



The Effects of Climate Change on Business

Rutgers Consulting Group

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Sonora, California, 2014. Photographed by Andrew Williams.



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2. Executive Summary

Global climate change has altered operations in the corporate world and forced businesses to expand efforts to combat its effects. With worsening conditions of climate change, such as increased temperatures, extreme droughts, and intensified weather events, corporations are tasked with the challenge of counteracting its consequences and reevaluating their role in its perpetration.

INTRODUCTION TO CLIMATE CHANGE

50%

CO2 Increase

200%

Methane Increase

2°F

Temperature Increase



Humans have released 2.5 trillion metric tons of CO2 into the atmosphere since the mid-18th century. As a result, there has been a decrease in biodiversity, a vicious cycle of land degradation, a rise in sea levels, and an increase in global temperatures. These extreme weather events not only affect natural landscapes and ecosystems but also have a significant impact on the private sector through their effects on the supply chain and transportation. In response, global policies have been put in place to prevent further damage to both the environment and the global economy.

MITIGATING THE EFFECTS OF CLIMATE CHANGE ON BUSINESS

6 out of 9 experts interviewed stated that agriculture is at the highest level of risk when it comes to climate change

The global supply chain and the insurance industry are also at high risk due to the increased frequency of climate disasters

ESG strategies are tied to strong financial performance due to increased demand from consumers and institutional investors

Key players in the energy, fashion, and technology industries have implemented unique policies to address climate change challenges

Collective action across all industries is necessary to overcome the free rider problem and achieve net-zero emissions by 2050



CLIMATE CHANGE AND THE WAR FOR TALENT



Gen Z and Millennials place more importance on climate change than older generations

88% of students surveyed believe businesses are contributing to climate change

Only 9% of students surveyed believe businesses are putting in effort to fight climate change

Students value ESG in the job search, but it is not the most important factor for students

Experts agree that strong ESG initiatives allow companies to retain more talent

3. Methodology

To comprehensively assess the broad impacts of climate change and its effects on the business sector, the RCG team engaged in extensive secondary research. This included analyzing academic theses, industry reports, and other relevant published materials. In total, the team collected over 40 valuable sources discussing the measures businesses have taken to counteract climate change. The information collected from this secondary research helped the team develop a more thorough understanding of climate change and approach the issue from an informed angle.

In addition to the secondary research, team members conducted interviews with nine experts from both academic and industry backgrounds as well as a survey of over 50 Rutgers-New Brunswick students. Interviewed experts included professors from Rutgers University, Loyola-Marymount University, and climate specialists from renowned strategy consulting and financial services firms. The interviews and surveys corroborated the team's understanding of the economic, business, and social risks of climate change.

Interview Fields of Expertise



Rutgers Professor Interviews



This integration of primary and secondary research allowed the team to construct a comprehensive overview of the implications of climate change on business and the emerging trends that combat these challenges.

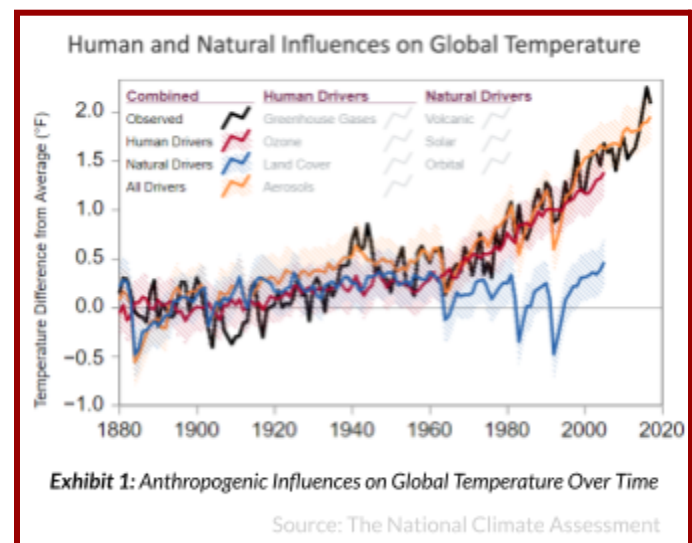
4. Introduction to Climate Change

Today's climate problem can be traced back to the early signs of climate change during the Industrial Revolution in the 19th century. This section introduces the origin of climate change, its current conditions, and predictions about its future.

4.1 A Brief Overview of Climate Change

During the Industrial Revolution, humans began to release large amounts of carbon dioxide and greenhouse gasses into the atmosphere, drastically changing the Earth's climate. This shift has been profound: **since 1880, the Earth's average temperature rose by approximately 1.6 degrees Fahrenheit.** Moreover, the concentration of methane gas surged by more than 200% in the last 200 years. Alarmingly, 60% of these methane emissions are anthropogenic, caused predominantly by human activity.

Looking ahead, **human activities are projected to increase carbon dioxide concentrations by 50% in the next 200 years**, exacerbating the impact of one of the most prevalent greenhouse gasses that traps long-wave heat energy and contributes to global warming.¹ **These anthropogenic processes have become the primary source of global warming.** As illustrated in Exhibit 1, human drivers like greenhouse gas emissions are causing global temperatures to rise more radically than natural drivers such as volcanic activity, solar radiation, and Earth's orbital change. In essence, climate change represents not just an environmental challenge, but a humanitarian dilemma.²



Land-based ecosystems, absorbing around 30% of anthropogenic carbon emissions, play a crucial role in regulating the climate. However, up to **40% of the world's land surface, including significant portions of cropland and pastureland, has been degraded** due to pressures such as deforestation and unsustainable farming. This degradation not only diminishes land's ability to sustain food production, maintain freshwater, and regulate the climate but also impacts food security, water availability, and ecosystem health, directly affecting half of the human population. **Land degradation, which is the leading cause of terrestrial biodiversity loss, can exacerbate issues like drought, desertification, and other extreme weather events.** Sustainable land management practices, including restoration efforts, are vital for mitigating these impacts and protecting ecosystems.³

