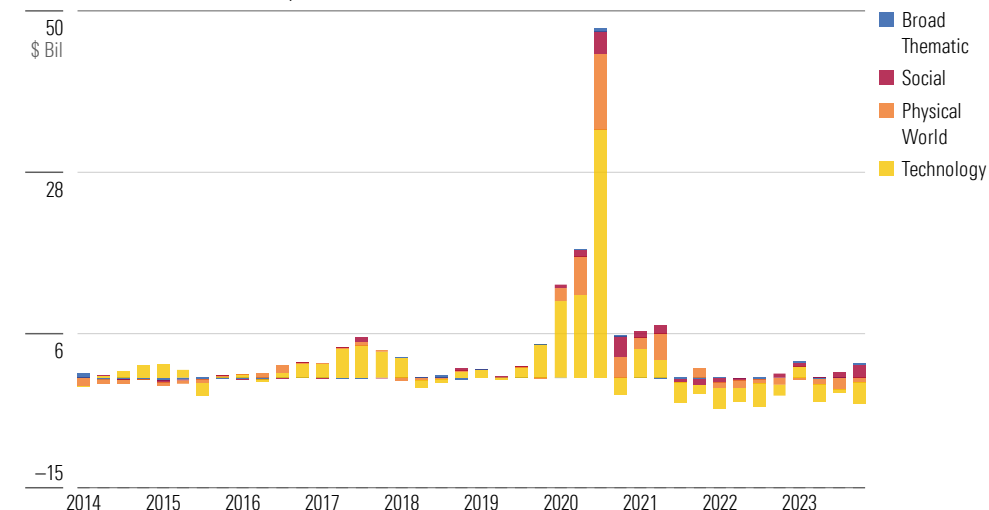
Assets in US-domiciled thematic funds have doubled over the trailing five years to USD 121 billion, but the journey to that point has been tumultuous.

**Exhibit 11** US AUM Growth (USD Billion)

Source: Morningstar Research. Data as of June 30, 2024.

As markets rebounded in the wake of the covid-19 turmoil, rock-bottom interest rates and the global rush to digitize provided a stiff tailwind for thematic funds, particularly those with a tech focus. In the bull market from the end of first-quarter 2020 to the end of 2021, assets in US-domiciled thematic funds surged by more than 3.5 times, topping out at USD 200 billion in mid-2021. This asset growth was supported by net inflows of USD 86 billion over the same period.

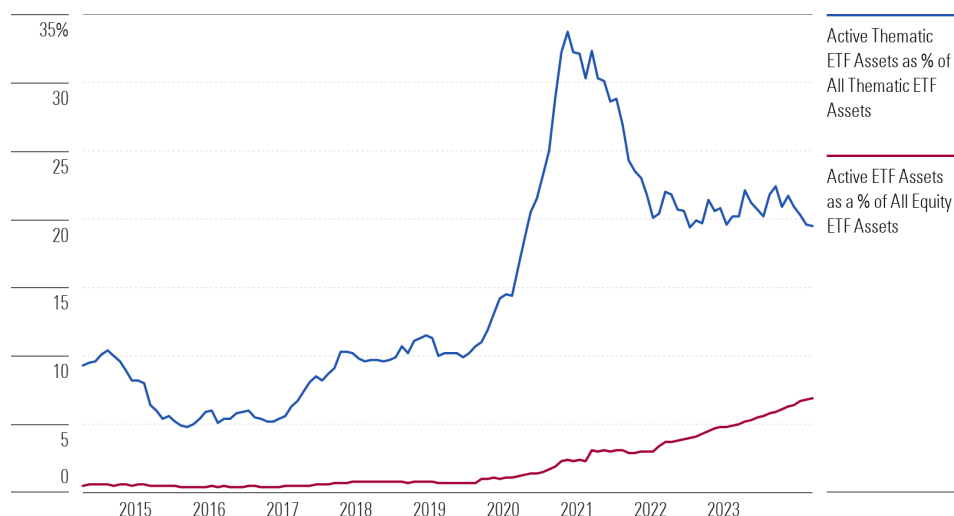
**Exhibit 12** US Thematic Flows by Broad Theme (USD Billion)



Source: Morningstar Research. Data as of June 30, 2024.

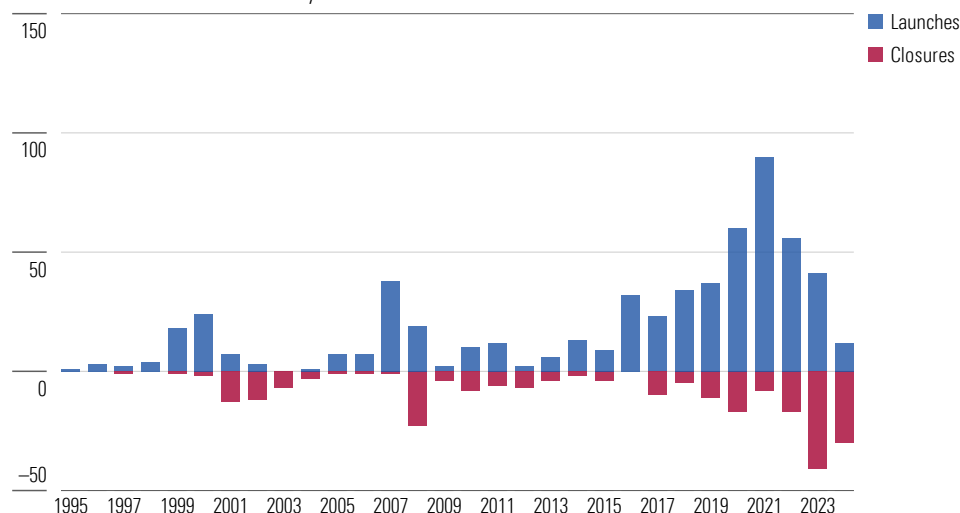
The market crash of 2022 hit thematic funds particularly hard. In the half year to mid-2022, thematic assets under management tumbled by almost one third (32%). In the following two years, asset values stabilized despite net outflows of USD 17.5 billion.

As of June 30, 2024, index funds controlled 70% of US-domiciled thematic fund assets. The evolution of thematic funds is closely tied to the rise of ETFs. Today, aside from two Calvert index funds (**Calvert Global Water** CFWAX and **Calvert Global Energy Solutions** CAEIX), all index-based thematic strategies are available in an ETF wrapper, reflecting the structure's position as a focal point of passive product development.

**Exhibit 13** Active ETF Popularity in Thematic ETFs vs. All Equity ETFs

Source: Morningstar Research. Data as of June 30, 2024.

ETFs have also become the wrapper of choice for many actively managed strategies. Thematic ETFs have been something of a trailblazer in this regard, with more than 10% of US thematic ETF assets sitting in actively managed strategies as early as 2014. This number spiked to around one third of thematic fund assets in 2021, thanks largely to the wild popularity of the ARK Invest suite of active ETFs, before dropping to around 20% today. As a comparison, despite the steadily growing popularity of active equity ETFs more broadly, they still only represent 7% of all US-domiciled equity ETF assets.

**Exhibit 14** US Thematic Launches by Year

Source: Morningstar Research. Data as of June 30, 2024.

Historically, thematic fund launches have been procyclical. New strategies are often introduced in periods of strong market performance, like the new millennium and the mid-2000s, but dry up during



downturns, as Exhibit 14 illustrates. This pattern is mirrored by closures which tend to spike in market downturns.

In the US, new launches have fallen steadily since a record 90 strategies came to market in 2021, with closures outnumbering launches in the first half of 2024 for the first time in any year since 2008.

Overall, the US thematic fund landscape is still dominated by a handful of very large funds. The 10 largest, highlighted in Exhibit 15, accounted for nearly 45% of all US thematic fund assets as of June 30, 2024.

At the midpoint of 2024, the **Global X Infrastructure Development** ETF PAVE is the largest thematic fund in the US. The fund is being used tactically to position portfolios ahead of the US presidential election in November 2024, at a time when enthusiasm for technology-focused themes has dwindled.

The tactical nature of thematic investing can see the fortunes of thematic funds wax and wane dramatically through time. The textbook example of this is the ARK Innovation ETF, the third-largest thematic fund in the US at the end of June 2024. The fund had amassed USD 26 billion in assets by its peak in 2021, just one year later assets had plummeted by 70 percentage points to just USD 8 billion.

#### Exhibit 15 Largest Thematic Funds in the US

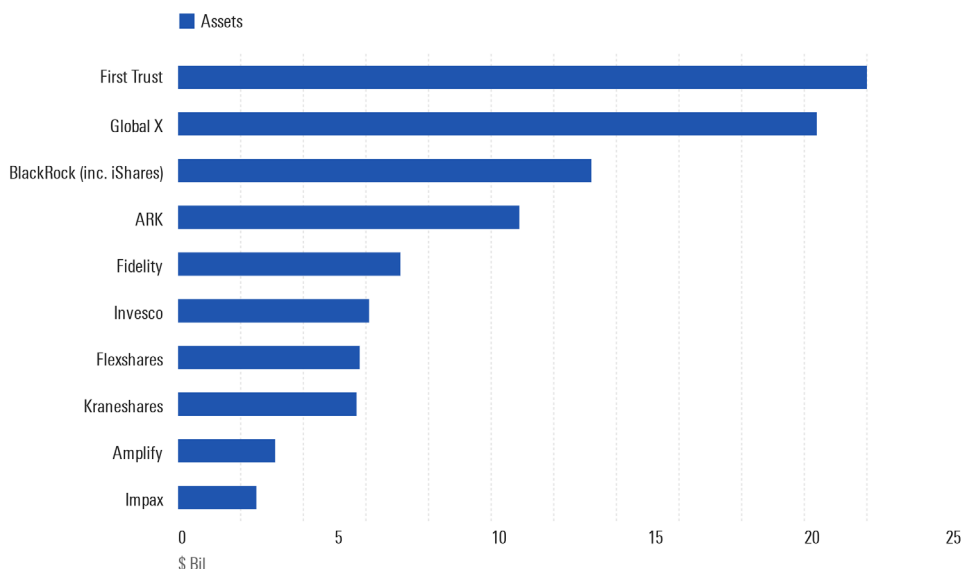
Name	Theme	Sub-Theme	Index Fund	Assets (\$Bil)
Global X US Infrastructure Dev ETF	Political	Infrastructure Spending	Yes	7.4
First Trust NASDAQ Cybersecurity ETF	Cyber Security	Cyber Security	Yes	6.6
ARK Innovation ETF	Multiple Tech Themes	Innovative Technology	No	6.0
First Trust Dow Jones Internet ETF	Digital Economy	Internet	Yes	6.0
FlexShares Mstar Gbl Upstrm Nat Res ETF	Resource Management	Upstream Natural Resources	Yes	5.8
KraneShares CSI China Internet ETF	Digital Economy	Internet	No	5.4
iShares US Medical Devices ETF	Life Sciences	Medical Devices	Yes	5.1
Fidelity New Millennium	Broad Thematic	Broad Thematic	No	5.0
iShares Exponential Technologies ETF	Multiple Tech Themes	Exponential Tech	Yes	3.4
Global X Uranium ETF	Resource Management	Uranium	Yes	3.4

Source: Morningstar Research. Data as of June 30, 2024.

Elsewhere in the top 10, Fidelity New Millennium, which was launched in 1992, remains one of the elder statesmen of the thematic fund market. In fact, several funds in the top 10 challenge the trendy

reputation of thematic funds with their longevity. These include the **First Trust Dow Jones Internet ETF** FDN, which is closing in on a 20-year track record.

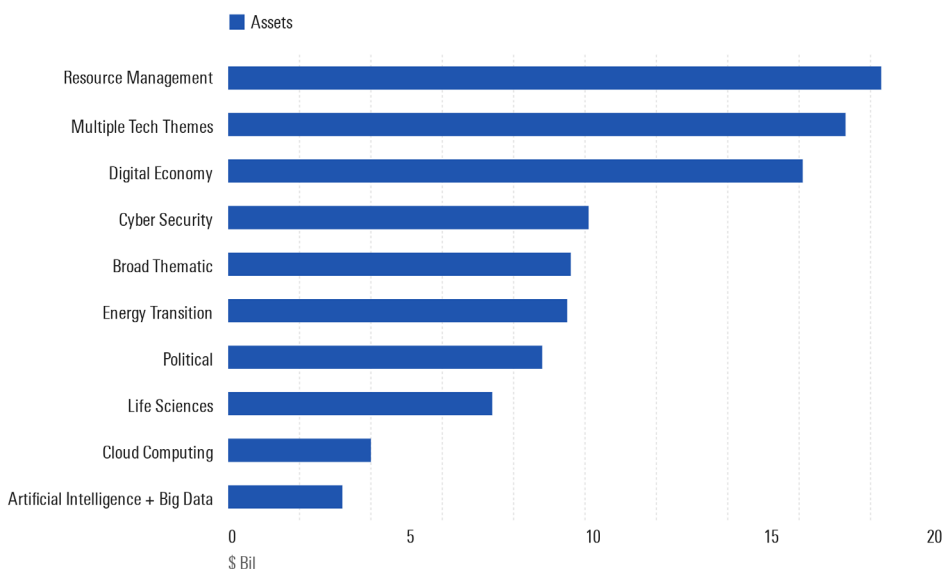
**Exhibit 16** US Thematic AUM by Provider (USD Billion)



Source: Morningstar Research. Data as of June 30, 2024.

