



Portfolio Strategy

United States

The Goldman Sachs Group, Inc.

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Environmental issues, in particular climate change, are receiving increased focus from the investment community. Socially responsible and fundamentally driven investors need to consider the implications. This paper provides an introduction to this topic and examples of company-specific disclosures.

Why read this report

- [Review of socially responsible investing](#)
- [Highlight fundamental risks and opportunities](#)
- [Examples of climate-related corporate disclosures](#)

The growing interest in environmental issues is important to both socially responsible and fundamental investors

Socially Responsible Investing gaining momentum

An increased global focus on environmental issues, in particular climate change, has led to a renewed interest in Socially Responsible Investing (SRI). Total assets managed under the SRI umbrella in the United States have increased over fifty-fold in the last twenty years, and an increasing number of mutual funds fall under the SRI definition. A key question for money managers is whether a socially responsible strategy can deliver acceptable returns over time and be an ongoing investment option for institutional investors with fiduciary responsibilities. Recent academic work indicates that the answer may be “yes.”

Not just a “green” issue – implications for fundamental analysis

While many investors consider environmental issues a topic simply for the SRI market, there are important implications from these issues for fundamental investors as well. An issue such as climate change may present a host of concerns for individual companies, such as regulatory, reputational, and litigation risks. However, there are potential opportunities as well, such as developing new “green” products or obtaining a relative advantage over a competing firm that is not as well positioned to adapt to a carbon-emission constrained world.

Multiple ways to invest in this theme

Many investors are aware of mutual funds that specialize in SRI strategies. But there are other ways for investors to develop an investment approach for the theme of climate change. For example, several ETFs have been developed recently with a SRI/environmental mandate. Carbon-trading markets have been developed whereby emission allowances can be bought and sold, allowing participants to engage in trading strategies based on their view of the price of carbon emissions. Demand for insurance (and reinsurance) products will likely grow in importance as the potential for weather-related events to affect business lines or personal health increases.

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Overview: Environmental issues on the radar screen

Increasing attention paid to environmental issues.

The enactment of the Kyoto Protocol, heightened media coverage of the debate around the effects of climate change, and recent comments on environmental matters from several notable companies, including General Electric, have all served to raise the profile of this issue. While all environmental-related issues seem to be gaining momentum, climate change and the potential contributions to it by manmade greenhouse gases (GHG) has received particular scrutiny.

Scientists have argued that carbon dioxide and other manmade emissions are trapping heat in the Earth's atmosphere and may be contributing to a worldwide rise in surface temperatures that has led to global warming or, more precisely, accentuated the observed process of climate change. The scientific community is closely observing changes in such matters as weather patterns, intensity of storms, polar ice covers and other environmentally related issues.

Climate change as an investment theme.

This paper will not review the scientific evidence and/or arguments surrounding the effect of GHG on the environment. We will leave that to the scientific community. Rather, we take the position in this introductory paper that **whether or not an individual investor is convinced that anthropogenic, that is, manmade GHGs are leading to changes in the Earth's climate, this issue will have implications for the financial markets and for corporate performance.** Regulatory changes have already occurred in many countries and in many states and localities within the United States, and additional steps are under active discussion. Further, many investors and insurance companies are already striving to calculate environmental liabilities.

Investors: Two ways of thinking about climate change

Socially responsible perspective.

When discussing environmental issues it is hard not to consider the "socially responsible investing" (SRI) market. Indeed, many in the SRI arena focus on issues precisely like climate change when evaluating individual companies. In particular, investors in this area focus on those companies that may have policies aimed at reducing the emission of GHG or are developing products that focus on renewable sources of energy.

Fundamental analysis perspective.

However, even those investors without an SRI mandate need to consider the financial ramifications of climate change. Liabilities may suddenly have to be realized if caps are placed on GHG emissions. Capital spending to upgrade production facilities to meet "cleaner" standards may have to be put in place. There are hard dollars involved here, both from the perspective of expenses that may have to be incurred and revenue opportunities that may develop.

Within this report we examine some of the investment vehicles and markets that investors can explore with regard to this theme.

Corporate managements: A plethora of risks...and opportunities

A senior management level topic.

