Pursuing Net Zero Goals in Public Equities

The publicly traded firms in a handful of emissions-intensive sectors are responsible for about 60% of all global emissions. By allocating capital to climate solutions and carbon improvers in these sectors, investors can make progress toward their net zero goals, even if that leads to higher spot portfolio emissions than if they were to cut these emissions-intensive sectors altogether.

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A growing number of investors have made commitments to align their portfolios with net zero, the goal of mitigating climate change by transitioning to net zero greenhouse gas emissions. The question these investors face is how to most effectively achieve this goal—particularly in public equities, which is the largest asset class holding for most institutional investors.

As we've explored previously, greenhouse gas emissions are highly concentrated in a few key equity sectors that make up about a third of the public equity market. These sectors account for about 90% of public company emissions and about 60% of all global emissions. In today's report, we share our thoughts on how investors with decarbonization goals can approach investing in emissions-intensive sectors of the public equity market. There is an important role for investors to play in these emissions-intensive sectors; movement by these sectors to reduce greenhouse gas emissions could have the largest impact on real-world decarbonization, and access to capital is critical for them. **We see two key ways investors with net zero goals should provide capital in emissions-intensive sectors:**

1. **Allocating to climate solutions:** these are companies whose products and services directly support moving the global economy toward achieving climate goals. For example, utilities can contribute to the climate transition by generating power from renewables instead of fossil fuels, railroads are an energy-efficient substitute for moving goods around compared to aircraft or trucks, and construction firms can manufacture efficient insulation materials to reduce emissions from heating and cooling. These companies will play an important role in reducing some of the largest categories of greenhouse gas emissions, namely electricity and heat, transportation, and industry/construction, respectively. While there is no universal definition of climate solutions, companies' products can be systematically assessed through this lens to identify those providing the goods and services most impactful to achieving emissions reductions.
2. **Allocating to carbon improvers:** these are emissions-intensive companies on a clear and credible pathway to reducing their emissions in line with global net zero scenarios via changes in their production processes (reducing scope 1 and 2 emissions, e.g., an aluminum producer switching from coal to hydropower) and/or through a shift in their product mix toward climate solutions (reducing scope 3 emissions, e.g., a car company shifting to make electric vehicles). Assessing improvement paths is difficult, and all the necessary data is not always available. Yet we believe it is possible to identify carbon improvers based on a systematic evaluation of individual companies in terms of their transition goals (e.g., the nature of the transition ambitions, the technical and economic feasibility of the transition), their concrete actions taken to execute their goals, and, of course, progress toward the goals. Today, we see a significant universe of high-emitting firms with clear and credible pathways, and we would expect the universe to grow over the coming 12–18 months as more companies develop their plans. Through both capital allocation and engagement, investors can play an important role in ensuring that more and more companies take actions to decarbonize.

While a portfolio allocation that is overweight climate solutions and carbon improvers is likely to have higher spot emissions metrics than if investors were to take the common approach of simply reducing allocations to these emissions-intensive sectors, it is likely to have more impact on the net zero transition over time. The majority of climate solutions can be found in emissions-intensive sectors, as these are the companies creating the tangible products and infrastructure that are needed for a greener, net zero economy. And companies with the largest scope to decarbonize are, by definition, those with high spot emissions today. If climate solutions providers and carbon improvers are successful, they will see falling emissions over time while having a tangible impact on real-world decarbonization.

Net Zero Commitments Exist to Achieve Emissions Reductions in the Real World

A growing number of investors have made net zero commitments within their portfolios, namely commitments to accelerate the decarbonization of the economy. While these commitments are often expressed in the form of portfolio emissions targets—and can also reduce financial or reputational risk by aligning investors with the climate transition—the ultimate goal is to support emissions reductions in the real world.