In 2021, First Trust surpassed ARK to become the leading provider of thematic funds in the US. Its thematic assets reached USD 31 billion by the end of the year, an increase from USD 26 billion in 2020. In contrast, ARK's thematic assets declined from USD 47 billion in 2020 to USD 30 billion by the end of 2021.

**Exhibit 17** US Thematic AUM by Theme (USD Billion)



Source: Morningstar Research. Data as of June 30, 2024.

As of June 30, 2024, resource management was the most popular theme. This grouping includes water funds, which have been a mainstay of thematic investing in the US for almost two decades. Also included under the resource management banner are uranium funds, which have benefited from the energy disruption connected with the conflict in Ukraine, as Western governments scrambled to find viable alternatives to Russian natural gas.

Tech-oriented thematic funds remain the largest US broad theme grouping by a wide margin despite steady net outflows since late 2021. Popular tech themes in the region include digital economy, cybersecurity, and cloud computing, as well as the multiple tech themes, a group that captures the still-prominent ARK Innovation ETF.

---

**Exhibit 18** US Thematic Funds Style Box (% of Funds)

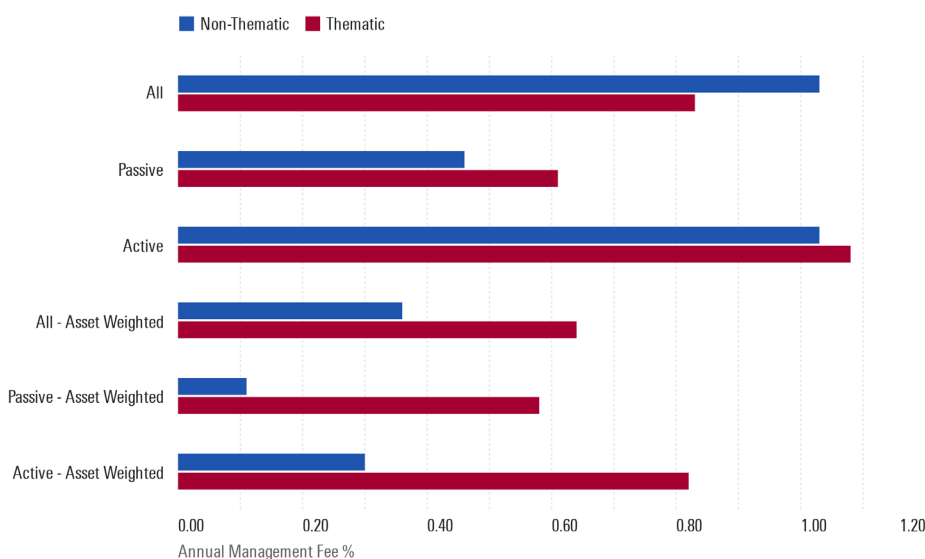
	Value	Blend	Growth
Large	2	7	31
Mid	7	11	27
Small	2	4	8

---

Source: Morningstar Research. Data as of June 30, 2024.

As of mid-2024, 66% of US thematic funds landed on the growth side of the equity style box, while just 11% fell on the value side.

The US stands out from other regions in the percentage of funds that target the small-cap market segment. Fourteen percent of US thematic funds sit in the small-cap market segment of the style box, while this number sits at 5% globally.

**Exhibit 19** US Average Fees (%)

Source: Morningstar Research. Data as of June 30, 2024.

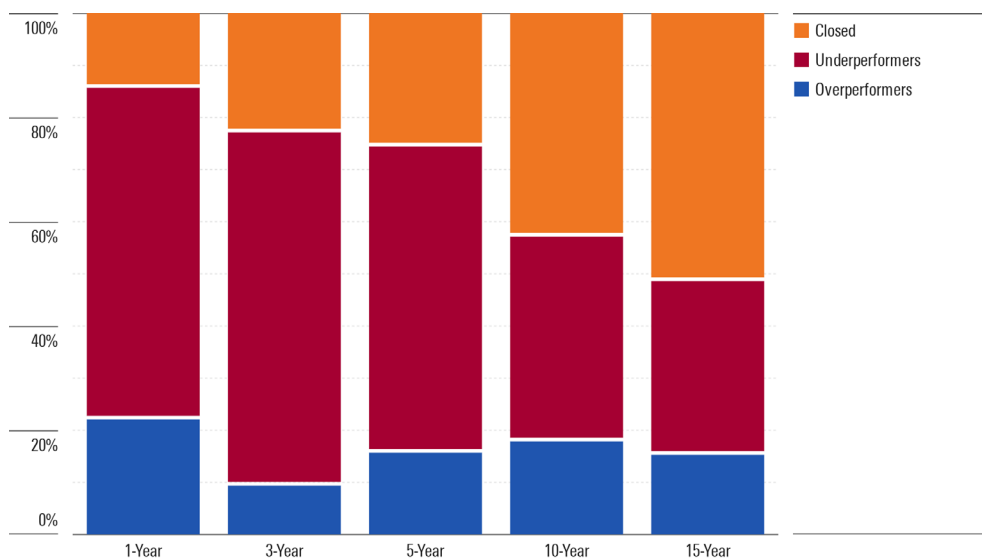
On average, both active and passive US thematic funds levy higher average management fees than their nonthematic counterparts. The difference is particularly striking when we look at asset-weighted fees, which highlight how popular thematic funds charge fees many multiples higher than those of the most popular nonthematic funds.

In the year to mid-2024, 22% of thematic funds survived and outperformed global equities. This figure drops to just 9% of three years, a period that fully captures the headwinds facing thematic funds since early 2022.

More than two thirds of thematic funds underperformed the Morningstar Global Target Market Exposure Index. This is a sharp reversal from their stellar showing in 2020, highlighting the volatility that goes hand in hand with thematic investing. Over longer periods, even as closures ramp up, success rates have hovered between 15% and 18%.

Over longer periods, these funds' high fees contribute to their relatively poor performance versus broad market indexes. High closure rates also contribute to poor ratios, with 51% of funds failing to survive the 15-year period to mid-2024.

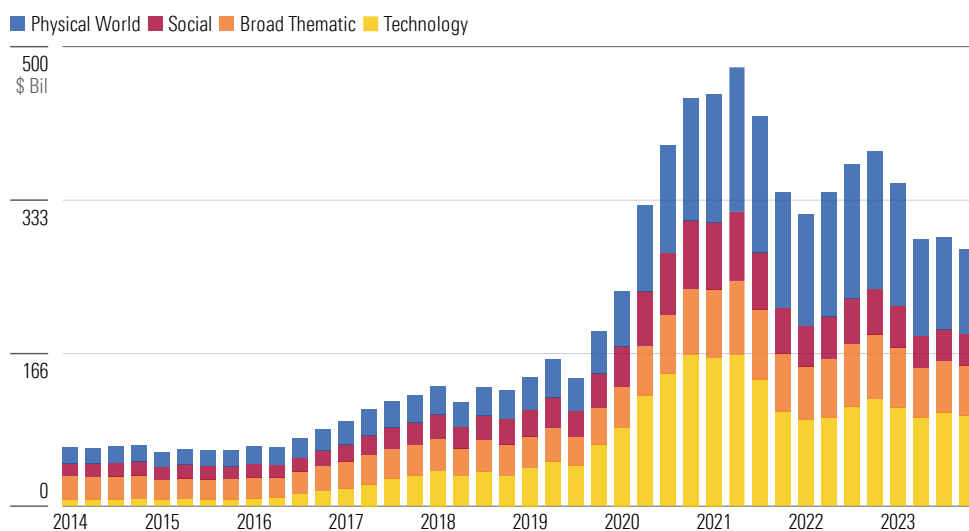
Exhibit 20 details the dismal odds facing investors in selecting a thematic fund that will succeed.

**Exhibit 20** Thematic Fund Survival and Success Rate vs. Global Equities

Source: Morningstar Research. Data as of June 30, 2024.

## Europe

Europe is home to the largest market for thematic funds. As of June 30, 2024, there were 870 thematic funds domiciled in the region, accounting for more than half (55%) of all assets in thematic funds globally.

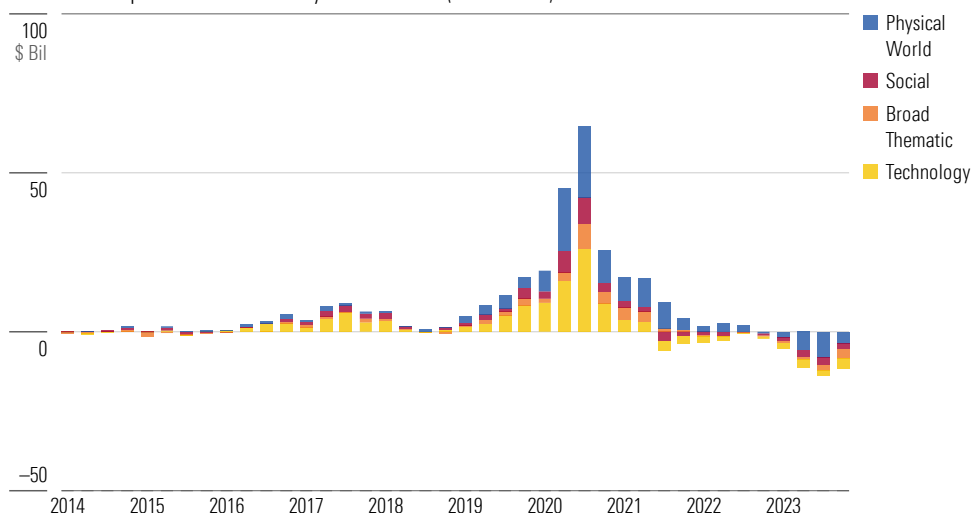
**Exhibit 21** Europe AUM Growth (USD Billion)

Source: Morningstar Research. Data as of June 30, 2024.

Assets invested in thematic funds domiciled in the region have more than doubled over the trailing five years to USD 280 billion, although this growth has been far from linear.

The postpandemic bull market proved particularly supportive of thematic funds, which were some of the best-performing funds of any stripe. From the market trough in March 2020 to its peak at the end of 2021, assets in European thematic funds more than tripled to a record USD 477 billion. This rise was supported by USD 215 billion in net inflows.

**Exhibit 22** Europe Net Asset Flows by Broad Theme (USD Billion)



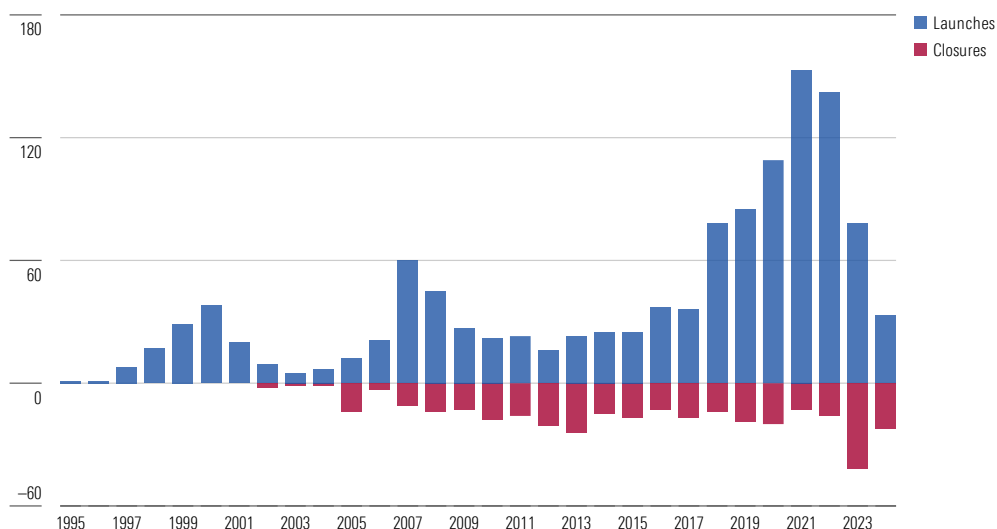
Source: Morningstar Research. Data as of June 30, 2024.

However, these funds were also among the hardest hit during the subsequent "tech reckoning," with assets plummeting by more than 40% from the end of 2021 to June 30, 2024. Despite poor performance across the board, moderate outflows in tech were offset by inflows into physical world themes, primarily energy transition until mid-2023, when these flows too reversed. While net outflows since the end of 2021 have been meaningful (USD 41 billion) they represent less than a fourth of the assets gathered in the postpandemic bull market.

In contrast to the United States, most thematic funds in Europe are actively managed. Passive funds held just 14% of total thematic assets in the region at the end of June 2024.

After the boom years of 2021-22, the number of new thematic fund launches in Europe has fallen, while fund closures have increased, although the former still outnumber the latter, indicating a lingering optimism among fund providers.