Climate change is a topic that should be on the agenda of every Board of Directors.

The risks are great and varied. However, there are also potential opportunities. These opportunities could be the relative advantage one company enjoys in this area over another in the same industry, especially those considered to be problematic. Or it could be the opportunity to develop new, "green" products. We explore some of these risks and opportunities later in this report.

What is socially responsible investing?

No universal definition of SRI.

For many investors, the topic of climate change falls under the purview of socially responsible investing. There are various definitions and interpretations of what SRI actually represents. Below we outline some common implementations of an SRI framework:

- **Screening stocks for their social or environmental characteristics as opposed to strictly financial attributes.** SRI lets the investor support companies that share their own values and goals and avoid companies involved in certain business practices. For example, an investor may screen companies based on such attributes as their support of environmentally friendly activities, promotion of minority hiring, or ethical treatment of animals. Conversely, an investor may avoid or divest companies involved in activities that they deem to be against their own social values. This could include companies that deal in such products as tobacco, alcohol, gambling, or firearms.
- **Engaging in shareholder advocacy or shareholder activism.** These investors may attempt to build large equity stakes in companies that have, in their opinion, a poor record on social or environmental issues. By obtaining a large position they may attempt to influence the behavior of existing management on these issues. Note that some of these investors may obtain a nominal amount of equity in a company simply to have the ability to introduce shareholder resolutions.
- **Supporting disadvantaged communities.** Investors may make funds available to disadvantaged areas to support affordable housing projects, small businesses, or general community development.

Within this framework, the issue of climate change falls under the first two categories. For example, screening companies based on their efforts to constrain the emission of GHG would be a common SRI strategy for the first category. Engaging in shareholder activism to try to influence a management team's policies on climate change would fall into the second category,

Flow of funds into SRI market highlights this growing area

Total SRI assets in professionally managed portfolios in the United States have increased more than fifty-fold over the past two decades. In addition, the number of SRI-dedicated mutual funds exceeds 200 compared to less than 50 in the early part of the 1990s. By far the most assets in SRI strategies are engaged in screening activities to at least some degree.

UN meetings drew leaders from the investing, environmental, and political arenas.

Further evidence of the growth in investor interest can be seen in the increased participation in the Investor Network on Climate Risk (INCR). This coalition of investors was first formed at a November 2003 institutional investor summit on climate risk held at the United Nations (UN). At that time, ten institutional investors representing \$600 billion in assets founded the INCR to "further promote investor and corporate engagement and understanding of the range of risks posed by climate change."

Public pension funds have been leading much of the discussion.

By the second institutional investor summit on climate risk, held at the UN in May 2005, the INCR had grown to over 40 members representing \$2.7 trillion of assets. Many of the institutional investors participating in INCR represent public pension funds, state treasurers/controllers, and religious institutional investors. INCR is directed by Ceres, a US coalition of investors and environmental leaders that has spearheaded national and international investor activity on climate risk issues.

Global focus on the environment.

This increased focus on environmental issues by investors in the United States parallels similar shifts that have been evident with investors in other parts of the world, in particular Europe. Outside the United States, environmental issues are receiving an increasing amount of attention from investors, politicians, and academics. This focus is on the multiple effects of climate change, ranging from increased storms to coral bleaching and other environmental issues such as rain forest destruction.

If you build it, will they come?

Prior SRI investment results have been mixed.

A key question for many money managers has been whether SRI will become widely accepted enough to support a dedicated effort in this area. Notwithstanding the previously outlined growth in SRI assets, prior investment results in this area have been mixed.

Investors with fiduciary responsibilities, such as pension plan managers, have an obligation to focus on investment results. To the extent that SRI investing does not deliver suitable investment returns, this may not be a sustainable option for several institutional investors and, therefore, there may not be high ongoing demand for SRI investment vehicles.

Recent academic work indicates that SRI strategies may deliver excess returns.