> Paris Aligned Investment Initiative: *"**The primary objective is achieving emissions reductions in the real economy.** While different investors have varying scopes for undertaking action, the Framework should encourage investors to maximize their efforts to achieve the greatest impact possible."*
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> Net Zero Asset Owner Alliance: *"**It is important to understand the difference between reducing emissions in an investment portfolio and reducing emissions in the real economy.** While many mechanisms and strategies may contribute to lowering investment risks, meeting customer demands, or supporting climate targets, **they do not contribute equally to lowering emissions in the real economy**."*
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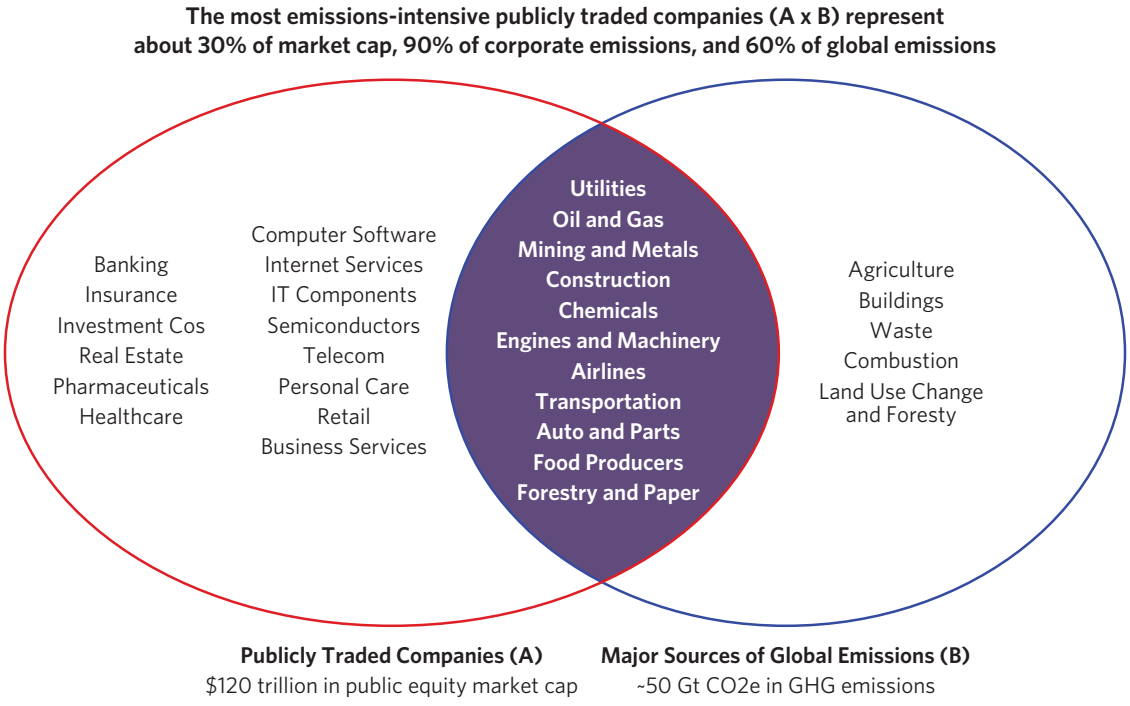
> Glasgow Financial Alliance for Net Zero: *"As part of the GFANZ recommendations and guidance for financial institution net zero transition plans, four key financing strategies have been identified that collectively define transition finance. These strategies are inclusive of financing, investment, insurance, and related products and services that are critical to **delivering real-economy emissions reduction in support of an orderly net zero transition of the global economy**."*

In recent reports, we explored how the global problem of climate change intersects with the assets that investors hold, focusing on public equities, which represents the largest portfolio allocation for most investors. We showed that greenhouse gas emissions are highly concentrated in a few key public equity sectors, with these emissions-intensive sectors accounting for about 90% of public company emissions and about 60% of all global emissions. **For net zero commitments to translate into real-world emissions reductions, investors need to focus on the sectors that represent a large share of the problem—the emissions-intensive sectors shown below.** You can read more about our methodology here.

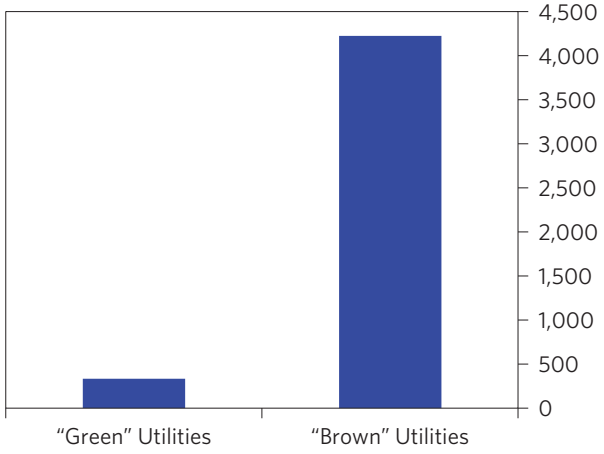


The road map for decarbonization, including in these emissions-intensive sectors, is increasingly clear, though the execution and implementation will be challenging.[1] Many of these shifts are already underway (e.g., renewable energy, electric vehicles), while others are more nascent and will require continued progress—and support from investors and policy makers—to become economically and technologically feasible (e.g., carbon capture). We cover this in more depth in the Appendix.