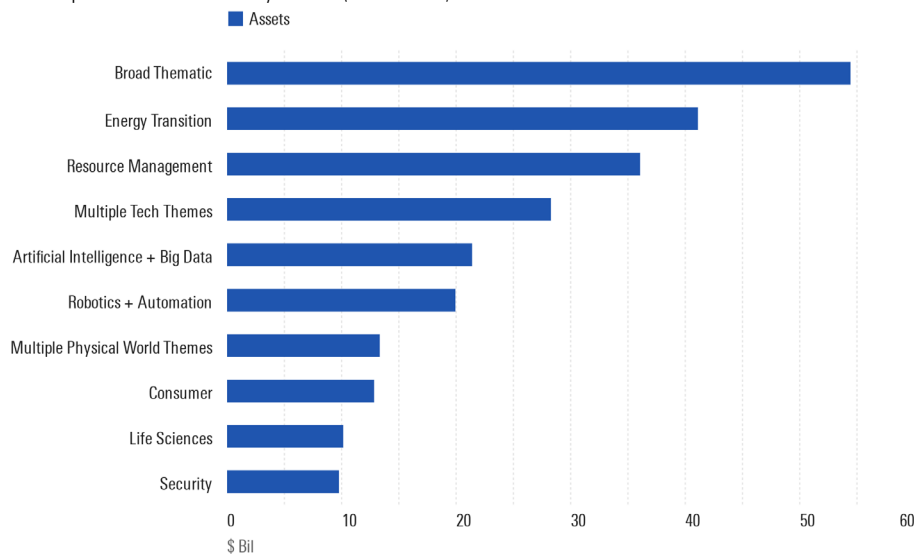
This broadly conforms to the historical pattern of thematic launches being a bull-market phenomenon. The number of thematic fund launches has been positively correlated with the performance of the broader equity markets. The number of new thematic launches rose in the runup to, and peaked immediately before, both the dot-com bubble and the global financial crisis before trailing off in the years that followed.

**Exhibit 23** European Thematic Launches by Year

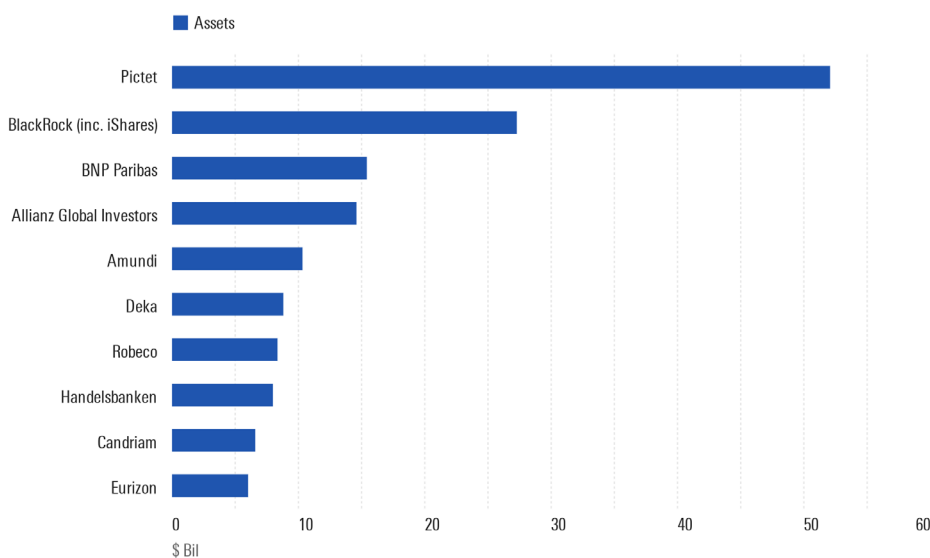
Source: Morningstar Research. Data as of June 30, 2024.

Accounting for USD 54 billion in assets under management, broad thematic funds remain the most popular theme grouping in Europe. They count among their number the largest thematic fund in Europe: Pictet Global Megatrend Selection.

The booming popularity of ESG funds in Europe has spilled over into the world of thematic investing. In early 2020, the EU Commission approved the European Green Deal, a set of initiatives to foster the transition of the EU's economies to carbon neutral by 2050. This, together with the huge government spending plans announced in late 2020 by the newly elected Biden administration in the US, prompted massive inflows into funds with an energy transition theme. Despite significant outflows in the year to the end of June 2024, funds seeking to profit from the transition away from hydrocarbon-based energy sources, such as alternative energy funds, remain the second-most popular theme grouping in the region.

**Exhibit 24** European Thematic AUM by Theme (USD Billion)

Source: Morningstar Research. Data as of June 30, 2024.

**Exhibit 25** European Thematic AUM by Provider (USD Billion)

Source: Morningstar Research. Data as of June 30, 2024.

Thematic specialist Pictet Asset Management is the largest thematic fund provider in Europe. Pictet has a range of 12 actively managed thematic funds, four of which sit atop the table of the 10 largest thematic funds in Europe. The firm's success has been built over many years and is founded on a measured approach to selecting and tracking long-term themes. In a market where fund launch and closure rates run high, Pictet has scored reassuringly low on both counts.

BlackRock takes second place in the European thematic provider league table. Its small stable of actively managed funds, which includes the sizable **BlackRock Sustainable Energy** and **BlackRock Next Generation Technology** funds, is complemented by the range of thematic ETFs marketed under its iShares brand.



French asset manager Amundi takes the third position. Much of Amundi's thematic range is managed under its CPR Asset Management sub-brand, which specializes in sustainable thematic exposures. A small suite of indexed thematic funds was bolstered by Amundi's acquisition of Lyxor Asset Management, an ETF specialist in 2021.

**Exhibit 26** Largest Thematic Funds in Europe

Name	Theme	Sub-Theme	Index Fund	Assets (\$Bil)
Pictet-Global Megatrend Sel I USD	Broad Thematic	Broad Thematic	No	12.1
Pictet - Robotics I dy EUR	Robotics + Automation	Robotics	No	10.2
Pictet-Water I EUR	Resource Management	Water	No	8.8
Pictet - Global Envir Opps I USD	Multiple Physical World Themes	Environmental Opportunities	No	8.2
Allianz Global Artfcl Intlgc W EUR	Artificial Intelligence + Big Data	Artificial Intelligence	No	7.9
Deka-Industrie 4.0 CF	Multiple Tech Themes	4th Industrial Revolution	No	6.3
Pictet-Security I USD	Security	Broad Security	No	6.0
BGF Sustainable Energy A2	Energy Transition	Alternative Energy	No	5.4
BNP Paribas Disrpt Tech Cl D	Multiple Tech Themes	Disruptive Tech	No	4.9
Pictet-Clean Energy Transition I USD	Energy Transition	Alternative Energy	No	4.7

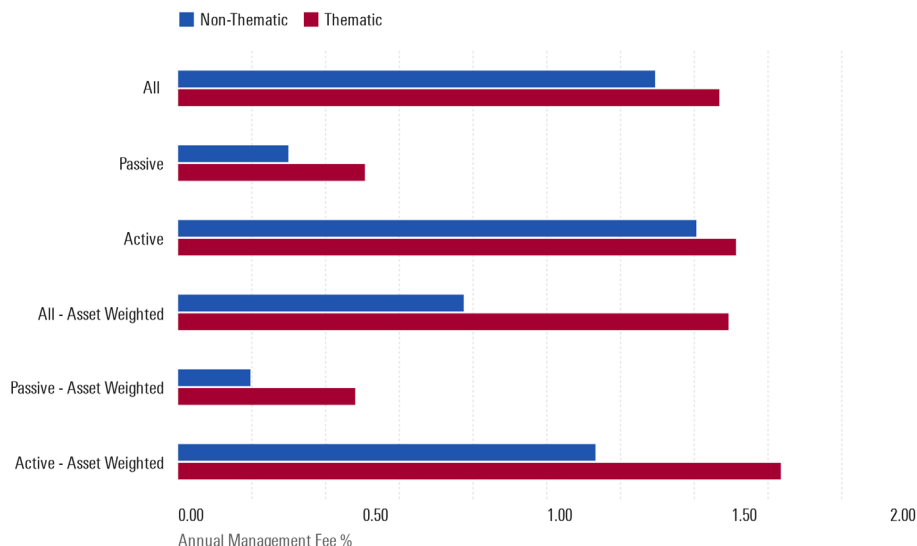
Source: Morningstar Research. Data as of June 30, 2024.

The style and size breakdowns of European thematic funds resemble those of their global counterparts. Two thirds of funds with an equity style box placement have a growth tilt. Notably, tumbling valuations for some themes have seen the percentage of funds with a value bias more than double to 14% since our last paper was published in 2022.

**Exhibit 27** European Thematic Funds Style Box (% of Funds)

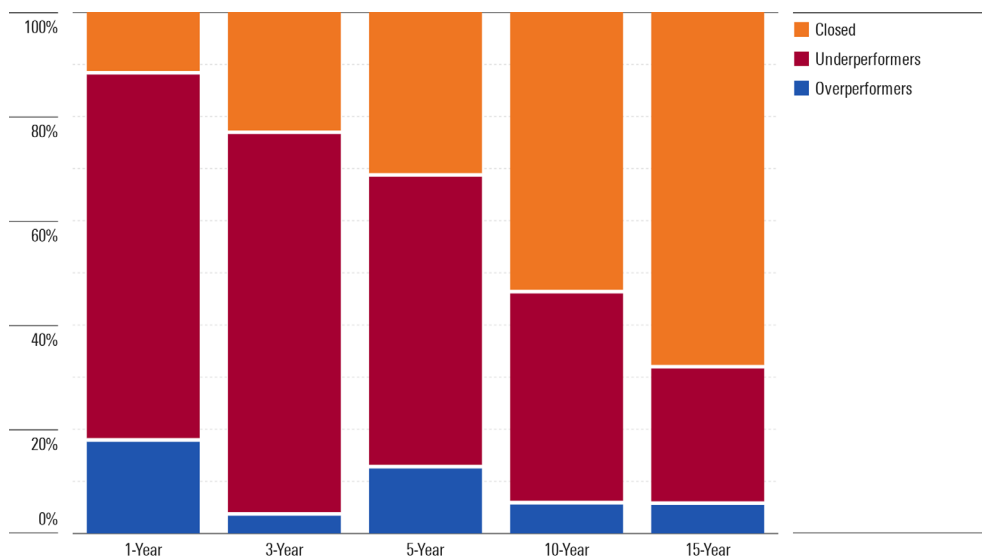
	Value	Blend	Growth
Large	2	11	40
Mid	11	10	21
Small	1	1	3

Source: Morningstar Research. Data as of June 30, 2024.

**Exhibit 28** European Average Fees

Source: Morningstar Research. Data as of June 30, 2024.

Both active and passive European thematic equity funds charge higher management fees than their nonthematic counterparts, on average.

**Exhibit 29** European Thematic Fund Survival and Success Rate

Source: Morningstar Research. Data as of June 30, 2024.

Exhibit 29 lays bare the challenge faced by investors in thematic funds. While thematic funds have experienced bursts of exceptional outperformance, longer-term returns have been poor.

An astonishing 68% of the funds that existed in Europe in mid-2009 had closed by mid-2024. This attrition rate severely limited the chance of an investor picking a winner over this period. In fact, just 5% of funds survived and outperformed global equities over the period.

High relative fees compounded over many years contribute to the low success ratios versus a costless index.

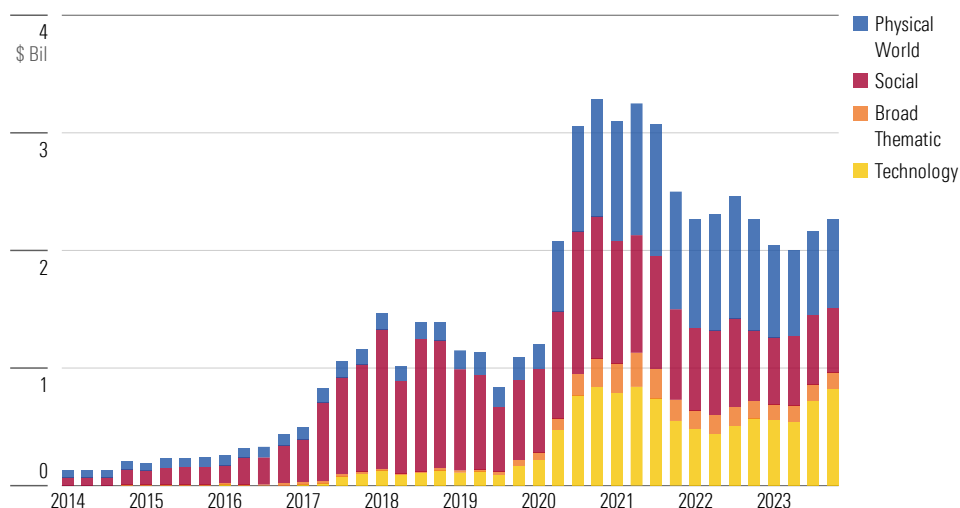
## Canada

Canadian thematic funds represent a tiny but growing segment of the Canadian fund universe. As of June 30, 2024, the cohort held a little more than USD 2.3 billion of investors' money, up from USD 1.4 billion in mid-2019.