Beyond the impact on natural land and water resources, climate change also affects business operations in the private sector. **Climate change disrupts the global supply chain through extreme weather such as wildfires, hurricanes, flooding, and heat waves.** For example, in July 2021, flooding in central China damaged supply chains for commodities such as coal, pigs, and peanuts, forcing the closure of a Nissan automobile plant.⁴ In one study, the Harvard Business Review gathered 35 years of temperature data and 20 years of precipitation data in the

¹ [NASA](#)

² Interview with Rutgers School of Environmental and Biological Sciences Professor

³ [United Nations](#)

⁴ [Yale](#)

United States, China, and Taiwan to better understand how extreme weather events or dramatic changes in precipitation or temperature affect supplier and Original Equipment Manufacturer (OEM) operations. The researchers found that **43% of surveyed supplier sites were exposed to climate variability**, 18% of the US sites were high-risk supplier sites, and 80% of the sites have no alternative locations for business continuity plans to sustain operations.⁵ **Climate change actively threatens production, lowering labor productivity and supply.**⁶ The lack of preparation for climate disruption will likely lead to the loss of an enormous amount of revenue for companies across the globe. However, various preventative programs have been globally established to combat the impact.

4.2 Global Actions and Policies

Before accords and treaties addressed climate change explicitly, there was the Montreal Protocol (1987), a historic global agreement that proposed to put an end to chlorofluorocarbons, or chlorine atoms that deplete the ozone layer. **In 1992, the United Nations Framework Convention on Climate Change was ratified by 197 countries**, making it the inaugural treaty addressing climate change and setting the annual meeting known as the Conference of Parties (COP).⁷ During COP, the Kyoto Protocol (2005) and the Paris Agreement (2015) were ratified. **The Paris Agreement is the most important pact**, established through international efforts in 2015, **outlining the overarching goal to hold the increase in the global average temperature to well below 2 degrees Celsius above pre-industrial levels**, and a more stringent sub-goal of limiting the temperature increase to only 1.5 degrees Celsius above pre-industrial levels.⁹ In total, 194 nations and the European Union agreed to sign these treaties, marking a huge step forward in the global effort against climate change by encouraging government policies and providing guidance for businesses' sustainability efforts. **The United Nations also established Sustainable Development Goals (SDGs) which guide policy-making around the world.** These goals are a successor of the Millennium Development Goals (MDGs) and will expire in 2030. This year, COP28 was held in Dubai. The main agendas were (1) evaluating if the world is on track for the Paris Agreement, (2) determining funding to compensate the countries damaged by climate change, and (3) discussing the phasing out of fossil fuels.⁸

Within the scope of the United States, the Biden administration has prioritized combating climate change since the 2020 presidential election. The administration established the National Climate Task Force to work on the following goals: reducing greenhouse gas emissions by 50% below the 2005 level by 2030; carbon pollution-free electricity generation; net-zero emissions economy by 2050; and delivering 40% of benefits from investment in climate change/clean energy to disadvantaged communities.⁹ **Two major bills align with the goals: the Inflation Reduction Act and the Bipartisan Infrastructure Law.** The Inflation Reduction Act not only focused on reducing inflation, but also invested in climate change mitigation and resilience. The act includes an Investment Tax Credit (ITC) and a Production Tax Credit (PTC) to deduct a percentage of the cost of renewable energy systems from federal taxes as incentives for the clean energy transition.¹⁰ It also provides the U.S. Department of Agriculture \$300 million to quantify greenhouse gas emissions and track the efficiency of mitigation practices in reducing greenhouse gas emissions.¹¹ **The Bipartisan Infrastructure Law has invested \$50 billion in protecting infrastructure against climate change.** It also invested in emission reduction at ports and airports, low-carbon

⁵ [Harvard Business Review](#)

⁶ Interview with Loyola-Marymount University Professor

⁷ [CFR](#)

⁸ [Washington Post](#)

⁹ [White House](#)

¹⁰ [EPA](#)

¹¹ [USDA](#)

technologies, and the deployment of EV charging stations nationwide.¹² These policies not only tackle reduced costs of alternative energy systems and proper management of infrastructure, but also aim to reduce emissions in other areas.

4.3 Economic and Non-Economic Effects

Climate change affects various global sectors, with **some experiencing more loss than others** via economic and non-economic impacts. **Health and food security are at the greatest risk** as the agriculture industry faces the consequences of heightened greenhouse gas emissions. The following subsections will delve further into the non-economic consequences as well as the economic impact of climate change, presenting quantifiable data and statistics to illustrate the financial losses resulting from climate-related risks.

4.3.1 Vulnerability of Health and Food Security

The most significant non-economic effects of climate change will be on health and food security. **Mortality rates will increase significantly if the temperature rises 4.5 degrees Celsius by 2090** due to the rising heat and precipitation leading to the proliferation of disease-spreading insects and other disease vectors.¹³ Climate change can also exacerbate water contamination and food-related illnesses. Due to insect, water, and food-borne disease, climate change is expected to cause **250,000 additional deaths globally per year** between 2030 to 2050.¹⁴ In addition, excessive heat can cause mental health problems among field workers which can reduce productivity.¹⁵

Furthermore, **high temperatures and shifts in precipitation have negative effects on agriculture**. Runoff from heavy precipitation contaminates the water supply, while heat waves impose harm on animals and diminish the production of egg, meat, and dairy products. For example, **US dairy production significantly decreased in 2010** due to livestock suffering from heat stress, and the resulting milk was lower in its fat, lactose, and protein content.¹⁶ Currently, 12.8% of households, or **44.2 million Americans, are facing food insecurity**,¹⁷ and this number will only be exacerbated by the consequences of climate change on food production. As crop yields decline and rainfall increases, food quality and distribution systems will be threatened. The long-term rise in precipitation and temperature will likely reduce plant survival as well.¹⁸

4.3.2 Economic Costs and Risk Factors

With major industries like agriculture facing challenges, **climate change could cause billions of dollars of loss to the economy**. Under a high emissions scenario, the U.S. economy could incur an annual **loss of 1-4% of its GDP** by the end of the century,¹⁹ with climate change-related disruptions in food supply leading to soaring food prices and rising inflation. According to a scientist at the Potsdam Institute of Climate Impact Research, **annual inflation could soar up to 7 percentage points by 2060** in high-emission



Exhibit 2: Potential Economic Effects of Climate Change

¹² [White House](#)

¹³ [Columbia](#)

¹⁴ [WHO](#)

¹⁵ Interview with Loyola-Marymount University Professor

¹⁶ [USDA](#)

¹⁷ [FRAC](#)

¹⁸ Interview with School of Environmental and Biological Sciences Professor

¹⁹ [EPIC UChicago](#)

scenarios due to increased food costs.²⁰ This would be 250% higher than the target inflation rate of 2 percent.

