Thematic Index Round-Up

MarketVector IndexesTM ("MarketVector") publishes 63 thematic indexes to cover forward-looking investment concepts grouped into meta themes: Clean Energy, Consumer Trends, Disruptive Technology, Financials 2.0, Health Care Innovation, Materials, NextGen Hardware & Communications, NextGen Software, Thematic Industrials & Infrastructure, Thematic REITS. In Q4 2022, Thematic REITs (+9.7%) outperformed other meta themes, reversing Q3 2022 underperformance. Financials 2.0 (-11.8%) and Clean Energy (-2.4%) underperformed their meta theme peers.

Exhibit 1: Meta Thematic Returns (USD, ending December 31, 2022)

Q1-2020	Q2-2020	Q3-2020	Q4-2020	Q1-2021	Q2-2021	Q3-2021	Q4-2021	Q1-2022	Q2-2022	Q3-2022	Q4-2022
Health Care Innovation -8.1%	Clean Energy 49.1%	Clean Energy 42.4%	Clean Energy 54.2%	Financials 2.0 38.6%	Health Care Innovation 10.4%		NextGen Hardware & Communications 16.2%	Materials 6.8%		Financials 2.0 0.9%	Thematic REITs 9.7%
Financials 2.0 -12.1%	NextGen Software 47.9%	Disruptive Technology 20.2%	Financials 2.0 38.1%	Consumer Trends 10.4%	Thematic Industrials & Infrastructure 8.4%	Materials 0.0%		Thematic Industrials & Infrastructure -7.4%	Disruptive Technology -18.5%	Health Care Innovation -3.0%	NextGen Hardware & Communications 8.6%
Clean Energy -14.0%	Health Care Innovation 47.3%	Materials 12.0%		NextGen Hardware & Communications 10.0%	Disruptive Technology 8.2%	Disruptive Technology 0.0%		Clean Energy -8.6%	NextGen Software -18.6%	Materials -3.1%	Consumer Trends 8.1%
NextGen Software -15.0%	Financials 2.0 33.5%	NextGen Software 11.6%	Health Care Innovation 30.9%		NextGen Hardware & Communications 7.8%	Thematic Industrials & Infrastructure -0.7%	Thematic Industrials & Infrastructure 4.2%		Thematic Industrials & Infrastructure -19.0%	Disruptive Technology -5.2%	NextGen Software 7.4%
Thematic Industrials & Infrastructure -17.5%	Disruptive Technology 33.0%	Consumer Trends 9.9%	NextGen Software 29.5%	Materials 8.1%		NextGen Hardware & Communications -1.9%	Clean Energy 1.0%	Consumer Trends -9.3%	NextGen Hardware & Communications -20.0%	Thematic Industrials & Infrastructure -5.4%	Health Care Innovation 7.2%
Disruptive Technology -17.8%		Health Care Innovation 9.9%	NextGen Hardware & Communications 23.6%	Thematic Industrials & Infrastructure 4.5%	NextGen Software 7.0%	Health Care Innovation -6.0%	Disruptive Technology -1.2%	NextGen Hardware & Communications -10.8%	Clean Energy -20.5%	Clean Energy -8.9%	Thematic Industrials & Infrastructure 5.8%
NextGen Hardware & Communications -17.9%	NextGen Hardware & Communications 29.5%	NextGen Hardware & Communications 8.9%	Disruptive Technology 23.5%	NextGen Software 3.9%	Materials 4.8%	Consumer Trends -6.5%	Consumer Trends -3.5%	Disruptive Technology -12.9%	Health Care Innovation -21.6%	Consumer Trends -9.1%	Disruptive Technology 4.0%
Materials -29.5%		Thematic Industrials & Infrastructure 8.8%	Consumer Trends 23.4%	Disruptive Technology 1.4%	Consumer Trends 1.1%	NextGen Software -9.4%	Financials 2.0 -7.3%	Financials 2.0 -14.3%	Consumer Trends -22.6%	NextGen Hardware & Communications -9.6%	Materials 2.4%
Consumer Trends -30.3%	Consumer Trends 25.0%	Financials 2.0 8.1%	Thematic Industrials & Infrastructure 18.4%	Health Care Innovation -2.0%	Clean Energy -1.1%	Clean Energy -10.8%	NextGen Software -7.6%	Health Care Innovation -14.7%			Clean Energy -2.4%
Thematic REITs -41.0%	Thematic Industrials & Infrastructure 24.7%	Thematic REITs 6.1%		Clean Energy -5.0%	Financials 2.0 -2.9%	Financials 2.0 -13.4%	Health Care Innovation -9.3%	NextGen Software -19.6%	Financials 2.0 -39.2%	NextGen Software -12.7%	Financials 2.0 -11.8%

