Understanding the Climate Finance Gap: 2025 Update

CREO Advisory | October 2025

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Executive Summary

Climate finance has accelerated sharply, with capital flows surpassing $2 trillion for the first time in 2024, nearly triple the level five years ago. However, experts believe that an additional four-fold increase is required to achieve net zero targets in 2050. Fortunately, there is no shortage of technologies ready to scale and about one-third of the emissions cuts needed in the next five years can come from technologies that already outperform on cost, representing a $135–$200 billion deployment opportunity and up to $10 trillion in potential annual revenues.[1]

Although climate fundraising declined by about 50% in 2024 — more than double the broader market drop — investment activity rose 27%, indicating strong underlying demand. Valuations dropped about 14%, creating more affordable entry points, but private equity deals remain at approximately a 60% premium, and climate fund returns since 2010 have fallen roughly 2 percentage points below market peers. Early signs in 2025 suggest a further contraction as public capital funding has weakened, allocator commitments to ESG strategies have slowed, and persistently high interest rates have dampened demand for capital-intensive projects. CREO's updated analysis highlights both the urgency and the opportunity for climate investors to act. We believe that there are six imperatives for investors:

a. **Maintain funding of catalytic public capital:** Targeted public funding through incentives, guarantees, and blended structures is essential to sustain the private sector flywheel. Recent pullbacks in U.S. Inflation Reduction Act (IRA) support and shortfalls in Europe's Recovery and Resilience Facility (RRF) underscore the risks of losing this foundation.

b. **Expand private debt financing:** Private debt has become the largest driver of climate finance, growing to almost 34% of global flows in 2023 from a four-year average of approximately 23%, helping to provide scale and flexibility for capital-intensive projects.

c. **Bring critical technologies online through Growth Equity and PE funding:** Growth Equity accounts for only 8% of climate fund capital, leaving scale-ready technologies stranded between venture and buyout stages.

d. **Develop funds tailored to market needs:** Mega-funds (>$1 billion) dominate the market, accounting for about 60% of climate fundraising. However, mid-sized funds ($250–500 million) are better suited to the $10–$40 million investments needed to scale proven technologies in under-allocated sectors.

e. **Back emerging climate managers:** As the markets have contracted, two-thirds of capital has flowed to experienced managers (>3 funds). Deploying more capital will require investors to selectively back emerging managers with credible track records in climate funds or adjacent sectors.

f. **Impose greater discipline on early-stage climate opportunities:** High entry multiples, particularly in smaller deals and hardware businesses, have limited investor returns. Applying stricter investment discipline used in other sectors could unlock stronger performance.

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Introduction

Over the past decade, global advancements in technology, policy, and finance have created strong momentum in addressing the climate crisis. Yet despite this progress, CPI forecasts suggest that the world remains on a path towards a 3.2°C increase in global temperatures.[2] Addressing this significant challenge will require large-scale investment. CREO analyzed private sector capital flows to better understand:

- The scale of the global climate finance challenge
- Sector-specific financing needs and opportunities
- Recent shifts in private capital flows from 2024 to 2025
- Key imperatives for climate investors to close the funding gap

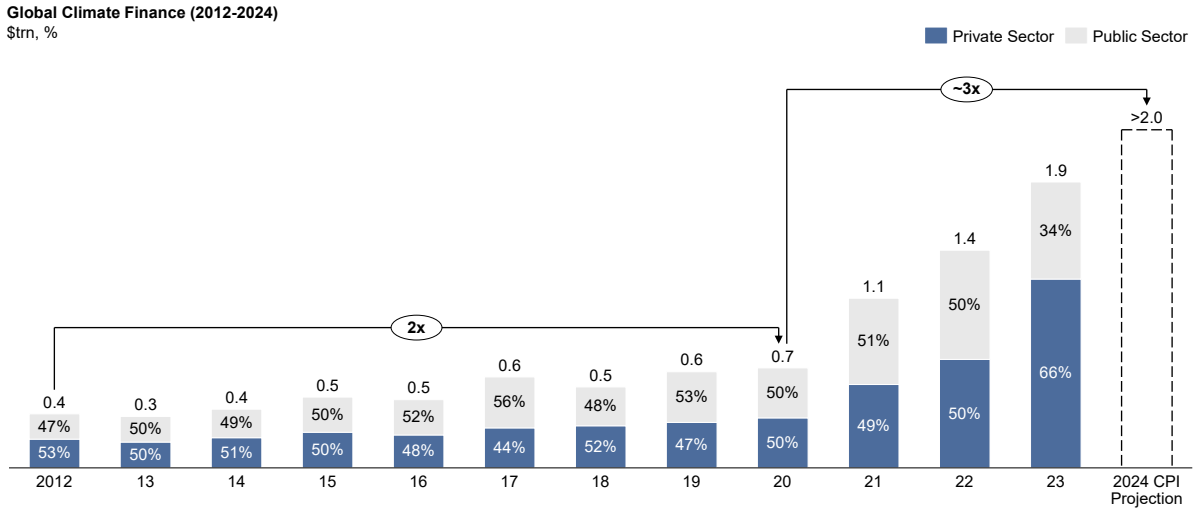
This report summarizes the findings and offers guidance on the actions private investors and philanthropists can take to put the world on the path to a net zero future. It builds on last year's Understanding the Climate Finance Gap, incorporating new insights from the global climate finance landscape and highlighting recent shifts in private capital flows.

The Global Climate Finance Challenge

Climate finance is growing faster than ever, but the pace and distribution of flows remain short of what is needed to achieve net zero by 2050.

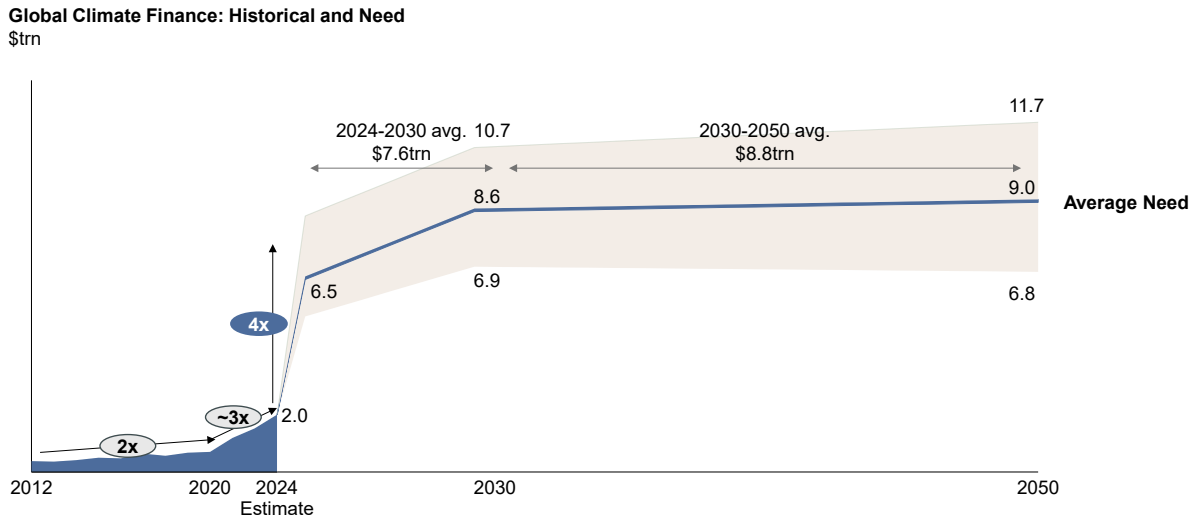
Global climate finance nearly tripled between 2020 and 2024 and is estimated to have exceeded $2 trillion (~2% of global GDP) for the first time in 2024. Private capital is driving this rapid growth, accounting for up to 66% of total financing in 2023, led by strong momentum in North America and Europe.

