The Evolution of Sustainability Investing

Helping investors align environmental priorities with their investment goals

By Dimensional Fund Advisors and the
Dimensional Sustainability Funds Council[1]

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OVERVIEW

With investors increasingly concerned about the potential environmental effects of certain business practices, many individuals and institutions are asking how they can align their environmental views and personal values with their investment decisions.

The Dimensional Sustainability Funds Council has worked with Dimensional's Research and Investment teams, looking to implement real-world solutions designed to deliver the dual outcomes mentioned above through Dimensional's systematic and time-tested approach. This paper highlights the key elements of those solutions in the context of a world in which sustainability considerations are playing an increasingly important role.

> 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.[2]"

WHY DO OUR CLIENTS INVEST?

While investor preferences can change over time, most clients of Dimensional, as well as clients of the Council, invest because they have financial goals with long-term horizons (accumulation phase) or want to maintain a certain standard of living through retirement (consumption phase). Clients in the accumulation phase seek to achieve their goals by saving (i.e., deferring today's consumption to future consumption). Since they will not require their money for some time, their savings can be invested with the expectation of capitalizing on the time value of money to generate growth of savings. Clients already in their consumption phase (e.g., retirees) may aim to withdraw just enough capital so that the remaining principal can grow and replenish those withdrawals.

1. The Dimensional Sustainability Funds Council is a group of consultants and wealth managers not affiliated with Dimensional working together with Dimensional to research the best ways to provide sustainability investment solutions to investors. As of December 31, 2015, the council representatives were: from Abacus Wealth Partners, Brent Kessel, Jennifer Kenning, and Spencer Sherman; from Financial Solutions Associates, Alex Burke; from Loring Ward, Sheldon McFarland; from Macroclimate, Mark Kriss; from Marin Financial Advisors, Dave Shore; and from Willow Creek, Bruce Dzieza.
2. United Nations, "Report of the World Commission on Environment and Development," General Assembly Resolution 42/187 (December 11, 1987).

Growth of capital for either group allows for increased consumption in the future, helping people better fulfill financial goals or enhancing their future standard of living. To achieve these outcomes, Dimensional and the Council believe clients need robust and well-diversified investment strategies founded on established and proven principles. Many investors also increasingly understand that achieving long-term investment returns may not have to come at the expense of compromising certain beliefs.

SUSTAINABILITY INVESTING

In recent years, we have found that more individuals and institutions are focusing on sustainability and how they can align their investment decisions with their views on preserving the environment and mitigating adverse climate effects. In this effort, tension may arise between the lifetime financial goals of individuals and institutions and the financial and environmental legacy they are leaving to future generations.

In a similar way, society faces competition between economic growth objectives and sustainability requirements. The evolution of societies through science and innovation has allowed humanity to enjoy an increasingly better standard of living, and fossil fuels have played a major role in that process since the Industrial Revolution.

According to the Intergovernmental Panel on Climate Change, a body of 195 member nations established to assess the science, greenhouse gas emissions[3] have increased since the pre-industrial era, driven largely by economic and population growth, and are now higher than ever. This has led to atmospheric concentrations of carbon dioxide, methane, and nitrous oxide that are unprecedented in at least the last 800,000 years. **Exhibit 1** shows how the increase in global anthropogenic, or human-induced, greenhouse gas emissions (Exhibit 1.d) and average greenhouse gas concentrations (Exhibit 1.c) from 1850 to 2011 has coincided with increases in land and ocean surface temperature (Exhibit 1.a) and rising sea levels (Exhibit 1.b) over the same period.[4]

Scientists, industries, governments, and society in general are now looking for ways to manage the tradeoffs between improving people's standard of living in the short and medium term and, in the long term, avoiding environmental damage that may inhibit humanity's standard of living. For instance, some energy companies have been shifting from coal-fired power plants to cleaner burning natural gas, and to low- and zero-carbon energy sources.[5] Data from the US Energy Information Administration shows carbon emissions from natural gas are nearly 50% below those from coal.[6]

However, the challenge of balancing shorter-term economic goals with longer-term concern for the environment can present society with many difficult questions: How can the transition from fossil fuels to alternative energies be managed practically? How long of a vision should be considered? What should the current generation's legacy be for future generations? What are society's responsibilities, even when not mandated by current laws? What financial losses might be faced if action is not taken? For a global and long-term issue like sustainability that works across borders, addressing these questions effectively at an international level can be difficult for governments representing economies with different energy needs and short political cycles.