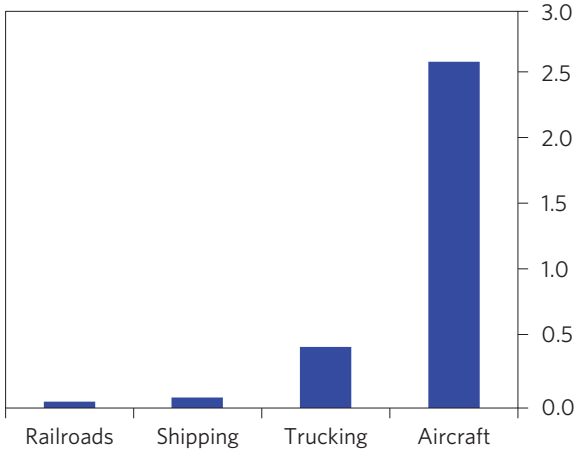
Identifying Climate Solutions in Emissions-Intensive Sectors

Climate solutions are companies whose products and services already generate positive climate outcomes today, by directly helping to lower the carbon footprint of the economy in emissions-intensive sectors where reductions are most needed. For example, electricity and heat is the largest source of greenhouse gas emissions globally. "Green" utilities that generate power using renewables are far less emissions-intensive than "brown" utilities that rely on natural gas or coal. Transportation is the next-largest source of greenhouse gas emissions; railroads emit far less carbon on a per-ton basis than other forms of freight transportation like shipping, trucking, or aircraft.

Median Scope 1 & 2 Intensity (Tonnes/$Mln Revenue)



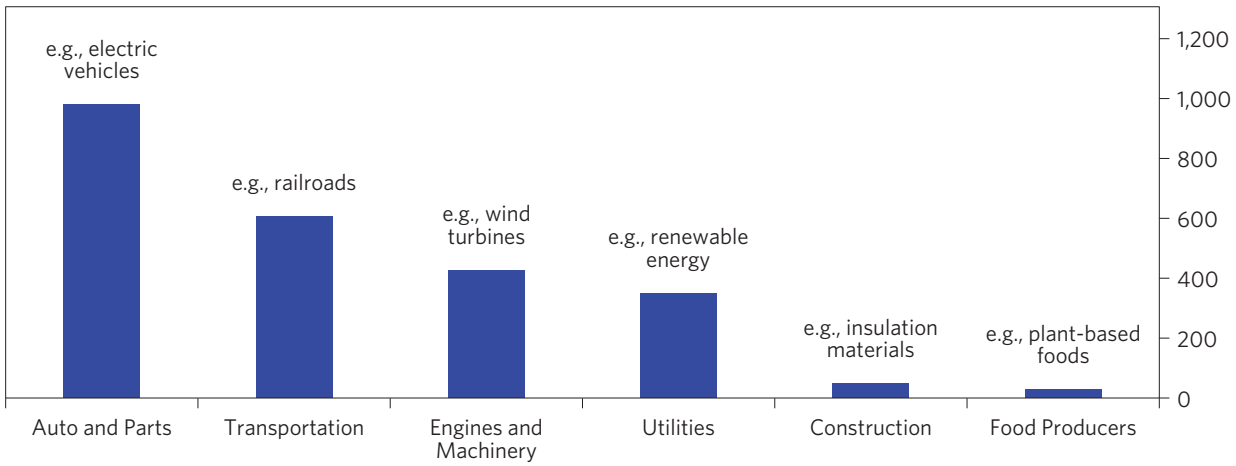
Emissions per Ton-Mile of Freight (Lbs CO2e)



Source: Bureau of Transportation Statistics

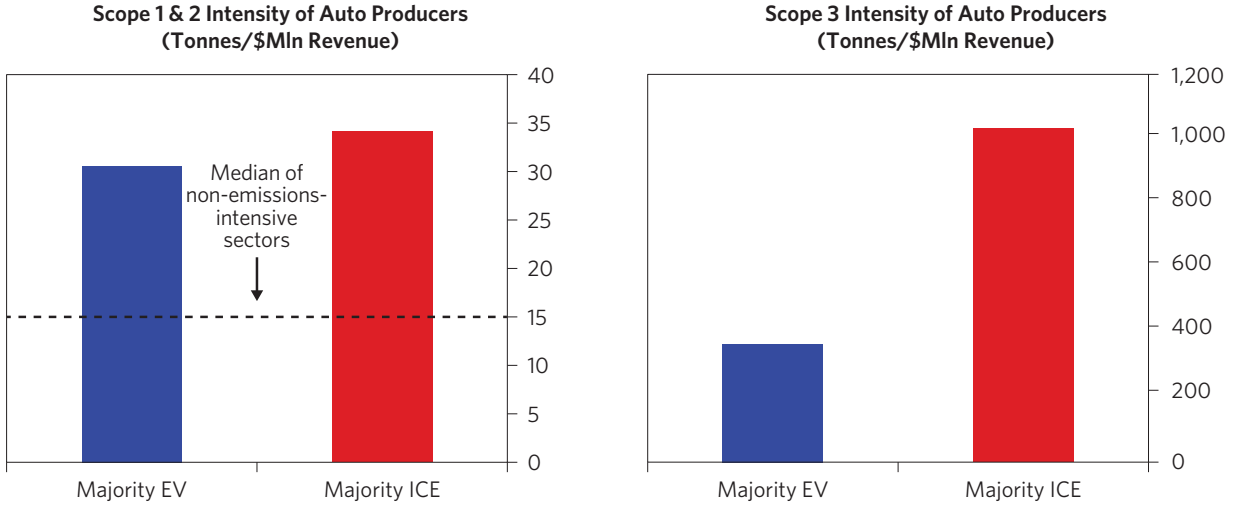
As shown below, there is already a large investable universe of climate solutions in these emissions-intensive sectors (totaling roughly $2.5 trillion or 8% of market cap within these sectors), which will only continue to grow as new technologies become increasingly scalable.