Figure 1: Climate finance nearly tripled from 2020 to 2024, driven by private sector funding[2,3]



Despite this acceleration, CPI estimates that the world remains on track for a 3.2°C increase in global temperatures.[2] Avoiding this outcome will require a fourfold increase in average annual flows to $7.6 trillion through 2030, rising to $8.8 trillion from 2030 to 2050.[2]

Figure 2: Despite progress, a 4x financing gap remains through 2030[2,3]



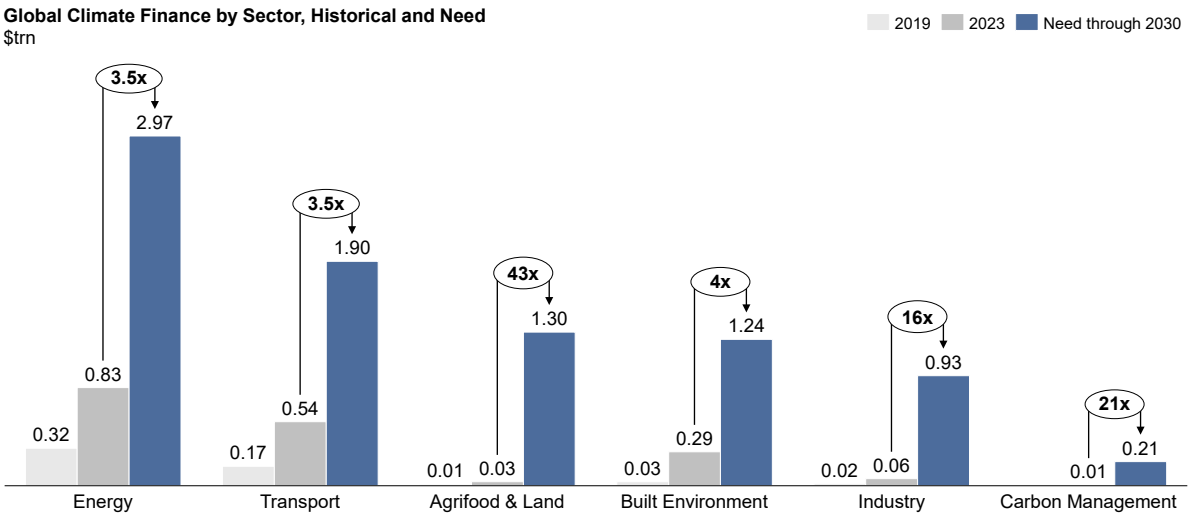
Policy and public capital remain pivotal in catalyzing climate investment, but public climate financing is under increasing strain. In the U.S., the administration is retreating from climate action and scaling back IRA commitments. In Europe, the expiration of the Recovery and Resilience Facility (RRF) in 2026 will create a projected €20 billion annual shortfall as priorities shift toward security and strategic autonomy.[4] By contrast, China continues to expand domestic green finance, which rose 19% year-on-year in 2024, while maintaining steady international climate funding of $3–$5 billion annually.[5]

Given these pressures, private investment will be essential to accelerate the deployment of innovative climate technologies across sectors.

Climate Finance Needs Across Sectors

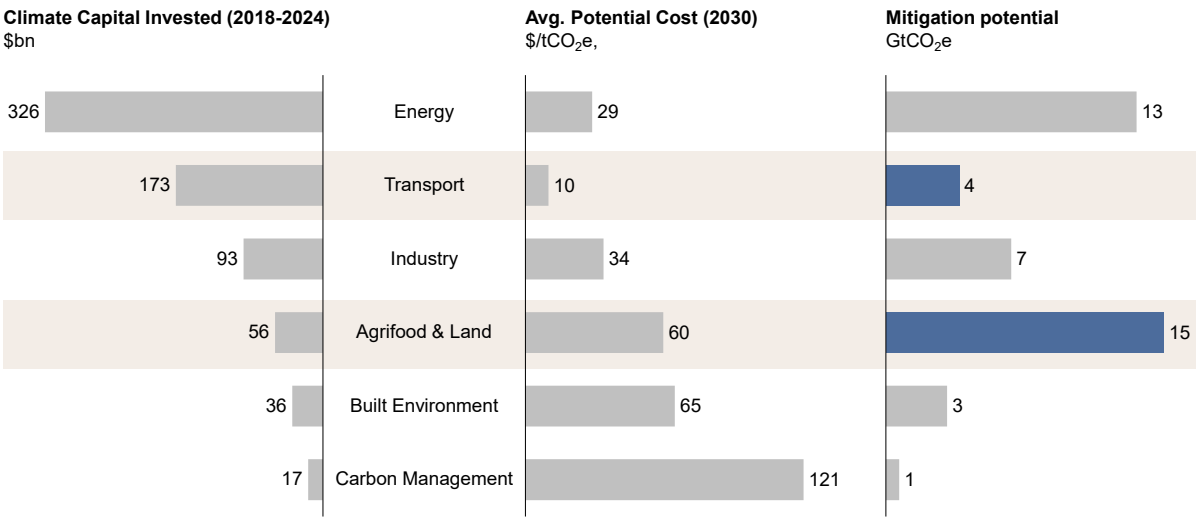
Achieving net zero by 2050 will require a dramatic scale-up of climate finance across all sectors — approximately 3.5 times current levels overall and an increase of more than 40 times in high-impact sectors such as agrifood. A strong pipeline of cost-competitive, scale-ready solutions represent a major opportunity to close this gap.

Figure 3: A significant increase in climate finance is required across all sectors[2,6,7,8,9,10]



While investment has grown, capital invested from 2018 to 2024 has flowed primarily to lower-cost, high-return sectors such as energy and transport, rather than those with the highest mitigation potential.