The economic impacts of climate change will be broader than just the food supply. For example, the winter **tourism industry could see losses of \$2 billion** due to the loss of snow and ice. Temperature extremes are expected to cause a **global loss of 2 billion labor hours** each year by 2090 due to productivity declines, resulting in **\$160 billion of lost wages**.²¹ The volatility of climate change may force companies to face unexpectedly high prices for production resources, energy, and insurance. At the same time, insurance companies are experiencing large losses as they are unable to insure certain parts of the world facing climate risk.²² The effects of this are seen most strongly in coastal areas. **In Florida, major insurers have started to pull out of the state**, with Farmers Insurance Group explicitly citing climate change as the reason.²³

Lastly, **climate change can increase the wealth gap between rich and poor countries**. Because a country's geography affects its economy through agricultural productivity and proximity to markets, underdeveloped countries suffer the greatest consequences. Long-term economic performance is episodic in nature for all, but the **richest countries will have greater access to climate change mitigation technologies**, while poorer countries will have greater difficulty in offsetting the impacts. With a 1 percent increase in average temperatures, it is estimated that developing countries will encounter negative effects on economic growth while developed countries and ones with cooler annual temperatures will likely experience marginal impact or even growth benefits as pictured in Exhibit 3 below. **By 2030, climate change will have pushed an estimated 32 to 132 million people into extreme poverty**.²⁴

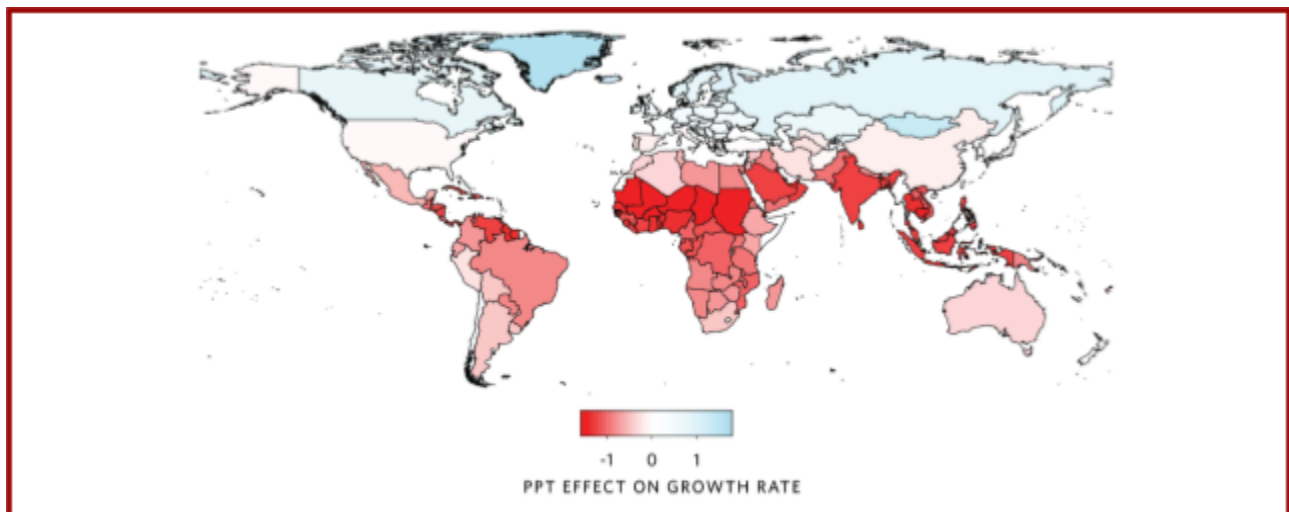


Exhibit 3: Estimated Change in Economic Growth Associated with 1 percent Increase in Average Temperature

Source: Carnegie Endowment for International Peace; Reprinted from Marshall Burke, Solomon M. Hsiang, Edward Miguel, "Global Non-linear Effect of Temperature on Economic Production," *Nature* 527 (2015): 235-239, <https://doi.org/10.1038/nature15725>

5. Mitigating the Effects of Climate Change on Business

As climate change continues to accelerate, a **variety of sectors are highly at risk of physical, transitional, and financial consequences**. However, this issue is simultaneously perpetrated by industries that release large

²⁰ [CBS News](#)

²¹ [Columbia](#)

²² Interview with Consulting Firm Climate Specialist

²³ [Miami Herald](#)

²⁴ [Carnegie Endowment for International Peace](#)

amounts of carbon into the atmosphere. This section examines the direct effects of climate change on business, the provisional efforts being implemented to combat these effects at select exemplary firms, and popular perceptions of various industries as perpetrators of climate change.

5.1 Effects on Industries and Supply Chain

Climate change has had increasing impacts on industries across the globe, and is posing significant threats to their operations and profitability. As severe weather events like floods, droughts, and heatwaves become more frequent, property, operations, and supply chains are progressively disrupted. Exhibit 4 demonstrates the main industries that will be impacted the most by these anomalies. **Suppliers are expected to experience a loss of over \$1.26 trillion in revenue** due to climate disruptions between 2020 and 2025 and related issues such as deforestation and water insecurity.²⁵ Increased operational costs push suppliers to increase their prices and pass the disruption onto consumers. Disruptions to global supply chains can be additionally catastrophic because the inherent domino-like structure of these chains produces increasing financial risks as costs rise at each link of the chain.

