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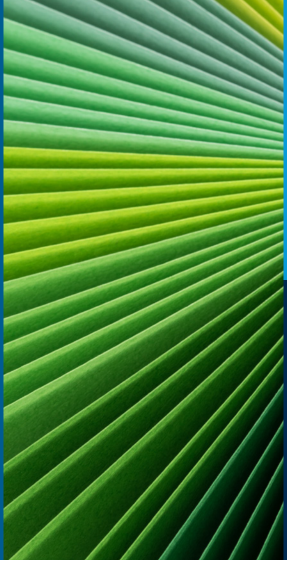

What are Avoided Emissions, and Why Should Companies and Investors Care?

INSIGHTS | PRIVATE EQUITY SOLUTIONS | July 2023

Climate change is affecting every aspect of the global economy, whether companies are prepared for it or not. Decisions makers are responding admirably with 127 countries and 917 of the largest companies setting net-zero targets, representing 88% of global emissions and 92% of GDP.[1] Despite these ambitions, the path to net-zero is unclear; however the solution clearly lies in two complementary goals:

1. **Removing Emissions** from the atmosphere through direct air capture, biochar, or natural carbon sinks
2. **Avoiding Emissions** entering the atmosphere through the scaling of climate solutions

Removing emissions can be achieved through either conventional methods, such as reforestation, or via new innovations like Carbon Capture, Utilization and Storage (CCUS). Both processes capture and store emissions to stop them re-entering the atmosphere. However, both lack the scale offset annual global emissions (~60bn t CO_2e).[2] As such, capital must be focused on avoiding emissions from entering the atmosphere at the source to achieve climate goals.

Understanding the scale of emissions being avoided is therefore critical for climate investors and companies. With impact and returns becoming intrinsically linked there is arguably outsized value in delivering both improved performance and reduced emissions for customers. Avoided Emissions analysis can unlock this value by measuring the quantity of emissions impacted by a solution and identifying the opportunities presented by global decarbonization.

The next generation of leading companies will be those that are doing more than just reducing their own emissions, they will be driving their customers towards net-zero. Analyzing Avoided Emissions helps identify those companies, allowing market participants to allocate capital to opportunities more effectively.

[1] Net Zero Tracker, as of June 2023.
[2] IPCC Climate Change 2022 Summary for Policy Makers Report, 2022.

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KEY TAKEAWAYS

- There is a significant opportunity for private capital scale decarbonizing solutions while at the same time accelerating growth
- Avoided Emissions measures the quantity of greenhouse gas ("GHG") impact a climate solution may generate over time
- Companies, investors and asset owners can better drive financial growth and sustainable performance through Avoided Emissions analysis

What are Avoided Emissions?

Avoided Emissions is a metric that quantifies the extent to which a product or solution is decarbonizing an existing process. They occur outside of a product's life cycle or value chain as a result of the use of that product.[3] Avoided Emissions are the difference in GHG emissions between a forecasted scenario where the subject product or solution is applied and a 'business as usual' case in which it is not. For example, a software solution that reroutes the transportation of goods from high emitting forms of transport, such as internal combustion engine trucks, to lower emitting ones, such as trains, would be expected to have a positive Avoided Emissions measure.

As a weight-based metric, it is measured in Carbon Dioxide Equivalent (CO_2e, see box) and allows the comparison of environmental impact of products across different sectors or geographies.[4]

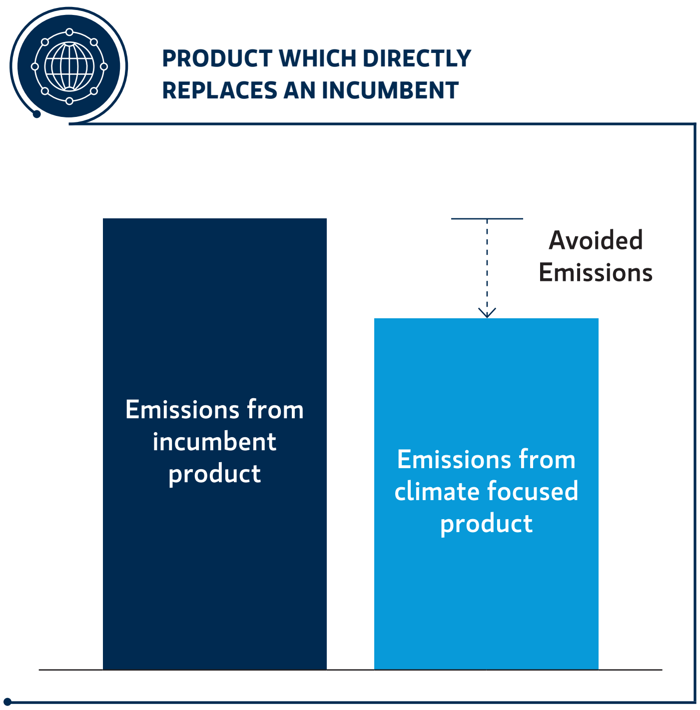
What is Carbon Dioxide Equivalent?