Figure 4: Capital is flowing to the lowest cost solutions, not necessarily mitigation potential[2,6,10]

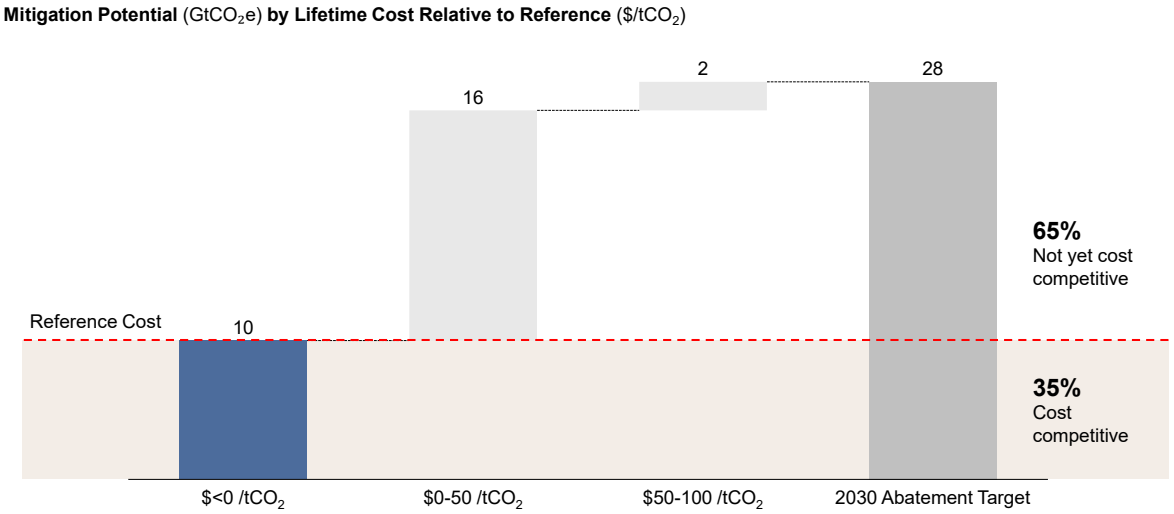


Available mitigation technologies across sectors already exceed the total abatement required by 2030, offering multiple pathways to achieve global targets.

Roughly 35% of the needed emissions cuts could come from technologies that already cost less than current references, with an additional 57% achievable from technologies that only

require between $0 and $50/tCO2 to be competitive. These are within reach of typical corporate shadow carbon prices and accelerating deployments could drive down costs sooner than many expect.

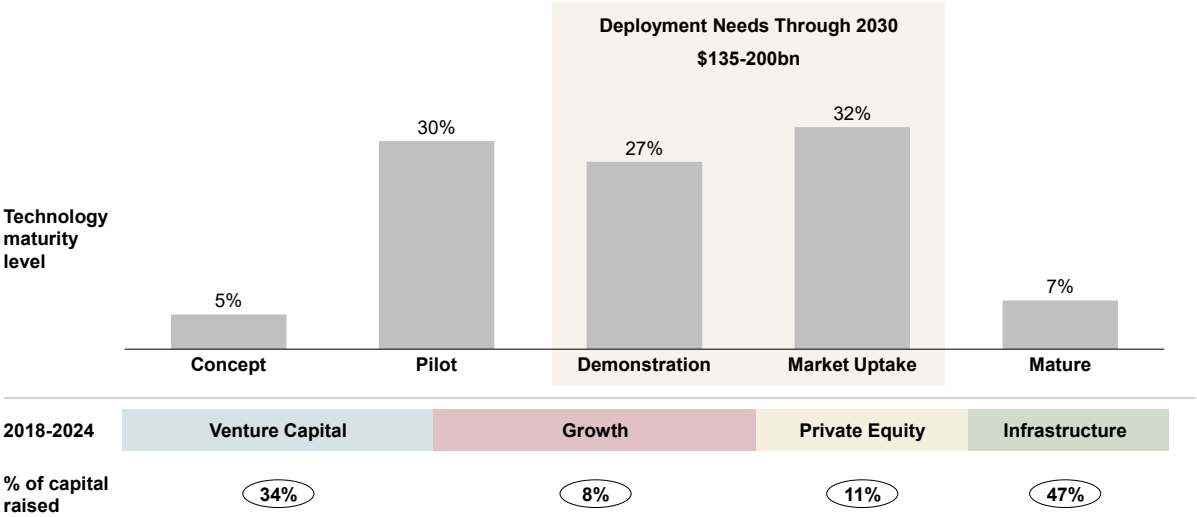
Figure 5: A third of the technologies needed to reduce emissions for 2030 are cost competitive[10]



Driving down the cost of clean technology solutions requires innovation and widespread commercial adoption. CREO analysis, coupled with work completed by Systemiq, shows that the development of key climate technologies follows a classic “S-curve”, where costs decrease rapidly after reaching tipping points in scaling deployment.[11]

According to IEA’s Clean Energy Technology Guide, 60% of the 550 tracked clean technologies are ready to commercialize and scale.[12] This potentially creates a $135–$200 billion deployment opportunity through 2030.

Figure 6: Clean technologies ready to scale offer a $135 to 200bn investment opportunity[12,13]

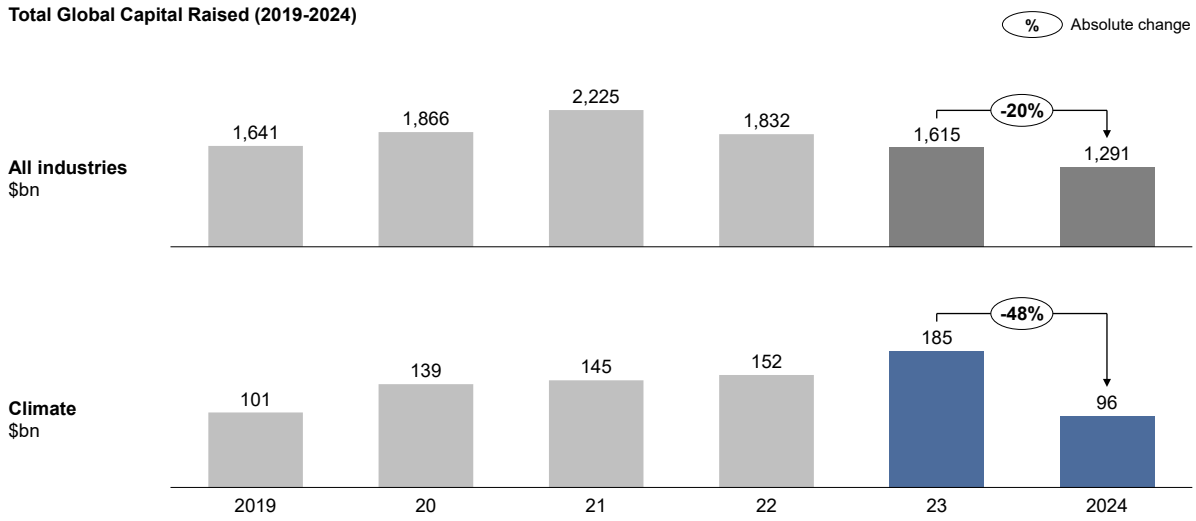


Broader demand for these technologies could drive up to $12 trillion in annual new revenues by 2030, providing an opportunity for private market investors.[1] The size, stage, and revenue multiples of the mitigation opportunity set are well matched to growth and private equity, yet much of the climate-driven private fundraising since 2018 has been concentrated in venture capital and infrastructure. This mismatch leaves a capital bottleneck.