Moreover, climate change has the potential to decrease a business's customer base. Small businesses with lower capacities to make major changes to their infrastructures, such as mom-and-pop shops in grave areas, could face a much larger burden. Overall, **the global economy could miss out on a \$43 trillion growth opportunity** if business leaders do not accelerate the transition to net-zero and low-emission operations.²⁶ Three experts interviewed from financial and consulting firms agreed that **businesses are facing both physical and transitional risks as a result of climate change**. Transitional risk would force business owners to reconsider how their business will be impacted by the switch to more sustainable practices and materials.²⁷ Physical risk would include being in the line of storms, hurricanes, and rising sea levels that could potentially force relocation due to irreversible damage.²⁸

While climate change is affecting businesses of all magnitudes, **the effects are disproportionately impacting some industries more than others**. Six out of nine experts interviewed said agriculture is the most vulnerable industry to climate change. **The risks to agriculture are arguably harder to mitigate than other industries** because agriculture has a long product development cycle that is especially susceptible to environmental changes.²⁹ In particular, extreme weather events resulting from climate change are some of the main drivers of this risk. Under hot and dry weather, crops face increased risk of wildfires and disease, and insurance companies that recognize this risk may increase their costs or outright refuse to insure farmers and their crops. **Workers working outside are also likely to experience heat exhaustion and heatstroke more frequently**.³⁰ In fact, agricultural field workers may be forced to endure mental health issues and fatigue caused by extreme heat, lowering labor productivity.³¹ Prolonged rain caused by climate change can also leech vital nutrients from the soil or erode soil away entirely. No longer having a firm, healthy foundation to grow on, crops are not able to properly develop and produce meaningful yields.³² To illustrate this, a 2012 drought in the US Midwest caused a 13% drop in corn yields



Exhibit 4: Industries Most Impacted

²⁵ [CDP Report](#)

²⁶ [Deloitte](#)

²⁷ Interviews with Three Experts from Consulting Firms and Wells Fargo

²⁸ Interviews with Two Experts from a Consulting Firm and Wells Fargo

²⁹ Interview with Consulting Firm Climate Specialist

³⁰ [National Climate Assessment](#)

³¹ Interview with Professor from Loyola Marymount University

³² [National Climate Assessment](#)

and a 3% decrease in soybean yields.³³ Through their impact on growing conditions, these weather anomalies increase the risk of unavailability and unprofitability of major crops, hurting the overall profitability of the agricultural sector.³⁴

Beyond agriculture, **the insurance industry may be largely affected** by climate change. Insurance companies have a responsibility to compensate for damages in the event of a catastrophe or accident. However, **climate change has increased the likelihood of these events**; in 2022 alone, the United States experienced at least \$1 billion of damage due to abnormal weather events.³⁵ In response, insurance companies have already begun to deny their services to certain states, as higher frequency acute risks from climate change force more payouts, decreasing profits. However, because the effects of climate change are inescapable in the long run, insurance companies cannot choose the “avoid” option indefinitely and must eventually face the emerging climate risks. **As insurance companies bear the brunt of risk assessment, they will have to update their risk metrics** in order to successfully adapt.³⁶

5.1.1 Exemplary Strategies

Many businesses have been making significant strides to adapt to climate change and reduce their overall emissions. A good example of a business responding to climate change is Entergy. **Following an astounding US\$2 billion in damages from hurricanes Katrina and Rita, Entergy has methodically invested in researching climate resilience as a response to extreme future weather events.** They retired older facilities and invested in low or zero-carbon generating units that are less vulnerable to storms and floods to prepare for future weather risks.³⁷

Similarly, in a series of business case studies for climate change mitigation, **the Organization of Economic Cooperation and Development (OECD) cited a leading yet unidentified Japanese IT company as a strong example of business response to climate change.** The company tried to achieve sustainability in its supply chain by requesting suppliers to reduce emissions and only working with suppliers that follow the company’s Green Procurement Guidelines.³⁸ **Moreover, the firm pledged net-zero emissions, acting on this pledge by transitioning to renewable energy and increasing efficiency through AI and other emissions-reducing technologies.** Not only do these sustainability actions make the acting companies more green, but these actions also influence competing businesses to follow suit to appease the public eye.

The fashion industry, notorious for being one of the largest contributors to waste and greenhouse gas emissions, provides further examples of successful climate strategies.³⁹ In recent years, **Patagonia has taken the lead in combating these issues. 87% of their products are made using green materials** such as organic and Regenerative Organic cotton, recycled polyester, and recycled nylon. In a statement on their oil usage, they stated their goal of reaching **100% green materials by 2025, reducing the firm’s emissions by 15 percent.**⁴⁰ Patagonia’s efforts to reduce their carbon footprint extend beyond just their products. Overall, they plan to achieve an 80% reduction in greenhouse gas emissions from their stores, offices, and distribution centers by 2030 as compared to 2017.³⁸

³³ [USDA](#)

³⁴ [Pew Research](#)

³⁵ [NOAA](#)

³⁶ Interview with Wells Fargo Climate Specialist

³⁷ [Entergy](#)

³⁸ [OECD](#)

³⁹ Interview with Consulting Firm Climate Specialist

⁴⁰ [Patagonia](#)

Further examples of business response to climate change include site relocation to avoid climate risks and a **shift in investment from high carbon footprint business units to clean technology**.⁴¹ However, skeptics of high carbon footprint business unit divestment argue that this strategy creates no true change, as the business unit divested still has the same climate impact when operated by the buyer organization. In this case, total carbon footprint is the same but the divesting company now “appears” decarbonized.

Lastly, while many companies are making positive efforts to reach net-zero emissions, **others have been criticized for engaging in greenwashing**. Greenwashing is deceptively marketing products as being greener or more environmentally friendly in the hopes of appealing to a wider array of consumers. While many companies participate in greenwashing, **this deceptive practice can be combated by drawing direct attention to authoritative figures within culpable organizations who have the ability to make systemic change**.⁴² Moreover, business leaders should develop a greater understanding of existing greenwashing practices in their industry to avoid deceptively marketing their products.

