

SCALING CLIMATE TECH

**A Global Study of
Entrepreneurs and Networks**

RESEARCH BY:

endeavor
INSIGHT

WITH SUPPORT FROM:



ABOUT ENDEAVOR INSIGHT

Endeavor Insight is the research division of Endeavor that provides data-driven analysis and visualizations showing what makes entrepreneurial ecosystems thrive. Our research team of economists, data scientists, and policy analysts specializes in understanding the needs of high-impact entrepreneurs and evaluating the networks that enable them to scale up and pay it forward to the next generation of entrepreneurs.

The methodology utilized in this study builds on previous Endeavor Insight research supported by the Omidyar Network, the Kauffman Foundation, and the Heron Foundation.

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HSBC Bank USA, National Association (HSBC Bank USA, N.A.) serves customers through Wealth and Personal Banking, Commercial Banking, Private Banking, Global Banking, and Markets and Securities Services. HSBC is playing a leading role in mobilizing the transition to a global net zero economy, not just by financing it, but by helping to shape and influence the global policy agenda. We are mobilizing finance to support our customers' transitions to net zero, accelerating innovation to help scale up climate change solutions and building global partnerships to ensure investment is swiftly channeled towards truly sustainable projects.

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Executive Summary

A GLOBAL STUDY OF CLIMATE TECH ENTREPRENEURSHIP

Endeavor Insight partnered with HSBC to examine the challenges that climate tech founders face as they scale their companies, and the opportunities for investors and supporters to help them succeed. This report demonstrates how global connectivity can further drive innovation and highlights what decision makers can do to better support underrepresented founders like women and minorities.

The findings of this global study are based on more than 1,000 climate tech companies from around the world, with a focus on six hubs: San Francisco (the Bay Area), New York, the Houston-Austin Corridor, London, Berlin, and Tel Aviv. Primary data was collected through interviews with over 200 founders and several industry experts, and secondary data was analyzed on more than 7,000 other actors including institutional investors, angel investors, mentors, and support organizations.

Entrepreneurs have a significant role to play in introducing and scaling the solutions needed to address climate change. Founders provide a necessary complement to the efforts of governments, universities, corporations, consumers, and other actors. The recent second wave of investor interest in climate tech businesses offers an opportunity to avoid the mistakes of the past, like supporting companies that were not ready to scale.

DECISION MAKERS CAN HELP MORE CLIMATE TECH COMPANIES REACH SCALE BY UNDERSTANDING FOUNDERS' EXPERIENCE.

FOUNDER BACKGROUNDS

Combining skills. STEM and business experience is a powerful combination for climate tech founders.

Experience matters. Companies with serial founders — those who previously started a different climate tech company, often bringing several years of experience with them — are more likely to scale their businesses to 100+ employees than companies without such experience.

FOUNDER CHALLENGES

Funding gaps. Founders ranked access to capital as the greatest challenge, citing a lack of investor knowledge and limited growth capital.

Global talent search. Qualified managers are more difficult to find than technical talent for scaling companies, though both are challenging to recruit and retain. Founders address shortages through remote work and by hiring from adjacent industries or foreign countries.

Customer confidence. Founders face difficulty in boosting customer confidence and product adoption rates, slowing their potential impact.

Hardware hardships. Climate mitigation cannot happen without hardware-based companies, but the dearth of patient capital and specialized support has hindered their growth.

FOUNDER CONNECTIVITY

Founder-to-founder relationships.

Companies with a founder who previously worked at a scaled climate tech company are twice as likely to reach scale than those without such experience. Companies that received angel investment or mentorship, or have a founder who previously founded a scaled company, also exhibit a greater likelihood to scale.

Entrepreneurial ecosystem development.

Founders of scaled companies are more likely to give back to others than those of non-scaled companies, by generating employee spinouts and becoming angel investors and mentors.

TECH HUBS AROUND THE WORLD BRING DIFFERENT STRENGTHS IN ADDRESSING CLIMATE CHANGE.



San Francisco/Bay Area: Companies in this hub have the most employees and are raising the most capital, indicating the enduring strength of Silicon Valley.

New York: In this hub, companies benefit from experienced talent in the finance and marketing industries, and it also has strong public policy support for climate tech.

