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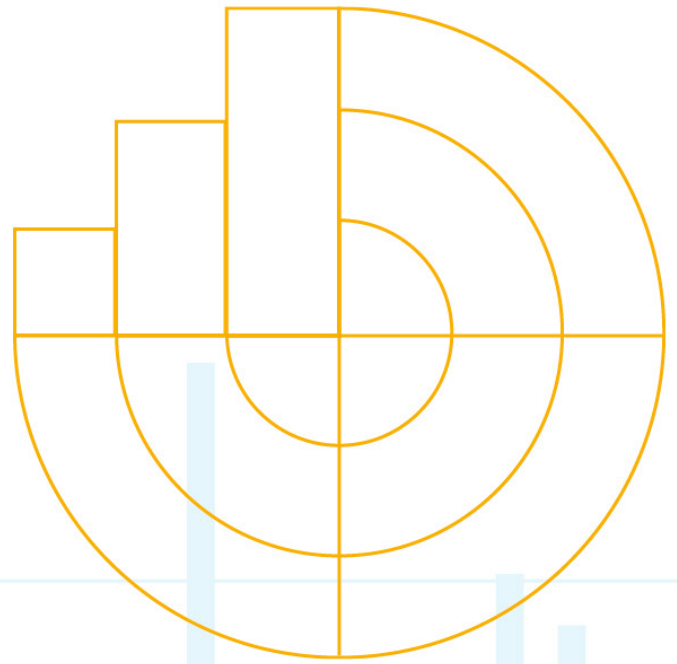
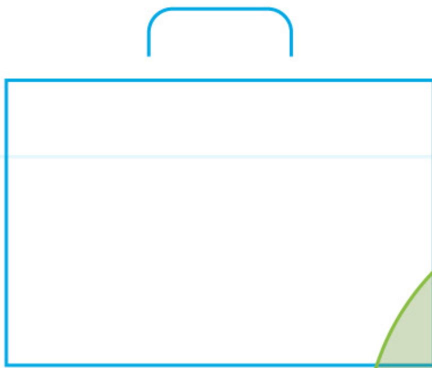
Investing Toward Net Zero: Applying Sustainalytics carbon metrics to Morningstar indexes





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Net zero emissions goals are being embraced by both public and private sectors as key to combating climate change. From Beijing to Brussels, Ford to Facebook, decarbonization commitments have proliferated amid a pandemic that has underscored humanity's fragile relationship with the natural world. Increasing numbers of investors also seek to position their portfolios in response to climate change. Some are driven by environmentalism, others by risk, and others still by regulation. The European Union's sustainable finance climate benchmarks, for example, advance targets outlined in the Paris Agreement and set a standard for decarbonization. Getting to net zero requires portfolio realignment. Investors must balance the goals of reducing fossil fuel exposure, supporting green technologies, and maximizing risk/return. Applying Sustainalytics-driven carbon metrics to Morningstar's suite of equity indexes can guide investors seeking to reduce carbon exposure. Morningstar's Renewable Energy and Low Carbon Risk Indexes also provide insights into how clean energy investment and decarbonization affect portfolio composition and risk and return.

Among the findings of this report:

- Decarbonization goals, including those stipulated by the EU climate transition benchmarks and Paris-aligned benchmarks, can be aided through Morningstar® Portfolio Carbon Metrics™, which use Sustainalytics' company-level data and research.
- Decarbonizing a portfolio can be more nuanced than avoiding carbon-intensive sectors or targeting renewables. Nor need it detract from risk/return.
- Even in the carbon-heavy energy and utilities sectors, pockets of low carbon risk can be found—for example, oil and gas equipment companies, midstream, and utilities involved in renewable energy.
- Even in the most carbon-heavy industries, risk varies. Among integrated oil majors, companies like Petrobras, ExxonMobil, and Shell are higher risk than Total and Repsol. Within the highest-risk industry, oil and gas exploration and production, DNO of Norway and Mitsui of Japan are lower-risk.
- China and the United States might be the world's heaviest emitters at the country level, but their equity markets carry relatively low levels of carbon risk because of sector biases. Emerging markets are generally riskier from a carbon perspective than developed ones, with the exceptions of resources-heavy markets like Canada and Australia.
- Renewable energy investing is not the same as low-carbon investing. Companies can be involved in both fossil fuels and renewables or have a renewables product focus but carbon-intensive operations.
- Low-carbon investing is linked to positive investment attributes like corporate quality and financial health, supporting the view that carbon risk is financially material.