5.1.2 Importance of ESG Performance

Businesses are adapting to the growing importance of Environmental, Social, Governance (ESG) strategies, the backbone of sustainability in the corporate world. According to a Nielsen study, **66% of consumers may be willing to pay more for products from sustainable companies**.⁴³ Driven by the assumption that consumers express their values and priorities through their purchasing choices, **companies have acknowledged their influence on consumer behavior and introduced eco-friendly products at premium prices**.⁴⁴

There is a positive relationship between the success of a company and its ESG efforts. Consumers are more likely to purchase from brands that publicize sustainable products, which aids in bolstering their popularity and growth. A meta-analysis conducted by researchers at New York University found that **58% of corporate studies on the relationship between ESG and financial performance found a positive relationship**, while only 8% found a negative relationship (the remaining 34% found neutral or mixed results).⁴⁵ In other words, the current evidence strongly suggests that companies with strong ESG practices outperform on the market. A potential reason for this could also be that ESG efforts, such as switching to renewable energy sources, are often more cost-effective in the long run. Another reason is that **ESG ratings are used by institutional investors** whose strategies may revolve around investing in companies that demonstrate ESG success.⁴⁶ According to a KPMG U.S. ESG and Financial Value Survey in 2023, a growing number of business leaders believe ESG engagement is currently delivering financial value in areas such as M&A efficacy, access to new capital, and customer loyalty, with expectations of greater benefits in the coming years.⁴⁷ Furthermore, a McKinsey report highlights that over **80% of chief investment officers are willing to pay a premium for companies with a clear ESG-financial performance link**, underscoring ESG's role in enhancing company valuations.⁴⁸ In essence, a comprehensive ESG strategy is not just a moral imperative but a crucial component of business success in the modern global economy.

While ESG is a framework that measures the overall sustainability of a company, Corporate Social Responsibility (CSR) is more of a sustainable strategy that businesses can implement. For example, a company

⁴¹ [CDP](#)

⁴² Interview with Loyola-Marymount University Professor

⁴³ [Food Marketing Institute](#)

⁴⁴ Interview with Consulting Firm Climate Specialist

⁴⁵ [NYU Stern](#)

⁴⁶ [Harvard Business Review](#)

⁴⁷ [KPMG](#)

⁴⁸ [McKinsey](#)

setting goals to reduce carbon emissions by creating strategies to shift to solar and wind energy would fall under CSR. On the other hand, measuring the amount of carbon emissions that company successfully cut compared to industry peers would fall under ESG. **Failure to abide by CSR can lead to a damaged brand image and outraged customers** due to the importance customers place on ethical behaviors, environmental issues, and social justice. 73% of customers would change their consumption behavior to protect the environment, and 49% are willing to pay more for a sustainable product.⁴⁹ In addition, combating climate change is especially important for ESG ratings. An example is the Carbon Disclosure Project (CDP), one of the major ESG ratings which measures a company's climate risks and greenhouse gas emissions. **Poor ESG ratings can impair a business's reputation and lead to investor divestment** – a study done by PwC found that **49% of institutional investors would divest from companies if there was no sufficient action taken in line with ESG initiatives.**⁵⁰

5.2 The Ongoing Debate: Free-Rider Problem

The industries facing the greatest risks from climate change are not always the largest perpetrators. While suppliers, agricultural producers, and insurance firms may face some of the largest challenges from climate change, industries like energy and transportation contribute the most to the increase of carbon emissions. With this in mind, there is an ongoing debate around just how much industries can quantify their responsibility for taking care of the world. Is there a line between government policies, corporate responsibility, and the collective human contribution? The first issue is recognizing how to properly mitigate or adapt successfully to climate change by utilizing operational alternatives, and the second issue is addressing the global free riding problem that makes it difficult for the global community to agree on who should pay the costs of mitigation and adaptation.⁵¹ **Two experts interviewed explicitly recognized the free-rider problem regarding global climate change,** reiterating the need for the global community to collectively reduce individual carbon footprints as a condition for the successful implementation of zero-carbon efforts. Therefore, given that collective action is absolutely necessary to save the planet, it becomes evident that **the costs of inaction in the face of climate change far outweigh the costs of proactive measures.** In this landscape, while the costs of reducing emissions must be incurred by particular corporations, the benefits will be experienced by all.

What will collective action look like in practice? First, the green energy transition will rely heavily on **investment in capital intensive decarbonization solutions** including broad renewable development, green hydrogen usage, and energy efficiency improvements.⁵² In addition, the race to zero greenhouse gas emissions by 2050 will likely require an annual global investment of over \$5 trillion in the energy sector,⁵³ and truly reaching net zero emissions will continue to **require investments and research and development by companies in all industries.** According to a climate specialist from a leading strategy consulting firm, as larger companies make shifts towards improvements in their supply chain, smaller players begin to follow the trend.⁵⁴ This model of collective investment and leadership from top firms will help all businesses avoid the dangers of climate change.

⁴⁹ [Harvard Business School](#)

⁵⁰ [PwC](#)

⁵¹ [Harvard](#)

⁵² [Deloitte](#)

⁵³ Ibid.