As seen in other regions, a cocktail of low rates and a tech boom beginning in the first quarter of 2020 helped push assets in Canada-domiciled thematic funds to a record high of USD 3.2 billion by late 2021.

However, a year later, assets had tumbled 30 percentage points following the market turmoil of 2022. A steady stream of net outflows followed the market crash, but turned positive again in 2024, thanks largely to net flows into one tech ETF, **Fidelity Global Innovators FINN**.

**Exhibit 30** Canada Thematic Fund AUM Growth (USD Billion)



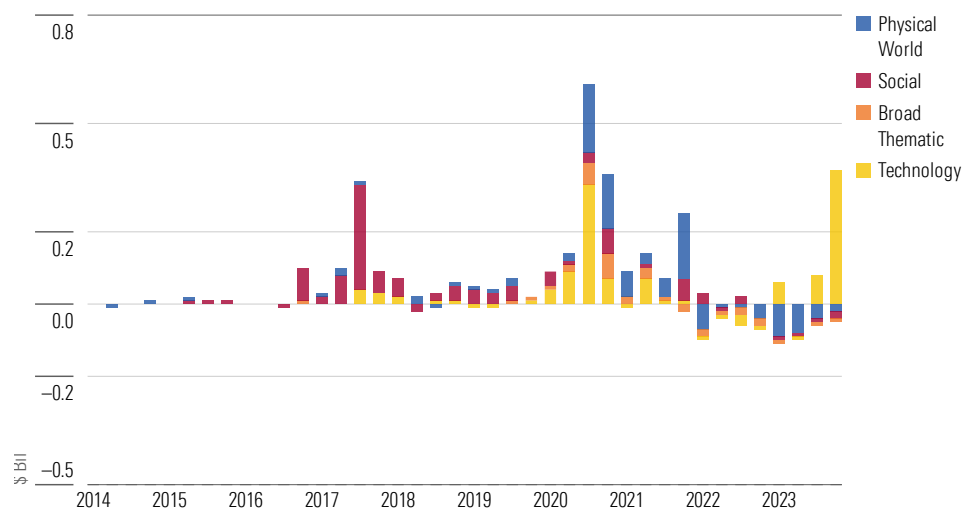
Source: Morningstar Research. Data as of June 30, 2024.

Along with assets and inflows, new fund launches started growing in 2016. Canadian fund providers introduced 30 new thematic funds between 2016 and 2020. The number of new launches exploded in 2021, as 23 new thematic funds opened their doors.

Reflecting what we have seen in other regions, thematic launches have been procyclical and tied to performance of thematic funds more generally. After a record number of launches in the bull market of

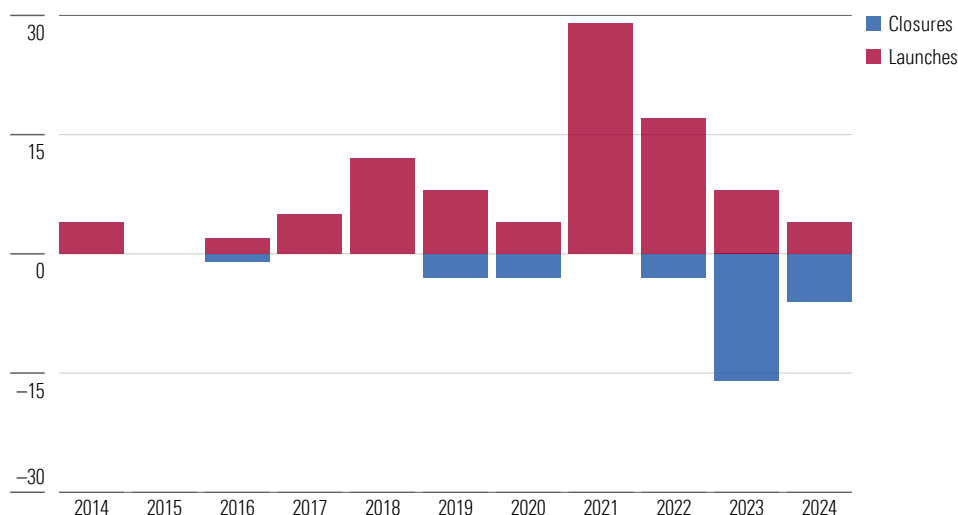
2021, the number of launches tailed off, while closure rates increased. Closures outnumber launches for the first time in 2023.

**Exhibit 31** Canada Thematic Fund Net Asset Flows by Broad Theme (USD Billion)



Source: Morningstar Research. Data as of June 30, 2024.

**Exhibit 32** Canadian Thematic Launches by Year



Source: Morningstar Research. Data as of June 30, 2024.

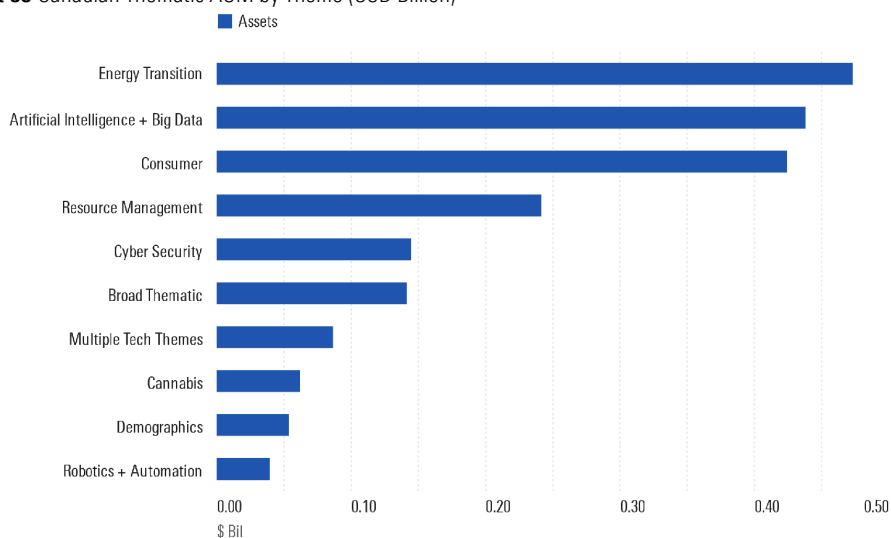
Despite the rise in the number of actively managed thematic ETFs, indexed thematic funds retained the bulk of the assets (70%) as of the end of June 2024.

Running Canadian thematic funds through our taxonomy shows that investors in the region prefer technology and physical world funds.

Popular funds span a diverse range of themes, with technology-themed funds like **CI Global Artificial Intelligence ETF CIAI**, socially themed funds like **Harvest Brand Leaders Plus Income ETF HBF**, and physical world-themed funds like **Desjardins Sustainable Cleantech** all appearing among the largest funds as of June 30, 2024.

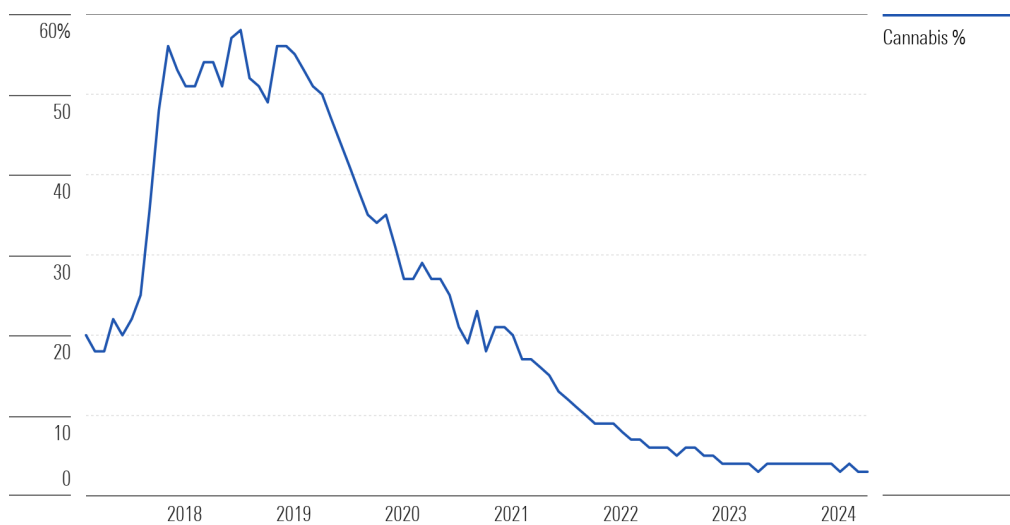
Funds tracking the energy transition theme are the largest grouping in Canada, despite recent performance woes. The popularity of artificial intelligence and Big Data-themed funds in the wake of ChatGPT's launch is reflected in the theme landing in second place in Exhibit 33.

**Exhibit 33** Canadian Thematic AUM by Theme (USD Billion)



Source: Morningstar Research. Data as of June 30, 2024.

Cannabis remains among the 10 most popular themes, but its presence has diminished considerably. In October 2018, Canada became the first major industrialized nation, and the second country in the world after Uruguay, to legalize cannabis for recreational use at the federal level. The country's place at the epicenter of what many thought to be an inevitable global wave of legalization stoked a local investor fervor that can be seen in Exhibit 34. In mid-2017, Canadian cannabis funds represented 18% of all thematic fund assets. By early 2018, this had ballooned to 56%. By mid-2019, this percentage had begun a relentless decline, as legalization efforts in key markets such as the US faltered, and sky-high valuations were slashed. As of June 30, 2024, cannabis funds represent just 3% of the broader Canadian thematic fund market.

**Exhibit 34** Canadian Cannabis Funds Thematic Fund Market Share

Source: Morningstar Research. Data as of June 30, 2024.

There is no dominant player in the Canadian thematic fund market, with the largest provider resting on the success of one product.

For example, buoyed by the success of its Harvest Brand Leaders Plus Income ETF, Canadian-based Harvest Portfolios became the largest thematic asset manager in Canada as of June 30, 2024.

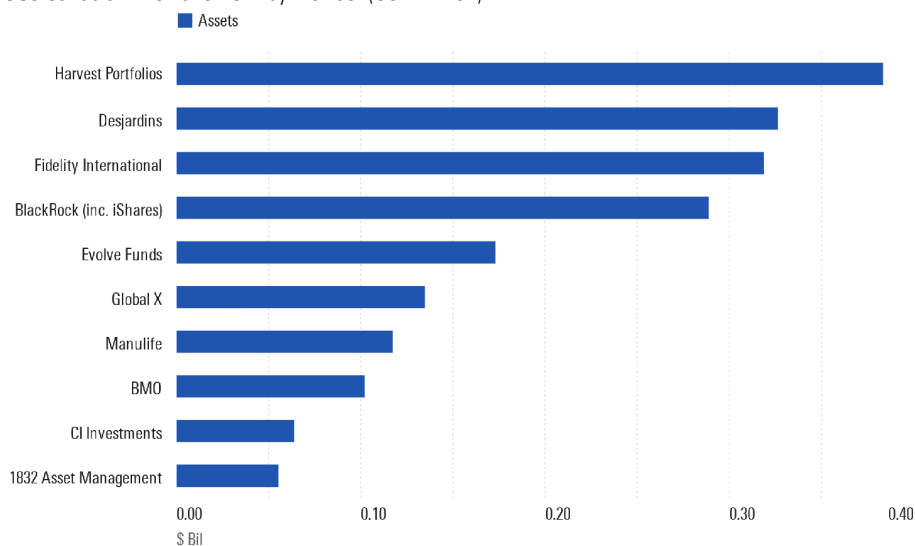
Another local specialist, Desjardins, claims second spot, riding on the popularity of Desjardins Sustainable Cleantech.

Once the largest thematic fund provider in Canada, Horizons ETFs rebranded to Global X in April 2024, as owner Mirae Asset Management moved to align its thematic branding globally.

**Exhibit 35** Largest Thematic Funds in Canada

Name	Theme	Sub-Theme	Index Fund	Assets (\$Bil)
CI Global Artificial Intelligence ETF C\$	Artificial Intelligence + Big Data	Artificial Intelligence	No	0.41
Harvest Brand Leaders Plus Inc ETF U	Consumer	Brands	No	0.35
Desjardins Sustainable Cleantech F	Energy Transition	Clean Tech	No	0.32
iShares Global Water ETF Comm	Resource Management	Water	Yes	0.24
Evolve Cyber Security ETF Hdg	Cyber Security	Cyber Security	Yes	0.13
Manulife Global Thematic Opps F	Broad Thematic	Broad Thematic	No	0.09
Fidelity Global Consumer Ind Sr B	Consumer	Consumer	No	0.07
Global X Marijuana Life Sciences ETF	Cannabis	Cannabis	No	0.06
CI Global Longevity Economy P	Demographics	Ageing Population	No	0.05
Dynamic Energy Evolution F	Energy Transition	Energy Transition	No	0.05

Source: Morningstar Research. Data as of June 30, 2024.