However, recent academic work has indicated that SRI may lead to superior portfolio performance. In an article published in the March/April 2005 edition of the *Financial Analysts Journal* entitled “The Eco-Efficiency Premium Puzzle,” the authors present evidence that a stock portfolio consisting of large-cap companies labeled “most eco-efficient” sizably outperformed a less eco-efficient portfolio over the 1995-2003 period. If environmentally-sensitive investors are correct that some assets are currently mispriced due to inadequate attention to these issues, one might expect the market prices of equity and fixed income instruments to adjust as more assets are directed toward SRI strategies.

We expect fundamental investors to increasingly focus on the financial implications of environmental issues and climate change whether or not these fall within a specific SRI framework. We address this in the next section of this paper.

A topic not just for the socially conscious investor

Environmental issues pose potential risks, and opportunities, for almost every company. These risks and opportunities come with possible financial implications as well. As such, while many view environmentally related issues as strictly an SRI topic, we caution that this is an important theme for fundamentally based investors as well.

Cap and trade system as an example.

For example, regulators could develop plans in an attempt to encourage the reduction of GHG emissions. In a typical “cap and trade” system, GHG emissions would be capped at a certain limit for a particular company in order to meet a specific environmental target. GHG emission allowances would then be allocated to individual companies. Companies with surplus emission allowances would be able to sell their excess permits in the open market. Companies that exceed the capped limits would have to purchase allowances in the open market. This could create environmentally related expense and liabilities that are not present today.

Sulfur dioxide caps have already been used.

This is certainly a viable option because there are precedents for this type of system, including in the United States. In the 1990s the US government placed caps on sulfur dioxide emissions in an effort to combat acid rain. Companies that kept their emissions below their capped level were allowed to sell emissions credits to companies that could not meet their quotas.

Asbestos was more than just a SRI issue.

It is hard to ignore the potential parallels between climate change due to the emission of GHG and the asbestos issue that has engulfed many companies over the past several years. Asbestos liabilities were very long-tailed in nature (with the extent of the damage unknown for many years) and exceedingly difficult to calculate. Just as many companies have had to deal with the overhang of asbestos-related liabilities and the litigation around them, some companies may have the same issue related to liabilities associated with GHG emissions.

Put this on the M&A due diligence checklist.

This is an especially important issue for companies considering M&A opportunities. Many companies belatedly discovered that acquisitions from the 1970s and 1980s came with unknown asbestos-related liabilities. The same potential exists around GHG-related liabilities.

Not all bad news: Climate change presents opportunities as well

While environmental-related liabilities may present potential challenges for some companies, there are opportunities as well. Some of these opportunities revolve around companies that may be able to develop new, “green” products or the technology to reduce GHG emissions from some products or production facilities. Even a company that is currently a heavy emitter of GHG could have an opportunity vis-à-vis its competitors if it is better positioned to adapt to a carbon-emission constrained world.

Exhibit 1 provides a brief summary of risks and opportunities around climate change.

Exhibit 1: Evaluation of climate change risks and opportunities

This list will likely grow

Topic	Risk	Opportunity	Commentary
Reputation	X	X	Companies viewed as environmentally "friendly", even within troubled industries, likely to see their reputation enhanced as opposed to those companies that are viewed as being environmentally "unfriendly."
Regulation	X		Uncertainty surrounding potential future regulation at the Federal and/or State level introduces uncertainty for companies that are heavy emitters of GHG.
Litigation	X		As with Asbestos, the potential for liabilities to be realized at a future date is a real issue, especially for potential acquirers.
Competitive Position	X	X	Companies that are better able to adapt to a "greener" world will have a competitive advantage over those companies that can not, or will not, adapt.
New product development		X	Business opportunity for any company that can develop new "green" products or technology to reduce the emission of GHG by existing products or processes.
Impact on business operations	X		The unpredictable element in planning, but shifts in weather patterns due to climate change could impact any business, i.e., insurance, travel, tourism, construction, etc.

Source: Goldman Sachs Portfolio Strategy.

Unsettled regulatory environment a key risk

Kyoto went into effect earlier in 2005.

The Kyoto Protocol calls for industrialized countries to reduce their collective emissions of GHG by 5.2%, compared to 1990 levels, by 2008-2012. In order to come into force, at least 55 parties representing at least 55% of carbon dioxide emissions, based on 1990 levels, had to ratify the agreement. The agreement came into force in February 2005 following ratification by Russia.