Source: MarketVector. Meta Thematic index returns are the equal weighted returns of underlying Thematic indexes listed in Exhibit 2.

Exhibit 2: Thematic Index Returns (USD, ending December 31, 2022)

			Quarterly Returns (USD)	Last3 Years (USD)
			Q4- Q3- Q2- Q1-	Ann Ann Draw-
Index Ticker Index Name	Meta Theme	Launch Date Base Date	2022 2022 2022 2022	Ret Stdev Down
BWINDNTR * BlueStar Wind Energy Industry	Clean Energy	03/23/21 12/31/14	8.4% -9.4% -11.0% -1.7%	12.5% 25.8% -14.3%
MVHTWOTR MVIS Global Hydrogen Economy ESG	Clean Energy	12/22/20 12/15/20		
BGTQNTR * BlueStar Global GreenTech	Clean Energy	07/06/20 12/30/16	2.4% -4.0% -16.4% -9.5%	14.4% 30.3% -17.9%
BHDROTR BlueStar Hydrogen and NextGen Fuel Cell	Clean Energy	03/09/21 06/30/20	0.7% -14.9% -35.2% -11.7%	44.00/ 00.50/ 47.00/
MVSMOGTR MVIS Global Low Carbon Energy	Clean Energy	02/23/21 12/31/15	-1.0% -8.8% -14.3% -9.0%	14.2% 33.5% -17.2%
BSOLRNTR * BlueStar Solar Energy Industry	Clean Energy Clean Energy	03/09/20 12/31/14		32.6% 45.5% -28.5%
BEVNTR * BlueStar Electric Vehicle Industry MVBJKTR MVIS Global Gaming	Consumer Trends	01/19/21 12/29/17 05/08/12 12/29/06		7.1% 63.9% -21.5% -1.7% 33.8% -28.5%
BCRUZTR BlueStar Hotels, Airlines, and Cruises	Consumer Trends	06/01/21 12/31/17		-14.5% 42.9% -36.0%
MVCIRCTR MVIS Global Circular Economy ESG	Consumer Trends	03/16/22 12/31/20		-14.570 42.570 -50.070
BVGOGTR BlueStar Global Online Gambling, Video Gaming ar		03/25/22 12/31/20		
BTOURNTR * BlueStar Travel and Vacation	Consumer Trends	05/13/19 12/31/15	11.1% -1.8% -27.2% -1.4%	-8.2% 41.6% -38.3%
BETORNTR * BlueStar Europe Travel and Vacation	Consumer Trends	05/12/21 12/31/15		-20.0% 45.9% -36.3%
MVFOFTR MVIS Global Future of Food ESG	Consumer Trends	09/09/21 12/31/19		-8.4% 19.5% -12.5%
BEGAMNTR * BlueStar E-Games	Consumer Trends	10/05/18 12/29/14	8.7% -15.5% -16.4% -12.2%	0.2% 22.5% -14.4%
MVESPOTR MVIS Global Video Gaming & eSports	Consumer Trends	07/16/18 12/31/14		6.6% 24.1% -14.2%
MVESPGTR MarketVector Global Video Gaming & eSports ESG	Consumer Trends	07/22/22 12/31/21	5.4% -12.7% -19.2% -14.0%	
BAUTNTR * BlueStar Autonomous Driving	Consumer Trends	05/10/18 12/28/12	4.6% -8.9% -21.2% -17.9%	0.2% 30.6% -21.6%
MVNACBTR MVIS North America Cannabis Industry	Consumer Trends	03/16/22 12/31/20	-17.0% -12.3% -51.0% -10.7%	
BSEAQNTR * BlueStar Asia Technology	Disruptive Technology	08/13/18 06/28/13	15.8% -14.2% -12.5% -18.9%	4.4% 28.3% -13.8%
