Dimensional's Approach to Sustainability Investing

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Investors around the world are increasingly aware of how certain business practices may potentially affect the environment and how that may impact future generations. As a result, many individuals and institutions are asking how they can align their investment decisions with their views on sustainability. The United Nations describes sustainable development as "development that meets the needs of the present without compromising the ability of future generations to meet their own needs."[1]

Investors may look to sustainability investing to address the dual priorities described above. It is Dimensional's belief, however, that the choice to adopt a sustainability approach should not have to come at the expense of sound investment principles.

Dimensional's approach to sustainability investing seeks to address the sustainability issues important to investors while continuing to offer broad diversification and focus on higher expected returns. To meet this goal, sustainability considerations can be integrated within a robust investment solution that pursues higher expected returns through increased weighting to securities with smaller market capitalisation, lower relative prices and higher profitability.[2] Dimensional's approach can offer investors the ability to pursue their sustainability and investment goals simultaneously.

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This paper explores Dimensional's approach to sustainability investing and presents evidence that the approach can be effective in targeting companies considered to be acting in more environmentally responsible ways while maintaining a focus on higher expected returns.

1. United Nations, "Report of the World Commission on Environment and Development," General Assembly Resolution 42/187 (December 11, 1987).
2. Relative price as measured by price-to-book ratio. Profitability is a measure of current profitability, based on information from individual companies' income statements.

APPLYING SUSTAINABILITY TO INVESTING

Many conventional sustainability approaches involve the use of positive or negative screens. A positive screen includes companies with environmentally favourable business practices, while a negative screen excludes companies with practices deemed unfavourable. Since a screen is applied in absolute (or binary) terms, a company either makes the investment list or it does not.

This binary approach can distort a company's sustainability profile and result in the company's needless removal from the investable universe. For example, a company with strong sustainability policies might be screened out due to a minor infraction, or all companies within a particular industry might be excluded because of the industry's environmental record—irrespective of each company's specific policies and practices. The inflexible nature of both positive and negative screening can render a smaller investment universe and a diminished opportunity for diversification.

Since environmental business practices can vary considerably among companies, corporate governance and practices that advance sustainability are better characterised along a spectrum. An investment methodology that applies more robust sustainability scoring at the company level may better serve investors.

Our view is that corporate responsibility for environmental impact is shared between the supply and demand sides of markets. For example, if the demand for carbon-based fuel remains high in the foreseeable future, we believe that, all else equal, a sustainability investing strategy should generally reward companies that supply energy in more environmentally sound ways, compared to those that do not. This sustainability framework should apply across industries. We want to understand which companies are operating with more environmental responsibility relative to their peers and emphasise investment in those companies.

Consistent with these views, Dimensional has developed an approach whereby sustainability criteria can be applied within a robust investment strategy. Starting with an investment universe that provides broad diversification across the equity market and targets increased weightings to stocks with higher expected returns, sustainability considerations can then be applied based on data that allows for systematic evaluation of companies according to multiple environmental and social sustainability variables.

When applying sustainability considerations, companies can be rated or scored on certain sustainability-focused metrics. With a sustainability score assigned to each company across all major sectors, investment in companies with high environmental sustainability scores can be emphasised while investment in companies with low scores can be minimised or excluded. Additional screens can be applied to reduce exposure to companies negatively connected with other issues important to sustainability-minded investors. This combined approach is designed to give investors a way to reinforce sustainability-focused business practices while pursuing their long-term investment goals through a broadly diversified strategy.

DIMENSIONAL'S APPROACH TO SUSTAINABILITY INVESTING

EMPHASISE HIGHER EXPECTED RETURNS	APPLY SUSTAINABILITY CONSIDERATIONS	SUSTAINABILITY STRATEGY
Determine eligible stock market	Eligible stocks are evaluated on multiple sustainability variables	Expected return and sustainability targets are combined to determine stock weights
Sort stocks on size, relative price and profitability characteristics	Gradually over and underweight stocks to reflect environmental sustainability scores	Enable trading with reduced turnover and costs
Gradually over and underweight stocks to achieve desired exposure to higher expected return securities	Exclude or reduce weight of companies deemed to have a particularly negative connection with other environmental and social sustainability issues	Allow ongoing security weights to adapt to changing size, relative price, profitability and sustainability variables

SUSTAINABILITY CONSIDERATIONS

To explore the potential benefits of integrating sustainability considerations within a robust investment strategy, we can apply sustainability criteria to a broadly diversified index, such as the Dimensional US Adjusted Market 1 Index, and compare this simulated strategy ("Sustainability Strategy") to the index without sustainability considerations ("Adjusted Market Index"). Both the Adjusted Market Index and Sustainability Strategy seek marketwide diversification in the US equity market and emphasise investment in companies with higher expected returns.