Houston-Austin: This hub is leading the way for energy and industrial manufacturing, with three-quarters of its companies falling into those two industries. It also has the highest proportion of hardware companies.

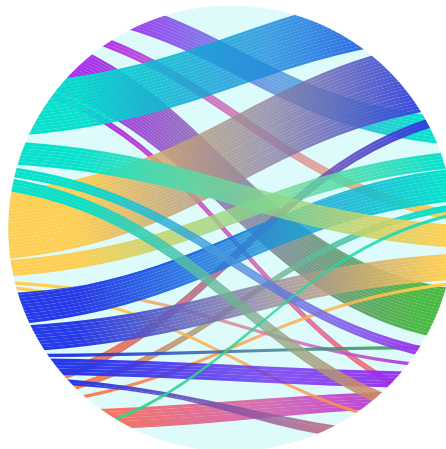
Berlin: This hub has the most dynamic climate tech sector, with nearly two-thirds of its companies founded within the past five years, as well as the greatest proportion of female-led companies.

London: The central geographical location increases the efficiency of international communication for companies based there, and this hub has an active network of professionals interested in sustainability.

Tel Aviv: This hub has a strong pool of STEM talent, and its small local market requires founders to plan for international expansion from early on in their growth.

GLOBAL PERSPECTIVES AND CONNECTIVITY WILL FURTHER DRIVE INNOVATION IN THE SECTOR.

Connections between hubs. Some hubs are net providers of resources to other hubs, while others are net recipients. London is a training ground for the world's climate tech founders, as a net exporter of education and employment for founders of companies based elsewhere. New York is a major supplier of the world's investment in climate tech, as a net exporter of angel and institutional investment.



Rising markets. Innovation can come from anywhere in the world, but founders in rising markets rely on global connections to scale. Founders in rising markets that have received education, employment, investment, or mentorship from the six hubs are more likely to scale their companies than those who do not have such connections.

Innovations in Asia. The technical talent, government support, and existing entrepreneurial activity in Asia gives the region a comparative advantage in making certain industries, like mobility and agriculture, more sustainable.

UNDERREPRESENTED GROUPS IN CLIMATE TECH FACE BIAS AND DIFFICULTY RAISING CAPITAL.

Facing bias. Female founders worldwide and minority founders in the United States face bias and difficulty raising capital. Climate tech companies with at least one female founder were less than half as likely to scale than companies with all-male founding teams.

Networks. Female founders reported they benefited from creating networks with other female founders. Minority founders reported actively building networks through fellowships and other professional experiences to improve access to capital.

Representation. Both groups mentioned the need for increasing representation by encouraging women and minorities to study relevant disciplines and enter fields like venture capital, tech, and entrepreneurship.

SUPPORT SYSTEMS SHOULD BE BETTER TAILORED TO THE NEEDS OF CLIMATE TECH ENTREPRENEURS.

Mentorship: Founders noted that it is hard to find mentors with climate tech experience, so they rely on networks in the broader tech sector. Experienced climate tech founders should be encouraged to become mentors.

Support Organizations: While a large majority of climate tech programs based in the hubs help with access to capital, less than a quarter help with access to talent or customers. Very few are tailored to the needs of hardware-based companies.

RECOMMENDATIONS

Entrepreneurs, investors, support organizations, policymakers, corporations, and universities all have a role to play in addressing climate change. Endeavor Insight's analysis identifies specific gaps that each actor in an entrepreneurial ecosystem can address to better support climate tech companies. In particular,

decision makers can do more to support climate tech entrepreneurs by listening to the needs of founders, supporting growth-stage companies, facilitating founder-to-founder connections, and leveraging the exchange of global resources.

I. Introduction

ENTREPRENEURS HAVE A SIGNIFICANT ROLE TO PLAY IN INTRODUCING AND SCALING THE SOLUTIONS NEEDED TO ADDRESS CLIMATE CHANGE.







Across the world, decision makers are mobilizing resources to mitigate climate change and decarbonize the planet. Governments are introducing policies and regulations, universities are developing innovative technologies, corporations are committing to net zero targets, and consumers are using sustainable products. Entrepreneurs provide a necessary complement to these efforts.