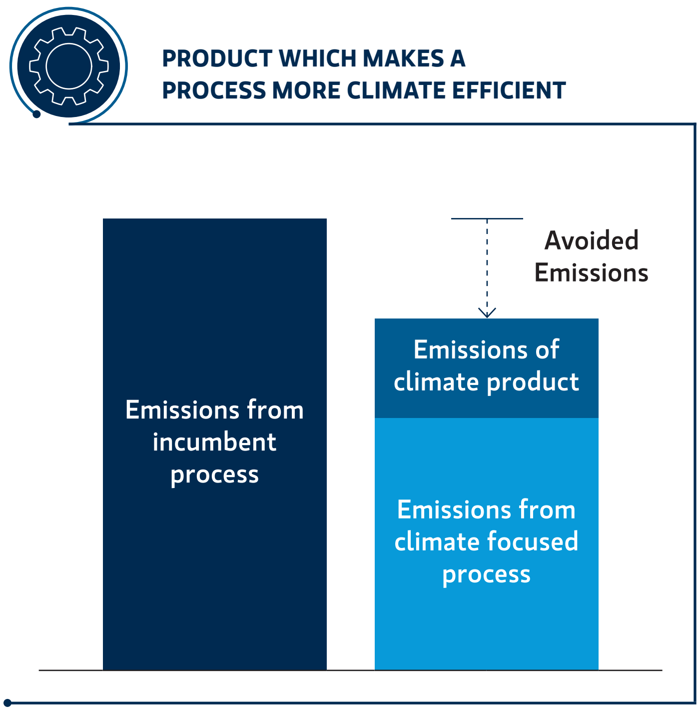
Carbon Dioxide Equivalent (CO_2e) is a metric used to standardize the climate effect from greenhouse gases. It converts different quantities of gases into CO_2 for ease of comparison.

For example, methane's effect on the climate is 25x more severe than CO_2 so has a higher CO_2e weight compared to CO_2.

Avoided Emissions are independent from Scope 1 – 3 emissions which are created from the product's lifecycle, and defined by the GHG Protocol, the current global standard for GHG emissions accounting.[5] They cannot offset the Scope 1 – 3 emissions of the company but do provide a full picture of how a company's products interact with the climate.