In applying sustainability considerations to the Sustainability Strategy, investment in companies was emphasised, reduced or excluded based on certain issues believed to be important to investors interested in sustainability. In addition to using data from annual reports and other sources, a third-party firm provided research on company business practices. This quantitative data allowed companies to be systematically evaluated in regards to sustainability.

At the industry level, a sustainability scoring system was applied using multiple variables to compare companies within the same industry, emphasising companies considered to have a stronger commitment to environmentally sustainable practices. At the strategy level, a screening approach was applied to exclude or underweight companies with poor overall emissions metrics or those deemed to have a particularly negative connection to other environmental and social sustainability issues.

The sections that follow identify the issues, or variables, considered by the Sustainability Strategy and describe how each was applied.

Sustainability Scoring Framework (Industry Level)

All companies in the investment universe received a sustainability score based on five variables. Greenhouse gas emissions intensity weighed most heavily in the score at 85%, with the other variables making up the remaining 15% portion of the total score. Within each industry, gradual weighting was applied to emphasise investment in companies with higher scores and minimise or exclude investment in companies with lower scores.

Sustainability Scoring Framework (Industry Level)	
Variable	Application
Greenhouse Gas Emissions Intensity[3]	85% of total sustainability score
Land Use and Biodiversity	15% of total sustainability score
Toxic Spills and Releases	
Operational Waste	
Water Management	

Emissions Variables (Strategy Level)

In addition to addressing greenhouse gas emissions as a primary component of the industry-based scoring system, the Sustainability Strategy focused on greenhouse gas emissions at the strategy level by excluding or underweighting the top contributors to greenhouse gas emissions. Investment in companies holding large reserves of fossil fuels such as coal, oil and natural gas were also excluded or minimised at the strategy level. Potential emissions were considered since companies with fossil fuel reserves may not be high greenhouse gas emitters but may enable emissions at other companies by selling their reserves for consumption.

Emissions Variables (Strategy Level)	
Variable	Application
Greenhouse Gas Emissions Intensity	Exclude or underweight top contributors to greenhouse gas emissions
Potential Emissions from Reserves	Exclude or underweight companies based on potential emissions from reserves

3. Greenhouse Gas Emissions Intensity represents a company's most recently reported or estimated Scope 1 (direct) + Scope 2 (indirect) greenhouse gas emissions normalised by sales in USD (metric tons per USD million sales). Greenhouse gases included are the six gases mandated by the Kyoto Protocol: carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs) and sulfur hexafluoride (SF_6). This methodology is subject to change with data developments or other findings or events.

Other Environmental and Social Sustainability Variables (Strategy Level)

Additional considerations related to key environmental or social sustainability issues were applied at the strategy level to exclude companies deemed to have a particularly negative connection with these issues.

Other Environmental and Social Sustainability Variables (Strategy Level)	
Variable	Application
Factory Farming	Companies cited for rearing livestock using particularly intensive methods may be excluded
Cluster Munitions	Manufacturers and certain associated entities may be excluded
Tobacco	Companies with meaningful revenue related to tobacco products may be excluded
Child Labour	Companies cited for child labour practices may be excluded
Other Considerations	Companies based on other sustainability-related factors may be excluded

WHAT ARE THE COSTS OF SUSTAINABILITY INVESTING?

Whatever screening approach is adopted, investors should consider the explicit and implicit costs associated with sustainability investing approaches:

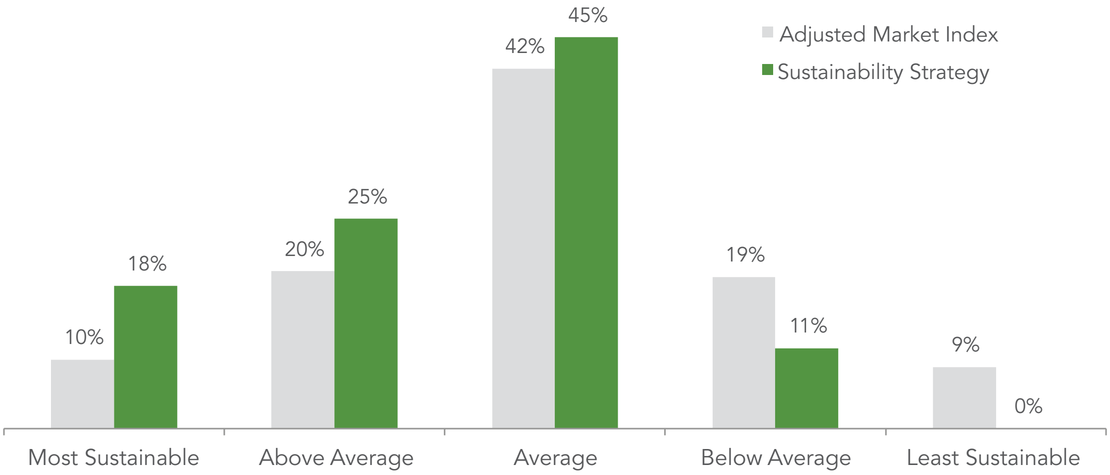
- The screens adopted to address sustainability issues are a cost to a fund.
- Some high-performing stocks may be excluded.
- Diversification may be reduced by screening out stocks.