**Exhibit 36** Canadian Thematic AUM by Provider (USD Million)

Source: Morningstar Research. Data as of June 30, 2024.

Outside of the largest funds, most have small asset bases. As of June 30, 2024, the median thematic fund in Canada had about USD 10 million in assets, while only four had more than USD 100 million. Funds with smaller asset bases (those with less than USD 100 million) indicate that a strategy or theme

has not gained (and may not ever gain) traction. Caution is warranted with these smaller funds as they could potentially liquidate because of a lack of interest.

Many of these funds are hoping to profit from emerging trends that are expected to grow rapidly in the near future. As such, 60% of Canadian thematic funds were classified as growth strategies within the confines of the equity style box, compared with only 12% for value. Exhibit 37 further details how Canadian thematic assets map to the style box.

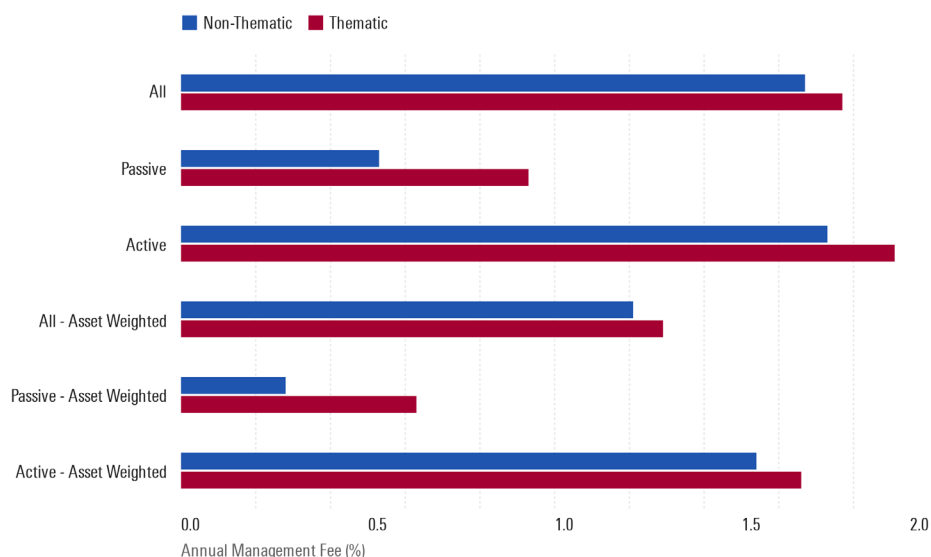
**Exhibit 37** Canadian Thematic Funds Style Box (% of Funds)

	Value	Blend	Growth
Large	2	8	33
Mid	8	15	23
Small	2	5	4

Source: Morningstar Research. Data as of June 30, 2024.

Fees are an important consideration for any investment strategy as they directly affect performance. Exhibit 38 shows that Canadian thematic funds charge higher fees than their nonthematic counterparts.

**Exhibit 38** Canadian Average Fees



Source: Morningstar Research. Data as of June 30, 2024.

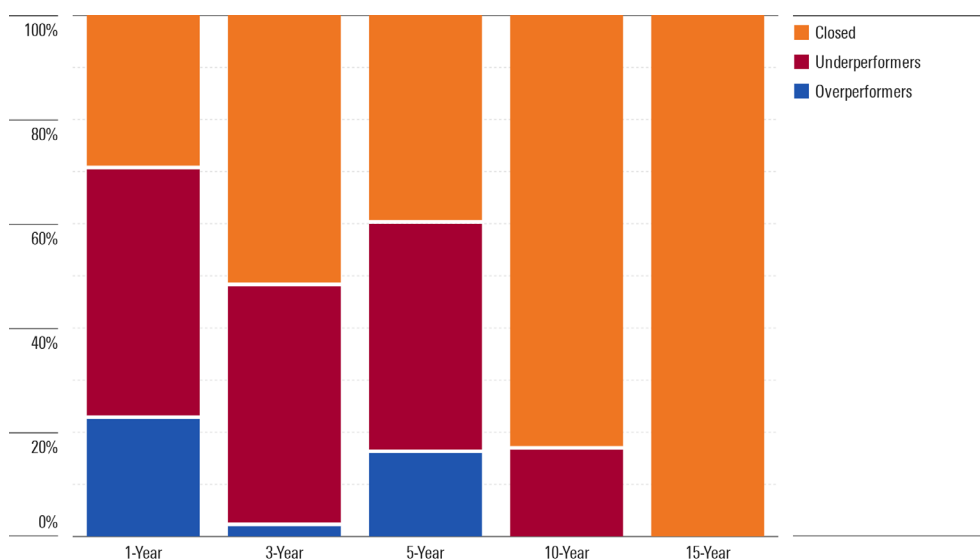
Higher fees charged by thematic funds have contributed to their relatively poor performance over longer periods, and their ability to outperform the global stock market tends to decline as strategies age.



Canada highlights this more starkly than any other region. All six thematic funds that were live in mid-2009 have since shuttered. Of the eight that survived over the trailing 10-year period, none outperformed the global equity markets, as measured by the Morningstar Global TME Index.

Exhibit 39 details the formidable challenges facing investors in selecting a thematic fund that will survive and outperform global equities over longer periods.

**Exhibit 39** Canadian Thematic Fund Survival and Success Rate



Source: Morningstar Research. Data as of June 30, 2024.

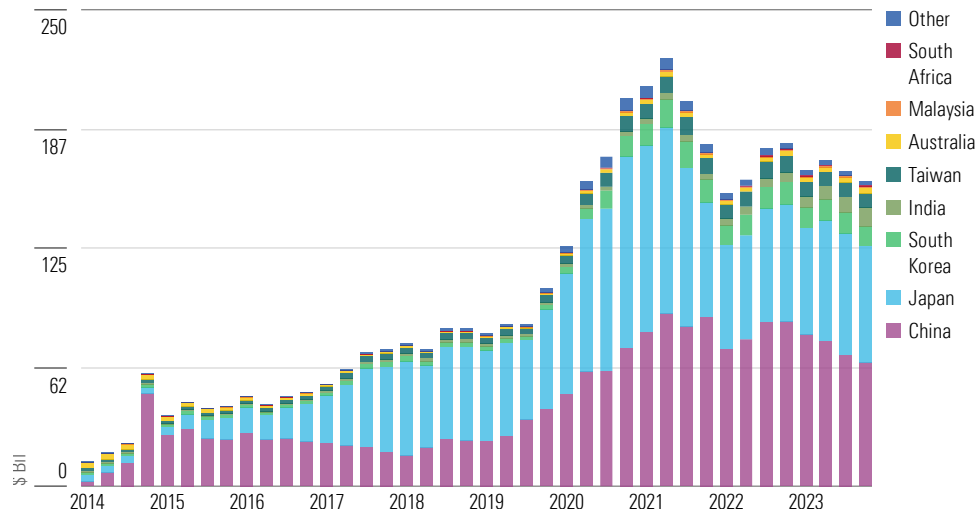
## Rest of World

Reflecting the pattern seen in other markets, thematic fund assets in what we have termed "rest of world" for purposes of this analysis, have nearly doubled over the trailing five-year period. However, as of June 2024, collective assets remain 30% down from highs reached in late 2021.

These aggregate figures mask differences between markets within this grouping. In India, for example, thematic fund assets have surged fourfold to USD 9 billion over the trailing three years, while other major markets have contracted.

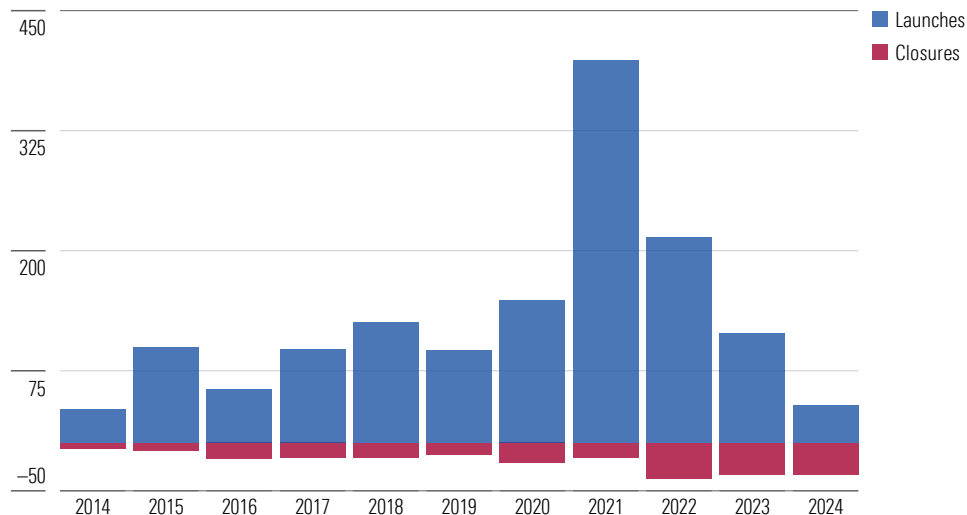
At the end of June 2024, China was the largest thematic fund market outside of Europe and the US with 11% of global assets (USD 65 billion), overtaking Japan at the beginning of 2022. The Japanese market was a close second with USD 61 billion in AUM, or 11% of the global market.

In South Korea (USD 10 billion), India (USD 9 billion), and Taiwan (USD 7 billion), thematic funds remain popular. In Australia, thematic funds have experienced a resurgence, with assets climbing above USD 2.8 billion in 2024 for the first time in nearly 10 years.

**Exhibit 40** Rest of World AUM Growth by Region (USD Billion)

Source: Morningstar Research. Data as of June 30, 2024.

New funds in the "rest of world" region peaked in 2021 with 398 new launches and have declined annually since. Just 39 new thematic funds were brought to market by mid-2024, however launches still outnumber closures.

**Exhibit 41** Rest of World Thematic Launches by Year

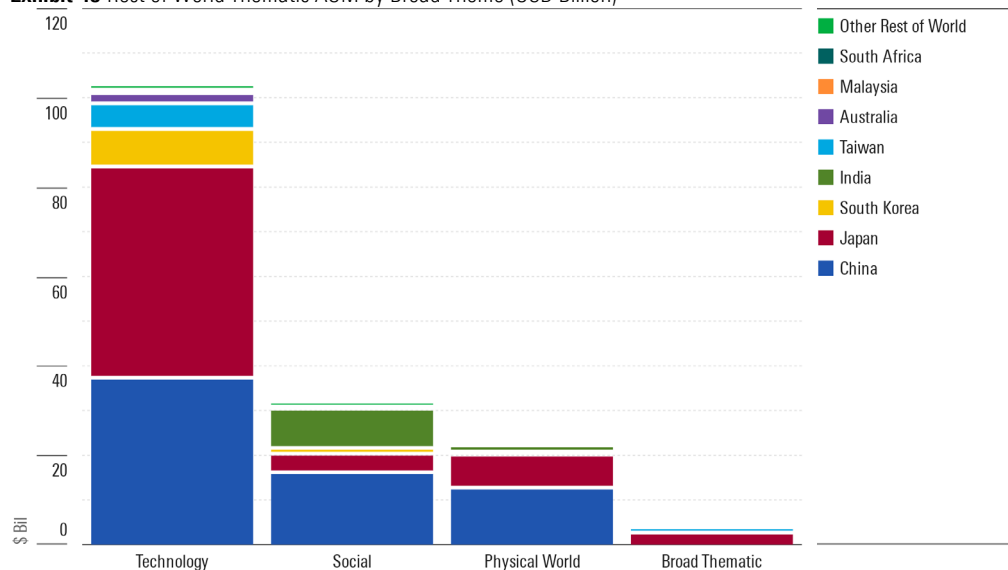
Source: Morningstar Research. Data as of June 30, 2024.

**Exhibit 42** Rest-of-World Largest Thematic Funds

Name	Theme	Sub-Theme	Index Fund	Assets (\$Bil)
CI Global Artificial Intelligence ETF C\$	Artificial Intelligence + Big Data	Artificial Intelligence	No	0.41
Harvest Brand Leaders Plus Inc ETF U	Consumer	Brands	No	0.35
Desjardins Sustainable Cleantech F	Energy Transition	Clean Tech	No	0.32
iShares Global Water ETF Comm	Resource Management	Water	Yes	0.24
Evolve Cyber Security ETF Hdg	Cyber Security	Cyber Security	Yes	0.13
Manulife Global Thematic Opps F	Broad Thematic	Broad Thematic	No	0.09
Fidelity Global Consumer Ind Sr B	Consumer	Consumer	No	0.07
Global X Marijuana Life Sciences ETF	Cannabis	Cannabis	No	0.06
CI Global Longevity Economy P	Demographics	Ageing Population	No	0.05
Dynamic Energy Evolution F	Energy Transition	Energy Transition	No	0.05

Source: Morningstar Research. Data as of June 30, 2024.