Hard to keep track of all the agreements and joint efforts.

The United States and Australia are among the two leading countries to not ratify the Kyoto Protocol. Some countries that did not ratify Kyoto were concerned about the different treatment afforded to emerging countries as opposed to developed countries.

Some countries that have not ratified Kyoto have entered into other agreements. For example, the United States and Australia recently joined China, India, Japan, and South Korea in agreeing to the Asia Pacific Partnership on Clean Development and Climate. This pact allows these countries to individually set goals for reducing greenhouse gas emissions. However, there is no enforcement mechanism, a common complaint among its critics.

Meanwhile, other efforts have been afoot in the United States to implement more structured regulations. Senators John McCain (R-AZ) and Joseph Lieberman (D-CT) have previously introduced legislation that would establish a limit on GHG beginning in 2010. Their proposal also includes a cap and trade type system.

Canada is paying close attention to many of the developments in the United States.

Regulation is not just an issue at the federal level, and several states have been active as well. For example, nine Northeastern and Mid-Atlantic US states have formed the Regional Greenhouse Gas Initiative, a cooperative effort aimed at reducing carbon dioxide emissions. Given its proximity, Canada is closely monitoring many of the state-by-state regulatory developments. California has also been visible in this debate, pledging to reduce the state's GHG emissions and moving ahead with GHG emission standards for automobiles.

All of these moving pieces result in a **confusing regulatory environment**. For companies contemplating new investments in areas such as power plants, production facilities, or new products that emit GHG, an unsettled regulatory environment introduces a significant amount of risk.

Shifting regulation may slow corporate decision making.

Should a multi-billion dollar investment be made in a new power plant that may be a heavy emitter of GHG? Should a company spend millions of dollars to upgrade facilities to make them more environmentally friendly? What about investing in developing new environmentally friendly products? With the future regulatory environment uncertain, corporate decision making could be hindered.

US companies abide by global regulation.

Note also that although the United States has not ratified the Kyoto Protocol, US companies with operations in countries that have ratified Kyoto must adhere to this standard. This introduces even more confusion for US companies as they deal with multiple regulations for multiple jurisdictions.

Global corporations in general will face an increasingly complex regulatory world as they adapt to changing rules in various jurisdictions. This could impart an administrative burden on these companies as well as increasing costs to monitor the various regulatory frameworks in each country of operation.

More and more companies are publicly commenting on environmental issues

GE's announcement was a watershed event.

In May 2005 General Electric (GE) launched its "ecomagination" initiative to develop new technologies to help customers meet pressing environmental needs, reduce its own GHG emissions, and commit to publicly report on its progress in these areas. When a company of GE's stature launches a large-scale program on environmental issues, it speaks to the growing focus on this topic by corporate America. Although GE was not the first US company to make such an announcement, the size of the company and the stated breadth of its intentions, attracted much attention.

This focus is being felt in other industries as well. Utility companies tend to be heavy emitters of GHG through their coal-fired power plants that generate electricity. Institutional investors have recently been putting pressure on some utility companies to provide an increased amount of disclosure related to environmental issues in general and the impact of climate change in particular. In response, companies such as American Electric Power and CInergy have issued expansive reports on their actions to deal with climate change and the emission of GHG. Others such as FPL are developing solar and liquid natural gas facilities and other processes that are more efficient and cleaner.

Exhibit 2 provides a sample of some of the public disclosures that certain companies have made recently with respect to environmental issues. This list is not meant to be an endorsement of these companies or their environmental policies. Nor is it intended to be a comprehensive list of every company that has disclosed information in this area

(certainly that list would be quite extensive). Rather, this list is intended to be an illustration of the disclosures coming from some major corporations on this topic and shows the wide variety of actions undertaken by companies in different sectors.