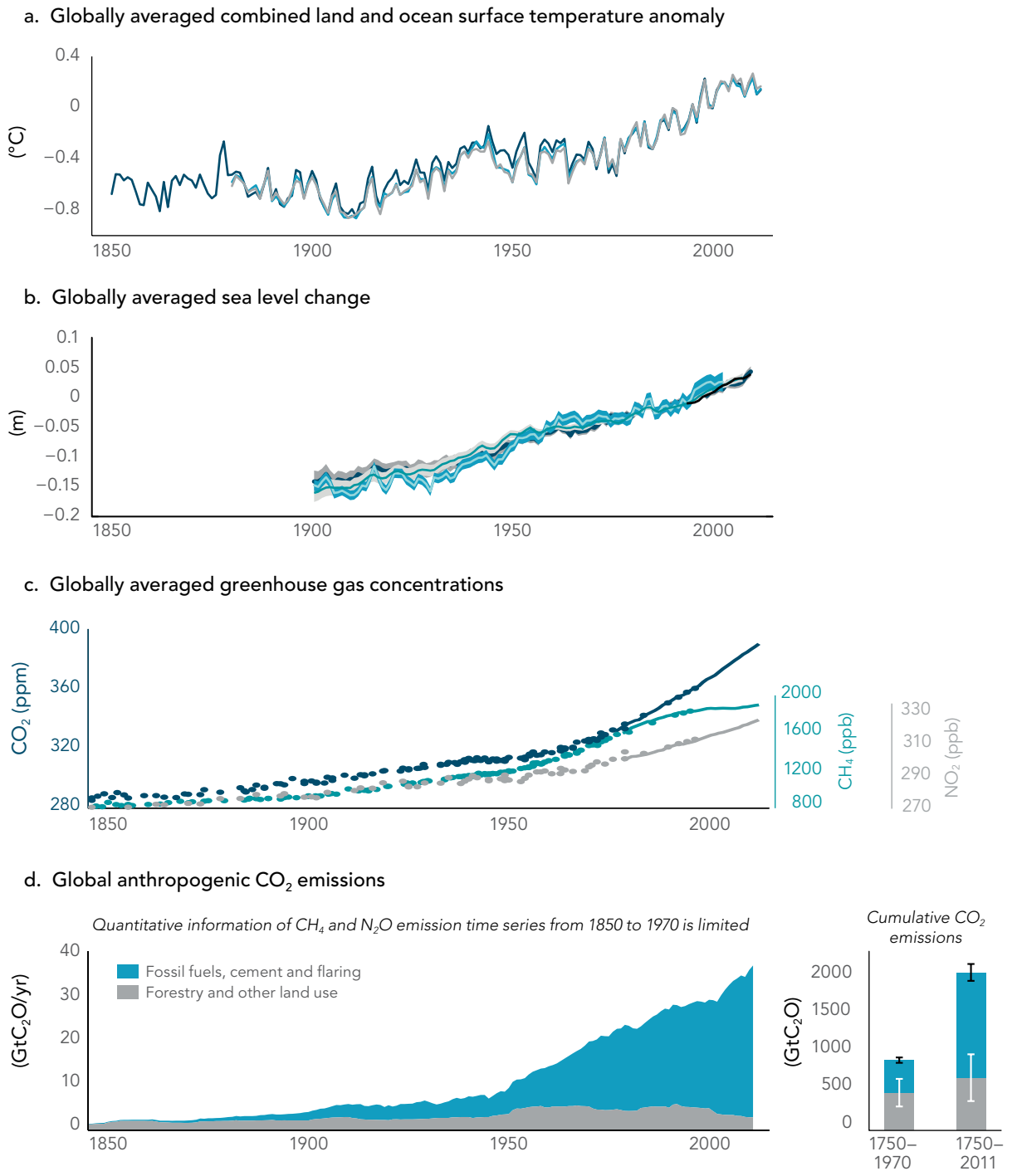
Institutions and individuals can embrace these concerns through their behavior and consumption decisions and can become effective agents of change. Investors can also express their preferences through their participation in global capital markets. In collaborating with Dimensional, the Council's primary goal was to help develop solutions that achieve both the investment and sustainability goals of individuals and institutions that place a priority on these issues. The collective research interactions have identified ways to enhance Dimensional's current offering and better satisfy those needs of investors.