Market Cap of Companies with >20% Climate-Aligned Revenues (USD, Bln)



[1] There is quality work being done by a variety of sources to bring clarity to the decarbonization transition, such as the Mission Possible Partnership, the Institutional Investors Group on Climate Change, the Glasgow Financial Alliance for Net Zero, Speed and Scale, Project Drawdown, and the Transition Pathway Initiative, among many others.

Importantly, many of these climate solutions still require high emissions as part of the production process, and investors will thus still see a large carbon footprint associated with the direct operations of these companies (what is referred to as scope 1 and 2), despite the positive impact of these companies' products on reducing global emissions. For example, while electric vehicles (EVs) are associated with far lower downstream (i.e., scope 3) emissions—which is the main way they contribute to real-world emissions reductions—they generate roughly similar emissions to internal combustion engine (ICE) vehicles during production. Similarly, a utility that primarily generates "green" electricity but still retains some legacy assets in fossil fuels, such as gas and coal, can still have a relatively high emissions intensity. As such, we believe it is important for all companies, particularly in these emissions-intensive sectors, to also have transition plans. In our next section, we will go into more detail on how we would approach determining the credibility of these transition plans.

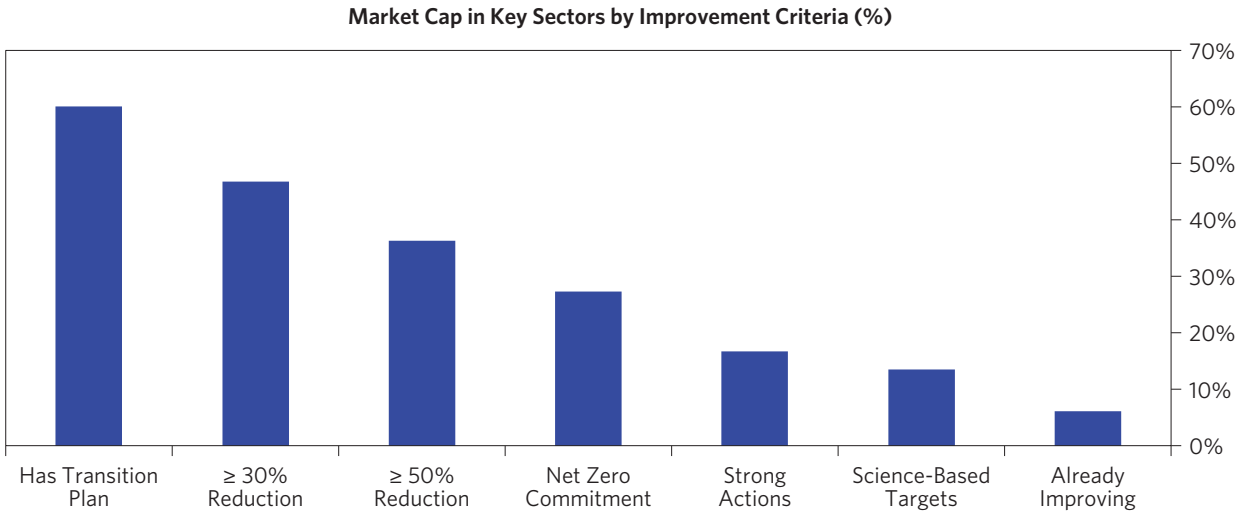


Identifying Carbon Improvers in Emissions-Intensive Sectors

Carbon improvers are companies on a clear and credible pathway to reducing their emissions in line with global net zero. These companies are especially important for achieving decarbonization goals, because their emissions will need to decrease for the world to reach net zero. By definition, companies with the largest scope to decarbonize are those with high spot emissions today—which is why improvements in emissions-intensive sectors are most important.

Assessing improvement paths is difficult; companies have every incentive to paint a positive picture of the future, but, of course, there is no guarantee that companies will live up to their emissions or other climate-related targets. Looking across companies in emissions-intensive sectors, about 60% say they have some form of a transition plan. These plans are more or less ambitious, depending on the firm—for example, only about half the transition plans call for at least a 50% emissions reduction—and a much smaller share of companies have had their plans approved by the Science Based Targets initiative[2] or have already produced significant results. Note that as more and more companies start to develop transition plans (an area where investor engagement is also likely to be key) or develop a track record of improvement as a result of prior actions, this universe is likely to expand over time.