Recent Shifts in Climate Private Capital Flows

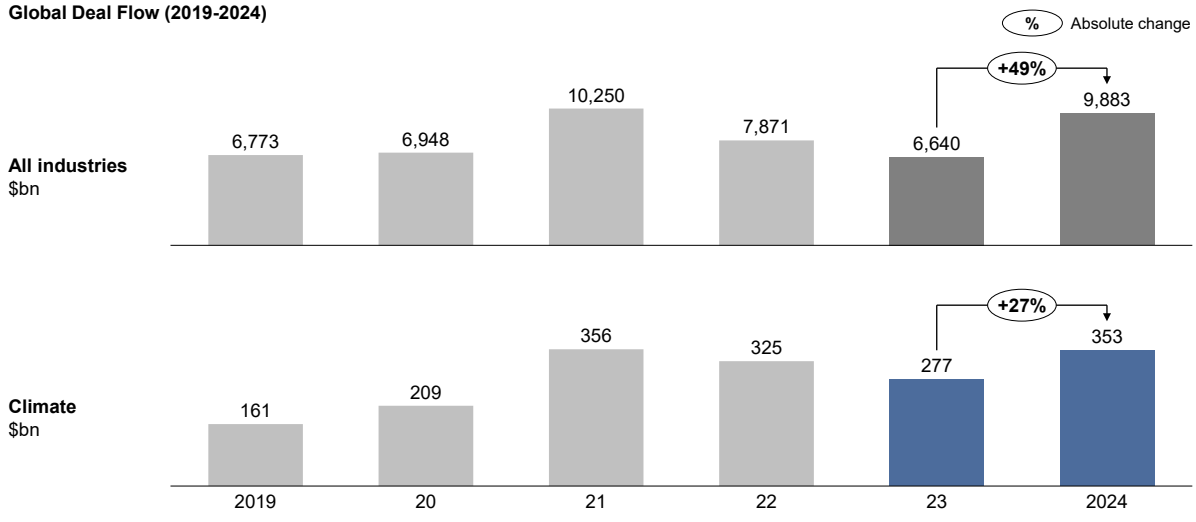
Climate fundraising contracted sharply in 2024, falling by up to 50% — more than double the 20% pullback seen across the broader market.

Figure 7: Climate fundraising declined by ~50% in 2024, more than the broader market[13]



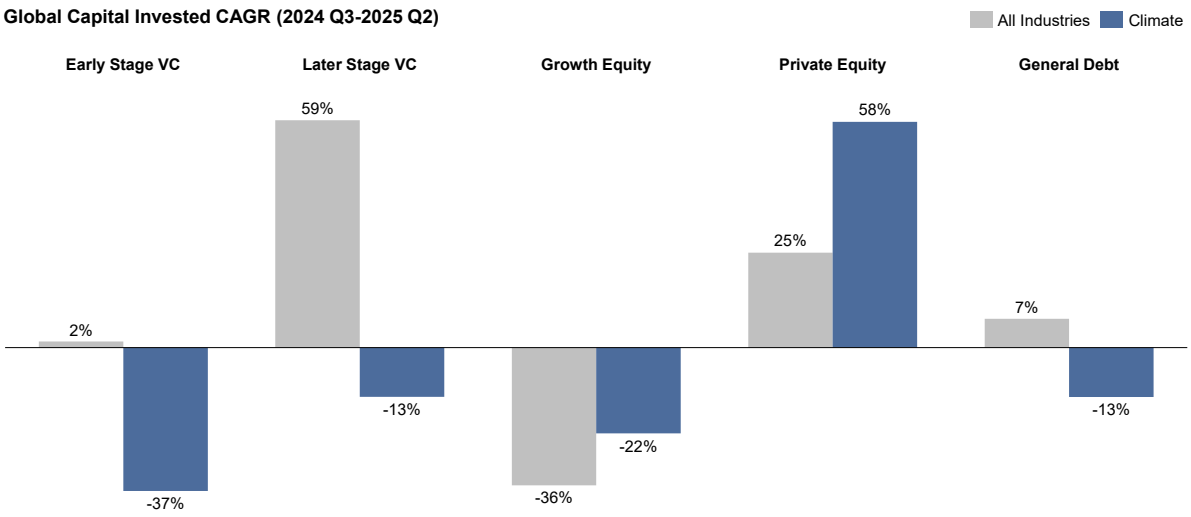
Despite this fundraising contraction, investment activity strengthened in 2024, with investment into climate solutions increasing approximately 27% during the year. This momentum is evident in both the short and long-term: since 2019, climate investing has expanded at a 17% CAGR, compared to 8% across all industries.

Figure 8: Climate investing surged 27% in 2024 but lagged the broader market[13]



In the short term, private equity has emerged as a particularly important driver of growth. Climate-related PE investing grew by 58% over the past twelve months, led by a handful of multi-billion-dollar energy deals. These included Blackstone Infrastructure's $11.5 billion acquisition of TXNM Energy, CDPQ's $10 billion acquisition of Innergex Renewable Energy, and TPG Rise Climate's $2.2 billion acquisition of Altus Power.

Figure 9: Short-term climate growth in the past twelve months is driven by private equity[13]



Other notable shifts in climate private capital flows from 2023 to 2024 included a decline in climate dry powder, though levels remain high relative to 3-year (73%) and 4-year (66%) fund-life averages. Valuations weakened ~14% compared to ~7% for PE across all industries, while climate fund returns lagged peers by ~2% (2010–2024), a significant decline from ~0.5% over the period 2010–2023. VC funding grew from 36% to 49% of total capital, and infrastructure declined to 24%. In a declining market, the U.S. and Asia gained ground, while emerging manager funding dropped from 44% to 32%, aligning more closely with its five-year average.

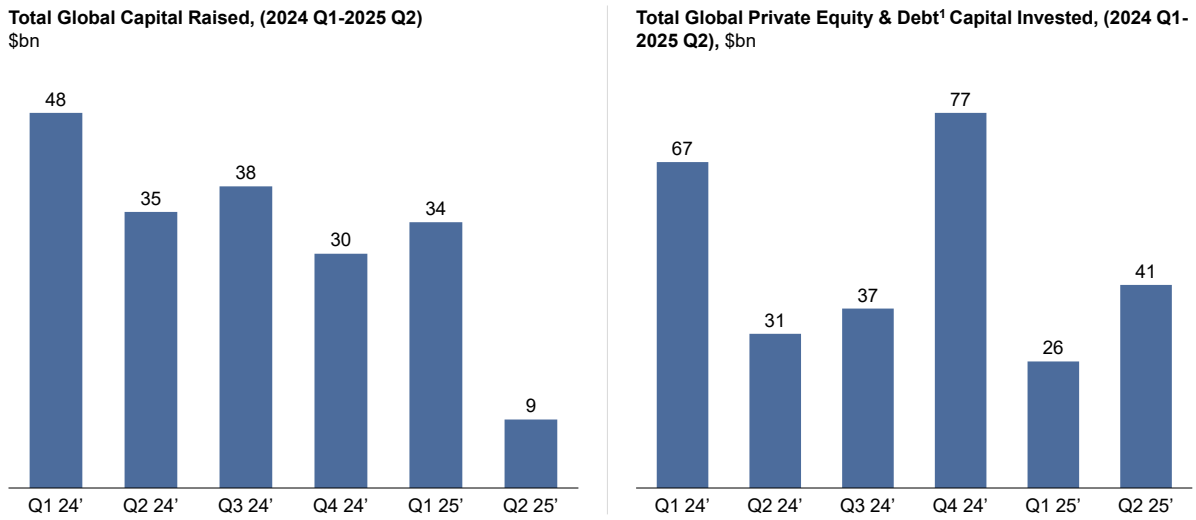
Figure 10: Eight shifts in climate private capital flows in 2024 vs. 2023[13]