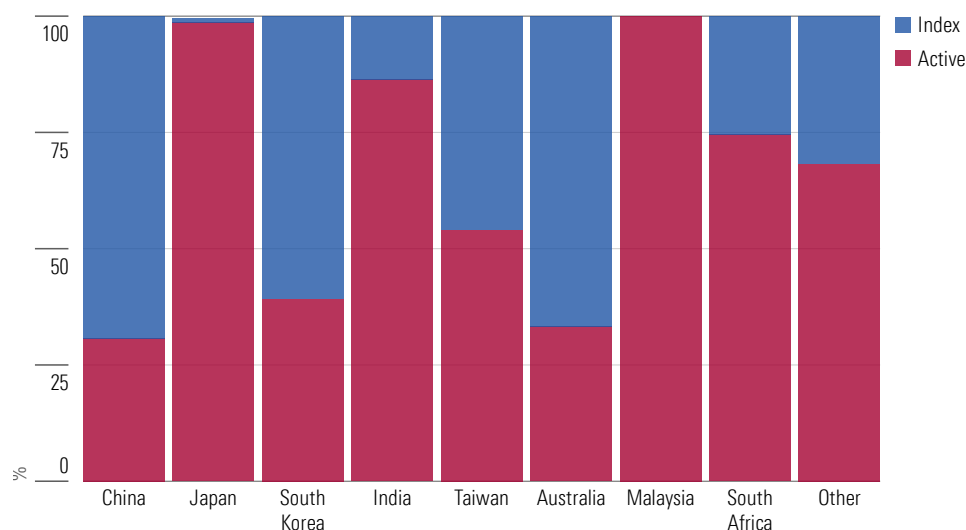
Like the trend observed in the US and Europe, technology is the most popular broad theme, accounting for one third of thematic fund assets in the rest-of-world group. Japan accounts for 46% of these tech-themed assets, reflecting the strong preference for tech investments there. Elsewhere, China dominates the assets in funds within the social and physical world broad themes, particularly those belonging to the consumer and energy transition themes.

**Exhibit 43** Rest of World Thematic AUM by Broad Theme (USD Billion)

Source: Morningstar Research. Data as of June 30, 2024.

Actively managed funds accounted for the majority of assets invested in thematic funds in the combined rest-of-world markets as of mid-2024. However, the active/passive split was very different across markets. Actively managed thematic funds dominate the market in Japan and Malaysia, accounting for more than 98% of assets in both cases. Meanwhile, in Australia, China, and South Korea, passively managed thematic funds accounted for more than 60% of assets, mainly invested in ETFs.

**Exhibit 44** Rest of World Active vs Passive Thematic AUM

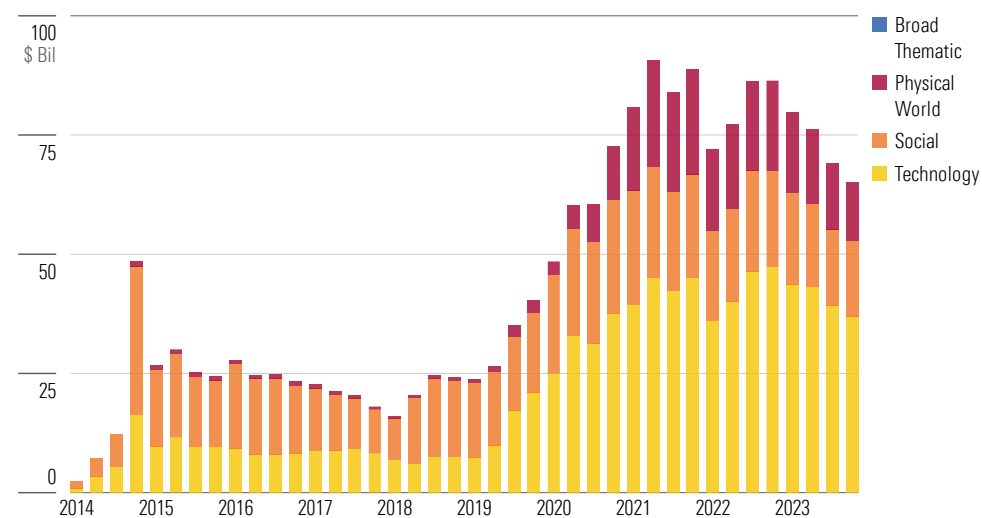


Source: Morningstar Research. Data as of June 30, 2024.

### China

Over the past decade, China has risen from nothing to become the largest thematic fund market outside of the US and Europe. As of June 30, 2024, there were 454 thematic funds domiciled in China. These funds held a combined USD 60 billion.

Relative to the other markets, the Chinese thematic fund market has followed a somewhat peculiar path. In the second quarter of 2015, thematic fund assets in China surged to USD 48 billion from USD 12 billion. This growth spurt was stimulated by strong stock market performance, inflows, and new launches. After the stock market crashed in mid-June 2015, assets in Chinese thematic funds plummeted and the development of the local thematic fund market stagnated. More recently, growth has followed a familiar path seen in other major fund markets: an expansionary period between 2019 and mid-2021, followed by a contraction. Despite the dip, as of mid-2024, China-domiciled thematic fund assets increased 2.7 times over the five years to mid-2024.

**Exhibit 45** China AUM Growth (USD Billion)

Source: Morningstar Research. Data as of June 30, 2024.

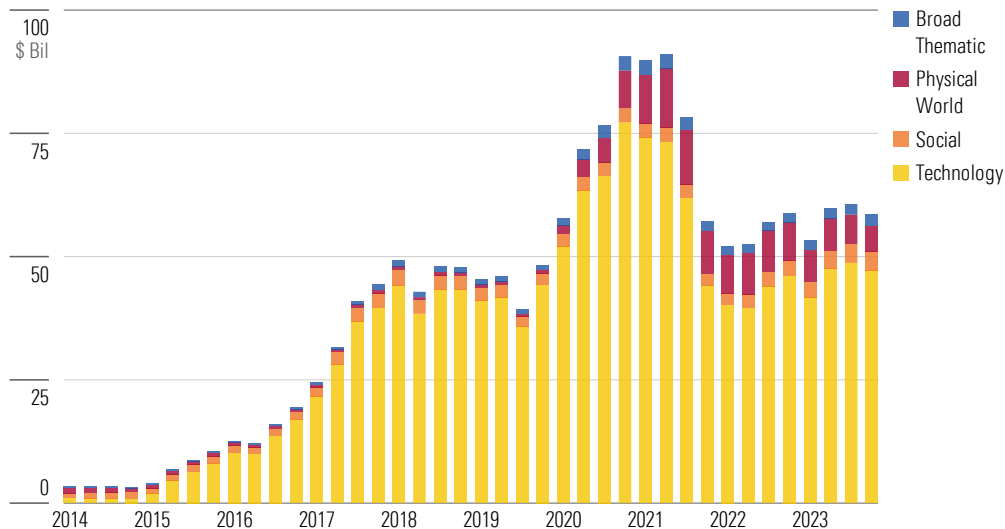
The popularity of the ETF wrapper in China has seen the percentage of total assets in indexed strategies expand, and they now represent 69% of all thematic fund assets.

The number and popularity of specific themes have been influenced by the Chinese government's commitment to pursue economic transformation. In recent years, the transition to a low-carbon and innovation-based economy has become a key focus for the government. The government's carbon neutrality plan, announced in September 2020, spurred the development of alternative energy and electric vehicle funds. Also, the US-China trade war pushed the government to seek technological independence, spurring the growth of tech-oriented thematic funds.

### Japan

Japan's thematic fund market is the second largest outside North America and Europe, trailing only China. Its total assets reached USD 58 billion as of June 30, 2024. However, assets under management have dropped by 36% compared with levels three years ago.

This fall can principally be attributed to underperformance of tech funds since the end of 2021. In the case of Japanese retail investors, many have switched their investments to other funds with theme-like narratives, such as semiconductor and India equity funds, which have contributed to outflows.

**Exhibit 46** Japan AUM Growth (USD Billion)

Source: Morningstar Research. Data as of June 30, 2024.

Actively managed funds dominate Japan's thematic fund market, making up 99% of the AUM. Technology funds command the largest portion, accounting for 81% of the thematic funds' total assets. The three largest funds in this category are **Goldman Sachs netWIN Technology Equity**, which focuses on the digital economy, **Nikko Global Robotics**, and **SMTAM Next Generation Telecom-Related World Equity Strategy**.

When it comes to fund providers, Nikko Asset Management leads the market with a 24% share, followed by Goldman Sachs and Sumitomo Mitsui FG. Most of these funds are centered around technology, with three of Nikko's funds ranking among the 10 largest thematic funds in markets outside North America and Europe.

### South Korea

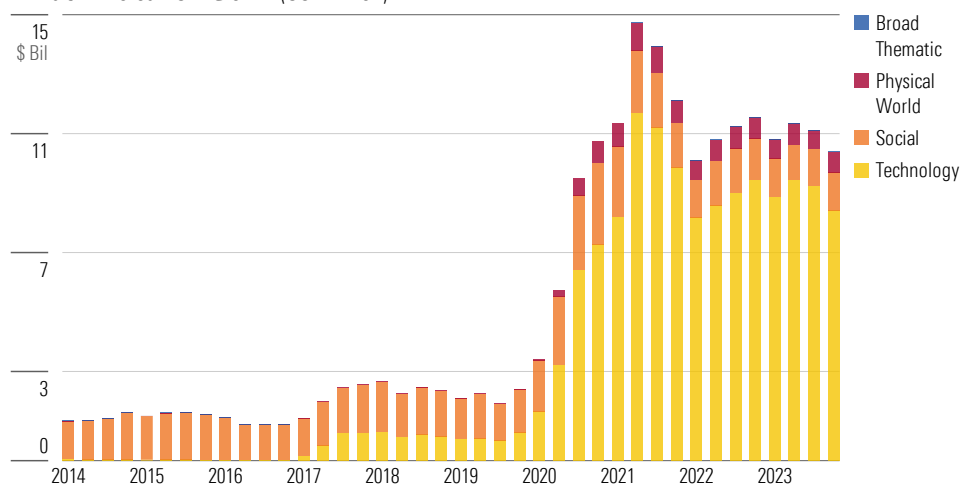
As of mid-2024, assets in Korea-domiciled thematic funds totaled USD 10 billion. The market has more than quadrupled in size over the trailing five years to June 30, 2024, although asset levels remain well below the highs of late 2021. That said, net asset flows have remained largely positive despite poor performance since then.

Asset levels soared in 2020, and many of the most popular thematic funds today were launched around this time to explicitly or implicitly benefit from the Korean New Deal announced by the Korean president in the summer of 2020. The deal involved large government investment in the domestic green energy and digital sectors.

Domestically focused battery technology and future-mobility funds are among the largest in the market and have also benefited from flows. In March 2021, the Korean government announced plans to be carbon neutral by 2050. This led to the launch of energy transition-related funds.

Most recently a wave of artificial intelligence and obesity-themed funds have launched to target those trendy themes.

**Exhibit 47** Korea AUM Growth (USD Billion)



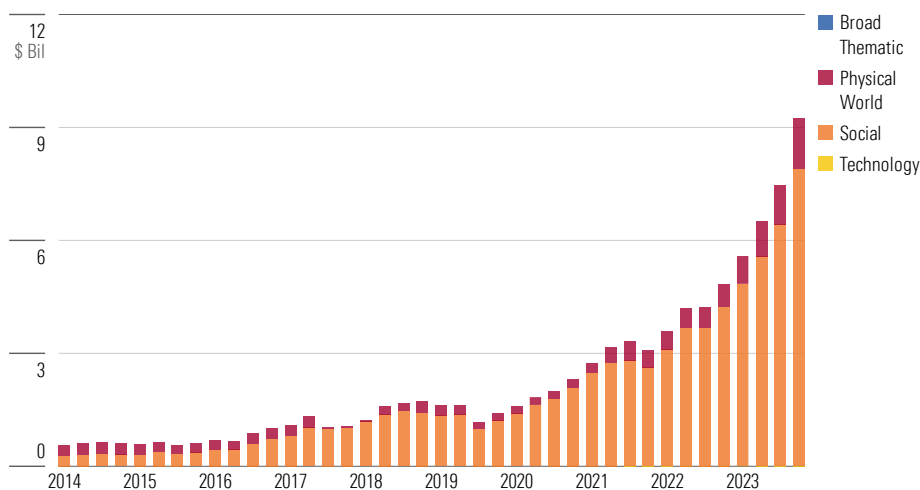
Source: Morningstar Research. Data as of June 30, 2024.

## India

Assets in Indian thematic funds have quadrupled to USD 9 billion over the trailing three years. This booming popularity is particularly notable given the contraction we have seen in most other global markets over the same period. This growth has gone hand in hand with the growth of the mutual fund market in India more broadly, which has grown 80% over the same period by riding on the wave of retail investment.

The market also stands out in the popularity of themes tracked. Technology-themed funds, which dominate in other major thematic markets, barely register among the Indian cohort.