⁵⁴ Interview with Consulting Firm Climate Specialist

6. Climate Change and the War for Talent

6.1 Generational Differences in Attitudes and Behaviors

There are significant differences between different generations' attitudes towards climate change. A study done by the Pew Research Center found that 89% of Generation Z and 81% of Millennials believe that climate change is and will continue to be a major threat to Earth, compared to 62% of Baby Boomers.⁵⁵ In general, **younger generations perceive the seriousness of climate change more than older respondents, who are more skeptical and less concerned** about climate change; another study found that 58% of Americans ages 18-29 view global warming as a serious problem as compared to just 38% of Americans ages 50 and older.⁵⁶

This translates to differences in policy priorities and activism among younger and older generations. 47% of Gen Z have contacted some form of public official about climate change compared to just 15% of Baby Boomers.⁵⁷ A key reason for these differences is the varied experiences between generations. Younger individuals have been able to witness the impacts of climate change first hand and early on in their key development years through environmental changes, while older generations are likely only noticing changes in the latter parts of their lives. Thus, the impacts of climate change have greater implications on life planning and decision-making for the younger population. Apart from being more vocal about their climate concerns, the Yale Program on Climate Change Communication found that **younger Americans are more likely to support climate change policies and initiatives than older Americans.** For example, 80% of younger Americans support the regulation of carbon dioxide as a pollutant as opposed to 65% of older Americans.⁵⁸

These generational differences in attitudes toward climate change have profound implications for companies looking to recruit new talent. As Gen Z and Millennials increasingly enter the workforce, they bring with them a new set of values through which they perceive the world. **Companies looking to gain an edge must adopt this lens in order to critically evaluate how their practices might be perceived by this new class of workers.**

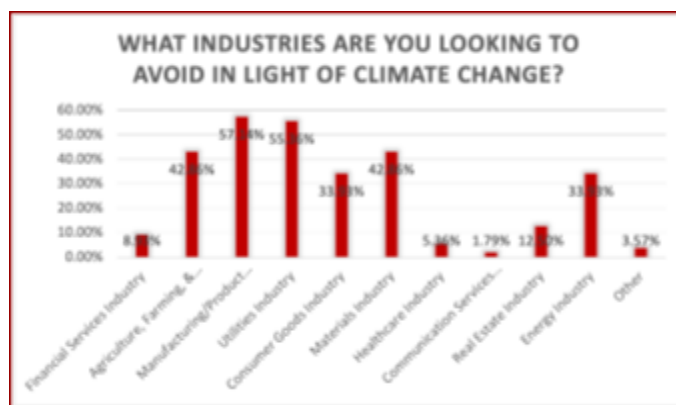


Exhibit 5: Student Survey Responses - "What industries are you looking to avoid in light of climate change?"

When surveyed about the industries that students are looking to avoid in light of climate change (Exhibit 5), there were large differences in responses based on (1) the perceived level of disruption from climate change faced by

⁵⁵ [Pew Research](#)

⁵⁶ [Pew Research Center](#)

⁵⁷ [Pew Research](#)

⁵⁸ [Yale](#)

different industries and (2) the perceived environmental impact of those industries. Under the first point, **57% of students surveyed said they would avoid the manufacturing/production industry, and 55% said they would avoid the utilities industry**, indicating their belief that these industries will be the most disrupted by climate change. Under the second point, **only 5% said they would avoid the healthcare industry**, with many students citing their perception of healthcare as a low-emissions industry even though the industry, in reality, produces significant emissions.

These results reveal that Gen Z's climate change concerns can significantly influence their career choices. **Just as they evaluated industries based on perceived carbon emissions, students may apply similar discernment when choosing between companies, favoring those with strong sustainability credentials.** Businesses, therefore, face a critical need to demonstrate their commitment to environmental responsibility, both in practice and in their messaging. Companies that successfully align with these values can attract and retain young talent who prioritize environmental considerations in their career decisions.

6.2 Student Perceptions of Business and Climate Change

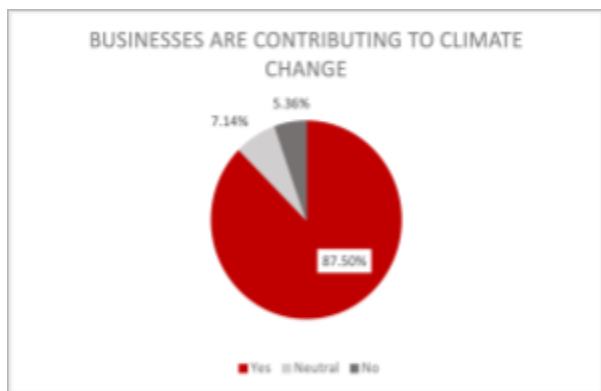


Exhibit 6: Student Survey Sentiment - "Businesses are contributing to climate change"

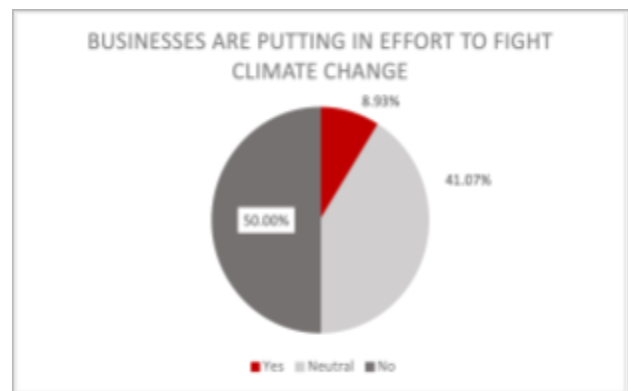


Exhibit 7: Student Survey Sentiment - "Businesses are putting in effort to fight climate change"

Looking at student perceptions of the private sector more generally, **88% of respondents believed that businesses are contributing to climate change** (Exhibit 6). In addition, while 96% of students believed that businesses should be involved in fighting climate change, only 9% felt that businesses are putting in an effort to do so (Exhibit 7). On the other hand, **seven out of nine experts interviewed claimed that while businesses contribute significantly to climate change, it is difficult to quantify just how much businesses play a role in its perpetration.** These experts stressed the collective responsibility of all humans, not just corporations, in addressing climate change. Based on a combination of student survey responses and expert interviews, an "adequate response" to climate change could vary on a case-by-case basis for the corporations most impacted by climate risks.