Why Climate Risk Matters

Climate change represents not only an existential threat to humanity but also material financial risk to investors. First, there are physical risks resulting from the increased severity and incidence of extreme weather and from longer-term changes in precipitation and weather patterns caused by rising temperatures and sea levels. Impact varies by industry and company, both in terms of operations and demand for products and services. For this reason, investors are increasingly scrutinizing the location of companies' properties, plants, and equipment.

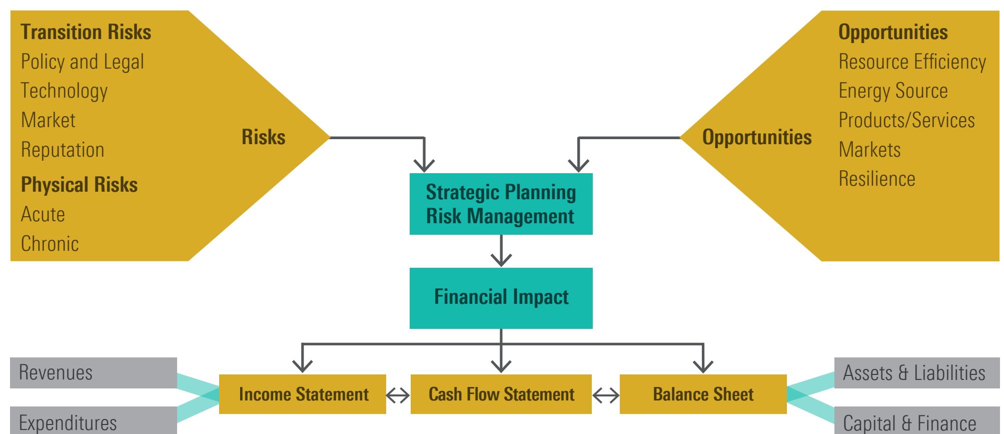
Transition risk is also critical. The Paris Agreement aims to keep the global temperature rise well below 2 degrees Celsius above preindustrial levels, and scientists have warned of disastrous consequences of a 1.5 C increase.[1] Meeting this goal will require a massive shift away from carbon-intensive fossil fuels. Some companies are well positioned for a low-carbon economy. Others are not.

[1] See Intergovernmental Panel on Climate Change Report 2018.

https://www.ipcc.ch/sr15/

Sustainalytics, a Morningstar company and a leading provider of environmental, social, and governance research and ratings, visualizes both the risks and opportunities associated with climate change in the context of the Financial Stability Board's Task Force on Climate-related Financial Disclosures, which was created following the Paris Agreement to improve reporting on financial risks associated with climate change. Specific transition risks include policy and legal regulations limiting carbon emissions, pressure on firms to align their strategies with the Paris Agreement's 2-degree scenario, switching costs to new technologies, and changing consumer preferences.

Exhibit 1. **Climate-Related Risks, Opportunities, and Financial Impact**



Source: Sustainalytics and TCFD Report https://www.fsb-tcfd.org/wp-content/uploads/2017/06/FINAL-TCFD-Report-062817.pdf

A Regulatory Road Map Emerges for Investors

The EU's sustainable finance action plan targets net zero by 2050. Making Europe the first climate- neutral continent entails cutting emissions by at least 55% by 2030. New disclosure requirements affect both companies and the investment managers who own them. For investment products, new standards are taking effect that see disclosure requirements increase in line with the extent of their sustainability ambitions.

EU guidelines mean greater transparency and comparability on investment products offered to the public. Those with an objective of reducing carbon emissions need to, where available, reference a climate benchmark and substantiate their objectives in disclosures aligned with the long-term climate goals of the Paris Agreement.

Benchmark Regulation stipulates requirements that indexes used in the EU must adhere to in order to be badged as one of two types of climate benchmark:

- EU Climate Transition Benchmarks or CTB
- EU Paris-aligned Benchmarks or PAB

While the PAB is more demanding than the CTB, both standards require significantly reduced portfolio-level carbon intensity, avoidance of high-carbon activities, and emissions reductions over time.

Exhibit 2. **EU Climate Benchmark Minimum Standards**

Minimum Standards	Climate Transition Benchmark	Paris-Aligned Benchmark
Baseline reduction of GHG intensity or absolute emissions	30% lower than investable universe	50% lower than investable universe
Minimum reduction in weighted average carbon intensity until 2050	At least 7% reduction of GHG intensity on average per annum	At least 7% reduction of GHG intensity on average per annum
Baseline exclusions	Controversial Weapons & Controversy Screens	
Activity Exclusions		▸ Tobacco ▸ Coal (1%+ revenues) ▸ Oil (10%+ revenues) ▸ Gaseous Fuels (50%+ revenues) ▸ Electricity Generation (50%+ revenues)
Corporate Target Setting	Upweight companies which report and follow a 7% reduction of GHG intensity on average per annum	
Exposure to High Emitting Industries	Equal weight relative to investable universe	
Inclusion of Scope 3 emissions data	4-year integration period	