1	**Fundraising**	**Decreased by ~50%** in 2024 to $96bn, down from $185bn in 2023
2	**Investment**	**Increased 27%** in 2024 to $353bn, up from $277bn in 2023; Growth in the last twelve month driven by a **few large PE deals**
3	**Dry powder**	**Climate dry powder fell** but remains relatively high vs 3-year (73%) or 4-year (66%) fund-life averages
4	**Valuations**	**Private equity valuations dropped** 14%, compared with 7% decline for all industries in 2024 US climate deals **continue to be ~2x the price of European deals**
5	**Returns**	**Decreased** to lag all sectors by ~2% (2010 to 2024), down from ~0.5% lower (2010-2023)
6	**Asset Class Mix**	**VC share of funding surged** (36% to 49%) while **Infrastructure decreased significantly** (40% to 24%)
7	**Geographic Mix**	Fundraising **decreased significantly in all regions**; USA & Asia gained share while EU & Middle East lost; deal flow shares **remained relatively** constant across regions
8	**Manager Funding**	Emerging Manager funding declined from 44% to 32%, in line with the 5-year average of 31%

There are signs of further contraction in 2025. The first half of the year saw fundraising and activity decelerate with Q2 fundraising falling to $9 billion compared to $48 billion in Q1 of 2024. Multiple headwinds could be contributing to this decline. Public capital support has weakened, particularly in the United States where the administration has scaled back climate commitments, and in Europe where the expiration of the Recovery and Resilience Facility leaves a projected €20 billion annual shortfall.[4] At the same time, allocators have grown more cautious toward ESG strategies, leading to reduced commitments to climate-focused

funds.[14] Persistently high interest rates have further dampened appetite for capital-intensive solutions, raising financing costs for infrastructure-heavy projects across the sector.

Figure 11: Climate fundraising and investing is likely to contract in 2025[13]



Looking ahead, the private sector will play an increasingly critical role in sustaining momentum across climate markets. With public funding under strain and fundraising activity slowing, the next phase of growth will depend on deploying existing capital efficiently and directing new private investment into climate.

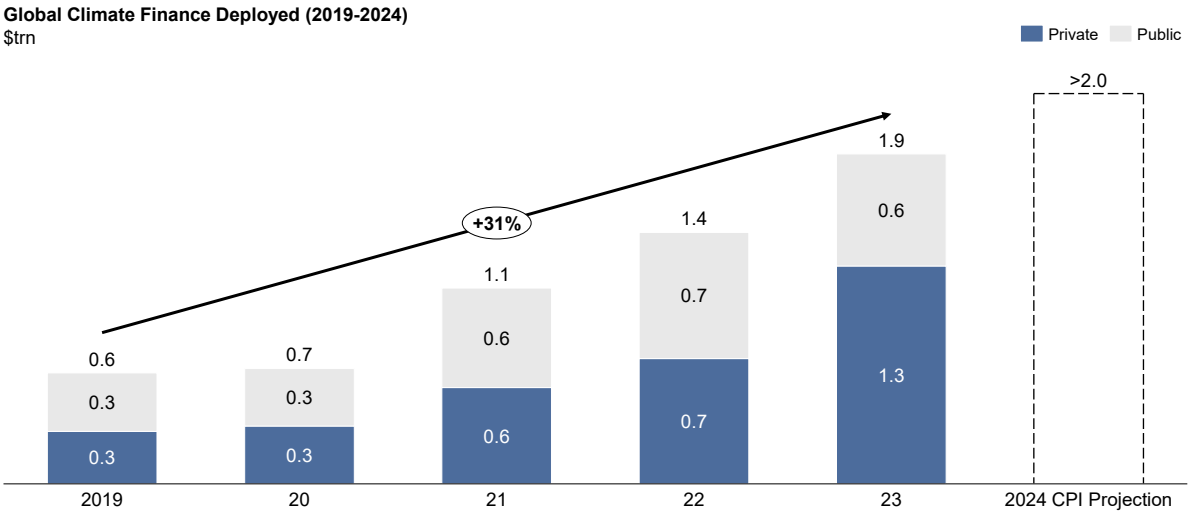
Climate Investing Imperatives

The challenge in climate finance is no longer raising capital but deploying it effectively through the right structures and sectors to fund scale-ready technologies. CREO analysis identifies six imperatives for directing capital and evolving market structures to close the climate finance gap.

#1 Public sector funding is still required to engage private sector flywheel

Public sector funding remains the foundation for private finance. Public investment grew 18% from 2019 to 2023, catalyzing 43% growth in private capital flows. Targeted incentives, guarantees, and blended structures are critical for de-risking projects, opening new markets, and crowding in institutional investment. Recent scale-backs in the U.S. and funding uncertainty in Europe could slow momentum in 2025, but sustained public capital is indispensable for achieving net zero.

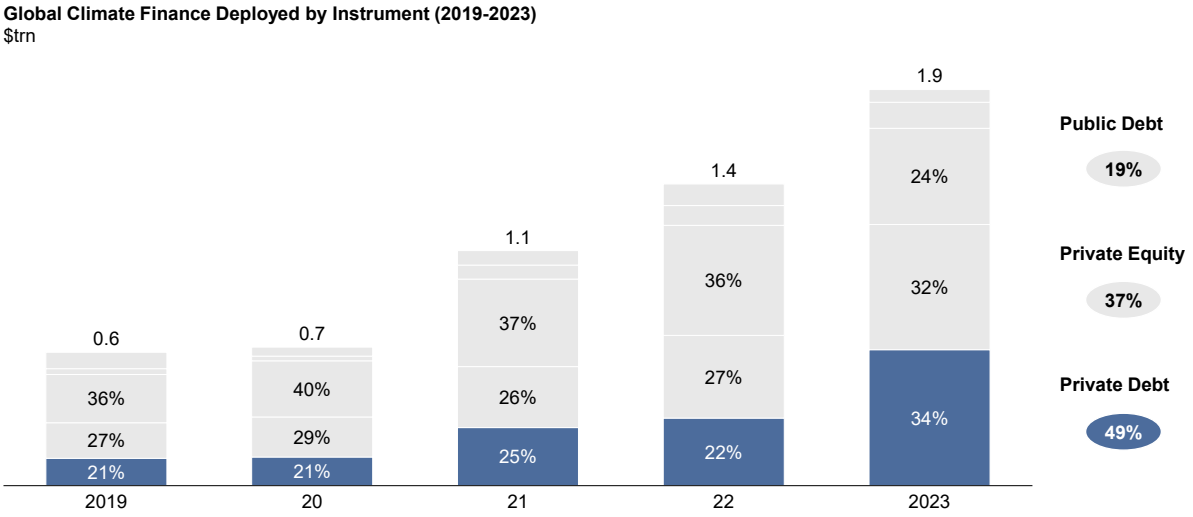
Figure 12: Private investment is accelerating growth on the back of public sector support[2,3,13]