BGTNATR BlueStar Israel Global Technology North America	Disruptive Technology	04/19/21 12/17/20	0.6% -2.8% -19.8% -11.7%	
BGTHTR BlueStar Israel Global Technology	Disruptive Technology	01/31/14 12/31/03	0.3% -3.1% -19.3% -11.4%	1.3% 26.0% -13.9%
MVDINDTR MVIS Digital India	Disruptive Technology	12/28/21 12/31/15	-0.8% -0.7% -22.5% -9.5%	19.0% 28.4% -25.5%
BFNQNTR * BlueStar Fintech	Financials 2.0	11/07/17 06/29/12	1.5% -3.3% -25.0% -13.5%	-7.5% 30.8% -22.5%
BEBKRNTR * BlueStar E-Brokers and Digital Capital Markets	Financials 2.0	03/31/21 12/29/17	-1.8% -1.2% <mark>-31.1%</mark> -12.5%	12.0% 33.8% -17.8%
BBIDSTR BlueStar Global E-Brokers and Digital Capital Mark	Financials 2.0	08/23/21 12/31/19	-2.3% -1.3% <mark>-36.0% -13.0%</mark>	5.4% 32.7% -20.0%
BUBIDTR BlueStar US Listed E-Brokers and Digital Capital Ma	Financials 2.0	11/10/21 12/31/19	-10.3% -2.1% -32.6% -13.1%	4.6% 41.0% -22.7%
MVDAPPTR MVIS Global Digital Assets Equity	Financials 2.0	03/08/21 02/26/21	-46.2% 12.6% -71.1% -19.2%	
BEHCNTR * BlueStar E-Healthcare	Health Care Innovation	01/22/21 12/31/15	13.4% -6.1% -17.8% -13.8%	8.3% 26.6% -14.5%
MVBIONTR * MVIS Global Bionic Healthcare ESG	Health Care Innovation	02/09/22 12/31/20		
MVFHCTR MVIS Global Future Healthcare ESG	Health Care Innovation	12/06/21 12/31/20		
BDNANTR * BlueStar Genomic Health Care	Health Care Innovation	05/22/20 12/31/15	-5.9% 2.9% -27.9% -26.4%	-10.9% 34.8% -22.2%
MVGDXJTR MVIS Global Junior Gold Miners	Materials	08/31/09 12/31/03		-3.9% 44.1% -22.4%
MVGMXCTR MVIS Global Clean-Tech Metals ex-China	Materials	01/28/22 12/31/15		18.8% 39.1% -23.3%
MVGMETTR MVIS Global Clean-Tech Metals	Materials Materials Materials	11/02/21 12/31/15		17.5% 36.4% -21.8%
MVNLRTR MVIS Global Uranium & Nuclear Energy	Materials	07/18/12 12/29/06	8.9% -0.8% -8.7% 4.0% 8.8% -6.5% -17.3% 9.7%	6.2% 17.8% 0.0% 9.7% 22.1% -14.1%
MVMOOTR MVIS Global Agribusiness BMOONTR * BlueStar Agribusiness 50	Materials	07/18/12 12/29/06 05/03/21 12/31/15	8.8% -6.5% -17.3% 9.7% 8.2% -9.2% -15.7% 9.9%	9.3% 21.6% -13.4%
BMOONTR * BlueStar Agribusiness 50 MVNUCLTR MarketVector Global Uranium and Nuclear Energy	Materials	05/03/21 12/31/15 08/11/22 12/31/21	6.6% 1.8% -16.4% 14.3%	9.5% 21.0% -15.4%
MVREMXTR MVIS Global Rare Earth/Strategic Metals	Materials	10/13/10 12/28/07	-7.4% -2.8% -29.6% 7.0%	26.0% 43.6% -18.3%
MVDAMTR MVIS Global Digital Assets Mining	Materials	12/28/21 12/17/21		20.070 43.070 18.370
MVSMCTR MVIS US Listed Semiconductor 10% Capped ESG	NextGen Hardware & Communications	08/13/20 12/31/11		13.6% 31.1% -16.8%