Source: Climate Benchmarks and Benchmarks' ESG Disclosures. EU Technical Expert Group on Sustainable Finance and Morningstar Indexes

It's important to note that EU CTB and PAB indexes are not allowed to simply underweight high-emitting sectors. By barring these indexes from ignoring the highest-emitting sectors, the EU prevents so-called greenwashing and promotes the transition to a circular economy, where resources are continually reused. For benchmarks to earn the label of EU climate benchmarks, providers must also demonstrate an average annual carbon reduction trajectory of at least 7%, which aligns with the decarbonization trajectory from the Intergovernmental Panel on Climate Change's 1.5 C scenario (with no or limited overshoot).

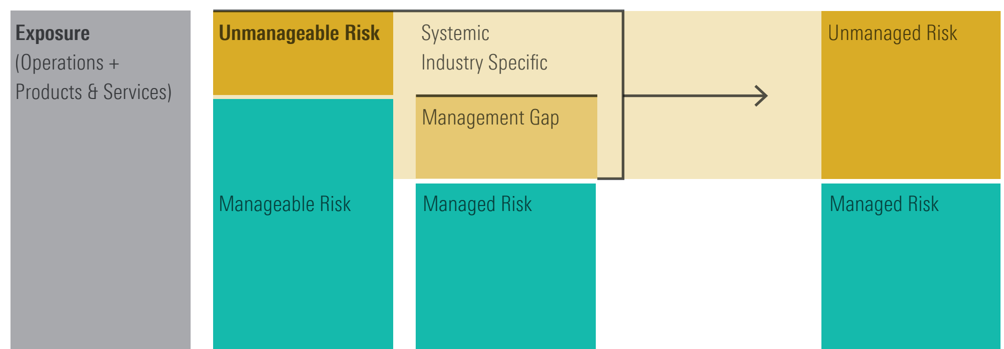
Morningstar's forthcoming CTB and PAB index methodologies will use Sustainalytics company-level carbon data to set a new standard in low-carbon benchmarking. We anticipate that these new indexes will expand an investor's toolkit for investing in or measuring the impact of lower carbon strategies.

Analyzing Carbon Risk

To advance decarbonization goals, such as those stipulated by the EU's CTB and PAB benchmarks, the Sustainalytics' Carbon Risk Ratings are a useful analytic. The rating evaluates how well companies are prepared to transition to a low-carbon economy by limiting emissions and developing green solutions. Unlike other tools, such as carbon footprinting, the Carbon Risk Ratings look forward to gauge a company's positioning for a world less dependent on fossil fuels.

The rating is based on an assessment of a company's overall carbon exposure and its management of that exposure. It recognizes that not all industries and companies are equally exposed to carbon risk. A company's carbon risk is defined as the unmanaged carbon exposure that remains after considering the management activities being taken to mitigate it. It considers a company's track record of reducing carbon intensity, carbon-reduction goals for products, design and development of sustainable products, and the carbon-intensity trend in the use of a firm's products and services.

Exhibit 3. **Sustainalytics' Carbon Risk Ratings**



Source: Sustainalytics

To gauge portfolio-level carbon exposure, Morningstar® Portfolio Carbon Metrics™ can be used. Carbon metrics include a range of indicators that evaluate carbon exposure and carbon risk. The data set aggregates company-level analysis from Sustainalytics. Among the measures are the Morningstar® Portfolio Carbon Risk Score™, Carbon Intensity, Fossil Fuel Involvement, and Stranded Assets Risk.

The Sustainalytics Carbon Risk Ratings are fundamental building blocks, not only for the portfolio carbon risk Score, but also for the Morningstar® Low Carbon Designation,™[2] the Morningstar® Low Carbon Risk Indexes™, and the forthcoming Climate-Transition Benchmark and Paris-Aligned Benchmark. Carbon intensity, for its part, measures a portfolio's current carbon footprint by gauging greenhouse gas emissions per millions of dollars of revenue.

[2] Morningstar Low Carbon Designation Methodology.

https://morningstardirect.morningstar.com/clientcomm/Morningstar_Methodology_Carbon_Metrics.pdf

Portfolio carbon metrics will be applied to a range of Morningstar indexes. For a full methodological discussion of the indexes mentioned, refer to their construction rules and other documentation posted on the Morningstar Indexes' website.[3]

[3] Morningstar Indexes. https://indexes.morningstar.com/

An important caveat to this study: Carbon coverage of index weight is not 100%. The data should therefore be viewed as directional.