[2] The Science Based Targets initiative is a global partnership of stakeholders, including the UN Global Compact and the Carbon Disclosure Project, that provides independent validation of emissions-reduction targets in line with climate science.



To reduce emissions, carbon improvers can pursue two types of changes, and some will need to pursue both:

1. **Changes in how a company produces its goods and services to reduce emissions in the production process (reducing scope 1 and 2 emissions):** for example, a mining company that currently uses a mixture of renewable energy and fossil fuels to power its smelters but plans to increase the former.
2. **Changes in their product mix to one that will reduce greenhouse gas emissions in the economy (reducing scope 3 emissions):** for example, an auto company that today makes ICE vehicles but plans to transition toward EVs.

In our research, we believe that the key dimensions to assess companies' transition plans are companies' intent, the feasibility of their announced plans, concrete actions taken to support those plans, and, of course, progress toward the goals. Our ability to assess these criteria also depends in large part on the information that companies are disclosing—not only at the headline level, but also in terms of the underlying methodology used to avoid inaccurate accounting. We recognize that environmental (and social) standards for corporate reporting are still evolving and that investors have a role to play by working with companies to improve the quantity and quality of these disclosures through active engagement.

Assessing Corporate Plans to Reduce Emissions

What to Examine	Key Questions
Feasibility	Is there a technically feasible abatement path?
	Is the abatement path financially viable?
Intent	Quality of targets (time frame, specificity)
	Are targets specific and actionable?
Concrete Actions and Results	Are signs of commitment, like ambition, reflected in corporate strategy, financial planning, capex/opex, and governance (e.g., incentive plans tied to net zero)?
	Are there signs of progress?

The auto manufacturing sector provides a good example of plans to shift a company's products/services. We assess whether an auto manufacturer will meaningfully pivot to selling more EVs with ambitious and specific targets (signaling clear intent), a proven and economical abatement path to achieving it (feasibility), and resources committed to supporting these goals (concrete actions).

For example, below is our read of one company that we assess is likely to meaningfully pivot its business:

- ***Feasibility:*** *the company has an existing lineup of EVs, and around 15% of the company's revenue is already driven by sales of EVs. It has substantial physical, intellectual, and human capital resources dedicated to EVs and is sourcing necessary input materials, reducing waste, and showing it has a technologically and economically feasible pathway to improving its alignment.*
- ***Intent:*** *the company has announced specific plans to increase EVs as a share of revenue by close to 50% by 2025. The targets are specific by region and segment, supported by senior management and the board of directors, coordinated across the company, and ambitious relative to the company's sector. The company has a Science Based Targets initiative-approved emissions reduction plan.*
- ***Concrete Actions and Results:*** *the company has already increased sales of EVs and has dedicated substantial capex on green goals (e.g., two-thirds of the value of existing capital stock).*

The metals and mining sector provides a good example of plans to shift a company's production processes. There are many relevant environmental dimensions to consider for mining companies, such as water usage, waste, and pollution. To identify climate improvers in the sector, we focus on whether the company will reduce the emissions intensity of its mining operations.

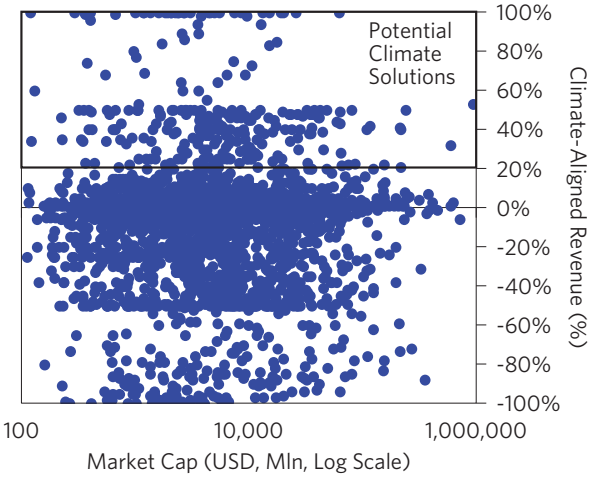
For example, below is our read of one company where the primary lever to reduce its emissions intensity is switching from gas-fired power plants to wind and solar energy. We assess it to be a likely improver given ambitious and specific targets (signaling clear intent), a proven and economical abatement path to achieving it (feasibility), and resources committed to supporting these goals (concrete actions):

