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Introducing The MVIS® Global Circular Economy ESG Index

*Providing Exposure to Global Leaders in a
Sustainable Model of Production & Consumption*

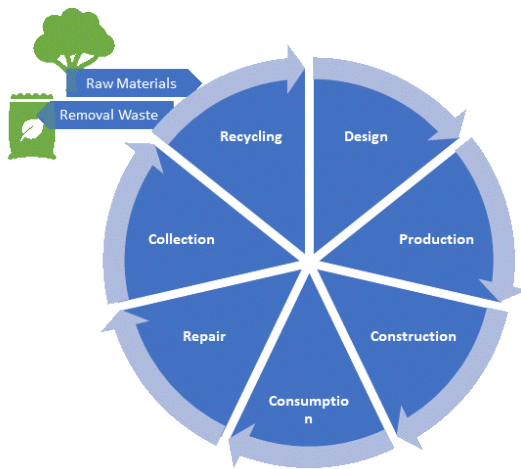
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The Importance of the Circular Economy



The circular economy represents an opportunity to reinvent consumption and production models through the prioritization of the reduction or elimination of waste and pollution by keeping products and materials in use for longer, and regenerating natural systems or resources. This can both improve the sustainability of our supply chains and reduce pollution while also increasing efficiencies in the global economy thereby presenting an opportunity for investors.

A shift from the linear economy -- where natural resources are harvested and used to produce goods, then the goods are used and disposed of -- to the circular economic model represents a 4.5 trillion USD opportunity for economic growth through the end of the decade, according to a recent report from the OECD¹. Furthermore, the circular economic model could be worth up to 700 billion USD in consumer materials savings.

Widespread adoption of the circular economic model broadens the addressable market for companies that offer infrastructure related solutions such as waste water treatment and recycling services. Furthermore, companies can potentially both decrease their cost of goods sold by using recycled materials in their production, and gain market share among a consumer base that is increasingly aware of the benefits the circular economic model has on the climate.

A 2021 consumer survey by Capgemini Research Institute² revealed that 72% of respondents were interested in buying products that lasted longer, 50% would buy “zero-waste” products if available, and 45% would either buy exclusively from brands that concentrate on circular and sustainable practices, or conversely refuse to buy products that are not recyclable or that are made using non-recycled materials.



In this paper we introduce The **MVIS® Global Circular Economy ESG Index (MVCIRC)**, which follows the EU SFDR principle of “Do No Significant Harm” (DNSH). It also targets sustainable objectives mapped to the United Nations Sustainable Development Goals (SDGs) on Responsible Consumption & Production and Clean Water & Sanitation, to align with European regulations for ESG requirements.

¹ OECD “TOWARD A CIRCULAR ECONOMY”.

² 2021 consumer survey by Capgemini Research Institute

Index Architecture: Sustainable Investing through a Thematic Lens

MarketVector Indexes™ ("MarketVector") views sustainable investing -- such as investing in companies tied to the circular economy -- as a type of thematic investment approach, allowing investors to target groups of stocks tied to an investment thesis by reaching across traditionally defined sectors and industries.

While some themes are tied to technological or consumer trends like Artificial Intelligence or Videogaming & eSports, others themes are tied to sustainable ESG objectives. In both cases, investors target groups of stocks impacted by the common drivers that they believe have long-term potential for capital appreciation or income.

Compared to other targeted disruptive themes, sustainable themes have the added benefit of targeting companies whose *raison-d'être* is to improve the world's environment, social or governance conditions; compared to other ESG-focused investments, sustainable themes have the benefit of targeted exposures tied to a unique investment thesis focused on growth opportunities.

The MVIS® Global Circular Economy ESG Index selects stocks that meet both thematic and ESG criteria, which are discussed below. Because the target of the index is a sustainable theme itself, the thematic criteria were designed to help meet the index's sustainability objectives while the ESG DNSH criteria serve to ensure the exclusion of bad-actor companies. Details related to investability screening and component selection can be found in the official MVIS® Global Circular Economy ESG Index methodology guide.