To gauge portfolio-level carbon exposure, Morningstar® Portfolio Carbon Metrics™ can be used. Carbon metrics include a range of indicators that evaluate carbon exposure and carbon risk. The data set aggregates company-level analysis from Sustainalytics. Among the measures are the Morningstar® Portfolio Carbon Risk Score™, Carbon Intensity, Fossil Fuel Involvement, and Stranded Assets Risk.

Energy and Utilities Aren't Totally Dirty

The 11 economic sectors that make up the global equity market can be viewed through the lens of carbon metrics to facilitate the kind of portfolio decarbonization mapped out by EU regulation. Energy unsurprisingly tops the list in terms of carbon risk and fossil fuel involvement, followed by utilities, basic materials, and industrials. Utilities and basic materials are actually more carbon intensive than energy at the sector level. Some might assume that technology carries the lowest carbon risk, but that distinction belongs to healthcare.

It is important to understand that a company's carbon exposure can be a function of its operations and/or its products and services. As a result, carbon risk stems from different areas depending on the sector. For energy, which has the highest carbon exposure, risk lies in fossil-fuel-related products and services. Utilities carry more risk in their operations. Real estate is exposed to carbon risk in its products and services—energy-intensive buildings, for example—while industrials face carbon risk in their operations.

Exhibit 4. **Carbon Risk Is Highest in Energy, Utilities, and Basic Materials and Lowest in Healthcare and Technology**

Sector Indexes	Percent Covered - Carbon	12 Month Average Fossil Fuel Exposure	Carbon Risk Score	Carbon Intensity	Carbon Exposure Score	Carbon Management Score	Carbon Operations Risk	Carbon Products & Services Risk
Energy	98.180	97.640	35.360	527.910	65.910	63.630	15.910	19.440
Utilities	91.560	80.280	17.580	2,275.410	38.650	56.100	16.870	0.710
Basic Materials	92.000	14.510	16.730	903.130	29.540	52.710	16.290	0.430
Industrials	88.670	4.770	13.920	147.350	23.390	43.110	8.550	5.370
Real Estate	85.710	0.910	11.630	146.150	17.340	33.200	0.310	11.320
Financial Services	95.280	4.870	8.390	11.560	13.390	29.630	0.020	8.380
Consumer Cyclical	92.230	0.040	7.510	55.000	12.530	24.990	4.370	3.140
Consumer Defensive	94.020	0.020	6.410	60.840	14.330	50.510	6.400	0.020
Communication Services	95.190	0.060	4.000	28.290	8.430	40.270	3.990	0.010
Technology	92.730	0.000	2.220	38.670	7.040	35.650	2.100	0.120
Healthcare	89.920	0.000	1.710	34.130	3.120	11.730	1.710	0.000

Sectors are represented by Morningstar Global Sector Indexes. Source: Morningstar Direct. Data as of Dec. 31, 2020.

Sectors are broad. Taking the highest-risk sectors — energy and utilities — and drilling down (excuse the pun) reveals that carbon risk varies at the industry level. In energy, the oil and gas equipment industries carry lower carbon risk than others. Examples of companies in this industry include Schlumberger, Tenaris, and Technip. Midstream businesses, such as pipeline providers Williams and Kinder Morgan, also carry lower risk in the view of Sustainalytics.

On the utilities side, industries such as diversified, renewable, and water have relatively low carbon risk. Standout companies among diversified utilities include Iberdrola, which makes significant use of renewables, as well as EDF and Centrica, which have heavy involvement in gas and nuclear. Orsted, Mercury NZ, and Fortum are renewables-focused utilities, while Beijing Enterprises Water Group, Suez, and American States Water score well within the regulated water industry. For those who have monitored the evolution of the utilities sector in recent years, the positive carbon management story is unsurprising. According to Morningstar Equity Research's Travis Miller, clean energy is a major growth catalyst in the utilities sector.[4]

[4] See "Clean Energy Provides Growth in Utilities Sector." Miller, Travis. Jan. 5, 2021.

https://www.morningstar.com/articles/1016121/clean-energy-provides-growth-in-utilities-sector

Exhibit 5. **In Energy, the Oil and Gas Equipment and Midstream Industries Carry Less Risk; In Utilities, Renewables and Water Are Lower-Risk**