Dimensional's approach to sustainability investing aims to minimise these costs by systematically applying sustainability considerations to a broadly diversified strategy that maintains focus on higher expected return securities. The goal is to provide an environmentally sustainable strategy without compromising sound investment principles.

SUSTAINABLY FOCUSED

The combined application of sustainability considerations within industries and across the strategy enables the Sustainability Strategy to emphasise sustainability at both the industry and strategy levels. **Exhibit 1** shows evidence of this result by comparing the Adjusted Market Index to the Sustainability Strategy across five sustainability score categories ranging from most to least sustainable.[4] The Sustainability Strategy holds a greater weight than the

Exhibit 1: Weight Distribution by Sustainability Score Category
Adjusted Market Index vs. Sustainability Strategy (as at 31 December 2015)



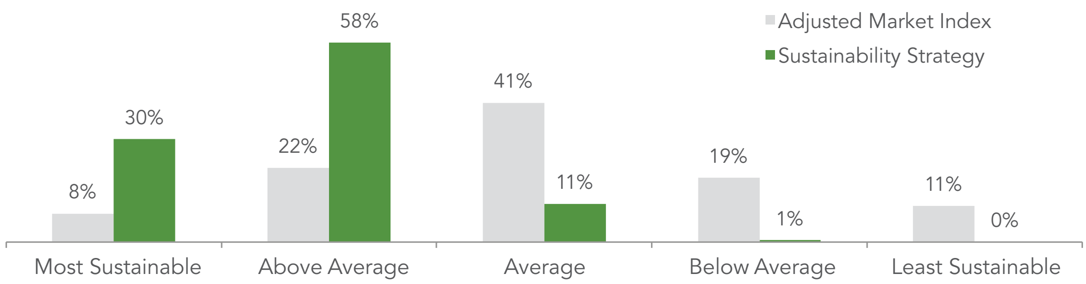
See appendix for complete description of the Adjusted Market Index and Sustainability Strategy.
Certain information incorporated herein has been provided by MSCI ESG Research Inc. See appendix for additional information.

Sustainability Strategy uses simulated data. Filters were applied to data retroactively and with the benefit of hindsight. Characteristics are not representative of an index or actual strategy.

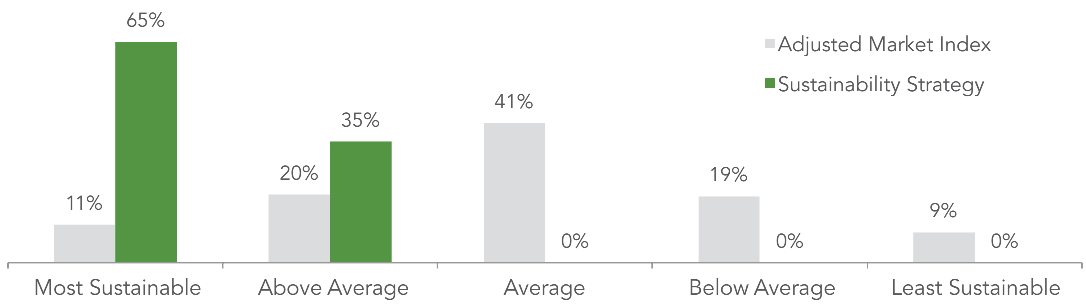
4. Sustainability score categories are determined by computing breakpoints based on company sustainability scores within the target market. The first 10% of market cap starting with the highest sustainability scores are the "Most Sustainable" companies. The next 20% are "Above Average," the next 40% are "Average," the next 20% are "Below Average," and the next 10% are the "Least Sustainable."

Exhibit 2: Weight Distribution by Sustainability Score Category by Sector
Adjusted Market Index vs. Sustainability Strategy (as at 31 December 2015)

ENERGY



UTILITIES



See appendix for complete description of the Adjusted Market Index and Sustainability Strategy.
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Adjusted Market Index in companies with high and above average sustainability scores, while holding a lesser weight in companies with low or below average sustainability scores.

Similar results are found at the industry level. For example, **Exhibit 2** shows the results within the energy and utilities sectors.