Climate tech entrepreneurs whose businesses reach scale are crucial to generating positive climate impact. Mitigating climate change requires environmentally sustainable solutions that are adopted on a massive level worldwide. Entrepreneurs are uniquely positioned to contribute to this global transformation because their work

involves developing, commercializing, and distributing new technologies.

Entrepreneurial climate tech companies are founder-led businesses whose products and services are contributing to climate change mitigation and decarbonization. These companies can be categorized as having business models based on hardware or software, as demonstrated in the table below, and operate in a variety of industries, including energy, food and agriculture, transportation, and manufacturing. Software-based climate tech companies introduce solutions to improve the efficiency of existing operations and reduce emissions, while hardware companies build devices and other physical products to deliver necessities like energy, food, and transportation to people in sustainable ways.

EXAMPLES OF SCALED CLIMATE TECH COMPANIES BY TYPE OF BUSINESS MODEL

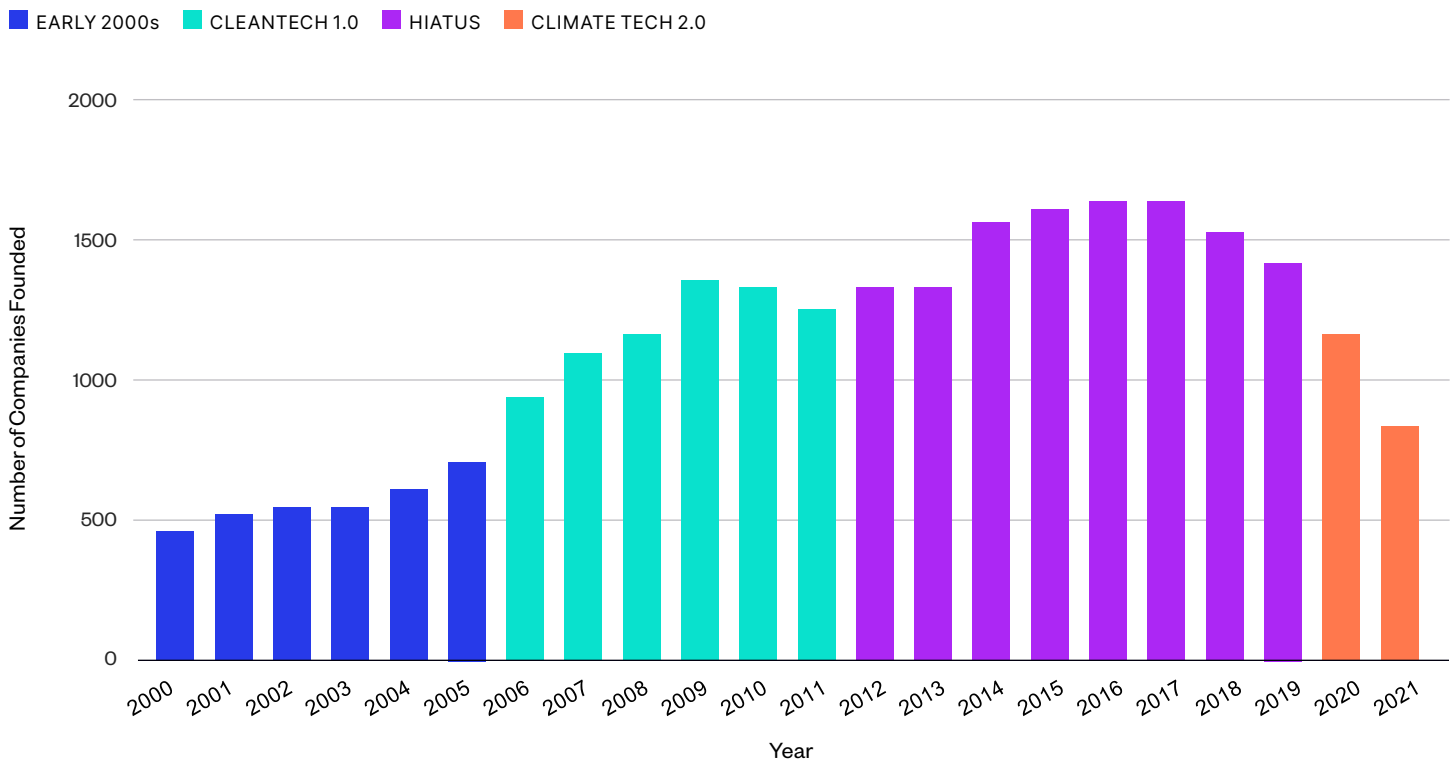
Software Companies	Hardware Companies
 Nowports , a Mexican digital freight forwarder that improves supply chain efficiency, founded in 2018 with 242 employees.	 GenCell , an Israeli fuel cell company producing clean energy, founded in 2011 with 140 employees.
 Cervest , a British climate intelligence platform, founded in 2015 with 125 employees.	 TIER Mobility , a German micro-mobility provider, founded in 2018 with 1,187 employees.
 Farmers Business Network , a U.S. agtech and e-commerce platform for farmers, founded in 2014 with 1,367 employees.	 Ecozen , an Indian company offering solar-powered irrigation and cold storage, founded in 2010 with 201 employees.

