The business case for carbon dioxide removal

4 key benefits of investing today

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Climate change is all around us. From increasingly severe weather to higher insurance premiums, we can feel the effects in our everyday lives.

Businesses face growing climate costs as well. In the U.S. alone, over 2.5 billion hours of labor across several industries have been lost to extreme heat. Globally, the latest models calculate worldwide economic losses from climate change will reach $38 trillion per year by 2050.

On the other hand, the momentum to fight climate change represents unprecedented commercial opportunities. Global targets to achieve net-zero emissions by 2050 have turbo-charged investments in climate technologies, fueling innovation and market growth. Venture capitalists and private equity deployed over $638 billion into climate tech startups in 2023 - a thirty-fold increase from just a decade prior. Moreover, the market for goods and services facilitating the transition to net-zero is estimated to reach $10.3 trillion by mid-century, representing 5% of projected global GDP.

Carbon dioxide removal and corporate climate action

How can firms navigate both climate risks and commercial opportunities? A science-based climate action plan serves as a roadmap to help companies adapt to a changing climate, mitigate risk, reduce carbon emissions, and position the firm for ongoing success. Such a plan allows firms to set realistic emissions reduction targets aligned with the Paris Agreement goals, while avoiding greenwashing by taking meaningful and measurable climate action.

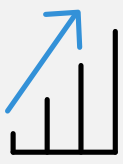
Critically, a science-based corporate climate plan should incorporate carbon dioxide removal strategies. The latest climate science has made it clear that alongside emissions reductions, we must also take steps to actively remove CO_2 from the atmosphere to address historic and unavoidable emissions.

Carbon dioxide removal enables the world to reach real net zero by 2050. For companies, the business case for investing in carbon dioxide removal centers on four main benefits: cost savings, growth, reputational power, and risk mitigation.

4 key benefits of investing in carbon dioxide removal

1
Save costs

2
Drive growth



3
Mitigate risk

4
Strengthen brand

From theory to action: calculating carbon dioxide removal ROI

Along this article, we will use a fictional company to illustrate how the outlined arguments can be translated into practice.

Let us assume that our fictional company is a company in the consumer industry, with annual revenues of $5 billion and annual emissions of 3 million tons (baseline year 2019).

To achieve its SBTi target of achieving net-zero emissions by 2050, our fictional company is building its portfolio of high-quality carbon dioxide removal, leveraged to neutralize its residual emissions. To this purpose, the company is investing $25m today to purchase 100 kilotons of high-quality carbon dioxide removal over the next 10 years (10 kilotons per year on average), at an average price of $250 per ton.

The firm is interested in estimating the return on its investment (ROI) in carbon dioxide removal.

1 Save costs by securing favorable commercial and financing terms

-0.7pp

cheaper **debt financing cost** for top quintile ESG performers worldwide

-0.4pp

cheaper **equity financing cost** for top quintile ESG performers worldwide

Investing in high-quality carbon dioxide removal can drive significant cost savings in many ways. Projections indicate that the carbon dioxide removal market will be heavily supply-constrained as early as in the next one to five years, driven by an exponential increase in the number of companies with sustainability commitments.[1]

Today, just a small fraction of the 8,000 companies committed to net-zero targets as part of the Science Based Targets initiative (SBTi) have purchased carbon dioxide removal. Nevertheless, firms are already struggling to find sufficient quality carbon dioxide removal volumes to meet their 2025 interim targets. The gap between supply and demand will only widen, leading to financial volatility and potential price spikes. Early movers can protect themselves from this future uncertainty by entering long-term contracts for high-quality carbon dioxide removal now, securing the most favorable commercial terms by locking in prices and taking advantage from future cost reductions through technology advancements.

In addition, **decarbonization initiatives improve equity and debt financing terms** as investors increasingly prioritize sustainability. Studies show that top quintile ESG performers can benefit from about 0.7% lower weighted average cost of debt and 0.4% lower weighted average cost of equity.

From theory to action: calculating carbon dioxide removal ROI

Assuming our example company has $2.5 billion debt, 5% of which receives a lower financing cost over 10 years, this results in total cost savings of about $9 million ($2.5 billion * 5% * 0.7% * 10 years).

[1] Climeworks internal analysis.

2 Drive growth through commercial offerings, shareholder return, and investor attraction

+4-25pp

higher CAGR in revenue for "green" products vs. conventional alternatives

+3pp

total **shareholder return** for top quartile environmental performers globally

Through leadership in carbon dioxide removal, **companies can more credibly tap into higher growth markets for "green" products and services.** Consumer surveys indicate that more than 70% of consumers are willing to pay a reasonable premium (10% to 25%) for "green" products, and studies show that they have a 4% to 25% higher compound annual growth rate (CAGR) in revenue than their conventional alternatives.

Historically, companies have used avoidance offsets to support their environmental claims when marketing their products. Avoidance offsets prevent the release of greenhouse gases into the atmosphere, thereby avoiding emissions that would have occurred elsewhere, such as preventing deforestation. However, unlike carbon dioxide removal credits, avoidance credits do not directly remove emissions from the atmosphere.

As product claims such as "climate neutral" are regulated and becoming more stringent to avoid misleading information and greenwashing, the adoption of carbon dioxide removal strategies is critical to unlocking the benefits mentioned above. Policies such as the EU Green Claims Directive are on the horizon, which could prohibit the use of avoidance offsets for neutralization and require carbon dioxide removal schemes instead.