#2 Private debt, the growth engine of climate, has a key role to play

Private debt has emerged as a powerful growth engine for climate finance, rising to 34% of global flows in 2023. From 2019 to 2023, it expanded by $520 billion — more than twice the $230 billion increase in public debt — providing scale and flexibility for capital-intensive projects such as renewable generation, storage, and infrastructure. Scaling private debt will be key to net zero, opening the door for new climate debt funds.

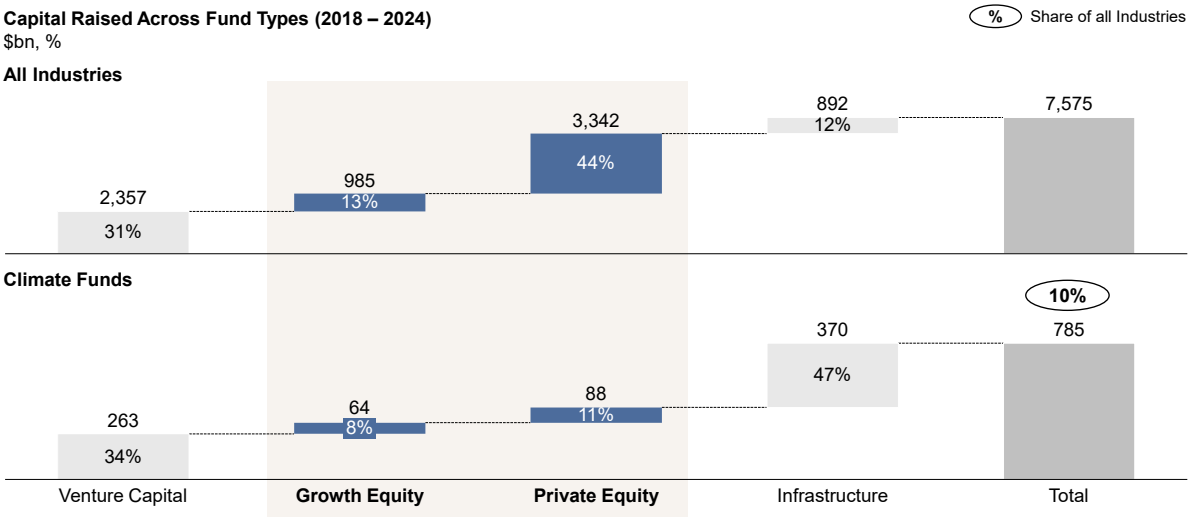
Figure 13: Private debt has become the largest driver[2]



#3 Growth Equity and PE capital must bring critical technologies online

In last year's Understanding the Climate Finance Gap report, CREO analysis highlighted that the "missing middle" also persists in climate across all sectors. Growth Equity is underfunded in climate, accounting for ~8% of capital raised versus ~13% across all industries. This leaves nearly 60% of scale-ready technologies stranded between venture and buyout, representing a $135–$200 billion deployment opportunity through 2030.

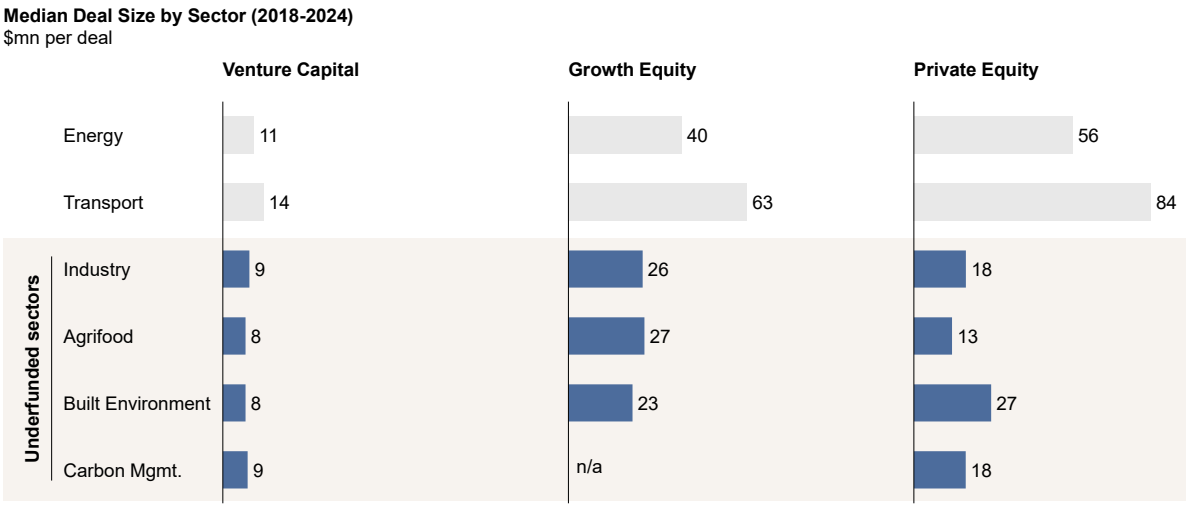
Figure 14: Capital for Growth Equity and PE is constrained in climate[13]