A large number of students believe that both the energy and utilities industries are best inclined to fight climate change, with 68% of surveyed students selecting the energy industry as one of their choices and 55% selecting utilities (Exhibit 8). While these industries tend to be especially highlighted when thinking about climate change, **our experts repeatedly stressed that companies within every industry must play their part.** The energy transition will only be successful if executives at all types of companies take steps to reduce greenhouse gas emissions within their internal operations. This means moving away from fossil fuels and towards renewable

energy sources such as solar and wind power.⁵⁹ Often, this may take the form of more mundane yet foundational changes. For example, a climate specialist from a top strategy consulting firm stressed that while high-visibility initiatives in areas such as carbon capture are important, what's often overlooked are initiatives like the construction of energy-efficient buildings and office spaces that prevent carbon emissions from forming in the first place.⁶⁰

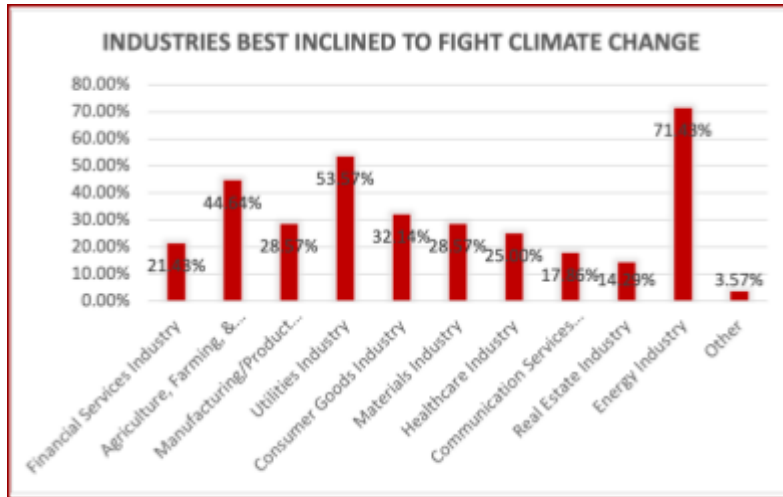


Exhibit 8: Student Survey Responses - "Which industries and companies do you feel are best inclined to fight climate change?"

Therefore, to enhance business resilience, **business leaders must take a comprehensive look at their impact on the environment across the entirety of their operations.** They must implement climate change adaptation plans that connect and engage internal and external stakeholders, as well as suppliers, as adaptation can affect the entire value chain. Lastly, companies must inspire customers by introducing sustainable products and services, launching climate education campaigns, and providing greater transparency in their progress towards reaching emission reduction targets. **Only then can businesses shake their perception among students as both contributors to climate change and passive bystanders in its mitigation.**

6.3 ESG, CSR, and Firm Competitiveness

6.3.1 ESG in Talent Acquisition

As corporations, financial institutions, and the media have placed greater importance on socially responsible business practices, **ideas of ESG and CSR have trickled down to education.** Many undergraduate and graduate business schools around the world now emphasize the importance of these concepts, with certain schools making social governance classes mandatory to earn a degree.

The prevalence of ESG and CSR in the business world raises the question of how much students value ESG in their job search. Considering other factors such as compensation, exit opportunities, and prestige, some students entering the job market may deprioritize ESG in order to chase factors that will provide them with intrinsic, tangible benefits in the short and long run. As shown in Exhibits 9 and 10, **a majority of Rutgers students surveyed indicated that ESG and climate-related initiatives are not major criteria in their job search.** These results are consistent with similar studies, such as those conducted by the University of Houston⁶¹ and the

⁵⁹ NRDC

⁶⁰ Interview with Consulting Firm Climate Specialist

⁶¹ University of Houston

Australian Catholic University,⁶² suggesting the representativeness of the Rutgers sample. Based on this evidence, it can be concluded that ESG and CSR do play a role in firm selection, but may not be the leading factor for many students.

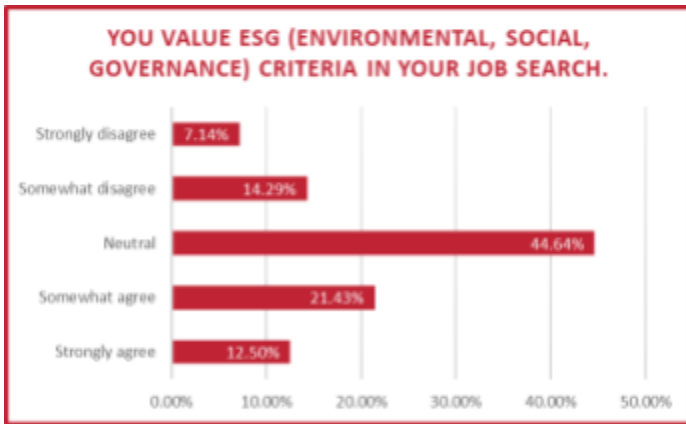


Exhibit 9: Student Survey Responses in Likert Scale - "You Value ESG Criteria In Your Job Search"

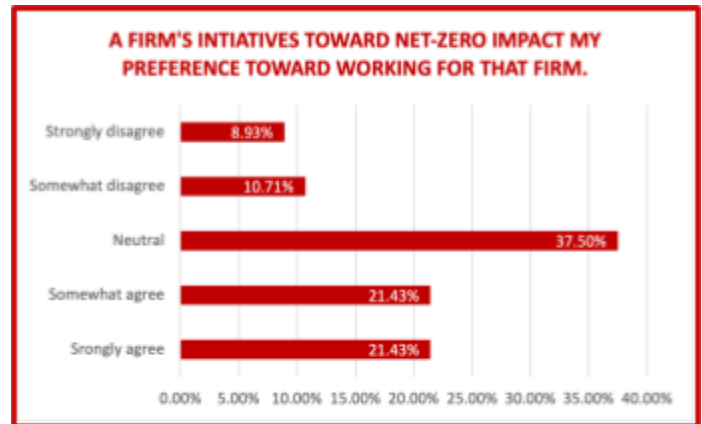


Exhibit 10: Student Survey Responses in Likert Scale - "A firm's initiatives toward net-zero impact my preference toward working for that firm"

Interestingly, ESG education may play a role in shaping the importance of ESG as a job selection criteria for students. Professor Tianhao Yao of Singapore Management University finds that MBA students exposed to ESG coursework were more likely to choose and stay in roles at high ESG-performing companies.⁶³ This implies that **ESG may become a more important job selection criteria in the future** as its premises are taught more widely in academic institutions. Thus, while an ESG strategy is unlikely to attract significant talent on its own, **when combined with other important factors, it can help companies stand out from competitors in the fight to recruit top talent.** As employees become more and more conscious of the effect their work has on the world, companies can demonstrate how their products or services are not only useful, but clean and green.