Further, **sustainability leaders outperform their peers in terms of shareholder return,** while also commanding higher market valuations. Emission intensity is a large driver for company valuation, and on average there is a 3% increase in total shareholder returns for top quartile environmental performers globally.

Moreover, early movers in decarbonization attract investment from ESG-focused funds and investors, significantly improving their access to financial resources. A recent study found that over 70% of private equity CEOs expect a high to very high exit premium of 5% to 15% or more for portfolio companies that decarbonize, and 67% of private equity firms recognize net zero as a material topic and have implemented or plan to implement related measures.

From theory to action: calculating carbon dioxide removal ROI

If 1% of our example company's products in terms of revenue can be marketed as "green" products because their associated emissions are removed with the purchased high-quality carbon dioxide removal which on average have a 5% higher CAGR over 10 years, this yields a return of $25 million ($5 billion * 1% * 5%* 10 years).

3 Boost brand power with customers and employees

Partnerships with carbon dioxide removal pioneers offer opportunities to expand global reach and enhance brand reputation. **Publicly communicating on a company's commitment to climate leadership through investment in carbon dioxide removal can significantly boost brand value.** According to the research, sustainability perceptions drove $19.9 billion in brand value for Amazon and $6.5 billion in brand value for Mercedes-Benz.

70%

of job seekers **prioritize environmentally friendly firms** (lower hiring cost)

53%

of Gen Z employees **willing to quit** over weak net-zero action (lower turnover cost)

Companies recognize that attracting and retaining top talent is critical to business success. Research shows that **70% of job seekers prioritize companies committed to climate action, resulting in lower hiring cost and better talent attraction.** Additionally, with 53% of Gen Z employees willing to quit over weak net-zero targets, addressing sustainability concerns is imperative to minimize turnover cost.

From theory to action: calculating carbon dioxide removal ROI

Assuming our example company has 10,000 employees, of which 0.1% are prevented from leaving each year due to weak net-zero policies, and the average cost of replacing an employee is $100,000, this results in a return of $10 million over 10 years (10,000 * 0.5% * $100,000 * 10 years).

4 Mitigate reputational and regulatory risks

-0.043% EPS

on average for companies suffering from declining customer satisfaction due to greenwashing perceptions[1]

-0.536% ROI

on average for companies suffering from declining customer satisfaction due to greenwashing perceptions

Investing in high-quality carbon dioxide removal solutions is essential for companies to future-proof against reputational and regulatory risks. Firstly, by choosing high-quality carbon dioxide removal, companies minimize the reputational risks associated with the perception of insincerity and environmental irresponsibility. **Many companies have recently faced significant reputational damage or even lawsuits for purchasing low quality offsets.** On average, companies perceived as greenwashing suffer an estimated 1.34-unit drop in American Customer Satisfaction Research Index (ACSI) scores. The impact goes beyond perception; previous research shows that slight changes in ACSI scores can have considerable financial consequences. Specifically, this change in ACSI correlates with a 0.043-unit change in net earnings per share (EPS) and a 0.536-unit change in return on investment (ROI).

>4%

of annual company revenue introduced as fine for misleading environmental claims in the EU

>$5 million

penalty paid by Kohl's and Walmart as a result from a lawsuit brought by the US FTC

Secondly, high-quality carbon dioxide removal helps mitigate litigation risks arising from potential fines for greenwashing. In highly regulated regions such as the EU and U.S., companies risk substantial penalties for misleading environmental marketing claims such as "net zero" or "climate neutral." **The EU is considering penalties of at least 4% of companies' annual turnover as part of the Green Claims Directive, while the U.S. Federal Trade Commission (FTC) has initiated lawsuits against companies for making false claims.** For instance, Kohl's and Walmart were required to pay $5.5 million after being found to have improperly promoted their products as environmentally friendly. By investing in high-quality carbon dioxide removal suppliers, companies can avoid legal repercussions and protect their financial assets. By mitigating the reputational risks associated with greenwashing and ensuring compliance with increasingly stringent sustainability standards and regulations, companies can protect their brand and future-proof their strategy.

From theory to action: calculating carbon dioxide removal ROI

Assuming that the risk of being fined 4% of annual revenue for greenwashing can be reduced by 10% over 10 years by investing in high-quality carbon dioxide removal, our example company can save $20 million ($5 billion * 4% * 10%).

Maximizing sustainability outcomes for businesses and the planet

Early adopters of carbon removal services can gain key benefits: reduced commercial and financing costs, new growth avenues, enhanced brand equity, and risk mitigation. Beyond commercial gains, investing in carbon removal helps companies use their purchasing power to amplify sustainability impacts by supporting the scale-up of the carbon removal industry.

As the urgency of climate action intensifies, businesses face unique opportunities and responsibilities. Tapping into the power of carbon removal helps companies secure their place in a lower-carbon future by staying ahead of regulation, creating value for shareholders, and contributing to global climate solutions.

From theory to action: calculating carbon dioxide removal ROI

In total, by taking advantage of just four of the eight potential benefits explained, **our example company can earn approximately $65 million by investing $25 million in high-quality carbon dioxide removal resulting in a total net return on investment (ROI) of 150% + over 10 years.**

Calculate the return on your carbon removal investment

Complementary to our cutting-edge direct air capture technology, Climeworks offers customized carbon dioxide removal portfolios - rigorously vetted by our expert team. Each portfolio is tailored to meet your strategic priorities, timing, quality, and budget.

Reach out to calculate the return on investment for your company.

Get in touch

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