Energy Industries	Percent Covered-Carbon	Carbon Risk Score	Carbon Intensity	Carbon Exposure Score	Carbon Management Score	Carbon Operations Risk	Carbon Products & Services Risk	Stranded Assets Risk
Oil & Gas E&P	96.510	43.310	665.470	72.280	54.840	22.170	21.140	70.720
Thermal Coal	89.230	39.100	1,595.440	48.340	38.190	8.490	30.610	0.000
Oil & Gas Refining & Marketing	96.970	38.110	218.920	62.060	56.810	14.860	23.250	0.000
Oil & Gas Integrated	99.710	36.940	535.610	76.560	73.230	16.380	20.560	71.930
Oil & Gas Midstream	97.170	22.510	739.010	35.540	50.130	13.720	8.780	0.000
Oil & Gas Equipment	97.940	13.560	150.880	24.640	55.840	0.390	13.170	0.000
Oil & Gas Drilling	34.820							
Utilities Industries								
Utilities - Industrial Power	72.140	23.960	10,422.510	40.150	37.360	23.620	0.340	0.000
Utilities - Regulated Gas	83.900	20.960	695.470	38.150	46.620	13.870	7.090	0.000
Utilities - Regulated Electricity	97.480	18.920	2,760.010	41.100	55.190	18.900	0.030	0.000
Utilities - Diversified	96.130	16.310	1,649.250	40.370	62.290	16.310	0.000	0.000
Utilties - Renewable	74.120	16.400	1,440.870	32.810	50.610	15.750	0.650	0.000
Utilities - Regulated Water	86.420	4.920	685.680	13.850	62.900	4.920	0.000	0.000

Industries are represented by Morningstar Global Industry Indexes. Source: Morningstar Direct. Data as of Dec. 31, 2020.

Even within the highest risk industry, oil and gas exploration and production, there are individual companies that stand out for their relatively low carbon risk. DNO and Mitsui are both classified by Sustainalytics as carrying Medium risk. Other companies within the industry, including ConocoPhillips, Apache, and Cabot Oil & Gas, carry either High or Severe risk.

Within the oil & gas integrated industry, there is also significant variation, as companies are in different stages of evolution regarding carbon reduction/climate mitigation strategies. Petrobras, Saudi Aramco, and PetroChina carry Severe risk in Sustainalytics' view. Chevron, Sasol, ExxonMobil, Royal Dutch Shell, and Eni carry High risk. Gazprom, Galp Energia, Total, and Repsol carry Medium risk.

Investors can also view involvement in various carbon-related activities, at the sector, industry, and company level. The CTB and PAB require minimum involvement in carbon-intensive activities, such as coal. Carbon Solutions Involvement data reveals several utilities industries participating in solutions.

Exhibit 6. **Carbon Involvement Within Energy and Utilities Industries Reveals a Range of Carbon Intensive Activities, but Also Participation in Solutions.**

Industries	Fossil Fuel Involvement	Thermal Coal Power Generation Involvement	Thermal Coal Extraction Involvement	Oil Sands Extraction Involvement	Arctic Oil & Gas Exploration Involvement	Carbon Solutions Involvement	Oil & Gas Production Involvement	Oil & Gas Products & Service Involvement	Oil & Gas Generation Involvement
Oil & Gas Exploration & Production	100.000	0.000	0.000	32.680	21.970	0.150	100.000	0.000	12.970
Oil & Gas Refining & Marketing	91.520	0.000	0.000	0.000	1.780	0.000	91.520	0.000	2.350
Oil & Gas Integrated	99.680	0.650	0.000	71.640	80.690	0.000	99.030	0.000	30.560
Oil & Gas Midstream	100.000	0.000	0.000	0.000	0.000	0.000	100.000	0.000	16.870
Oil & Gas Equipment	98.810	0.000	0.000	0.000	0.000	2.290	3.430	95.390	0.000
Oil & Gas Drilling	34.820	0.000	0.000	0.000	0.000	0.000	0.000	34.820	0.000
Thermal Coal	93.870	32.510	93.870	0.000	0.000	6.130	0.000	0.000	0.000
Utilities - Industrial Power	67.130	54.260	0.560	0.000	0.000	23.560	1.500	0.000	59.620
Utilities - Regulated Gas	68.730	4.570	0.000	0.000	0.000	4.560	35.510	0.000	33.840
Utilities - Regulated Electric	88.920	56.850	0.000	0.000	0.000	36.080	0.000	0.000	87.680
Utilities - Renewable	65.000	40.170	0.000	0.000	0.000	61.220	0.000	0.000	43.620
Utilities - Diversified	91.470	28.710	0.000	0.000	1.600	37.520	15.320	0.000	87.350
Utilities - Regulated Water	9.170	5.670	0.000	0.000	0.000	6.000	0.000	0.000	3.500

Source: Morningstar Direct. Data as of Dec. 31, 2020.