DISPLAY 1



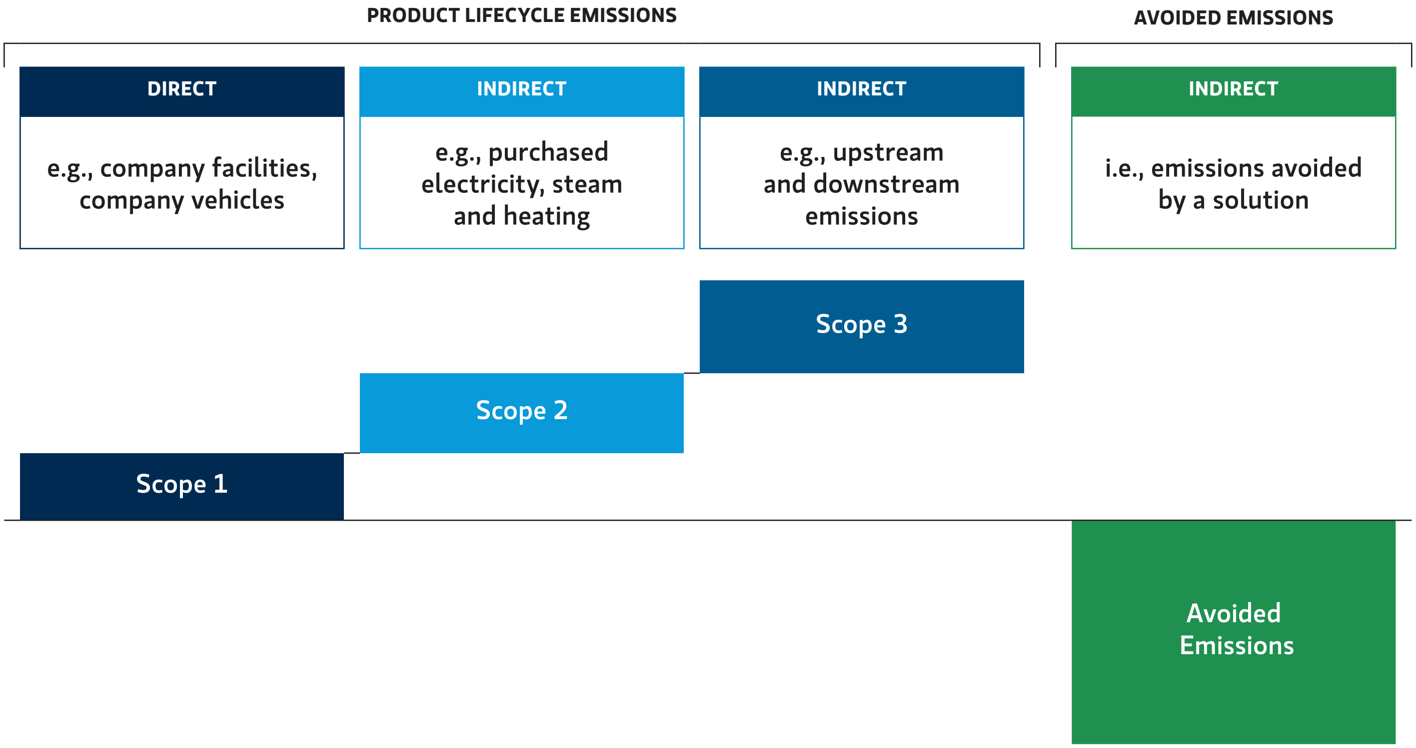


[3] Do We Need a Standard to Calculate 'Avoided Emissions', World Resources Institute, 2013.

[4] Eurostat, as of June 2022.

[5] GHG Protocol Guidance, as of June 2022.

DISPLAY 2

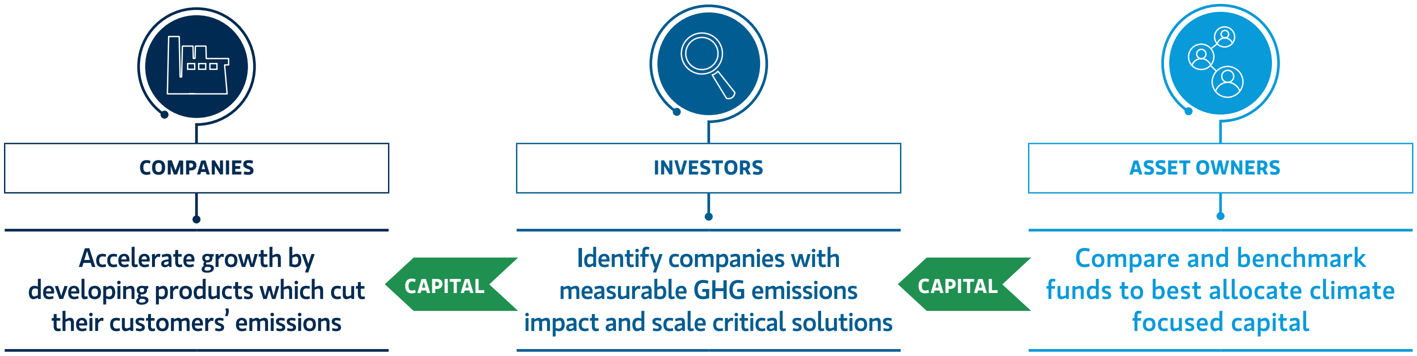


Despite this, we believe it is important that Scope 1 – 3 emissions are considered alongside Avoided Emissions. There is little benefit to scaling a product with significant avoided emissions potential if it emits a high quantity of GHGs during its production.