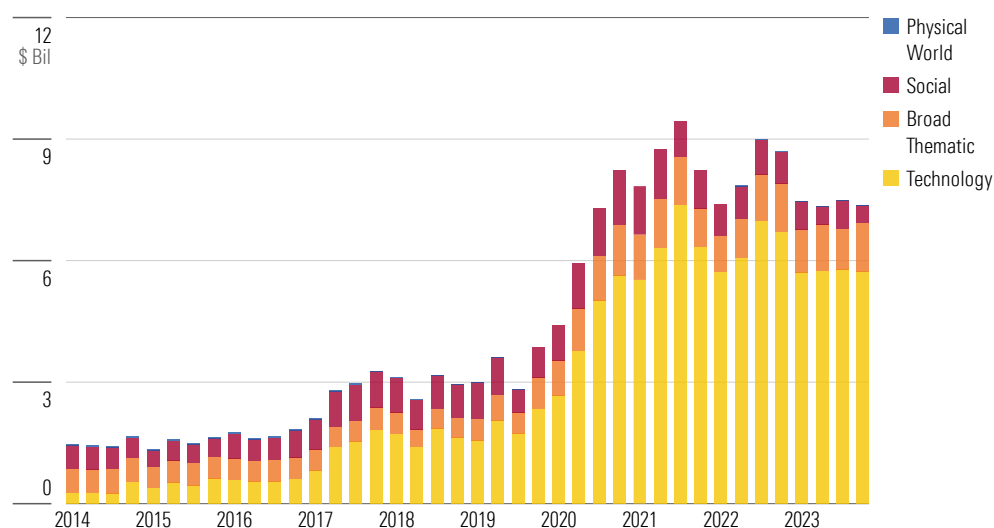
Consumer-themed funds, which target the growing discretionary spending power of Indians, have been the major recipient of net flows, but also rising in popularity have been funds tracking political and security-related themes. These themes include funds expected to benefit from state spending on infrastructure and structural reform as well as state-owned enterprises.

**Exhibit 48** India Thematic AUM Growth by Broad Theme (USD Billion)

Source: Morningstar Research. Data as of June 30, 2024.

**Taiwan**

Assets in Taiwanese thematic funds increased 2.5 times to USD 7.4 billion over the trailing five years through June 2024. In line with other thematic markets, assets peaked in early 2022 but have fallen 28 percentage points since.

**Exhibit 49** Taiwan Thematic AUM Growth by Broad Theme (USD Billion)

Source: Morningstar Research. Data as of June 30, 2024.



This fall was driven by USD 3 billion net outflows from technology-themed funds from the beginning of 2023 to mid-2024. Funds tracking future mobility and next-gen communications themes, such as 5G, have been the hardest hit but remain the most popular groupings in the market.

In fact, despite sustained outflows, **Cathay Taiwan 5G Plus ETF**, which was listed on the Taiwan Stock Exchange in December 2020, remains the largest thematic fund in Taiwan with assets under management of USD 1.5 billion. ■■■

## Appendix: Definitions of Themes

### Technology

Funds that target the disruptive growth potential of technological change. The technology broad theme includes the following themes: artificial intelligence + Big Data, battery technology, cloud computing, cybersecurity, digital economy, digital media, electronics, fintech, future mobility, life sciences, next-gen communications, robotics + automation, space, virtual reality and gaming, and multiple technology.

### Artificial Intelligence + Big Data

Invests in companies whose business is related to the evolution of artificial intelligence and/or Big Data analytics. This may include companies that are positioned to gain from the implementation of AI artificial intelligence or Big Data technologies in their own businesses and also those engaged in the production of AI artificial intelligence products and services, which enable third parties to more efficiently deliver their own products and services. Funds that use AI or Big Data analytics in the stock-selection process but do not select stocks on their exposure to these technologies are excluded from this taxonomy.

### Battery Technology

Invests in companies that are exposed to the development of battery and energy storage technologies. Targeted holdings can range from firms that design and build batteries for electric vehicles to mining companies that extract raw materials like lithium used to manufacture batteries. Companies engaged in the development of future energy storage solutions may also be included.

### Cybersecurity

Invests in companies that are set to benefit from the growing need for security in an increasingly digital world. This includes businesses that provide products and services to help protect systems and networks from information disclosure; theft of or damage to their hardware, software, or electronic data; and the disruption of the services they provide.

### Future Mobility

Invests in companies whose products and services are connected with the field of future-oriented mobility systems. These can include those involved in the design and production of cleaner, safer, and more efficient mass transit solutions, including but not limited to the electrification, connectivity, and automation of vehicles. Target holdings may include automobile manufacturers,

automotive component suppliers, and technology providers, as well as firms that provide new energy solutions.

### **Cloud Computing**

Invests in companies whose products and services are connected with cloud computing. Cloud computing refers to the provision of computing services (software, databases, and so on) over a network rather than on localized devices, allowing users remote access. Eligible are companies facilitating software as a service, platform as a service, and infrastructure as a service. Companies providing managed server storage space and/or other computing infrastructure and hardware may also be included.

### **Digital Economy**

Invests in companies exposed to developments in the digital economy. These firms may directly profit from the rise of the internet and increased digital connectivity in almost every aspect of life. Target companies may engage directly in e-commerce or provide products and services to those that do. They may also participate in the data economy by collecting, buying, and/or selling digital information. Companies that facilitate the move to a more digitalized world may also be included.

### **Fintech**

Invests in companies facilitating or exposed to technological developments in banking and financial services. They may leverage emerging technologies such as blockchain to gain efficiencies and provide new solutions to financial problems. They may also combine technological innovation with disruptive business models such as neobanks, peer-to-peer lending, and costless trading platforms. Funds that invest directly in cryptocurrencies or associated futures contracts are not included in this taxonomy.

### **Life Sciences**

Invests in companies facilitating or exposed to technological developments in the biological and medical sciences. These firms may target specific advancements in biotech or medical sciences such as geonomics or oncology and/or may be exposed to other technological changes such as the transition to digital health solutions like telemedicine. Strategies that do not differentiate themselves from biotechnology and healthcare sector funds are not included in this taxonomy.

### **Nano Technology + New Materials**

Invests in companies whose business is related to the development and commercialization of nanotechnology and/or new materials, as well as those predicted to benefit most from advancements in these technologies. The emerging science of nanotechnology involves the manipulation of matter at an atomic scale, which has several commercial applications including the creation of new materials. Firms that develop or apply intelligent materials that respond to changes in their environment or external stimuli, improving industrial processes, products, and efficiency may also be targeted. These materials are critical for sectors like robotics, fuel cells, and 3D printing

**Robotics + Automation**

Invests in companies whose businesses are involved with the development and/or implementation of robotics technologies or those that are predicted to benefit most from a transition to a more automated world. This may include companies involved in providing industrial robotics solutions, as well as other commercial applications. Those firms that design, build, and/or operate robotic technology, including those focused on specific automotive technologies such as drones or 3D printing, may also be included.

**Space**

Invests in companies that design, build, operate, or directly benefit from products and/or services that require operations that occur beyond the earth's atmosphere. These include firms that directly provide or enable space travel and exploration, satellite telecommunications, mapping, or intelligence services, or are a key component in the connected supply chain.

**Next-Gen Communications**

Invests in companies developing and implementing the next generation of communications infrastructure. Target businesses may be connected to technological developments in mobile or wireless networks such as 5G. Companies exposed to the development of smart city technology, which collects real-time data from across a city to help monitor and improve city operations, may also be included.

**Virtual Reality and Gaming**

Invests in companies exposed to video gaming and the development of virtual reality technology. Companies active in the computer gaming industry, including mobile gaming and e-sports, may be included. Providers of online casino and sports betting services may also be included, as well as any firms pioneering virtual reality technology.

**Multiple Technology Themes**

This theme collects funds that are permitted to invest in more than one of the other technology themes outlined in this taxonomy.

**Other**

This theme covers funds that track targeted technology themes that do not meet the definitions of the other technology themes identified in this taxonomy.

**Physical World**

Funds that address the management of physical resources. Included in this bucket are funds that facilitate the transition to a low-carbon world, such as alternative energy funds. The physical world theme includes the following

themes: energy transition, food, logistics + transportation, resource management, or broad physical world.

### Energy Transition

Invests in companies that are expected to benefit from the global transition away from hydrocarbon-based energy sources. This includes firms that design, supply, build, and/or operate wind, solar, and hydrogen-based energy solutions. Companies that provide other technical solutions such as carbon capture, which will help meet current or future carbon-related goals, may also be included.

### Food

This theme collects the subthemes focused on the global production and supply of food. Companies involved in specific segments of the food value chain such as fishing may be included, as may those engaged in agritech or foodtech.

### Broad Physical World

This theme collects funds that are permitted to invest in more than one of the other physical world themes outlined in this taxonomy.

### Resource Management

Invests in companies that profit from the management of natural resources. These include companies engaged in the management of water, forestry, rare earth metals, and other resources of the future. Those firms involved in building a low-waste or circular economy may also be included. Companies that primarily extract and manage widely traded commodities such as gold are excluded from this taxonomy.

### Logistics + Transportation

Invests in companies that participate in the business of transporting physical goods across the globe. These may include businesses involved in the building of transportation vessels such as ships and aircraft, as well as global shipping and logistics solutions providers.

### Other

This theme covers funds that track targeted physical world themes that do not meet the definitions of the other physical world themes identified in this taxonomy.

### Social

Funds that look to capitalize on structural changes in society. The social broad theme includes the following themes: cannabis, consumer, demographics, political, post-corona, security, wellness, other, or broad social.

**Cannabis**

Invests in companies operating within the global cannabis ecosystem. These companies may facilitate or be directly involved in the production and/or sale of cannabis or its derivatives for medical and/or recreational use.

**Political**

Invests in companies that are expected to benefit from specific political policies. These could be related to international policy, such as trade wars or global infrastructure projects like the New Silk Road, or domestic policy such as structural reform or the Korean New Deal.

**Wellness**

Invests in companies that operate within the wellness industry. Target businesses may offer products and services that promote the well-being of individuals and society. These include companies providing education solutions and those seeking to profit from a global trend toward healthier lifestyles.

**Consumer**

Invests in companies exposed to particular trends in consumer behavior. Target holdings may be connected with specific product segments (for example, sports or luxury goods), but also with changes to consumer behavior (for example, subscription economy). They may also focus more broadly on consumer trends at a geographic level, such as those in emerging markets.

**Demographics**

Invests in companies that are poised to benefit from demographic shifts. These businesses may be positioned to profit from global megatrends such as aging populations and/or increased urbanization.

**Post-Corona**

Invests in companies that are predicted to thrive in a world after the coronavirus. These include firms positively exposed to industries hit hardest by the global pandemic, such as airlines, tourism, and restaurants, as well as those profiting from the rise in remote work.

**Security**

Invests in companies whose businesses are connected with the need for security globally. Target firms may operate to support national security efforts, but also included are those that provide private security services to corporations and individuals. Companies providing safety services and/or products may also be included.

**Other**

This theme covers funds that track targeted social themes that do not meet the definitions of the other social themes identified in this taxonomy.

**Broad Social**

This theme collects together funds that are permitted to invest in more than one of the other social themes outlined in this taxonomy.

**Broad Thematic**

Broad thematic funds are permitted to invest in themes that fall under more than one of the other three broad themes outlined in this taxonomy.

### Morningstar Manager Research Services, EMEA Report Disclosure

This Report is for informational purposes, intended for financial professionals and/or sophisticated investors ("Users") and should not be the sole piece of information used by such Users or their clients in making an investment decision.

The analysis within this report is prepared by the person(s) noted in their capacity as an analyst for Morningstar. The opinions expressed within the Report are given in good faith, are as of the date of the Report and are subject to change without notice. Neither the analyst nor Morningstar commits themselves in advance to whether and in which intervals updates to the Report are expected to be made. The written analysis and Morningstar Medalist Rating within this Report are statements of opinions; they are not statements of fact.

Morningstar believes its analysts make a reasonable effort to carefully research information contained in their analysis. The information on which the analysis is based has been obtained from sources which are believed to be reliable such as, for example, the fund's prospectus and shareholder reports (or their equivalents), fund company website, interviews with fund company personnel, and relevant and appropriate press sources as well as data, statistics and information within Morningstar's own database. Morningstar does not perform an audit or seek independent verification of any of the data, statistics, and information it receives.

Unless otherwise provided in a separate agreement, Users accessing this Report may only use it in the country in which the Morningstar distributor is based. Unless stated otherwise, the original distributor of the report is Morningstar Inc., a U.S.A. domiciled financial institution.

This Report is for informational purposes only and has no regard to the specific investment objectives, financial situation or particular needs of any specific recipient. This publication is intended to provide information to assist institutional investors in making their own investment decisions, not to provide investment advice to any specific investor. Therefore, investments discussed and recommendations made herein may not be suitable for all investors; Users and User clients must exercise their own independent judgment as to the suitability of such investments and recommendations in the light of their own investment objectives, experience, taxation status and financial position.

The information, data, analyses and opinions presented herein are not warranted to be accurate, correct, complete or timely. Unless otherwise provided in a separate agreement, Morningstar makes no representation that the Report contents meet all of the presentation and/or disclosure standards applicable in the jurisdiction the recipient is located.