6.3.2 Competitive Advantage of ESG Performance

Aside from their impact on appealing to consumers, attracting investors, and acquiring talent, ESG strategies have even more benefits that help them establish a competitive advantage. Two experts interviewed collectively agreed that **ESG initiatives serve to benefit the health of employees in physically intensive jobs and allow companies to retain more talent.** This increase in employee satisfaction can directly improve financial performance: a study done by Alex Edmans of the London Business School found that companies on Fortune's "100 Best Companies to Work For" list generated **2.3 to 3.8% higher stock returns than their peers over a 25+ year timeframe.**⁶⁴ Companies that think long term in this way, satisfying the needs of both their shareholders and their stakeholders, not only succeed financially but also add value to society by creating jobs, increasing tax revenue, and raising standards of living.⁶⁵ Consequently, **different governments frequently provide subsidies or grants for investment into sustainable practices,** with countries like Germany, the United States, and Italy investing over US\$40 billion dollars since 2013.⁶⁶

⁶² [ACU Scholarly Journal](#)

⁶³ [Thesis by Tianhao Yao](#)

⁶⁴ [McKinsey](#)

⁶⁵ *Ibid.*

⁶⁶ [Financial Times](#)

An example of a company which has realized this value and made an effort to improve its ESG practices is Apple. In 2013, following the rise of ESG concerns amongst the public and investors alike, Apple hired Lisa Jackson, an ex-EPA administrator to take on a role as VP of Environmental, Policy, and Social initiatives.⁶⁷ Apple's approach under Jackson's guidance has been multifaceted, **focusing on carbon neutrality across its global operations and a commitment to achieving this across its entire business and supply chain by 2030.** This includes reducing fossil fuel usage in product production, grappling with the environmental harm of metal extraction, and prioritizing recycling of device components. A key example of this effort is the MacBook Air with an M2 chip, which uses 40% recycled materials and has seen a 30% reduction in its emissions impact.⁶⁸ Apple has also managed to achieve a **100% increase in recycled rare Earth materials used.**⁶⁹ Their comprehensive strategy extends to the global supply chain and the entire lifetime of every device sold, symbolized by the green flower symbol on products that meet these standards.⁷⁰ **Overall, emissions have dropped 40% through FY2021, even with a 33% increase in net sales over the previous year,**⁷¹ demonstrating the potential of **aligning ESG goals with financial performance.**

7. Conclusion

Since the Industrial Revolution, **human activities have significantly increased carbon emissions,** leading to a rise in the Earth's temperature by 1.6 degrees Fahrenheit since 1880. As a result, land degradation has increasingly worsened and exacerbated ecosystems, biodiversity, and human settlements. Beyond the scope of land and water, **the impact of climate change has extended to the global supply chain,** disrupting industries and posing a substantial risk to economies. International treaties like the Kyoto Protocol and the Paris Agreement were created to address and stabilize the rising concentrations of greenhouse gasses, but the recent absence of global leaders representing the U.S. and China at COP 28 in 2023 has raised concerns about the lack of an authoritative approach towards climate change. On the other hand, the Biden Administration in the U.S. has attempted to prioritize climate action with the creation of the National Climate Task Force and the Bipartisan Infrastructure Law. **Climate change impacts the environment and poses economic threats, causing billions in damages annually, affecting health, food security, inflation, and widening the wealth gap between nations.**

The implications of climate change in the long run amplify major concerns for the future of businesses in all industries. Supply chains are particularly at risk as disruptions in one area would create ripple effects, trickle down to the rest of the chain. Changing weather patterns will inevitably impact harvests for the agriculture sector, but the broader effect would be on the availability of other goods as demand and prices fluctuate. If immediate steps are not taken to mitigate the effects of climate change, other trends including rising sea levels could harm the physical presence of certain businesses or their operations. **In response to these risks, some businesses have begun to perform additional risk assessments and negotiate with suppliers to better understand the effects of climate change on their business processes and cut emissions, respectively.** These strategies can serve as the basis for sustainable initiatives for a variety of sectors, and businesses should strive to begin implementing them with haste. It is in the long term benefit for all businesses to take steps towards lowering their overall emissions outputs and creating plans of action for goals they are aiming to achieve. **Companies that have already taken steps to greener alternatives have seen positive financial impacts,** namely long-run savings in areas such as energy costs and also greater demand for goods by consumers, given that these

⁶⁷ [Times](#)

⁶⁸ Ibid.

⁶⁹ [Apple ESG Report](#)

⁷⁰ [Techcrunch](#)

⁷¹ [Apple 2021 10-K](#)

products can now be advertised as sustainable. While businesses are mitigating the effects of climate change on their operations, **a vast majority of students and professionals believe that businesses are key contributors to climate change**, especially in major industries like energy, transportation, and oil and gas. Considering that these findings have been corroborated by other studies, businesses should assume that consumers are beginning to place a high value on environmentally conscious activities in companies. **To stay competitive and retain a consistent customer base, businesses should thus begin to identify problematic processes and begin developing strategies to promote shared values with consumers.**

In the contemporary business world, **it is imperative that businesses not only prioritize ESG concerns, but do so immediately.** These factors are increasingly and heavily shaping how and why prospective employees choose future employers, and inaction in placing these factors at the forefront of a company's priorities could mean the difference between becoming a market leader and being left behind as other institutions successfully attract talent. **As higher education institutions place a higher emphasis on ESG values in their curricula, future generations of the workforce will continue to factor these issues into their job search at an increasing rate.** Climate change is a multi-stakeholder matter. While some industries do not feel the immediate impact of climate change, all industries will eventually be affected in the long run. **In a larger sense, the climate responsibility does not solely fall on corporations, but rather on every person actively involved in the perpetuation of their own carbon footprint.**

8. About the Authors



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