Exhibit 2: Sample of company-specific information on environmental issues

We expect voluntary disclosures to increase due to investor interest in this area

Ticker	Company	Employee Head Count	Market Cap As of 8/23/05 (\$ mln)	Significant Policy Initiatives
Consumer Discretionary				
F	Ford Motor	324,864	18,160	Clean manufacturing initiatives include: (1) Chromium-free pre-paint coating process, eliminating disposal of the waste oil; (2) Eliminating mercury-containing switches from Ford vehicles; (3) Eliminating all PCB transformers from Ford facilities.
Energy				
BP	BP PLC	102,900	240,804	Launched 5-year, \$350 million emissions reduction program in 2004 targeting one million tones of emission reduction per year. Database established for efficiency project ideas: by the end of 2004 over 400 project ideas were identified.
XOM	Exxon Mobil Corp.	85,900	371,995	Worldwide environmental expenditures in 2004 totaled more than \$2.9 billion. XOM is beginning projects to reinject natural gas in locations where it is currently being flared, as well as develop LNG transport infrastructure.
Financials				
BAC	Bank of America	175,742	174,084	Applies extensive policies to all extensions of credit and debt underwriting where proceeds are known relating to forestry. Recycles more than 31,000 tons of paper annually.
JPM	JPMorgan Chase & Co.	160,968	120,704	In 2004 established the Office of Environmental Affairs, which will aim to implement the Equator Principles. The private equity divisions conduct an environmental review as part of investment process for companies in environmentally sensitive industries.
C	Citigroup Inc.	294,000	225,209	Citigroup manages \$1bn in SRI assets. Citigroup has collected data on energy used in 11,800 buildings owned or leased globally. Citigroup's private equity business focuses on opportunities in renewable energy, sustainable forestry, and clean technology.
Industrials				
GE	General Electric	307,000	360,110	As part of GE's "Ecomagination" project, GE will invest \$1.5 bn in R&D for clean technologies by 2010, up from \$700 mn in 2004. GE set a 30% GHG intensity reduction goal by 2008, a 1% absolute reduction by 2012, and an energy efficiency improvement goal of 30% by 2012.
MMM	3M Company	67,071	54,312	MMM has set goals: (1) To improve energy efficiency by 20% in 2005, normalized to net sales, from a 2000 base year; (2) reduce waste by 25% in 2005, normalized to net sales, from a 2000 base year, and (3) reduce volatile air emissions by 25% in 2005.
Materials				
AA	Alcoa Inc	119,000	24,144	In 1998, targeted reduction of GHG emissions by 25% below 1990 levels by 2010. Goal achieved in 2003. By 2006, Alcoa expects savings of \$60 million by improving energy efficiency and \$40 million from environmental management.
DD	Du Pont (E.I.)	60,000	40,168	In 2003 GHG emissions were 72% below 1990 base year. Energy use is now 6% below 1990 levels, which saved DD \$1.5 billion compared to what costs would have been had energy increased in proportion to increases in production.
Utilities				
FPL	FPL Group	11,900	17,100	FPL owns the largest solar facility in world, as well as 23 wind facilities and 29 hydro facilities. FPL is currently converting old coal plants to new natural gas fired plants.
PCG	PG&E Corp.	20,200	13,610	During 2002, PG&E met voluntary emission reduction targets set in 1998, achieving 50% reduction in emissions vs 1998 baseline. PCG reduced overall energy use at 88 of its facilities by 24% compared with 1998 baseline through efficiency and conservation.
CIN	CINergy Corp.	7,842	8,596	CIN aims to reduce GHG emissions to 5% below 2000 level (74 mn tons) during the period between 2010 and 2012. CIN committed \$21 million to fund projects through the remainder of this decade to help reach this voluntary goal.
AEP	American Electric Power	19,893	14,215	The near-term costs to the company for compliance with the Administration's currently proposed regulatory programs have been estimated at approximately \$3.5 billion by 2010.

Source: Company reports.

Investment opportunities: How to approach this theme

We expect climate change and related issues to have implications for issuers and the capital markets. Investors with strong views on this topic may wish to consider the investment approaches in Exhibit 3.