MVSMHTR MVIS US Listed Semiconductor 25	NextGen Hardware & Communications	08/12/11 09/29/00		13.8% 31.6% -16.6%
BQTUMTR BlueStar Machine Learning and Quantum Computin	NextGen Hardware & Communications	06/07/18 12/18/15		11.7% 26.1% -13.1%
BGFGNTR * BlueStar Global 5G Connectivity	NextGen Hardware & Communications	07/26/19 12/15/15		5.4% 23.2% -12.6%
BUQFCNTR * BlueStar US Machine Learning and Quantum Comp	NextGen Hardware & Communications	03/08/21 12/18/15		13.2% 27.2% -13.0%
BCHNQNTR * BlueStar China Internet Software	NextGen Software	08/13/18 06/28/13		-6.5% 43.6% -21.7%
BADTQNTR * BlueStar Digital Advertising	NextGen Software	12/28/21 12/30/16	5.7% -9.2% -32.4% -23.9%	-1.0% 35.2% -23.6%
BAINTR * BlueStar Artificial Intelligence	NextGen Software	03/26/18 12/31/12	3.8% -7.3% -24.4% -12.7%	4.0% 26.1% -13.5%
BDATATR BlueStar Big Data & Analytics	NextGen Software	03/09/21 12/31/15	-7.4% -6.8% -28.6% -18.2%	0.6% 37.6% -16.4%
MVSPCTR MVIS Global Space Industry ESG	Thematic Industrials & Infrastructure	08/31/21 12/31/19	18.0% -8.1% -14.7% 1.3%	3.6% 31.2% -29.9%
BRBTNTR * BlueStar Robotics	Thematic Industrials & Infrastructure	01/29/18 06/29/12	17.5% -6.7% -21.7% -14.1%	7.1% 26.7% -15.1%
BRB3DTR BlueStar Global Robotics & 3D Printing	Thematic Industrials & Infrastructure	04/12/22 12/30/16	10.9% -8.1% -26.8% -16.5%	0.2% 29.2% -15.3%
BDLRTNTR * BlueStar Data Center and Logistics Real Estate	Thematic Industrials & Infrastructure	08/05/19 12/31/13	9.1% -16.3% -16.6% -9.3%	2.5% 21.1% -16.2%
BTOTNTR * BlueStar Total Security	Thematic Industrials & Infrastructure	07/08/19 12/31/15	8.0% -5.7% -13.7% 2.8%	6.9% 22.4% -14.2%
BLOGRNTR * BlueStar Global Logistics	Thematic Industrials & Infrastructure	10/23/20 12/29/06	0.9% -6.7% -11.2% -11.0%	9.2% 19.6% -12.4%
BECOMNTR * BlueStar E-Commerce US Leaders	Thematic Industrials & Infrastructure	09/11/18 12/28/12	-0.2% 3.7% -32.6% -16.0%	-1.7% 29.6% -15.7%
BUIINTR * BlueStar US Listed Internet Infrastructure	Thematic Industrials & Infrastructure	04/08/22 12/31/15		2.0% 23.2% -11.3%
BILINTR * BlueStar Israel Infrastructure	Thematic Industrials & Infrastructure	03/25/22 12/31/17		8.7% 19.7% -17.4%
MVMORTTR MVIS US Mortgage REITs		08/04/11 12/30/04		-15.4% 44.8% -56.2%
MVMVATR MVIS Australia A-REITs (AUD)		12/21/12 12/29/06		-2.3% 30.4% -35.6%
BURRTNTR * BlueStar Top 10 US Residential Real Estate	Thematic REITs	01/28/22 12/31/15	5.3% -4.7% -14.5% -15.0%	1.3% 27.3% -28.0%