The current wave of interest in climate tech offers an important opportunity to avoid the mistakes of the past.

The first wave of investor interest in tech ventures with a focus on sustainability and climate change mitigation, often called “Cleantech 1.0,” occurred from 2006 to 2011. In that time period, clean energy companies attracted over \$25 billion of venture capital (VC), but investors ended up losing over half of that amount, according to the MIT Energy Initiative.¹ In addition to macroeconomic factors, VCs made several miscalculated investments in companies that were not ready to scale because their technologies were immature or their markets were not large enough. After this boom-and-bust cycle, many investors shied away from making large investments or taking bold bets in climate tech.

Since 2020, many commentators have identified the arrival of “Climate Tech 2.0” — a second wave of investor interest in climate tech innovation and entrepreneurship. During the hiatus between the two waves, founders continued to launch new companies. According to PitchBook data illustrated in the graph below, climate tech entrepreneurs founded over 12,000 companies worldwide from 2012 to 2019. While some have reached scale by creating hundreds of jobs and expanding their operations to reach customers in multiple countries, others have struggled to do so without the availability of growth capital.

CLIMATE TECH COMPANIES CONTINUED TO EMERGE AFTER THE END OF “CLEANTECH 1.0”



Note: The graph is color-coded according to four time periods: 2000–05 (Early 2000s), 2006–11 (Cleantech 1.0), 2012–19 (Hiatus), and 2020–21 (Climate Tech 2.0).