Thematic Criteria

To be initially included in the MVIS® Global Circular Economy ESG Index, companies must derive at least 50% of their revenue from the sub-themes displayed in **Exhibit 1**. Sub-themes are selected with the goal of targeting companies with substantial revenue exposure to circular economy-related solutions that support sustainable objectives in line with SDGs. Going forward as the universe of investable publicly-traded companies in additional sub-themes emerge, they may be added to the index as well.

Exhibit 1: Sub-Themes Included in MVCIRC

<p>Products that are made of – or services related to – recycled, repurposed, or reused materials.</p>	<p>A core component of a circular economy investment are companies that reuse materials as the primary inputs to their manufacturing process.</p>
<p>Waste management services that include recycling services</p>	<p>Companies involved in recycling services play a key role in the circular economy by collecting or sorting recyclable materials and preparing or selling them to businesses that will reuse them.</p>
<p>Water purification and treatment products and services</p>	<p>Water purification and treatment companies contribute to the circular economy by recovering polluted and waste water, restoring the water, and then delivering the water back into the environment or economic ecosystem.</p>
<p>Metal Recycling Services</p>	<p>Metal recycling turns scrap metal and metal waste into usable metals products. These companies sometimes also transform materials left over from the smelting process into useable materials. Metal mining is generally a highly energy intensive process; recycling metals not only reduces waste that goes to landfills but also reduces the reliance on mining.</p>
<p>Biofuels</p>	<p>Biofuels are fuels that are made from generally renewable sources such as algae or biomass, plant-based materials, or from organic by-products such as vegetable oils or animal fats.</p>
<p>Waste-to-Energy</p>	<p>Waste-to-energy companies produce electricity from burning trash that would otherwise be sent to landfills. While the goal of the circular economy is to decrease the amount of non-recoverable resources in the economy, the question is what is the most beneficial way to dispose of the waste that is still generated? Generally, there are two options: incinerate or send to landfill.</p> <ul style="list-style-type: none"> • In the first case, if waste is to be incinerated and generate significant CO2 emissions, it is better to generate electricity from it for two reasons. First is not to “waste” the waste. Second is that the energy generated by waste-to-energy companies would alternatively need to be produced through other means. • In the second case, landfills should be the last resort when it comes to waste management. Trash in landfills is problematic because it produces more potent greenhouse gasses than incineration, it uses massive amounts of land, and it can allow additional pollutants to seep into the ground and ground water.

ESG Factors

Companies must also pass MarketVector™’s standard ESG screens, summarized in **Exhibit 2**, which outlines 36 ESG factors across four key categories. While the ESG factors selected here are not designed specifically to achieve any single subjective overall ESG rating, they serve to ensure that companies included in our indexes are not egregiously bad actors and DNSH based on the provisions outlined by the EU Taxonomy Regulation.

Exhibit 2: Sample of ESG Factors Considered in MVCIRC

<p>Norm-Based Research</p>	<p>Examples include: Child labor violation, gender discrimination, racial discrimination, human rights violations, environmental protection violations.</p>
<p>Controversial Weapons Involvement</p>	<p>Examples include: Biological weapons, chemical weapons, cluster munitions, depleted uranium.</p>
<p>Sector Involvement or Revenue Exposure</p>	<p>Examples include: Civilian firearms, gambling, tobacco, military equipment.</p>
<p>Energy Extractives Through Revenue Exposure</p>	<p>Examples include: Fossil fuels, coal mining, nuclear power, oil sands.</p>

Index Exposures and Risk/Return Profile

As demonstrated in the following **Exhibits 3 through 6**, companies with products that are made of – or services related to – recycled, repurposed, or reused materials (“Circle Economy Products and Services”) account for the largest exposure in the index, followed by Recycling Services. Viewed through standardized sectors, this translates to a roughly 58 percent weight in Industrials and a nearly 30 percent weight in Materials. Furthermore, the portfolio is global, with a roughly 30 percent weight in companies headquartered in the US, 13 percent in Canada, 11 percent in Australia and the remaining weight currently split among 10 additional countries.