Source: MarketVector. Total Return Indexes, *Net Total Return Indexes

Licensed Product News

As of Q4 2022, total thematic products licensed stands at \$17bn USD. We are excited to welcome our newest licensed products in Q4 2022.

INDEX TKR	PRODUCT TKR	PRODUCT NAME	DATE LISTED
MVCIRCTR	REUS LN	VanEck Circular Economy ETF	10/26/22
MVBIONTR	CYBO LN	VanEck Bionic Engineering UCITS ETF	12/07/22

MarketVector ESG Products

MarketVector[™] ESG indexes support European SFDR Principal Adverse Impact Standards (PAIs) and UN Sustainable Development Goals (SDGs). As of Q4 2022, the following ESG indexes support UN SDG goals.

INDEX TKR	INDEX NAME	UN SDG	DATE LISTED
MVBION	MVIS® Global Bionic Healthcare ESG Index	Good Health And Well-Being.	02/09/2022
MVCIRC	MVIS® Global Circular Economy ESG Index	Responsible Consumption and Production, and Clean Water and Sanitation	03/16/2022
MVFHC	MVIS® Global Future Healthcare ESG Index	Good Health And Well-Being	12/6/2021
MVFOF	MVIS® Global Future of Food ESG Index	Good Health And Well-Being, Responsible Consumption and Production, and Sustainable Cities and Commodities	09/09/2021
MVHTWO	MVIS® Global Hydrogen Economy ESG Index	Affordable and Clean Energy	12/22/2020



Thematic Spotlight

ETFGI reported assets in Environment, Social and Governance (ESG) ETF products topped USD 400 billion globally, in 2022, with 47 months of positive net inflows, growing at 32% CAGR over last 10 years (ETFGI.com, as of November 2022). As demand in ESG investing grows, so too have scrutiny, some negative, around ESG investments.

"Can Profit-seeking companies help save the planet?"

- Economist September 2022

The research and evidence around ESG performance remains inconclusive, because there is no standard approach, and no standard dataset. Companies have a duty to focus on long term profits and asset managers have a duty to focus on stewardship. Expanding their duties to wider stakeholders often creates conflicting trade-offs. One of the more pressing issues surrounding ESG investments are what trade-offs must be made if investors require investments that deliver higher return and alignment with their values.

Broadly, asset managers can integrate ESG data and research using one or a combination of the following approaches:

- 1. Negative screening: exclusion of companies involved in certain sectors, industries or activities.
- 2. Positive screening: investment in or over-weighting of companies in sectors, industries, projects or business activities leading to positive ESG outcomes.
- 3. Impact and engagement: taking an activist role with issuers and stakeholders to influence and direct outcome. Passive managers aligned to an index, are often restricted by how much they can take an activist role and are constrained by their stated objective to replicate the index. But this should not limit their ESG objectives.

MarketVector believes that well-designed ESG index solutions can be constructed to deliver both performance and ESG objectives. Disruptive thematic indexes, poised to deliver growth, linked to an ESG sustainable investment objective, integrating ESG data to screen or weight, can target companies based on very specific and granular ESG risks and/or innovative business activities. Finding disruptive companies focused on innovative ways to deliver better ESG outcomes can lead to intersecting goals to capture both performance and ESG objectives.

MarketVector has partnered with Institutional Shareholder Services (ISS) to use ISS ESG data in designing targeted thematic ESG indices. Combining MarketVector's deep thematic index experience with ISS broad ESG expertise will allow clients to build thematic ESG indexes with the aim of capturing both positive financial performance and positive environmental impact.