Exhibit 3: Climate change and investing

New opportunities will likely continue to develop

Investment vehicle	Commentary
Mutual Funds	According to the Social Investment Forum, there were 200 SRI dedicated mutual funds as of 2003. We anticipate that additional professional managers, although not necessarily adopting a pure SRI mandate, will increasingly incorporate environmental issues into their fundamental analysis.
ETFs	Several socially conscious and/or environmentally oriented funds have been developed in the past year.
Company-specific relative advantage	Companies that are better positioned for a carbon-constrained world could have a relative advantage vis-à-vis other companies in the same industry (i.e., potential factor in pair trade ideas).
Insurance	Demand for protection from weather-related property damage, health-related risks due to pollution, and D&O liability for inadequately addressing climate change threats will likely all increase.
Reinsurance	The ability to transfer and share the risk of loss from weather-related incidents will likely gain in importance
Carbon-emissions trading	In a cap and trade environment, carbon has a value placed on it by the emissions trading market. Investors with views on the price of carbon have a direct way of approaching this theme.

Source: Goldman Sachs Portfolio Strategy.

On a company specific basis, one approach may be akin to the Sullivan Principles

The Sullivan Principles focused on human rights in South Africa.

In 1977 the Reverend Leon H. Sullivan developed a set of principles on social responsibility which became an international standard for businesses operating throughout the world. These principles were considered helpful in dismantling apartheid in South Africa. Ultimately developed into what are known as the Global Sullivan Principles, this voluntary code of conduct provides a framework related to human rights, social justice, protection of the environment, and economic opportunity.

Prior to development of the Sullivan Principles, some shareholders of global companies with operations in South Africa, threatened to divest their holdings. Under Sullivan, these companies were not forced to withdraw from the country, harming workers and the economy, but rather were able to set a strong example of good corporate behavior. These companies set the standards for proper treatment of workers and their communities.

Look for “scorecards” to be developed.

With respect to climate change and other environmentally-related issues, it is possible that companies could be evaluated on a similar sort of “general principles” basis as opposed to a set of hard-and-fast rules. These principles could be based around such issues as quality of disclosures related to climate change, commitment to developing “greener” products, and/or voluntary reductions in GHG emissions. In other words, a framework may develop that would allow investors to compare the efforts of different companies in several discussions.

Our European colleagues have already prepared analysis in this area.

Goldman Sachs analysts in Europe have previously developed a framework for evaluating environmental and social issues related to European energy companies. Their analysis focused on how these issues could impact the competitiveness and reputation of a company, and the corresponding potential impact on valuation. For additional information, please see Anthony Ling’s February 24, 2004 report entitled “Environmental and social issues count.”

Using such a framework investors may be able to identify good companies even in industries that are typically heavy emitters of GHG. The analysis becomes not only an absolute, but also a relative comparison that could be the starting point for more in-depth analysis.

Investors pushing for enhanced mandatory disclosure.

In April 2004 a number of public pension fund leaders wrote to the Securities and Exchange Commission (SEC) to emphasize that climate change poses a material financial risk to many of their portfolio companies. These leaders stressed that these risks should be analyzed as a matter of routine corporate financial disclosure to the SEC. While some companies have voluntarily started to make progress toward such risk disclosure, other companies have not been as forthcoming with voluntary disclosures.

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Current Investment List (CIL). We expect stocks on this list to provide an absolute total return of approximately 15%-20% over the next 12 months. We only assign this designation to stocks rated Outperform. We require a 12-month price target for stocks with this designation. Each stock on the CIL will **automatically** come off the list after 90 days unless renewed by the covering analyst and the relevant Regional Investment Review Committee.

Ratings definitions prior to November 4, 2002

RL = Recommended List. Expected to provide price gains of at least 10 percentage points greater than the market over the next 6-18 months.

LL = Latin America Recommended List. Expected to provide price gains at least 10 percentage points greater than the Latin America MSCI Index over the next 6-18 months. **TB = Trading Buy.** Expected to provide price gains of at least 20 percentage points sometime in the next 6-9 months. **MO = Market Outperformer.** Expected to provide price gains of at least 5-10 percentage points greater than the market over the next 6-18 months. **MP = Market Performer.** Expected to provide price gains similar to the market over the next 6-18 months. **MU = Market**

Underperformer. Expected to provide price gains of at least 5 percentage points less than the market over the next 6-18 months.

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