Exhibit 3: Sub-Theme Exposures in MVCIRC

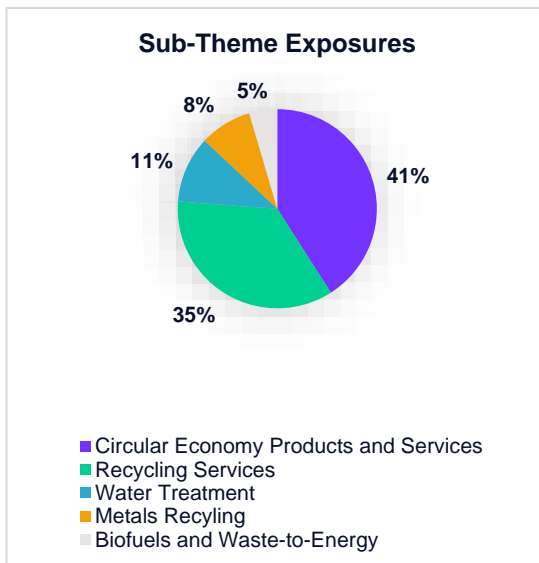


Exhibit 4: Country Exposures in MVCIRC

Country	Weight
United States	30.50%
Canada	12.94%
Australia	10.59%
United Kingdom	9.41%
Finland	6.50%
Japan	5.19%
Ireland	5.00%
Belgium	4.50%
China	4.15%
Norway	4.14%
Hong Kong	3.63%
Brazil	2.27%
Luxembourg	1.18%

Source: MarketVector Indexes™

Exhibit 5: MVCIRC Sustainability and ESG Data

Sustainability		Business Involvement	
Overall ESG Rating (1-4)	2.33	Fossil Fuels	0.72%
Weighted Average Environmental Rating (1-4)	2.47	Tobacco	0.09%
Weighted Average Social Rating (1-4)	2.01	Coal	0.00%
Weighted Average Governance Rating (1-4)	2.71	Oil sands	0.00%
Greenhouse Gas Intensity (Scope 1+2 total carbon emissions per 1 million EUR of rev.)	683.11	Gambling	0.00%
Weighted Average Revenue Exposure to SDG Solutions (stated in introduction)*	46%	Military Equipment	0.13%
Weighted Average Revenue Exposure to SDG Solutions (all SDGs)*	82%		

Source: ISS, MarketVector Indexes™

*Based on companies covered by ISS

Exhibit 6: MVCIRC Top-20 Index Constituents

Name	Sub-Theme	Weight (Capped)
WASTE MGMT INC DEL COM	Recycling Services	8.00%
WASTE CONNECTIONS INC NEW COM	Recycling Services	8.00%
REPUBLIC SVCS INC COM	Recycling Services	7.00%
UPM-KYMMENE CORP NPV	Circular Economy Products and Services	6.50%
BRAMBLES LTD NPV	Circular Economy Products and Services	6.00%
DARLING INGREDIENTS INC COM	Circular Economy Products and Services	5.50%
SMURFIT KAPPA GRP ORD EUR0.001	Circular Economy Products and Services	5.00%
SEVERN TRENT ORD GBP0.9789	Water Treatment	4.50%
UMICORE NPV	Metals Recycling	4.50%
TOMRA SYSTEMS ASA NOK0.50	Circular Economy Products and Services	4.14%
GFL ENVIRONMENTAL INC SUB VTG SHS	Recycling Services	4.08%
SMITH(DS) ORD GBP0.10	Circular Economy Products and Services	3.92%
CLEANAWAY WASTE MG NPV	Recycling Services	3.56%
KURITA WATER INDS NPV	Water Treatment	3.29%
CHINA CONCH VENTUR HKD0.01	Biofuels and Waste-to-Energy	3.03%
EVOQUA WATER TECHNOLOGIES CO COM	Water Treatment	3.03%
COMMERCIAL METALS CO COM	Metals Recycling	2.63%
CASELLA WASTE SYS INC CL A	Recycling Services	2.46%
KLABIN SA UNITS (1 COM & 4 PRF)	Circular Economy Products and Services	2.27%
ENVIVA INC COM UNIT	Circular Economy Products and Services	1.89%

Source: MarketVector Indexes™

Company Examples

Brambles

A self-proclaimed “pioneer of the sharing economy”, Brambles is “one of the world’s most sustainable logistics businesses”. The company facilitates a pool of roughly 360 million reusable logistics pallets, crates, and containers that are shared among its customers through global network of more than 750 service centers in roughly 60 countries around the globe. While Brambles’ operations inherently serves to improve the sustainability of the logistics industry, the company also benefits this model to create a network effect in its customer base: the more customers that use Brambles’ products and services, the more supply Brambles has to grow its business.