Numerous multilateral bodies and industry groups have published guidelines, methodologies, and requirements for widespread implementation of Avoided Emissions including the GHG Protocol, the World Business Council for Sustainable Development and Project FRAME. Their aim is to create the building blocks upon which governments, companies and investors can measure and report Avoided Emissions to allow more capital to flow to critical climate technologies.

DISPLAY 3

Use Case for Avoided Emissions Analysis



Why Should Companies, Investors and Asset Owners Use Avoided Emissions?

Avoided Emissions helps define which products or services have the greatest potential to decarbonize. It can be utilized by companies, investors, and asset owners to scale climate solutions.

Overall, each group gains from understanding climate impact in more detail and ensuring they assign capital, time, and resources to what is believed to be the best available solutions.

COMPANIES

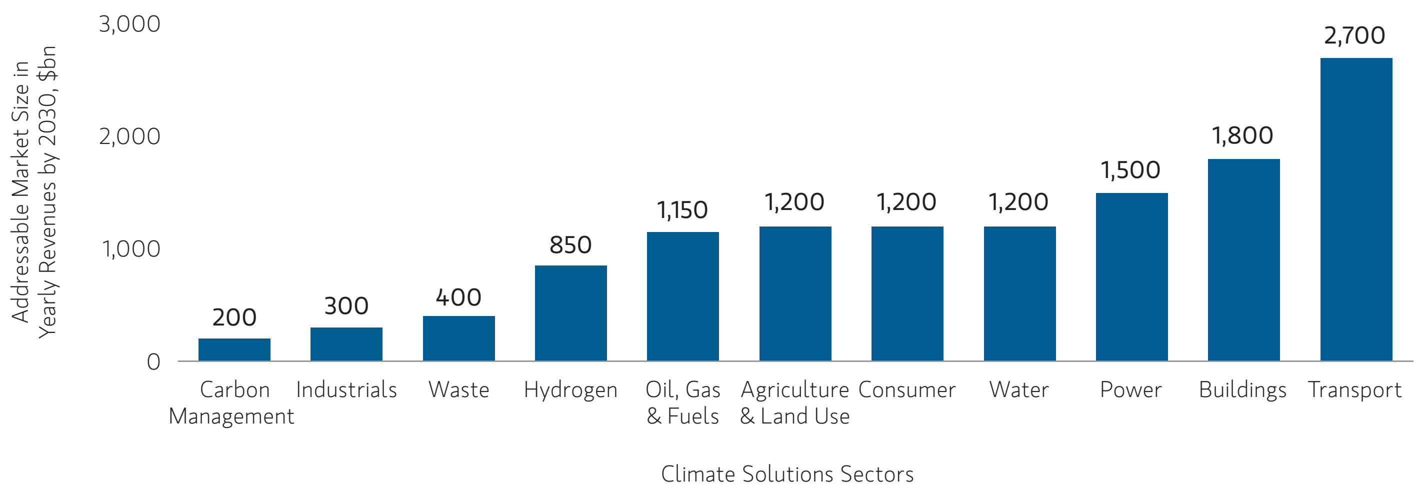
Large companies, such as those in the Fortune 500, are increasingly focused on reducing their emissions, either by their own choosing or in accordance with regulatory requirements. For example, Nestle recently announced a step away from "investing in carbon offsets…to invest in programs and practices that help reduce GHG emissions in our own supply chain."[6] Given climate is a theme that transcends sectors and geographies, this consideration is critical to long term success. These companies need ways of growing while also emitting fewer GHGs, and companies who can solve this problem for their downstream customers and clients have a significant opportunity.

To capitalize on this, management teams must be able to measure the impact their products create and Avoided Emissions can provide this insight. This becomes a very powerful tool for sales teams looking to drive growth and operational teams directing R&D because it quantifies the

DISPLAY 4

Addressable Market Size for Net Zero Focused Investments in 2030[7]

$ Billion



[6] Nestle statement, reported in Just Food Article, June 2023.

[7] Accelerating towards Net Zero, McKinsey & Co, June 2022.

CO_2e avoided from a product's use. Indicating to a customer that a product generates both cost and emissions savings is highly likely to be a competitive advantage. This represents the opportunity set for private companies looking to grow by solving the climate problem.