A SUGGESTED APPROACH

Dimensional believes that helping individuals and institutions achieve their investment goals requires a strategy that is broadly diversified, based on sound investment principles, and efficiently implemented. Dimensional has been doing that since 1981 in US markets and since 1986 in international equity markets.

3. A greenhouse gas is any gaseous compound in the atmosphere that is capable of absorbing infrared radiation, thereby trapping and holding heat in the atmosphere. Examples include carbon dioxide and methane.
4. IPCC, 2014: *Climate Change 2014: Synthesis Report. Contribution of Working Groups I, II and III to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change* [Core Writing Team, R.K. Pachauri and L.A. Meyer (eds.)]. IPCC, Geneva, Switzerland, 151 pp.
5. Low- and zero-carbon energy may include sources such as wind, solar, and nuclear power.
6. U.S. Energy Information Administration, "How much carbon dioxide is produced when different fuels are burned?" (2015, June 18). www.eia.gov/tools/faqs/faq.cfm?id=73&t=11.

Exhibit 1 Observations and Other Indicators of a Changing Global Climate System



Observations and other indicators of a changing global climate system. Observations: (a) Annually and globally averaged combined land and ocean surface temperature anomalies relative to the average over the period 1986–2005. Colors indicate different data sets. (b) Annually and globally averaged sea level change relative to the average over the period 1986–2005 in the longest-running dataset. Colors indicate different data sets. All data sets are aligned to have the same value in 1993, the first year of satellite altimetry data (black). Where assessed, uncertainties are indicated by colored shading. (c) Atmospheric concentrations of the greenhouse gases carbon dioxide (CO_2, dark blue), methane (CH_4, teal) and nitrous oxide (N_2O, gray) determined from ice core data (dots) and from direct atmospheric measurements (lines). Indicators: (d) Global anthropogenic CO_2 emissions from forestry and other land use as well as from burning of fossil fuel, cement production, and flaring. Cumulative emissions of CO_2 from these sources and their uncertainties are shown as bars and whiskers, respectively, on the right hand side.

Moreover, since the early days, Dimensional's investment solutions have taken into account investors' constraints and preferences. Certain strategies have been tailored to address the needs of clients with particular social considerations, such as the exclusion of tobacco companies or firms involved with gambling, among others. Dimensional has also successfully helped clients with sustainability concerns through the US Sustainability Core 1 and the International Sustainability Core 1 equity funds. As of March 31, 2016, each of these funds has outperformed its benchmark net of fees since inception in March 2008.

However, over time, ideas around sustainability have evolved in tandem with investor needs. Since the funds were launched, there have been advances in knowledge and awareness of sustainability topics, such as the effects of greenhouse gas emissions. There has also been an increase in company reporting on sustainability, which has improved the availability of data on companies and their carbon footprint. Most importantly, feedback from clients suggests there has been a shift in investor preference toward reducing exposure to companies that are responsible for greenhouse gas emissions and fossil fuel reserves and that may face increased challenges as awareness of environmental impact advances.

To better address the sustainability considerations of concerned investors, Dimensional, in collaboration with the Dimensional Sustainability Funds Council, has developed an enhanced approach to sustainability investing, which is applied to the Dimensional Sustainability Core portfolios.[7]

The Sustainability Core portfolios are broadly diversified and seek exposure to the higher expected returns available from the market itself, and from small company stocks, low relative price stocks and those of high-profitability firms.[8] The US Sustainability Core 1 Portfolio typically holds more than 2,000 securities of large and small capitalization companies, and the International Sustainability Core 1 Portfolio typically holds more than 3,000 large and small capitalization companies from more than 20 developed countries outside the US.

Being highly diversified helps Dimensional efficiently take into account sustainability considerations.

Dimensional uses internal, as well as third-party research, to collect quantitative data used to systematically evaluate companies on sustainability issues. At the industry level,[9] a sustainability scoring system is applied using multiple variables to compare companies within the same industry, emphasizing companies with higher-than-average industry scores and excluding or underweighting companies with lower-than-average industry scores.

Sustainability scores are based on a blended variable that takes into account a range of environmental factors. The primary focus is on the greenhouse gas emissions intensity[10] of each company, which considers the most recently reported direct (Scope 1) or indirect (Scope 2) emissions of carbon dioxide, methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride. These emissions were all identified as greenhouse gases under the Kyoto Protocol, signed in 1997 and enacted in 2005.