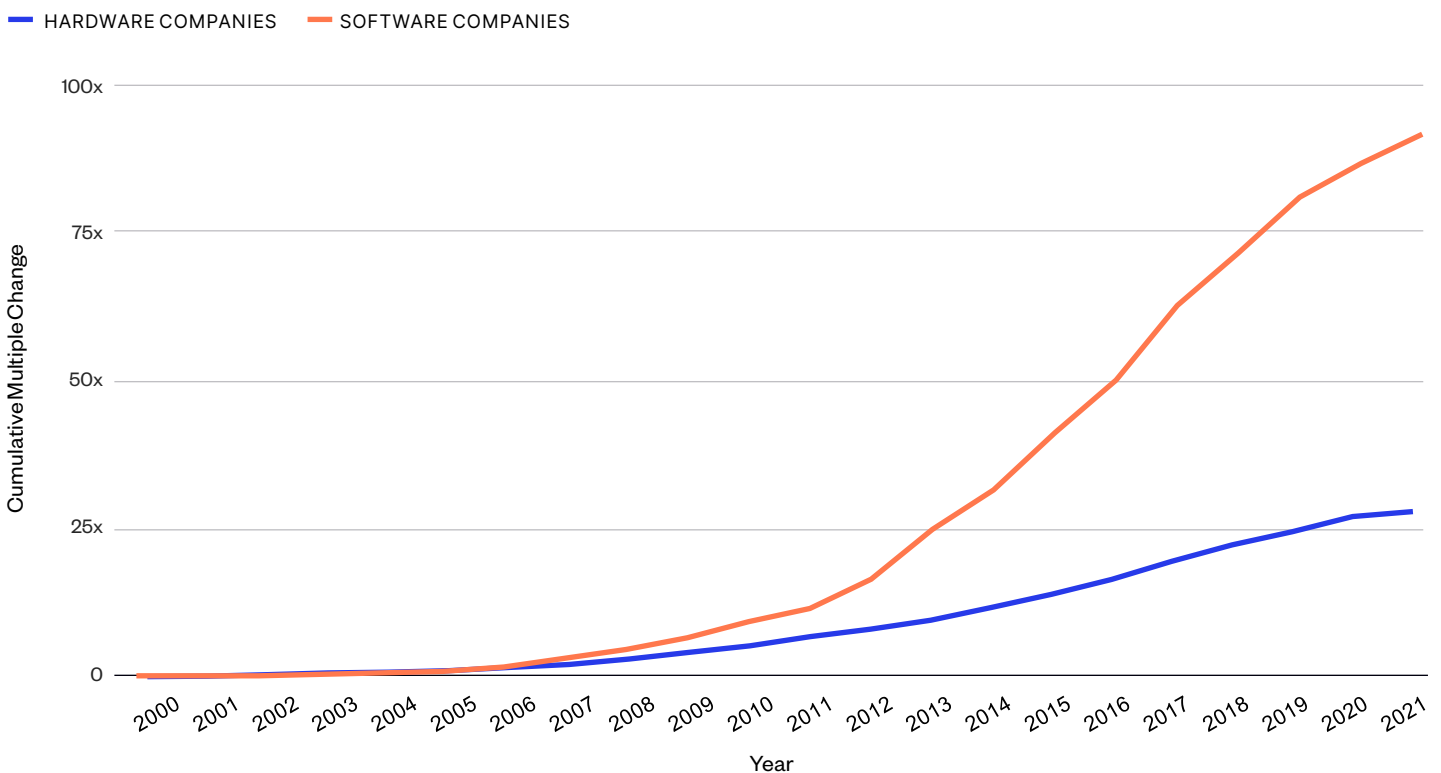
Source: PitchBook data on climate tech companies founded since 2000; includes cleantech and agtech.

Many of the climate tech companies that have emerged since the mid-2000s are software firms. As the graph below shows, the growth rate of the number of software climate tech companies has greatly outpaced hardware climate tech companies. Investors are more familiar with software business models, which may lead to software companies receiving more resources. For the climate tech sector to maximize its potential, investors should not overlook the need for hardware solutions as well.

As large-scale investment returns to the climate tech sector, along with an increase in consumer awareness and policy action, the opportunity for high-impact entrepreneurs to deliver on sustainability is ripe. By better understanding the needs of entrepreneurs with the most promise to scale their companies, investors and other decision makers can avoid the mistakes of “Cleantech 1.0” and enable lasting success.

SOFTWARE COMPANIES HAVE PROLIFERATED FASTER THAN HARDWARE COMPANIES IN CLIMATE TECH

Change in the Number of Climate Tech Companies since 2000, by Business Model



Note: Graph depicts the multiple change in the number of hardware and software climate tech companies from Endeavor Insight's dataset over time, indexed to the initial number of companies in 2000.

Sample size: 1,061 companies. Source: Endeavor Insight analysis.

II. Research Approach and Methodology

ENDEAVOR INSIGHT'S APPROACH TO STUDYING CLIMATE TECH FOCUSES ON THE EXPERIENCES OF ENTREPRENEURS AND THE FACTORS THAT ENABLE THEM TO SCALE THEIR BUSINESSES.

This study identifies the opportunities for supporting more climate tech founders as they scale their businesses around the world. Endeavor Insight, with support from HSBC, studied six metropolitan areas that are hubs for climate tech entrepreneurship and traced the dynamics in other rising markets for climate tech. This report also highlights the experiences of founders from underrepresented demographic groups.

In its research methodology, Endeavor Insight employs a founder-first approach in order to elevate the perspectives of the entrepreneurs building businesses. The research questions included:

- What are the major challenges facing climate tech founders, and how are they addressing them?
- What types of founder experiences, networks, and relationships are associated with reaching scale?
- What are the relative strengths and weaknesses of the six climate tech hubs?
- How are founders based outside those geographies utilizing resources that hubs can provide?
- What are the unique experiences and challenges for climate tech founders from underrepresented groups?
- How can investors, support organizations, policymakers, and other stakeholders help climate tech companies reach scale?