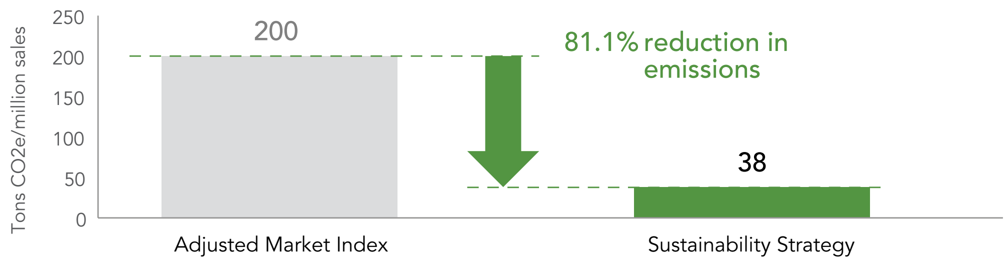
FOSSIL FUEL SMART

Dimensional also recognises that many sustainability-focused investors regard emissions as the most important variable when it comes to climate impact. The sustainability considerations applied to the Sustainability Strategy address emissions both within industries and at the strategy level. First, greenhouse gas emissions intensity is the largest component in the sustainability scoring system, which was applied within each industry. Further, greenhouse gas emissions intensity and potential emissions from reserves were addressed at the strategy level through screens that exclude or minimise investment in companies that rank most poorly on these metrics.

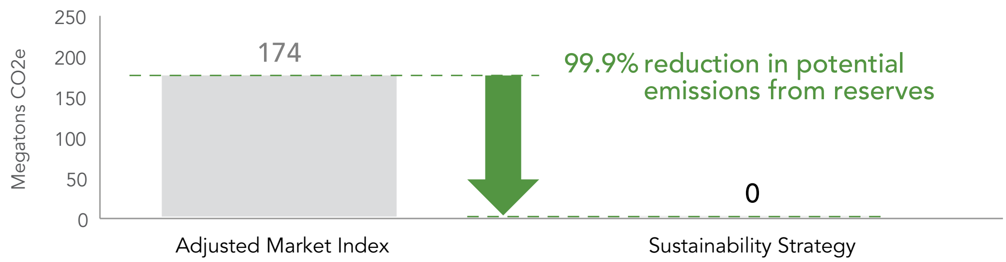
Exhibit 3 (next page) shows evidence of the reduced exposure to emissions made possible through this approach to sustainability. The charts compare the Adjusted Market Index to the Sustainability Strategy on greenhouse gas emissions intensity and potential emissions from reserves. Both charts show a significant reduction in these metrics for the Sustainability Strategy.

Exhibit 3: Exposure to Greenhouse Gas Emissions and Potential Emissions from Reserves
Adjusted Market Index vs. Sustainability Strategy (as at 31 December 2015)

GREENHOUSE GAS EMISSIONS INTENSITY



POTENTIAL EMISSIONS FROM RESERVES



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PUTTING IDEAS INTO PRACTICE

Dimensional has a long history of creating investment solutions to address the evolving needs of clients. Our approach to sustainability investing can offer investors an opportunity to pursue their sustainability goals while maintaining sound investment principles. The approach is designed to consistently focus on securities with higher expected returns, employ cost-effective execution and address the sustainability issues that matter to investors.

APPENDIX

Adjusted Market Index – The Dimensional US Adjusted Market 1 Index was compiled by Dimensional from CRSP and Compustat data. The index includes all securities of US companies traded on the NYSE, NYSE MKT (formerly AMEX) and Nasdaq Global Market with an emphasis on companies with smaller capitalisation, lower relative price and higher profitability. Profitability is measured as operating income before depreciation and amortisation minus interest expense scaled by book. Exclusions: non-US companies, REITs, UITs and investment companies. The index was incepted on 1 March 2007 and is rebalanced annually.

Sustainability Strategy – The Sustainability Strategy is a simulated strategy that applies sustainability impact considerations to the Dimensional US Adjusted Market 1 Index, combining an emphasis on companies with smaller capitalisation, lower relative price and higher profitability with an emphasis on companies with more favorable sustainability impact profiles. Securities of companies that may be less sustainable than other companies in the universe are excluded or underweighted while companies that may be more sustainable than other companies in the universe are overweighted. Sustainability Strategy uses simulated data. Filters were applied to data retroactively and with the benefit of hindsight. Characteristics are not representative of an index or actual strategy.

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RISKS

Investments involve risks. The investment return and principal value of an investment may fluctuate so that an investor's shares, when redeemed, may be worth more or less than their original value. Past performance is not a guarantee of future results. There is no guarantee strategies will be successful.

Diversification does not protect against loss in declining markets.

Environmental and social screens may limit investment opportunities.