#4 Mid-sized funds ($250-500mn) deploying $10-40mn checks are mission critical

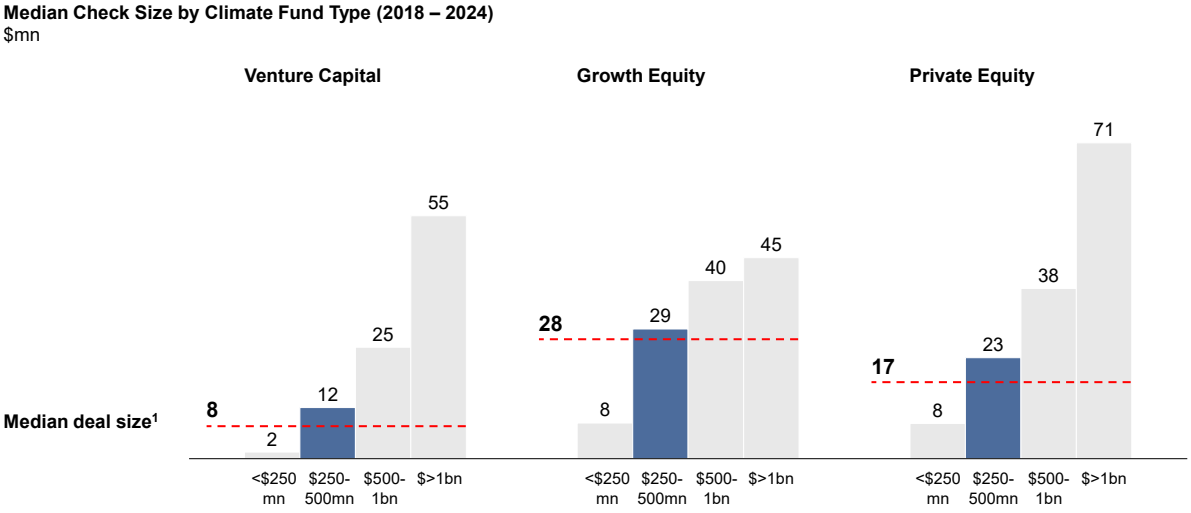
Mega-funds over $1 billion dominate climate fundraising but are less suited to the $10–$40 million investments that under-allocated sectors require.

Figure 15: Check sizes ($10–$40mn) are mission critical to scale under-allocated sectors[13]



Mid-sized funds of $250–$500 million are better positioned to direct capital efficiently into emerging technologies in under-allocated sectors.

Figure 16: Capital deployment mismatches are best addressed by funds ($250-500mn)[13]

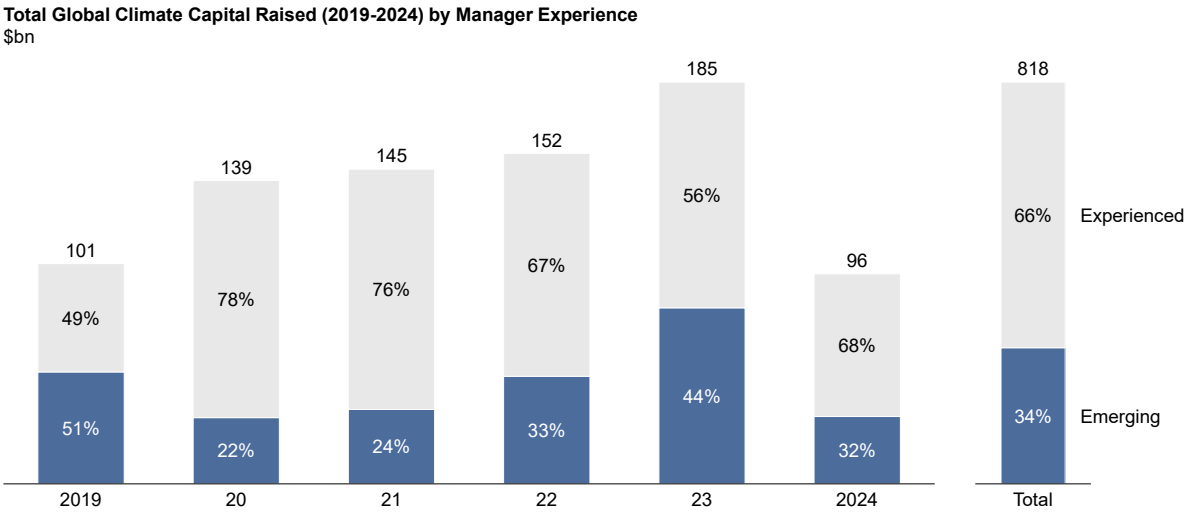


#5 Opportunity to back emerging managers with proven track records

As fundraising markets have contracted, two-thirds of capital has flowed to experienced managers. Deploying more capital into climate will require investors to back emerging managers, especially those with strong track records in adjacent sectors. These managers

can bring new perspectives and theses that broaden the scope of climate capital deployment.

Figure 17: Opportunity to boost climate investment by backing more emerging managers[13]

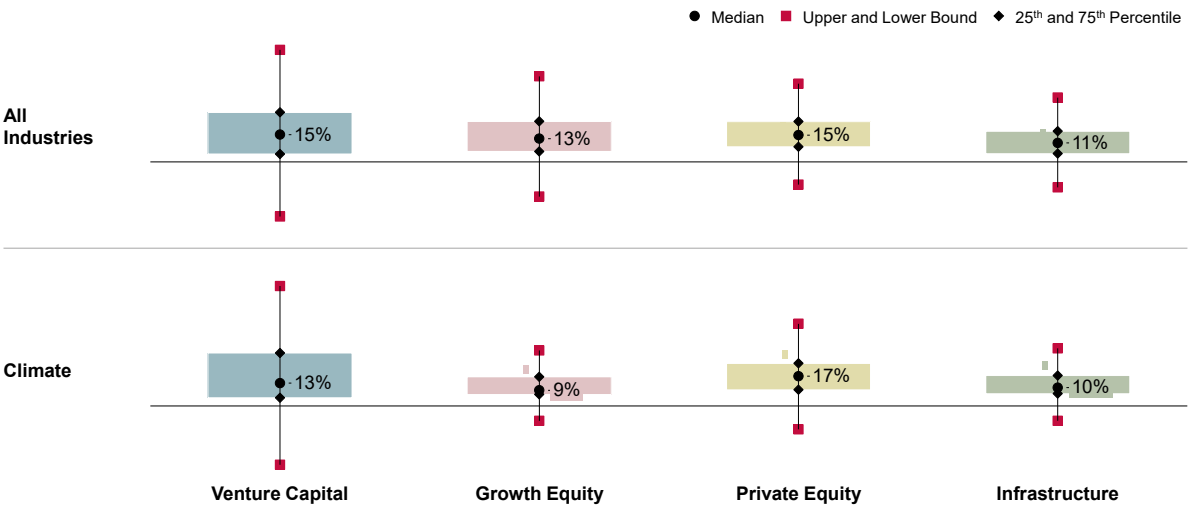


#6 Disciplined investing unlocks superior returns

Climate fund performance from 2010–2024 lagged the broader market by ~2%, a significant decline from the ~0.5% gap observed in 2010–2023. Figure 18 highlights the differences between climate fund returns and the broader market by asset class.