HUB DEFINITIONS

San Francisco Bay Area: the San Francisco–Oakland–Berkeley Metropolitan Statistical Area, plus four adjacent counties that encompass the wider Bay Area.

New York Metro Area: the New York–Newark–Jersey City, NY–NJ–PA Metropolitan Statistical Area.

Houston–Austin Corridor: the Houston–The Woodlands–Sugar Land Metropolitan Statistical Area plus the Austin–Round Rock Metropolitan Statistical Area.

Greater Berlin: the metropolitan area of Berlin, including surrounding areas in Brandenburg.

Greater London: the metropolitan area of London, including surrounding areas, notably Oxford and Cambridge.

Greater Tel Aviv: the metropolitan area of Tel Aviv, including surrounding areas, also known as Gush Dan.

Data and Methodology

Endeavor Insight built a dataset of over 1,000 climate tech companies from around the world, as illustrated in the graph below. Companies that meet the sampling frame are entrepreneurial, for-profit, tech-enabled, and contribute to decarbonization or climate change mitigation. Primary data collection included interviews with 204 of those companies' founders and several industry experts. Secondary data collection included company information, investments, and founder education and work histories. In addition, data was collected on over 7,000 other actors including institutional investors, angel investors, mentors, and support organizations.

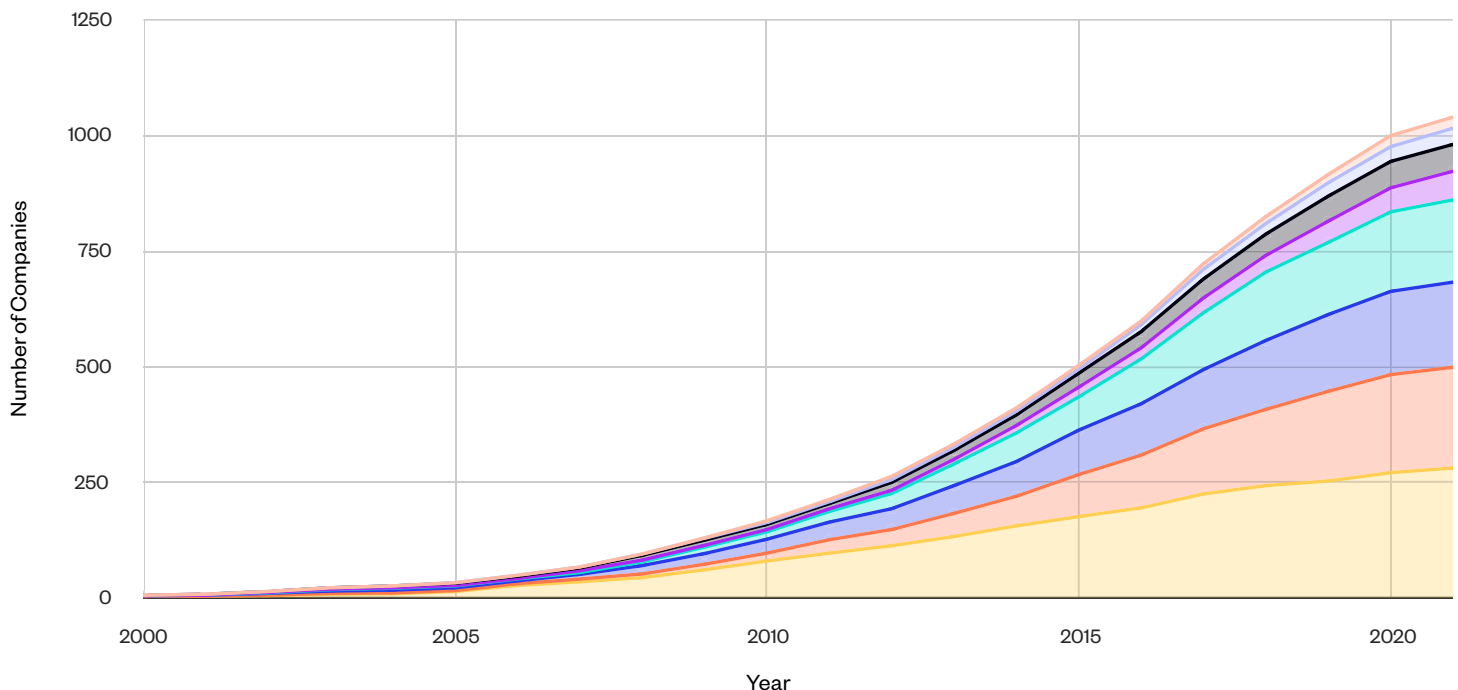
In this report, a company is considered "scaled" if it has more than 100 employees. Companies of that size make up 23 percent of the dataset. Despite this low representation, that group of companies has created over 80 percent of the climate