Except as otherwise required by law or provided for in a separate agreement, the analyst, Morningstar and its officers, directors and employees will not be responsible or liable for any trading decisions, damages or other losses resulting from, or related to, the information, data, analyses or opinions within the report. Morningstar encourages Users and User clients to read all relevant issue documents (e.g., prospectus) pertaining to the security concerned, including without limitation, information relevant to its



investment objectives, risks, and costs before making an investment decision and when deemed necessary, to seek the advice of a legal, tax, and/or accounting professional.

The Report and its contents are not directed to, or intended for distribution to or use by, any person or entity who is a citizen or resident of or located in any locality, state, country or other jurisdiction where such distribution, publication, availability or use would be contrary to law or regulation or which would subject Morningstar or its affiliates to any registration or licensing requirements in such jurisdiction.

This Report may be distributed in certain localities, countries and/or jurisdictions ("Territories") by independent third parties or independent intermediaries ("Distributors"). Such Distributors are not acting as agents or representatives of the analyst or Morningstar. In Territories where a Distributor distributes our Report, the Distributor, and not the analyst or Morningstar, is solely responsible for complying with all applicable regulations, laws, rules, circulars, codes and guidelines established by local and/or regional regulatory bodies, including laws in connection with the distribution third-party research reports.

For a list of funds which Morningstar currently covers and provides written analysis on please contact your local Morningstar office. For information on the historical Morningstar Medalist Rating for any Fund Morningstar covers, please contact your local Morningstar office.

Please note that investments in securities (including mutual funds) are subject to market and other risks and there is no assurance or guarantee that the intended investment objectives will be achieved. Past performance of a security may or may not be sustained in future and is no indication of future performance. A security investment return and an investor's principal value will fluctuate so that, when redeemed, an investor's shares may be worth more or less than their original cost. A security's current investment performance may be lower or higher than the investment performance noted within the report. Morningstar's Risk, Return and Star Rating serves as useful data points with respect to evaluating a fund's risk profile.

A current yield percentage is not a reflection of the actual return an investor will receive in all cases as market prices for securities are constantly changing due to such things as market factors. Where a security is denominated in a different currency than the currency of the User or User's clients, changes in rates of exchange may have an adverse effect on the value, price or income of or from that investment.

Indexes noted within the report are unmanaged, their returns do not include payment of any sales charges or fees an investor would pay to purchase securities, and cannot be invested in directly.

In certain jurisdictions, the Report contents, except for the Morningstar Medalist Rating and key analysis/ opinions, may be shared with the fund company prior to publication. In the unlikely event that Morningstar would change their analyses/opinions and/or the Morningstar Medalist Rating based on feedback as result of such review, the Report would disclose such a fact.

### Conflicts of Interest

- ▶ Analysts may own (actual or beneficial) interests in the financial products that are the subject of the Report. No material interests are held by Morningstar, the analyst or their immediate family in the financial products that are the subject of the Report. The Conflicts of Interest disclosure above also applies to relatives and associates of Manager Research analysts in India.
- ▶ Analysts' compensation is derived from Morningstar's overall earnings and consists of salary, bonus and in some cases restricted stock. Analysts' receive no compensation or material benefits from product issuers or third parties in connection with the Report. The Conflicts of Interest disclosure above also applies to associates of Manager Research analysts in India. The terms and conditions on which Morningstar Investment Adviser India Private Limited offers investment research to clients, varies from client to client, and are detailed in the respective client agreement.
- ▶ Morningstar does not receive commissions for providing research and does not charge financial product issuers to be rated.
- ▶ Analysts may not pursue business and employment opportunities outside Morningstar within the investment industry (including but not limited to, working as a financial planner, an investment adviser or investment adviser representative, a broker-dealer or broker-dealer agent, a financial writer, reporter, or analyst).
- ▶ Morningstar may provide the product issuer or its related entities with services or products for a fee and on an arms' length basis including software products and licenses, research and consulting services, data services, licenses to republish our ratings and research in their promotional material, event sponsorship and website advertising.
- ▶ Morningstar affiliates (i.e., its investment management group) may have arrangements with a fund company's affiliate to provide investment consulting advice some of which an analyst may issue an investment research reports on one or more of the fund company's funds. However, analysts do not have authority over Morningstar's investment management group's business arrangements nor allow employees from the investment management group to participate or influence the analysis or opinion prepared by them.
- ▶ Morningstar, Inc. is a publicly traded company (Ticker Symbol: MORN) and thus a fund which is the subject of this Report may own more than 5% of Morningstar, Inc.'s total outstanding shares. Please access Morningstar, Inc.'s proxy statement, "Security Ownership of Certain Beneficial Owners and Management" section <http://investorrelations.morningstar.com/sec.cfm?doctype=Proxy&year=&x=12>. A fund's holding of Morningstar stock has no bearing on and is not a requirement for funds Morningstar determines to cover.

Analysts do not have any other material conflicts of interest at the time of publication. Users wishing to obtain further information should contact their local Morningstar office or refer to

<https://corporate.morningstar.com/us/asp/subject.aspx?xmlfile=540.xml>.

### **Morningstar Medalist Rating™**

The Morningstar Medalist Rating is the summary expression of Morningstar's forward-looking analysis of investment strategies as offered via specific vehicles using a rating scale of Gold, Silver, Bronze, Neutral, and Negative. The Medalist Ratings indicate which investments Morningstar believes are likely to outperform a relevant index or peer group average on a risk-adjusted basis over time. Investment products are evaluated on three key pillars (People, Parent, and Process) which, when coupled with a fee assessment, forms the basis for Morningstar's conviction in those products' investment merits and determines the Medalist Rating they're assigned. Pillar ratings take the form of Low, Below Average, Average, Above Average, and High. Pillars may be evaluated via an analyst's qualitative assessment (either directly to a vehicle the analyst covers or indirectly when the pillar ratings of a covered vehicle are mapped to a related uncovered vehicle) or using algorithmic techniques. Vehicles are sorted by their expected performance into rating groups defined by their Morningstar Category and their active or passive status. When analysts directly cover a vehicle, they assign the three pillar ratings based on their qualitative assessment, subject to the oversight of the Analyst Rating Committee, and monitor and reevaluate them at least every 14 months. When the vehicles are covered either indirectly by analysts or by algorithm, the ratings are assigned monthly. For more detailed information about the Medalist Ratings, including their methodology, please go to

<http://global.morningstar.com/managerdisclosures>

The Morningstar Medalist Ratings are not statements of fact, nor are they credit or risk ratings. The Morningstar Medalist Rating (i) should not be used as the sole basis in evaluating an investment product, (ii) involves unknown risks and uncertainties which may cause expectations not to occur or to differ significantly from what was expected, (iii) are not guaranteed to be based on complete or accurate assumptions or models when determined algorithmically, (iv) involve the risk that the return target will not be met due to such things as unforeseen changes in changes in management, technology, economic development, interest rate development, operating and/or material costs, competitive pressure, supervisory law, exchange rate, tax rates, exchange rate changes, and/or changes in political and social conditions, and (v) should not be considered an offer or solicitation to buy or sell the investment product. A change in the fundamental factors underlying the Morningstar Medalist Rating can mean that the rating is subsequently no longer accurate.

Analysts do not have any other material conflicts of interest at the time of publication. Users wishing to obtain further information should contact their local Morningstar office or refer to the Analyst Conflicts of Interest and Other Disclosures for North America, EMEA, or APAC at:

<http://global.morningstar.com/managerdisclosures>

under Section "Methodology Documents and Disclosures".

### **Morningstar Rating**

The Morningstar Rating for funds is a proprietary data point that is quantitatively driven. Funds are rated from 1 to 5 stars based on how well the fund performed (after adjusting for risk and accounting for sales charges) in comparison to similar funds. Within each Morningstar Category, the top 10% of funds

receive 5 stars and the bottom 10% receive 1 star. Funds are rated for up to three time periods—three, five, and 10 years—and these ratings are combined to produce an overall star rating, which is noted within the Report. Funds with less than three years of history are not rated. Morningstar Ratings are based entirely on a mathematical evaluation of past performance. Star ratings are in no way to be considered a buy or sell signal nor should be viewed as a statement of fact.

**For Recipients in Australia:** This Report has been issued and distributed in Australia by Morningstar Australasia Pty Ltd (ABN: 95 090 665 544; ASFL: 240892). Morningstar Australasia Pty Ltd is the provider of the general advice ('the Service') and takes responsibility for the production of this report. The Service is provided through the research of investment products. To the extent the Report contains general advice it has been prepared without reference to an investor's objectives, financial situation or needs. Investors should consider the advice in light of these matters and, if applicable, the relevant Product Disclosure Statement before making any decision to invest. Refer to our Financial Services Guide (FSG) for more information at <http://www.morningstar.com.au/fsg.pdf>.

**For Recipients in Hong Kong:** The Report is distributed by Morningstar Investment Management Asia Limited, which is regulated by the Hong Kong Securities and Futures Commission to provide services to professional investors only. Neither Morningstar Investment Management Asia Limited, nor its representatives, are acting or will be deemed to be acting as an investment advisor to any recipients of this information unless expressly agreed to by Morningstar Investment Management Asia Limited. For enquiries regarding this research, please contact a Morningstar Investment Management Asia Limited Licensed Representative at <https://shareholders.morningstar.com>.

**For Recipients in India:** This Investment Research is issued by Morningstar Investment Adviser India Private Limited. Morningstar Investment Adviser India Private Limited is registered with the Securities and Exchange Board of India (Registration number INA000001357) and provides investment advice and research. Morningstar Investment Adviser India Private Limited has not been the subject of any disciplinary action by SEBI or any other legal/regulatory body. Morningstar Investment Adviser India Private Limited is a wholly owned subsidiary of Morningstar Investment Management LLC. In India, Morningstar Investment Adviser India Private Limited has one associate, Morningstar India Private Limited, which provides data related services, financial data analysis and software development.

The Research Analyst has not served as an officer, director or employee of the fund company within the last 12 months, nor has it or its associates engaged in market making activity for the fund company.

**For Recipients in Japan:** The Report is distributed by Ibbotson Associates Japan, Inc., which is regulated by Financial Services Agency. Neither Ibbotson Associates Japan, Inc., nor its representatives, are acting or will be deemed to be acting as an investment advisor to any recipients of this information.

**For Recipients in Singapore:** This Report is distributed by Morningstar Investment Adviser Singapore Pte Limited, which is licensed by the Monetary Authority of Singapore to provide financial advisory services in Singapore. Investors should consult a financial adviser regarding the suitability of any investment product, taking into account their specific investment objectives, financial situation or particular needs, before making any investment decisions.

### About Morningstar Manager Research

Morningstar Manager Research provides independent, fundamental analysis on managed investment strategies. Morningstar views are expressed in the form of Morningstar Medalist Ratings, which are derived through research of three key pillars—People, Process, and Parent. The Morningstar Medalist Rating is the summary expression of Morningstar’s forward-looking analysis of investment strategies as offered via specific vehicles using a rating scale of Gold, Silver, Bronze, Neutral, and Negative. A global research team issues detailed research reports on strategies that span vehicle, asset class, and geography.

Medalist Ratings are not statements of fact, nor are they credit or risk ratings, and should not be used as the sole basis for investment decisions. A Medalist Rating is not intended to be nor is a guarantee of future performance.

### About Morningstar Manager Research Services

Morningstar Manager Research Services combines the firm's fund research reports, ratings, software, tools, and proprietary data with access to Morningstar's manager research analysts. It complements internal due-diligence functions for institutions such as banks, wealth managers, insurers, sovereign wealth funds, pensions, endowments, and foundations. Morningstar’s manager research analysts are employed by various wholly owned subsidiaries of Morningstar, Inc. including but not limited to Morningstar Research Services LLC (USA), Morningstar UK Ltd, and Morningstar Australasia Pty Ltd.

### For More Information

For current Morningstar clients, please reach out to your respective Client Success Manager for more information on how you can best leverage this research within your firm.

For all others, please reach out to our business development team at [uksalesgeneralist@morningstar.com](mailto:uksalesgeneralist@morningstar.com) to learn more about Morningstar’s various offerings and more details about how you can leverage this research.



1 Oliver's Yard  
55-71 City Road  
London  
EC1Y 1HQ

©Morningstar. All Rights Reserved. Unless otherwise provided in a separate agreement, you may use this report only in the country in which its original distributor is based. The information, data, analyses, and opinions presented herein do not constitute investment advice; are provided solely for informational purposes and therefore are not an offer to buy or sell a security; and are not warranted to be correct, complete, or accurate. The opinions expressed are as of the date written and are subject to change without notice. Except as otherwise required by law, Morningstar shall not be responsible for any trading decisions, damages, or other losses resulting from, or related to, the information, data, analyses, or opinions or their use. The information contained herein is the proprietary property of Morningstar and may not be reproduced, in whole or in part, or used in any manner, without the prior written consent of Morningstar. To license the research, call +1 312 696-6869.