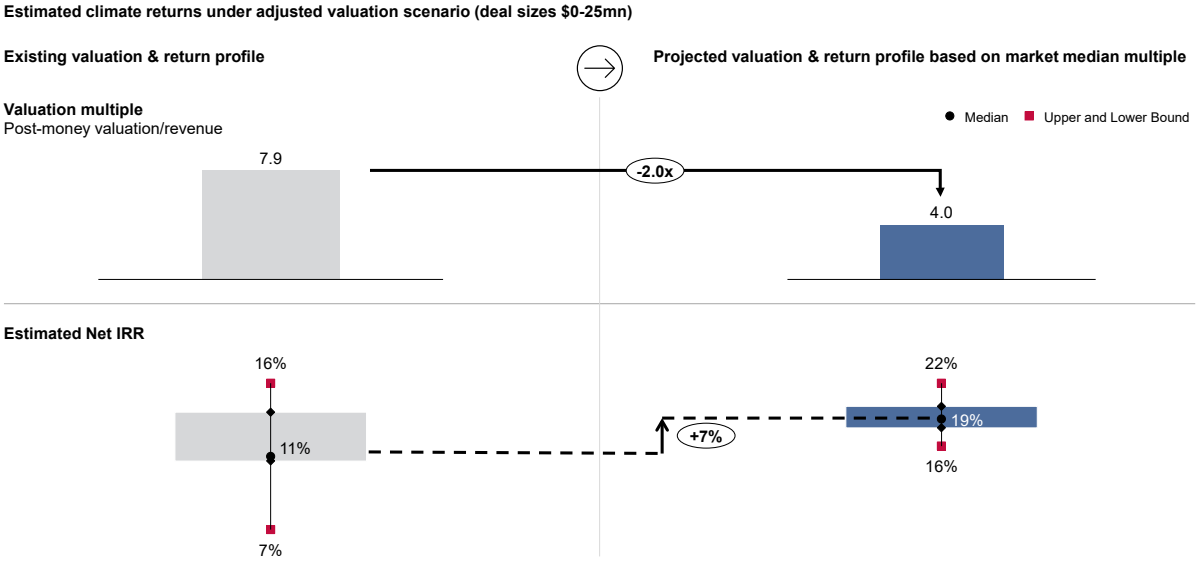
Climate companies often trade at a premium, particularly for deals with post-money valuations of less than $100 million where the premium is ~1.7x when compared to the broader market. This is partially explained by the higher share of hardware deals in climate (~92%) when compared to the broader market (~79%), and the fact that climate hardware valuations are ~2x that of all industries while software deal valuations are in line with the broader market.

Figure 18: Climate returns are ~2% lower than market[13]



The higher entry multiples, particularly in smaller deal sizes and hardware, are constraining returns. Applying the same rigor and pricing discipline used in other sectors could unlock ~2–7 percent greater net IRR.

Figure 19: Opportunity to boost climate returns with disciplined investing in early-stage deals[13]



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There is much to celebrate in the momentum of climate investing. Private investors continue to play an important catalytic role. Going forward, it will be imperative to direct capital to mid-sized growth equity funds, support emerging managers with proven track records, and continue to allocate funds to scale large infrastructure and private equity deals to accelerate the path to net zero.

Appendix

Definitions

Throughout this report, the term “climate” refers to both climate and sustainability related themes. This covers all areas that improve environmental outcomes and reduce emissions.

The report uses the Pitchbook definition to identify growth equity deals and includes:

- Later Stage VC deals that are Series E or later or involving companies that are seven or more years old and have previously raised at least six VC rounds.
- All PE Growth/Expansion deals.

This report also analyzes the investment gap, mitigation potential, and private company investment flows across six broad climate sectors as defined below.

Involved in large-scale clean energy production, transmission, and distribution. This covers renewables, nuclear power, and advanced grid-scale energy storage, along with supportive technologies for integrating and transmitting clean energy.

Focused on decarbonizing transportation services for moving people and goods, covering logistics, air freight, airlines, marine, road, and rail. Encompasses electrification, sustainable biomass and hydrogen fuels, and enhanced mobility efficiency.

Efforts that decarbonize and enhance the efficiency of industrial processes like steel, cement, manufacturing and waste management. Key initiatives include electrification, green chemicals, sustainable biomass and hydrogen fuels, and circular and decarbonized industrial processes.

Developing resilient and sustainable buildings, including energy-efficient heating and cooling, lighting, appliances, eco-friendly materials, air purification, and smart technologies to minimize.

Enhancing biodiversity and building a resilient food system to meet global demand, while addressing emissions. This includes nature-based solutions, sustainable farming methods, biological carbon sequestration, sustainable diets, consumer products, and packaging solutions.

Facilitating the reduction, avoidance, and removal of carbon emissions. This covers tracking and accounting technologies, operating carbon credit marketplaces, point-source carbon capture solutions, and atmospheric engineered carbon removal technologies like Direct Air Capture (DAC).

Data Sources

Any analysis completed is as good as the data on which it is based. CREO made every effort to ensure that the completion of this report used the best available data. Where possible, CREO consulted and cross-referenced multiple data sources to increase confidence in the analysis.

Data on private companies and funds is notoriously difficult to source, often incomplete, and sometimes unreliable. The CREO team has invested significant time to secure, review and validate data from the best sources available but it is important to acknowledge that the data is unlikely to be perfect, and readers should view the results of analyses as directional, best used to inform rather than as a source of truth.

- The macro analysis included in the Global Climate Finance Challenge is based primarily on research and data provided by the Climate Policy Initiative (CPI) that has been comprehensively tracking global climate finance since 2011. The CPI dataset extends only through 2023 with preliminary data for 2024 only recently released. CREO drew supplementary insights from Pitchbook Media and CB Insights to capture general climate finance trends for 2024 and 2025.
- The authors obtained Data for the Climate Funds analysis from CREO and Pitchbook and selectively checked against the Preqin database. All 989 funds tracked by CREO are 100% climate focused while the Pitchbook data reflects a stated (and Pitchbook verified) investor preference to focus on the Clean Tech, Ag Tech, and Climate Tech Verticals as well as climate-related impact goals and real asset investments. The Pitchbook data set contains 4,588 funds covering the period from 2010-2024.
- Pitchbook was also the source for company and deal information. The initial dataset comprised deals categorized in the Clean Tech, Ag Tech and Climate Tech verticals from January 2014 onwards, with a size exceeding $3 million. CREO manually tagged deals were tagged by sector, leveraging Pitchbook’s keywords and vertical tags.
- The analysis for Climate Investing Imperatives section draws on multiple sources to model estimates for the investment gap, mitigation potential, and incremental annual revenue across sectors in 2030 and 2050. Data and analysis comes from BloombergNEF, Climate Policy Initiative (CPI), International Energy Agency (IEA), Intergovernmental Panel on Climate Change (IPCC), International Renewable Energy Agency (IRENA), McKinsey & Company, Systemiq, and the World Economic Forum (WEF).

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About The Organizations

CREO Syndicate is a global, NYC-based nonprofit with a network of family offices, foundations, and institutional partners working to deploy $1 trillion into climate and sustainability solutions by 2028. Through research, peer learning, and a collaborative research and data platform, CREO helps mobilize private capital into low-carbon and resource-efficient opportunities worldwide. Through 2023, CREO's members have deployed more than $60 billion into climate and sustainability investments. For more information, please visit www.creosyndicate.org.

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Featherlight is a private investment firm that helps investor entrepreneurs launch and scale climate-focused private equity funds by providing large-scale, catalytic capital and proactive strategic guidance and operational support. With offices in North America and Europe, Featherlight leverages its team's deep experience at large pension and sovereign funds, family offices and private investment firms to help great climate investors build great climate investment businesses. https://featherlight.capital.