Emerging Markets Carry Higher Carbon Risk Than Developed Markets; the U.S. and Chinese Markets Are Surprisingly Low-Risk

From a geographic perspective, developed markets carry less carbon risk than emerging markets, when Sustainalytics company-level assessments are aggregated to the portfolio level. Though the U.S. is a heavy emitter, the U.S. equity market carries low levels of carbon risk because of its technology and healthcare tilt and low exposure to energy and utilities. Similarly, China is the world's largest carbon emitter, but the Morningstar China Index carries only a medium level of carbon risk. That's higher than the U.S. but well below resource-intensive markets like Norway, Canada, and Australia, and even India.[5]

Europe generally carries low carbon risk, aside from markets like Russia, Czech Republic, and Poland. The lowest levels of carbon risk belong to Switzerland, the Netherlands, and Denmark. Europe's relatively low carbon risk owes in no small part to the continent's climate-focused regulation.

Asia's carbon risk stems from the Persian Gulf and emerging markets like Indonesia, Thailand, the Philippines, Malaysia and India. Japan is a low-carbon risk market, as are Taiwan and Hong Kong. Regulation plays a role in varying climate risk within Asia as well.

[5] For more on carbon risk through a geographic lens, see "The Morningstar Sustainability Atlas."

https://direct.morningstar.com/builder/login?redirectUrl=%2Fcloud%2Fresearch%2Fdoc%2F979640%2FMorningstar-Sustainability-Atlas-Northern-Europe-Set-the-Global-Standard

Exhibit 7. **Emerging Markets Carry More Carbon Risk Than Developed. The U.S. Equity Market is Low Risk.**

	Percent Covered - Carbon	12 Month Average Fossil Fuel Exposure	Carbon Risk Score	Carbon Intensity	Carbon Exposure Score	Carbon Management Score	Carbon Operations Risk	Carbon Products & Services Risk	Stranded Assets Risk
Developed Markets	97.310	7.900	7.200	158.720	14.160	36.170	4.270	2.930	1.360
Emerging Markets	89.470	7.920	12.060	261.150	18.810	31.880	7.100	4.960	2.360
Asia	91.700	5.000	10.380	210.930	17.280	33.920	6.150	4.230	0.480
Australia	99.620	15.880	10.190	253.130	18.790	41.410	6.520	3.670	2.210
Canada	98.960	25.420	12.470	318.040	21.080	39.850	7.530	4.930	1.300
Europe	97.530	10.940	8.420	163.630	18.740	44.230	4.500	3.920	3.580
India	87.070	16.150	15.170	395.980	21.770	23.500	6.480	8.700	0.490
Japan	94.420	4.320	9.780	113.430	17.740	36.830	5.900	3.890	0.100
Nordics	95.070	6.670	8.170	112.850	18.640	48.390	4.490	3.680	1.360
US	97.690	6.720	6.170	140.950	11.820	33.000	3.800	2.370	1.080
UK	98.790	17.660	9.310	113.140	19.400	45.110	5.070	4.240	6.010

Regions and Countries are represented by Morningstar Indexes. Source: Morningstar Direct. Data as of Dec. 31, 2020.

How Carbon-Friendly Is Renewable Energy?

As discussed above, the renewables industry is a bright spot within the otherwise carbon-risky utilities sector. But investment products targeting clean energy companies are broader in their scope than just utilities. To provide more insights, we can apply portfolio carbon metrics to Morningstar's renewable energy indexes. The indexes rely on Sustainalytics' sustainable product research and carbon exposure data, using revenue to determine a company's involvement in renewable energy.

The Morningstar Global Markets Renewable Energy Index, the most inclusive variant, is derived from the Morningstar Global Markets Index, which contains large-, mid-, and small-cap companies from roughly 50 developed and emerging markets. The Renewable Energy Index consists of two distinct sleeves. The first selects companies involved in renewable energy or green transportation and represents 75% of overall index weight. The second highlights heavy users of renewable energy and represents 25% of index weight. Companies are equally weighted within their sleeves.

Exhibit 8. **Renewable Energy Investing is Not Low Carbon Investing**

	Percent Covered-Carbon	Carbon Intensity	Carbon Exposure Score	Carbon Management Score	Carbon Operations Risk	Carbon Operations Risk Category Average	Carbon Solutions Involvement
Global Renewable Energy	70.580	846.460	24.660	50.000	10.930	15.400	54.000
Global Equity Market	92.440	174.100	14.840	35.210	4.700	4.510	9.530

Morningstar Global Markets Renewable Energy Index and Morningstar Global Markets Index. Source: Morningstar Direct. Data as of Dec. 31, 2020.

The Renewable Energy Index devoted one third of index weight to utilities stocks as of February month-end 2020 and 32% to industrials. Both sectors carry higher carbon exposure than healthcare and technology to which the Index is underweight. The 337 constituents of the Renewable Energy Index as of February month-end 2021 included several companies with High Carbon Risk Ratings from Sustainalytics, including Evergy, Huadian Power International, and AGL Energy. These companies are both heavily involved in fossil fuels and in green solutions.