- ***Feasibility:*** *there is a feasible path to produce metals with fewer emissions that depends on operational choices, such as their energy mix (e.g., switching from fossil fuels to renewable energy). The company has substantial partnerships with suppliers and technology partners and large existing renewable energy generation capabilities.*
- ***Intent:*** *the company has measurable and specific targets on greenhouse gas emissions reductions (15% reduction by 2025, 50% by 2030, net zero by 2050), an increase in ambition from a few years ago. The targets are specific by region and segment, supported by senior management and the board of directors, coordinated across the company, and ambitious relative to the company's sector. Executive compensation is tied to climate performance.*
- ***Concrete Actions and Results:*** *the company has strong actions on energy efficiency, including significant investment in renewable energy (75% of electricity currently from renewable sources) and green research and development into low-carbon steel (about 10% of annual capex in decarbonization, adding up to $7.5 billion by 2030). Although emissions in the sector are relatively hard to abate, scope 1 and 2 emissions have fallen 4% since 2018.*

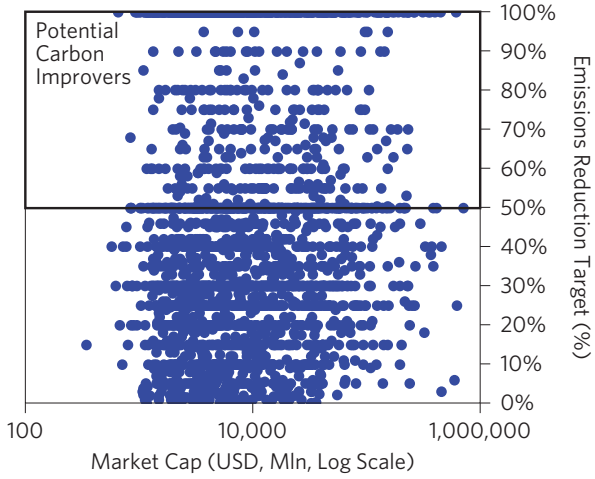
Climate Solutions and Carbon Improvers Can Be Assessed Systematically

While there is no universal definition of climate solutions and carbon improvers, we believe it is possible to assess companies systematically based on these dimensions. For example, one way of looking at whether companies' products and services are likely to contribute to curbing climate change is to examine companies' revenue alignment to climate-related metrics, such as UN Sustainable Development Goal 13 on Climate Action. Similarly, for carbon improvers, we can systematically assess companies' emissions reductions plans. The charts below lay out these two metrics (which are among the many possible metrics available to investors) across thousands of companies, creating a set of potential climate solutions and carbon improvers to assess further.

Climate-Aligned Revenue vs Market Cap



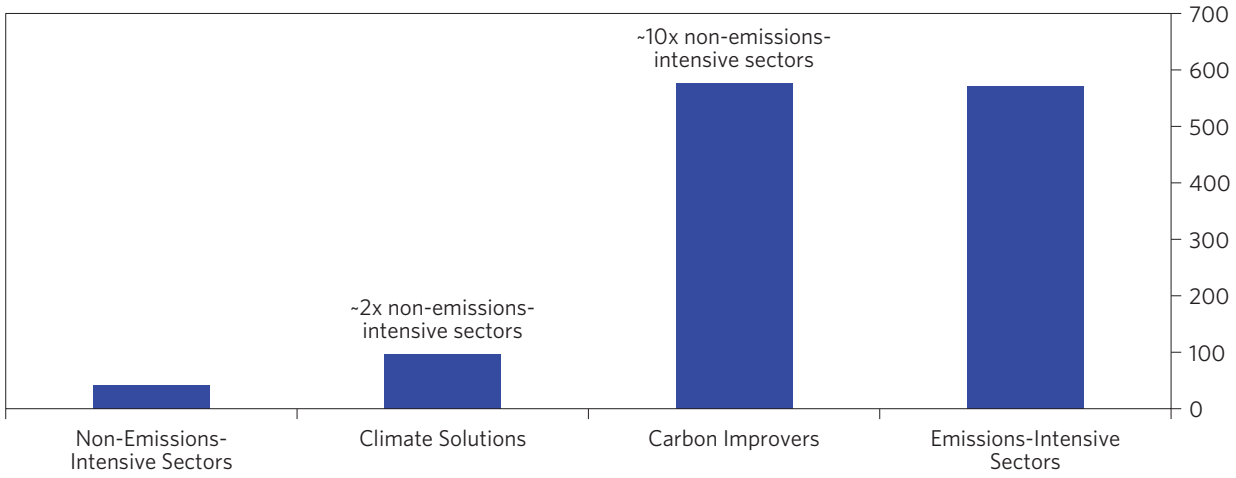
Emissions Reduction Target vs Market Cap