INVESTORS

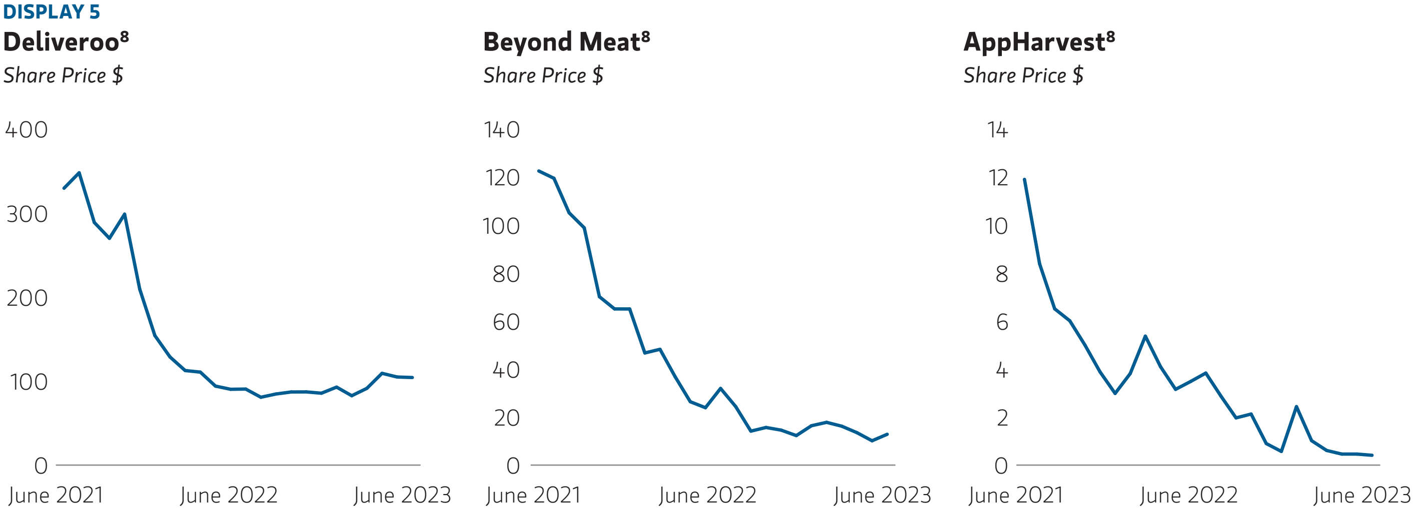
Investors must also accurately identify which companies are decarbonizing their sectors to ensure they find the most valuable climate technologies. Avoided Emissions analysis can provide this insight and drive decision making by focusing investors on sub sectors within themes which are most impactful and most valuable to an economy. In a world which looks to decarbonize, we do not believe it is a coincidence that many of the more trend-based sustainability sectors in recent years (e.g., rapid grocery delivery, vertical farming, branded plant-based meat) have suffered significantly in the recent downturn. The Avoided Emissions analysis of these sectors shows limited carbon impact in many cases and market participants have arguably recognized that there are better opportunities elsewhere.

On a more granular level, Avoided Emissions analysis can aid in identifying which products drive improved performance through decarbonization. Currently European consumers are presented with numerous options to reduce their energy bills and many will choose the most cost-effective. To identify that solution, investors can use Avoided Emissions analysis which quantifies the GHG reduction of competing products.

For example, installing new insulation can avoid ~7% of household emissions in the first year but has almost no effect after 5 years.[9] Comparatively, installing a new heat pump can reduce emissions associated with gas usage by up to 70% every year the product is in use.[10] Rational consumers are therefore unlikely to select new insulation given the cost benefit and investors who have this insight this can allocate capital effectively.

The analysis can be taken a step further by allowing investors to compare product level impact across sectors and geographies. GHG emissions have the same atmospheric impact wherever they occur, meaning investors can use Avoided Emissions analysis to compare the climate impact of a heat pump in the UK with an alternative cooking stove in Kenya. This comparative analysis is a powerful tool and one that can drive capital towards the most attractive climate solutions globally.

DISPLAY 5



Proxies for climate themes: Rapid grocery delivery (Deliveroo), Plant Based Meat (Beyond Meat), Vertical Farming (AppHarvest)

[8] Investing.com, as of June 2023.