Umicore

Umicore “is a leading circular materials technology company” whose “overriding goal of sustainable value creation is based on the ambition to develop, produce and recycle materials”. Umicore is involved in providing critical metals and materials to support the electric mobility and semiconductor industries, including cobalt, nickel, platinum, and palladium. Through the company’s recovery, recycling, and reuse of precious and base metals, electronics, and jewelry, it is able to sustainably produce items such as rechargeable battery materials, substrates for photovoltaic systems, vehicle emission control catalysts, and compounds for vehicle tires.

TOMRA

TOMRA “provides technology-led solutions that enable the circular economy with advanced collection and sorting systems that optimize resource recovery and minimize waste”. TOMRA is an industrial machinery and systems company that offers four main solutions:

1. Collection and reverse vending systems to help keep resources in the closed-loop of a circular economic model.
2. Food production systems to minimize food waste.
3. Waste and metal recycling through sorting systems.
4. Mining equipment to help maximize resource recovery and minimize ecological footprints.

Risk and Return Profile

The **MVIS® Global Circular Economy ESG Index** has back-tested history beginning at the end of 2020, shown in **Exhibit 7**. Over this time it has slightly outperformed broad-market and sector indexes like the MSCI ACWI and S&P Global Industrials. In addition, the volatility of the index, shown in **Exhibit 8**, has been slightly higher than its peers but most similar to the S&P Global Industrials Index. **Exhibit 9** shows the correlation of the index against other benchmarks, revealing a relatively high correlation to both the MSCI ACI and S&P Global Industrials indexes.

Exhibit 7: Comparative Historical Returns of MVCIRC



MSCI ACWI and S&P Global Industrials indexes are represented by the iShares MSCI ACWI ETF and the iShares Global Industrials ETF, respectively.