To learn more about MarketVector IndexesTM' extended family of innovative indexes, please visit www.marketvector.com and sign up to join the conversation.

IMPORTANT DEFINITIONS AND DISCLOSURES

Copyright © 2023 by MarketVector Indexes GmbH ('MarketVector') All rights reserved. The MarketVector family of indexes (MarketVectorTM, Bluestar®, MVIS®) is protected through various intellectual property rights and unfair competition and misappropriation laws. MVIS® is a registered trademark of Van Eck Associates Corporation that has been licensed to MarketVector. MarketVectorTM and MarketVector IndexesTM are pending trademarks of Van Eck Associates Corporation. BlueStar®, BlueStar Indexes®, BIGI® and BIGITech® are trademarks of MarketVector Indexes GmbH.

Redistribution, reproduction and/or photocopying in whole or in part are prohibited without written permission. All information provided by MarketVector is impersonal and not tailored to the needs of any person, entity or group of persons. MarketVector I receives compensation in connection with licensing its indexes to third parties. You require a license from MarketVector I to launch any product that is linked to a MarketVectorTM Index to use the index data for any business purpose and for all use of the MarketVectorTM name or name of the MarketVectorTM Index. Past performance of an index is not a guarantee of future results.

It is not possible to invest directly in an index. Exposure to an asset class represented by an index is available through investable instruments based on that index. MarketVector does not sponsor, endorse, sell, promote or manage any investment fund or other investment vehicle that is offered by third parties and that seeks to provide an investment return based on the performance of any index. MarketVector makes no assurance that investment products based on the index will accurately track index performance or provide positive investment returns. MarketVector is not an investment advisor, and it makes no representation regarding the advisability of investing in any such investment fund or other investment vehicle. A decision to invest in any such investment fund or other investment vehicle should not be made in reliance on any of the statements set forth in this document.

Prospective investors are advised to make an investment in any such fund or other vehicle only after carefully considering the risks associated with investing in such funds, as detailed in an offering memorandum or similar document that is prepared by or on behalf of the issuer of the investment fund or other vehicle. Inclusion of a security within an index is not a recommendation by MarketVector to buy, sell, or hold such security, nor is it considered to be investment advice.

These materials have been prepared solely for informational purposes based upon information generally available to the public from sources believed to be reliable. No content contained in these materials (including index data, ratings, creditrelated analyses and data, model, software or other application or output therefrom) or any part thereof (Content) may be modified, reverse-engineered, reproduced or distributed in any form by any means, or stored in a database or retrieval system, without the prior written permission of MarketVector. The Content shall not be used for any unlawful or unauthorized purposes. MarketVector and its third-party data providers and licensors (collectively "MarketVector Parties") do not guarantee the accuracy, completeness, timeliness or availability of the Content. MarketVector Parties are not responsible for any errors or omissions, regardless of the cause, for the results obtained from the use of the Content. THE CONTENT IS PROVIDED ON AN "AS IS" BASIS. MARKETVECTOR PARTIES DISCLAIM ANY AND ALL EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, ANY WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE OR USE, FREEDOM FROM BUGS, SOFTWARE ERRORS OR DEFECTS, THAT THE CONTENT'S FUNCTIONING WILL BE UNINTERRUPTED OR THAT THE CONTENT WILL OPERATE WITH ANY SOFTWARE OR HARDWARE CONFIGURATION. In no event shall MarketVector Parties be liable to any party for any direct, indirect, incidental, exemplary, compensatory, punitive, special or consequential damages, costs, expenses, legal fees, or losses (including, without limitation, lost income or lost profits and opportunity costs) in connection with any use of the Content even if advised of the possibility of such damages.

MarketVector Indexes GmbH

Frankfurt Office Kreuznacher Str. 30 60486 Frankfurt am Main +49 (69) 4056 695 55 New York Office 1350 Avenue of the Americas, Fl 4 New York, NY 10019 (646) 380 2500