tech sector's total jobs. Endeavor Insight frequently uses employee size (or "job creation") as a proxy for scale because it is highly correlated with other growth metrics, such as revenue and amount of investment received. Additionally, employee numbers tend to be more readily available and comparable across geographies and industries than currency-based metrics.

The research examined the connections between entrepreneurs and other founders, as well as the relationships between founders and investors, mentors, universities, and former employers. In contrast to other research on entrepreneurship that focuses on limited measurements to describe a sector such as the number of investment deals, Endeavor Insight's analysis examines the creation of relationships that contribute to entrepreneurial ecosystem development and patterns that can inform actionable strategies.

CUMULATIVE GROWTH OF SAMPLED CLIMATE TECH COMPANIES BY SECTOR

GHG CAPTURE, REMOVAL, AND STORAGE FINANCIAL SERVICES BUILT ENVIRONMENT CLIMATE CHANGE MANAGEMENT AND REPORTING
MOBILITY AND TRANSPORT INDUSTRY, MANUFACTURING, AND RESOURCE USE FOOD, AGRICULTURE, AND LAND USE ENERGY



Note: Graph depicts the cumulative number of climate tech companies from Endeavor Insight's dataset that were founded between 2000 and 2021. "GHG" stands for greenhouse gas.

Sample size: 1,040 companies. Source: Endeavor Insight.

III. Global Overview of Climate Tech

DECISION MAKERS CAN HELP MORE CLIMATE TECH COMPANIES REACH SCALE BY UNDERSTANDING FOUNDERS' EXPERIENCES.

In order for more climate tech companies around the world to reach scale, decision makers should understand the experiences of climate tech entrepreneurs, both before and after they launched their companies. Endeavor Insight studied founder backgrounds, interviewed founders about their challenges, and analyzed the role of founder-to-founder connections to understand how each of these factors can accelerate or inhibit the journey to reaching scale. While these entrepreneurs operate in a diverse set of geographies and industries, several common lessons emerged from this study.

Founder Backgrounds

Endeavor Insight asked founders about the academic and professional experiences that were most useful to them as an entrepreneur, so that decision makers can understand the ingredients for success and fill in gaps in existing support.

STEM and business experience is a powerful combination.

Climate tech entrepreneurs come from a wide range of backgrounds, but analysis of their educational background shows that they often have engineering or other STEM skills. Engineering is a particularly common precursor for climate tech founders, and given that much of the climate tech field is hardware-focused, this area of study is an advantage for companies that are developing new technology and physical devices. Some founders also pointed out that the mindset gained from engineering helps when leading a company.

In many cases, climate tech founders started as engineers who went on to work in consulting or to pursue an MBA before developing their own business idea. Jeremy Crane, founder of **Yellow Door Energy**, notes, "Having an engineering degree was very helpful because at the end of the day we do technical solutions. And an MBA has also been critical for understanding and having the language to do what we do, especially on the fundraising side of things."

The top 10 most common universities attended by climate tech founders in this study are all prominent research universities that offer advanced STEM degrees as well as MBAs, and they have strong alumni networks with a global presence. The United States accounts for 6 of the 10 universities, as indicated in the table. The other most frequently attended universities are in the United Kingdom and Israel.

Top Universities Attended by Climate Tech Founders
Stanford University
Columbia University
University of California, Berkeley
Imperial College London
Harvard University
University of Cambridge
Massachusetts Institute of Technology
University of Texas at Austin
Tel Aviv University
University of Oxford

Having several years of professional experience is a strong component for success.