Exhibit 8: Comparative Rolling 12-Month Annualized Volatility

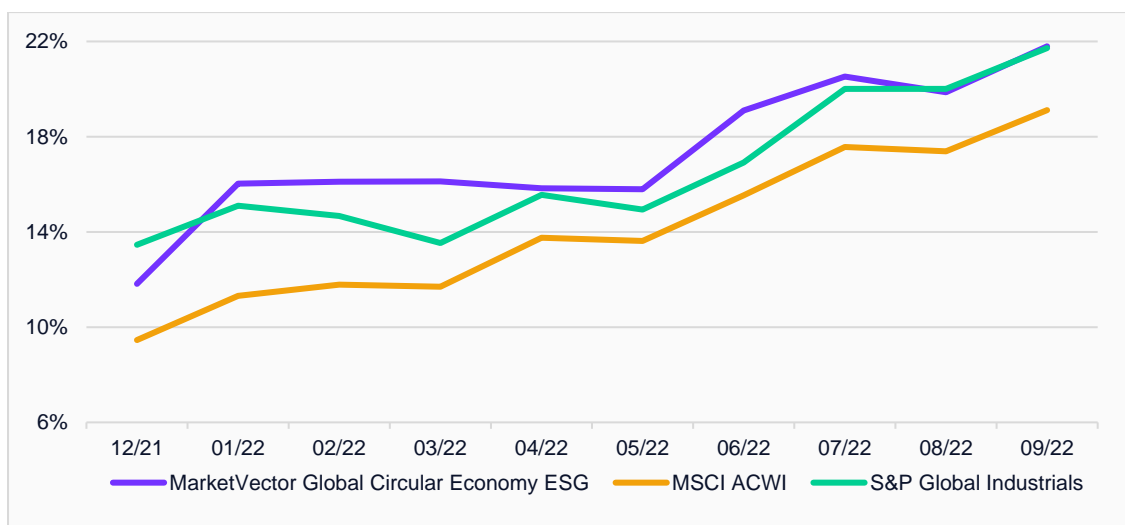
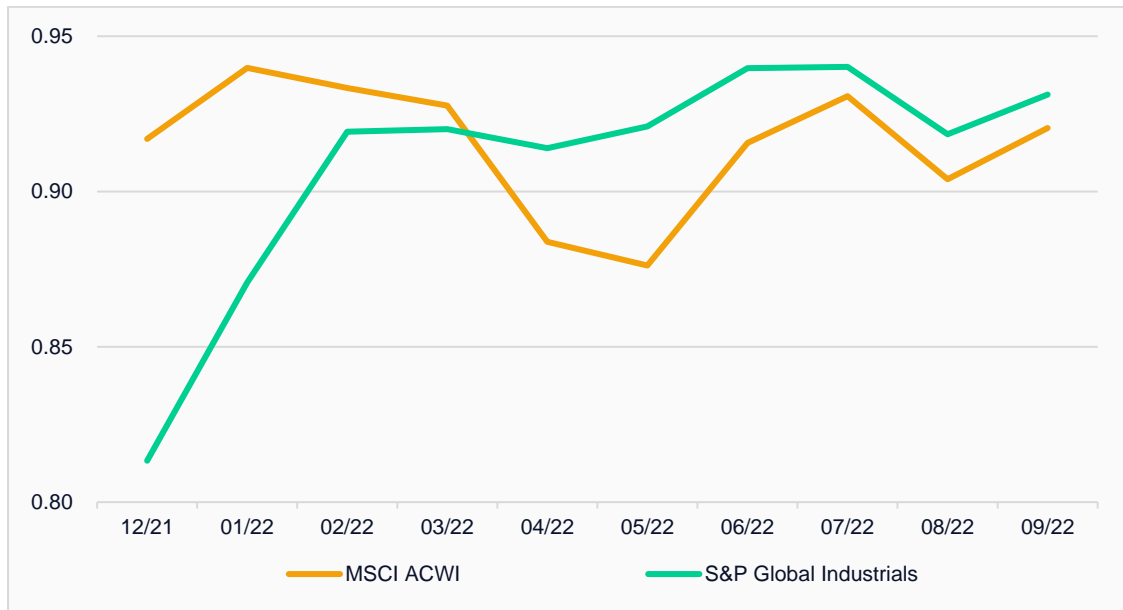


Exhibit 9: Rolling 12-Month Correlations of MVCIRC



Conclusion

The [MVIS® Global Circular Economy ESG Index](#) allows investors to tap into companies leading the world toward a new, sustainable economic model driven by a closed loop system to keep materials in use for as long as possible.

This index adds to MarketVector™’s growing line-up of ESG indexes focused on facilitating the delivering an investment thesis tied to the UN’s Sustainable Development Goals. Other such indexes include the [MVIS® Global Future Healthcare ESG Index](#), the [MVIS® Global Future of Food ESG Index](#), and the [MVIS® Global Hydrogen Economy ESG Index](#). The MarketVector™ suite of thematic ESG indexes follow the EU SFDR principal of “Do No Significant Harm” (DNSH) and target sustainable objectives mapped to the United Nations Sustainable Development Goals (SDGs), allowing investors to target growth opportunities aligned a sustainable objective.

The market for sustainable infrastructure and services, especially in the areas of recycling and water purification conservation is growing. At the same time, consumers are becoming increasingly aware of their role in the circular economy as active purchasers of goods made from recycled and recyclable materials. By embracing the circular economy, the components of this index not only strive to do well by the environment but their investors as well.

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Joshua Kaplan is the Global Head of Research and Investment Strategy at MarketVector Indexes™. Joshua is involved in MarketVector™ index design, maintenance and commercialization activities. He is also responsible for producing research and analysis on MarketVector™'s indexes and investment trends. Josh joined MarketVector Indexes™ following the acquisition of BlueStar Indexes in August 2020 where he served as BlueStar's Director of Research and Finance. Prior to joining BlueStar Indexes in late 2011, Joshua specialized in fundamental equity analysis for a small-cap tech-focused hedge fund affiliated with a leading Israeli private equity firm. Joshua is a CFA Charterholder and graduated from Syracuse University with degrees in Finance, Entrepreneurship, and Economics.

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IMPORTANT DEFINITIONS AND DISCLOSURES

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