The consequence of this approach, at the industry level, is to shift capital from companies with the worst scores toward companies with the best scores. **Exhibit 2** shows how the scores are allocated at the industry level across a range of environmental impacts.

Exhibit 2 Sustainability Scoring Framework (Industry Level)

Variable	Application
Greenhouse Gas Emissions Intensity[11]	85% of total sustainability score
Land Use and Biodiversity	15% of total sustainability score
Toxic Spills and Releases	
Operational Waste	
Water Management	

7. Dimensional's approach to sustainability investing is protected by U.S. Patent Nos. 7,596,525 B1, 7,599,874 B1 and 8,438,092 B2.
8. Relative price as measured by the price-to-book ratio. Profitability is a measure of current profitability, based on information from individual companies' income statements.
9. Industry level considerations are implemented by evaluating companies against other companies of the same industry only.
10. Greenhouse gas emissions intensity measures the quantity of emissions in relation to economic output, such as a company's emission output compared to their total sales.
11. Greenhouse Gas Emissions Intensity represents a company's most recently reported or estimated Scope 1 (direct) + Scope 2 (indirect) greenhouse gas emissions normalized 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.

At the portfolio level,[12] the enhanced approach applies screens that exclude or underweight companies with poor overall emissions metrics or those negatively connected to other environmental and social sustainability issues. In addition to addressing greenhouse gas emissions as a primary component of the industry-based scoring system, greenhouse gas emissions intensity is considered at the portfolio level by excluding or underweighting the top contributors to greenhouse gas emissions.

The enhanced approach also looks at potential emissions from fossil fuel reserves. While companies with large fossil fuel reserves may not have high emissions, those stored reserves are nevertheless a source of future potential emissions and may face risk of devaluation due to governmental action or the increased availability of alternative energy sources. Reserves can be categorized within oil, gas, or coal. The goal is to exclude or minimize investment in companies with relevant coal, oil, and gas reserves. **Exhibit 3** lists emissions variables applied at the portfolio level.

Exhibit 3 Emissions Variables (Portfolio 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

Sustainability encompasses more than just emissions. The strategy may also penalize companies that use particularly intensive factory farming methods, companies identified as manufacturers of cluster munitions and mines that indiscriminately affect humans and the productive use of land, companies cited for child labor practices, and those linked to the production of tobacco. **Exhibit 4** lists the additional environmental and social sustainability considerations applied at the portfolio level.

Exhibit 4 Other Environmental And Social Sustainability Variables (Portfolio 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 Labor	Companies cited for child labor practices may be excluded
Other Considerations	Companies based on other sustainability-related factors may be excluded

This enhanced approach to sustainability investing is designed to reduce exposure to companies with substantial intensity of emissions, companies that have reserves capable of sourcing future emissions, and companies whose practices may otherwise violate certain environmental and social sustainability principles. Through the combined application of a sustainability scoring system at the industry level and a screening approach at the portfolio level, the strategy emphasizes environmental sustainability at both the industry and total portfolio levels.

SUMMARY

The Dimensional Sustainability Funds Council has worked with Dimensional in an effort to find the best way of providing effective investment solutions to clients who are highly conscious of the environmental impact of their investments. The guiding light in these efforts has been to achieve the dual goal of efficiently taking into account sustainability considerations while building robust investment solutions expected to grow savings for future consumption.

The resulting strategies systematically evaluate sustainability metrics among companies across all major industries,

12.Portfolio level considerations are implemented by evaluating companies against all other companies eligible for investment.

excluding or penalizing companies that rank poorly while emphasizing companies with higher sustainability scores. At the same time, the strategies are broadly diversified and target the sources of higher expected returns while minimizing turnover and trading costs and ensuring broad diversification across countries, industries, and companies. Ultimately, by combining an integrated approach to sustainability investing with a robust investment design, Dimensional offers investment solutions for investors who want to pursue higher expected returns while upholding their environmental values.

PORTFOLIO CONSIDERATIONS

Investing risks include loss of principal and fluctuating value. Sector-specific investments can also increase these risks. Sustainability impact considerations may limit investment opportunities available to the Portfolio. For more detail regarding the risks affecting this Portfolio, please see the Principal Risks section of the prospectus.

Source: Dimensional Fund Advisors