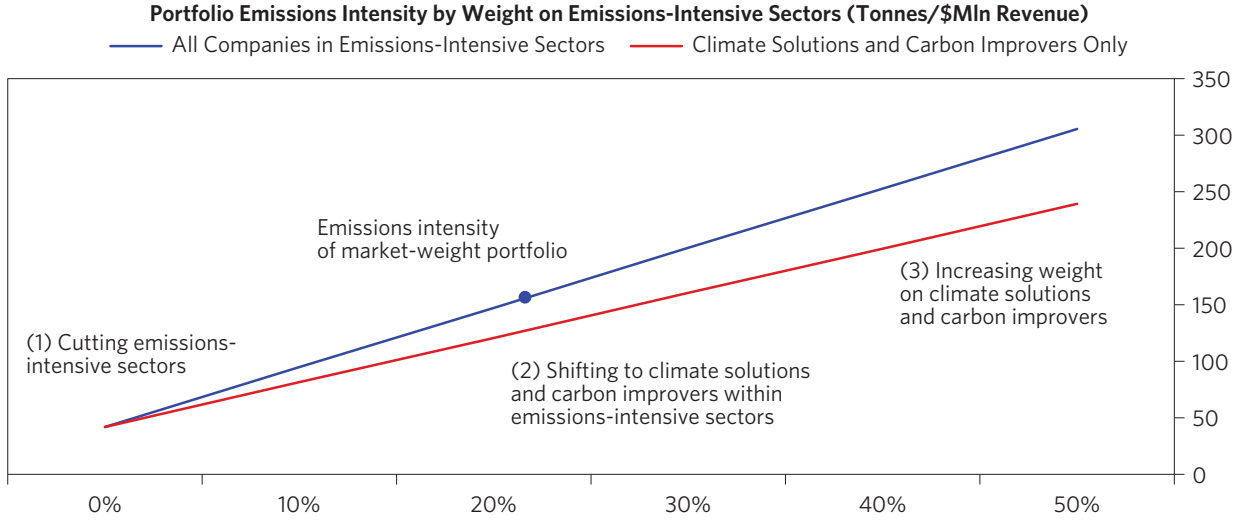
A Portfolio Allocation That Is Overweight Climate Solutions and Carbon Improvers Will Contribute to Real-World Net Zero, but Will Have Relatively High Near-Term Emissions Compared to Cutting These Sectors Altogether

A reality we believe investors must accept is that investing in climate solutions and carbon improvers in the emissions-intensive sectors that matter most for decarbonization will come with relatively high portfolio emissions in the near term compared to cutting these sectors altogether. These are areas of the economy (industrial processes, physically moving goods, producing energy, etc.) that are unavoidably more energy- and emissions-intensive than more knowledge- or service-based areas (finance, tech, etc.), which is precisely why abating emissions in these sectors is most impactful for achieving the goal of emissions reductions in the real world. As shown below, climate solutions and carbon improvers have a far higher emissions intensity than companies outside of these emissions-intensive sectors.

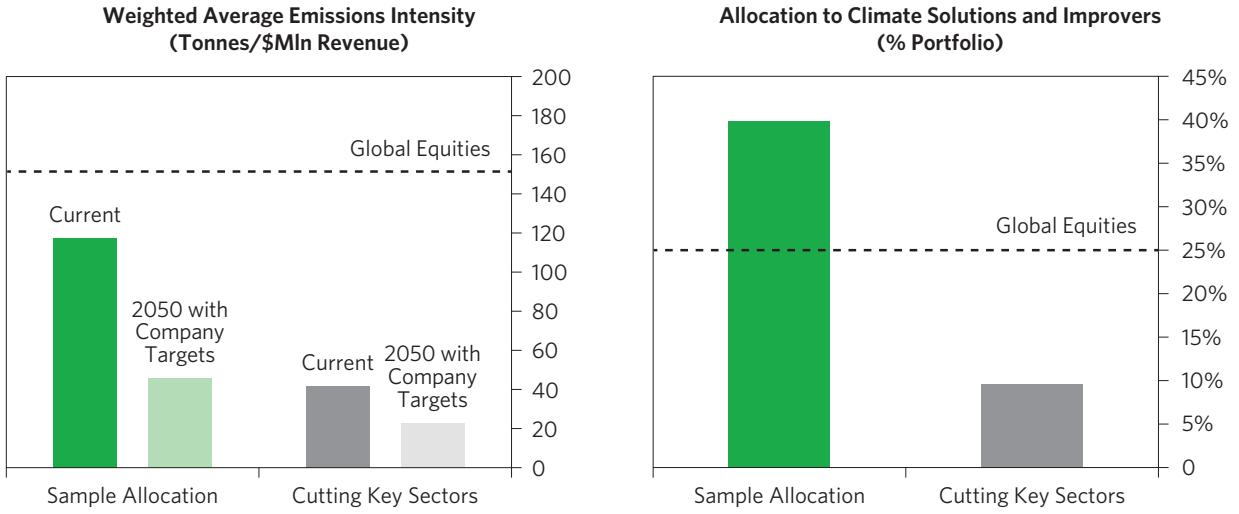
Emissions Intensity of Various Sector Slices (Tonnes/$Mln Revenue)