General Electric is an example of a company that is heavily involved in wind turbines and other clean energy solutions, but still carries a Medium Carbon Risk Rating due to the totality of its product range. NextEra Energy, which is heavily involved in renewables (as well as fossil fuel-derived energy), is also considered medium risk. So is Tesla, because it is quite carbon-intensive in its operations.

How Does Low-Carbon Investing Look and Act?

The Morningstar Low Carbon Risk Indexes can be analyzed to gauge how the decarbonization mapped out by the EU affects portfolio composition and risk/return. The indexes are methodologically aligned with the Morningstar Low Carbon Designation and allow investors to mitigate risks associated with climate change. By using Sustainalytics' Carbon Risk Ratings, the indexes emphasize companies across regions that are well positioned for a low-carbon economy.

The Low Carbon Risk Indexes are derived from the large- and mid-cap segments of their equivalent Morningstar region/country index. The indexes are created through an optimization process that targets low portfolio-level carbon risk and fossil fuel exposure, while minimizing deviation from the broad market. Only companies with high carbon risk are excluded; otherwise most members of the parent index are included in the indexes, with weights tilted based on Carbon Risk Ratings. The number of constituents in each index is variable. Regional and sector weights are kept to within 4 percentage points of market weight.

The most inclusive index variant, the Morningstar Global Markets Low Carbon Risk Index, can be analyzed to assess the results of portfolio decarbonization. First, judging index-level carbon intensity against its parent as of year-end 2020:

- Morningstar Global Markets Low Carbon Risk Index's Carbon Intensity Level: 136.82
- Morningstar Global Markets Large-Mid Index's Carbon Intensity Level: 171.89

At the global level, the Low Carbon Risk index methodology results in portfolio-level carbon intensity well below average for all companies measured by Sustainalytics. The low carbon risk index methodology results in carbon intensity reduction of more than 25%. Compliance with the Climate Transition Benchmark and Paris-Aligned Benchmark will require even further emissions reductions from the broad market (30% and 50% respectively) but the Low Carbon Risk Index's portfolio composition indicates direction of travel for portfolio-level decarbonization.

From a sector perspective, it's unsurprising to see the Low Carbon Risk Index with below-market exposure to energy, utilities, and basic materials and above-market exposure to healthcare and technology.

Exhibit 9. **Morningstar's Low Carbon Risk Index Is Light on Energy and Utilities and Heavy on Healthcare and Technology**

	Global Low Carbon Risk	Global Large-Mid
Basic Materials	4.7	5.0
Communication Services	9.2	9.8
Consumer Cyclical	12.2	12.2
Consumer Defensive	7.2	7.1
Healthcare	12.2	11.5
Industrials	9.9	10.4
Real Estate	3.0	3.0
Technology	20.4	19.4
Energy	2.8	3.3
Financial Services	16.2	15.6
Utilities	2.2	2.7

Source: Morningstar Direct. Data as of Feb. 28, 2021. Morningstar Global Markets Low Carbon Risk Index/Morningstar Global Markets Large-Mid Index.

From a regional perspective, the Low Carbon Risk Index is biased toward developed markets. As of early 2021, it maintained above-market weight in North American stocks and below-market exposure to Asia and Europe.

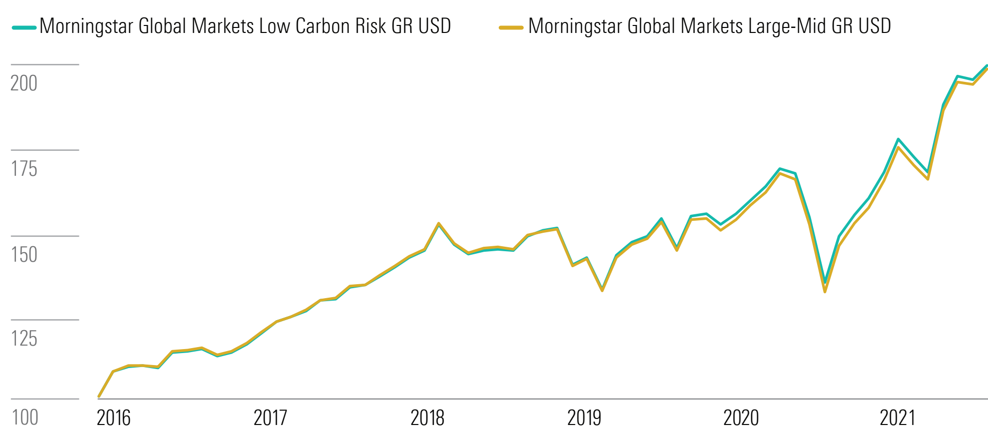
Exhibit 10. **Morningstar's Low Carbon Risk Index Is Light on Energy and Utilities and Heavy on Healthcare and Technology**