[9] Assessing the effectiveness of energy efficiency measures in the residential sector gas consumption through dynamic treatment effects, Penasco & Anadon, 2023.

[10] How the energy crisis affects the case for heat pumps, Nesta, 2022.

ASSET OWNERS

Climate investing has seen significant growth in recent years with private market equity investors launching over 330 sustainability focused funds from 2019 to 2022.[10] The cumulative AUM is estimated to be over $270bn at present, without accounting for corporate capital, public equity vehicles, and credit funds that may make similar investments. Distinguishing between these funds has become an arduous task for asset owners who must compare a broad range of metrics, many of which are self-defined and fund specific. Building on this, several funds have committed to an impact theme (e.g., sustainability) but feel unable to define the non-financial metrics which determine their success.

Fortunately, asset owners focused on climate solutions have been presented with some unique factors to better assess potential decarbonization opportunities:

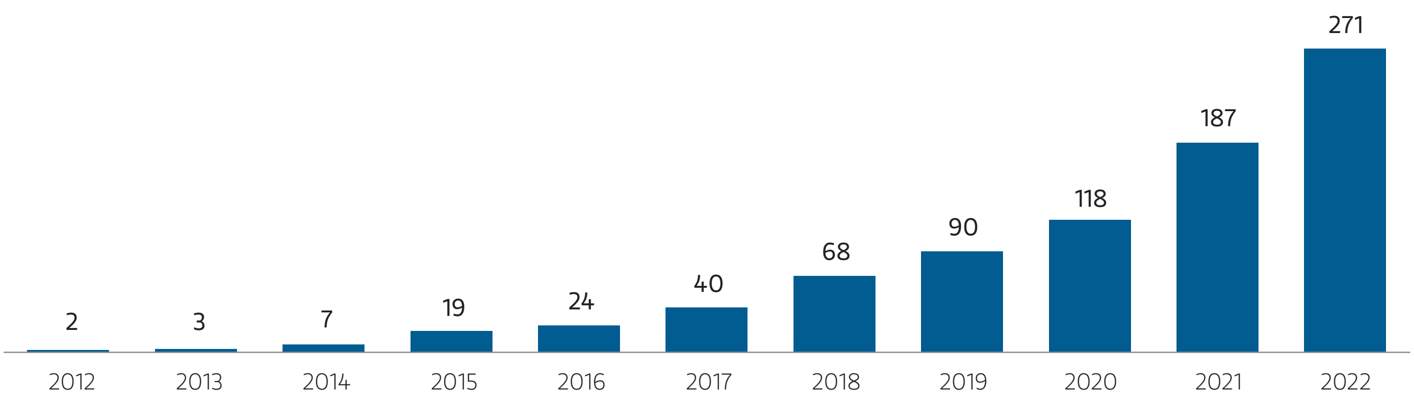
1. **Universal KPI** – Unlike other forms of impact a singular metric, CO_2e, can be used across geographies and sectors
2. **Measurement Guidelines** – Recognized institutions have defined how to measure and classify of GHG emissions
3. **Clear Goal** – While there are numerous interlinked factors driving climate change, reducing the emission of GHGs into of the atmosphere is a commonly agreed upon goal

These factors can combine to help owners understand which funds are effectively delivering impact and, importantly, measure their success in doing so. Investors should aspire to provide clear goals and transparent data, empowering asset owners with real insights. Given the link between returns and impact in the climate space, it is likely that owners may soon require incentive compensation to be aligned with both goals.

DISPLAY 6

Cumulative value in Environment, Social and Governance and Impact Funds[11]

AUM $bn



Conclusion

GHG emission reduction is moving from a consideration to a condition of investment and its awareness and implementation across various stakeholders is expected to grow. Avoided Emissions analysis can focus capital on the products or services which will help a company's customers achieve net-zero.

As with all carbon accounting, there is variability when calculating Avoided Emissions, but this should not detract from its power as a tool. Its use should guide companies to accelerated growth, drive investors towards key technologies and help asset owners select investments. Eventually, we'd like to see third party assurance for Avoided Emissions in the same way financial statements are audited.

Looking forward, we expect leading solutions will improve the competitiveness of their customers and reduce their emissions. Identifying these solutions is vital for companies, investors and asset allocators.

[11] 8 key factors for investing in climate change, McKinsey & Co, 2023.

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