Investors can achieve dramatic reduction in spot portfolio emissions compared to the index by simply removing any exposure to emissions-intensive sectors (moving to the left on the blue line below). By doing so, however, they are effectively removing the link between the portfolio and the companies most important to achieving the decarbonization of the economy. In comparison, while climate solutions and carbon improvers have a lower emissions intensity on average than their peers in emissions-intensive sectors, portfolio emissions fall much less by shifting allocations toward them (shifting from the blue to the red line) and could even increase with higher allocations to them (shifting to the right on the red line).



Despite higher spot emissions than if investors were to take the common approach of simply reducing allocations to these emissions-intensive sectors, a portfolio allocation that is overweight climate solutions and carbon improvers is better aligned to the net zero transition. Below, we compare two general paths for investors on various metrics: 1) an allocation[3] that only holds climate solutions and carbon improvers within emissions-intensive sectors but overweights these companies meaningfully, such that they make up 40% of assets; and 2) an allocation that cuts emissions-intensive sectors from 25–30% of market cap to zero. Simply cutting emissions-intensive sectors has a more significant impact on reducing the portfolio's current emissions intensity, but at the cost of allocating much less capital to the carbon improvers and climate solutions that will lead to long-term decarbonization and also contributing less to products and services that are aligned with the climate transition. If these are the real-world outcomes that net zero-focused investors intend to encourage, we believe maximizing portfolio allocations to climate solutions and carbon improvers—and engaging thoughtfully with these companies—should take precedence over reducing a portfolio's current emissions intensity.



Cutting key sectors will lead to a lower spot emissions intensity but also a lower allocation to climate solutions and improvers, which are the companies that will have the largest impact on the real-world decarbonization trajectory

[3] "Sample Allocation" is a hypothetical equity portfolio based on Bridgewater Associates' proprietary sustainability assessment and portfolio construction processes and is not intended to represent any product offering. Perspectives based on Bridgewater's proprietary sustainability assessment process. Other sustainability assessment methodologies could be used and could produce different results.

Appendix

Below, we give examples of decarbonization pathways for companies in the emissions-intensive sectors via shifts in their products and services and/or production processes—some are credible and scalable, while others are still in early deployment stages or under development.

Examples of Products and Services and Production Process Changes for Companies in Emissions-Intensive Sectors

Category	Total Emissions (Gt CO2e)	Percentage Attributable to Key Sectors in Public Markets	Sector	Examples of Products and Services Changes for Companies	Examples of Production Process Changes for Companies
Electricity and Heat	15.6	58%	Utilities	Renewable energy (wind, solar, hydro, geothermal, tidal)	Flexible grids, energy storage; improved emissions efficiency
Transport	9.6	67%	Auto and Parts	Electric vehicles, fuel-efficient vehicles	Use of recycled aluminum and plastics
			Airlines	Novel propulsion aircraft such as hydrogen, electric (under development)	Efficient flight paths, sustainable aviation fuels (under development), greater fuel efficiency
			Transportation	High-speed rail, electric trains and trucking; low emission shipping (hydrogen, wind)	Better fuel management, increased freight capacity, anti-idling technologies
Industry and Construction	9.1	54%	Mining and Metals	Low-carbon metals (e.g., steel, aluminum)	Greater use of renewable energy, electric arc furnaces, increased recycling and re-use, better waste management
			Construction	Low-carbon building materials (e.g., cement) and insulation	Improved energy efficiency, better waste management, retrofitting existing buildings
			Chemicals	Low-carbon chemicals (e.g., green ammonia, bioplastics); alternative refrigerants	Higher recycling rates, efficient use of chemicals, reduced waste
			Engines and Machinery	Production of low-carbon inputs (e.g., wind turbines, solar panels); carbon capture (under development)	Greater use of renewable energy, lower emission manufacturing, increased recycling and re-use
Agriculture	5.8	28%	Food Producers	Plant-based foods	Methane capture/digestors, upstream use of precision agriculture, reduced food loss, lower fertilizer use
Fugitive Emissions (Energy)	2.9	64%	Oil and Gas	Pivot to broad energy solutions such as carbon capture, biofuels, and hydrogen	Methane leak detection and repair, vapor recovery units, reduced non-routine flaring
Land Use Change and Forestry	1.4	24%	Forestry and Paper	Recycled paper	Reduced illegal deforestation, managed forests, forest restoration
Other (e.g., Buildings, Waste)	5.9	—	Cross-cutting	—	Better waste management, efficient heating and cooling systems, building insulation, LED lighting

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