	Global Low Carbon Risk	Global Markets Large-Mid
Developed	93.1	90.1
Emerging	6.8	9.9
Developed	93.1	90.1
Greater Asia	19.7	22.4
Greater Europe	18.7	19.3
North America	60.9	57.2

Source: Morningstar Direct. Data as of Feb. 28, 2021. Morningstar Global Markets Low Carbon Risk Index/Morningstar Global Markets Large-Mid Index.

What about risk and return? The Morningstar Low Carbon Risk Index family launched in November 2018 with returns back-tested to December 2012 based on historical ratings. For the trailing five-year period through Feb. 28, 2021, the Global Markets Low Carbon Risk Index slightly outperformed its broad market equivalent. From an attribution perspective, below-market exposure to the underperforming energy sector contributed during the period as did above-market exposure to the U.S. The small margin of deviation from the parent index reflects the index's optimization methodology and constrained nature.

Exhibit 11. **Low Carbon Risk Index's Solid Track Record vs. Broad Market Equivalent**



Source: Morningstar Direct. Data as of Feb. 28, 2021. Morningstar Global Markets Low Carbon Risk Index GR USD/Morningstar Global Markets Large-Mid Index GR USD

From a risk perspective, the Low Carbon Risk Index was slightly less volatile than its parent index (judged by standard deviation of returns) for the five-year period through the end of February 2021. Relative risk rankings tend to be more stable than relative return rankings over time.

- Global Low Carbon Risk Index Five-Year Standard Deviation of Return: 14.5
- Global Large-Mid Index Five-Year Standard Deviation of Return: 14.8

In addition to historical risk and return data, it's vital to examine forward-looking measures. The Morningstar Risk Model can illuminate the Low Carbon Risk Index's fundamental characteristics. The risk model tracks stocks' exposure to factors, or sources of return. Two factors—economic moat and financial health—are especially germane. Morningstar equity analysts assign moat ratings to stocks they believe possess a sustainable competitive advantage capable of generating excess returns over time. An algorithm then extrapolates from the 1,500-stock coverage to assign quantitative measures of the strength and stability of competitive advantages to a universe of 45,000 stocks. Morningstar has found that wide-moat companies tend to generate relatively stronger returns in market downturns.

Financial health is based on the Quantitative Financial Health metric designed to assess the strength of a firm's financial position. It ranks companies on the likelihood that they will tumble into financial distress by considering leverage and equity volatility. Higher scores imply stronger financial health and therefore a lower risk of bankruptcy. Morningstar has found that financially stable firms also tend to perform better than financially unsound firms in down markets.

The Morningstar Global Markets Low Carbon Risk Index demonstrates higher aggregate scores for Economic Moat and Financial Health than its parent index. This means its constituents tend to be better competitively positioned and financially healthier than the overall market.

Exhibit 12. **Low Carbon Risk Index Favors Better Positioned, Financially Healthier Companies**

	Economic Moat	Financial Health
Global Low Carbon Risk	0.341	0.098
Global Large-Mid	0.228	0.064

Source: Morningstar Direct. Data as of Feb. 28, 2021. Morningstar Global Markets Low Carbon Risk Index/Morningstar Global Markets Large-Mid Index.

These risk exposures are consistent with other Morningstar studies on funds and indexes screened on ESG criteria. They are also consistent with Sustainalytics' observation that companies with economic moats tend to carry less ESG risk and lower volatility.[6]

[6] "How Combining ESG Risk and Moat Ratings Can Benefit Portfolios." Sustainalytics. Dec. 21, 2020.

https://www.morningstar.com/articles/1015608/sustainalytics-how-combining-esg-risk-and-moat-ratings-can-benefit-portfolios

Carbon Risk Is Financially Material

Portfolio decarbonization is about more than excluding traditional energy companies and targeting renewables. To meet the requirements of the European Union's Sustainable Finance Action Plan, investors must take a more nuanced approach. The good news is that pockets of low carbon risk can be found in carbon-intensive areas. Also encouraging is that decarbonization can be accomplished while maintaining strong investment attributes. The Morningstar Low Carbon Risk Index's track record supports the view that carbon risk represents a financially material issue that can affect investment performance and volatility. While relative returns shift depending on market conditions, the index's ability to protect on the downside is likely more enduring. Risk exposures linked to a positive long-term investor experience should reassure investors concerned about a return sacrifice associated with decarbonization. M

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