Several entrepreneurs described the value of the skills and knowledge that they had gained in a variety of jobs before deciding to found their own company. As shown in the table below, the most common former employers of the climate tech founders studied in this report include a mix of Big Tech giants, management consulting firms, investment banks, hardware manufacturers, and energy companies. These careers cultivate specialized skill sets that translate well into climate tech entrepreneurship. In interviews, several founders who previously worked in tech, consulting, or the traditional oil and gas industry noted that they started their companies because they were motivated to deploy their expertise in more sustainable ways.

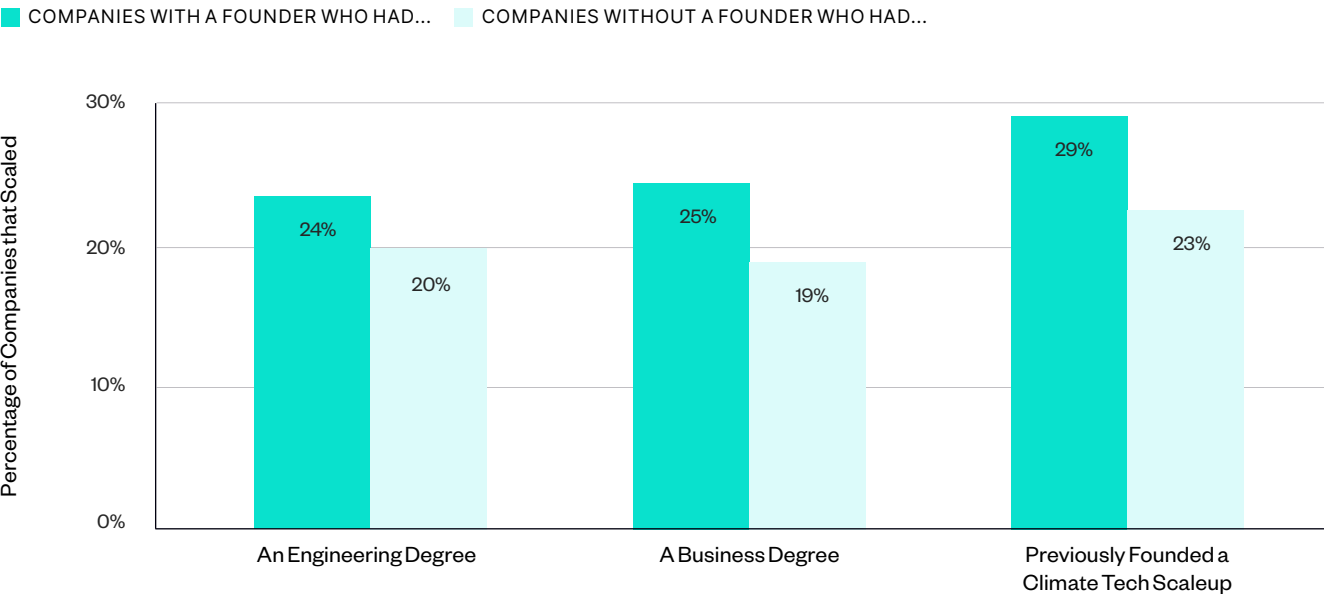
Endeavor Insight’s findings run contrary to the notion that top founders are likely to have little experience. As the graph below shows, companies with a founder who had previously founded another climate tech

company that scaled are more likely to scale their companies to at least 100 employees. The serial entrepreneurs — those who have founded more than one company — that Endeavor Insight spoke to described the benefit of having already been on the entrepreneurial journey, of knowing the pitfalls, and of not being as fearful as they once had been of making a mistake. This aligns with recent academic research that older entrepreneurs outperform younger ones.²

Most Common Former Employers of Climate Tech Founders	
Alphabet (including Google)	Shell
McKinsey & Company	Intel
Boston Consulting Group	Bain & Company
Goldman Sachs	Accenture
Barclays	Oracle
Deloitte	Morgan Stanley
Tesla	Applied Materials

CLIMATE TECH FOUNDERS WITH CERTAIN EXPERIENCES ARE MORE LIKELY TO SCALE THEIR COMPANIES

Percentage of Climate Tech Companies that Scaled by Founding Team Education and Experience



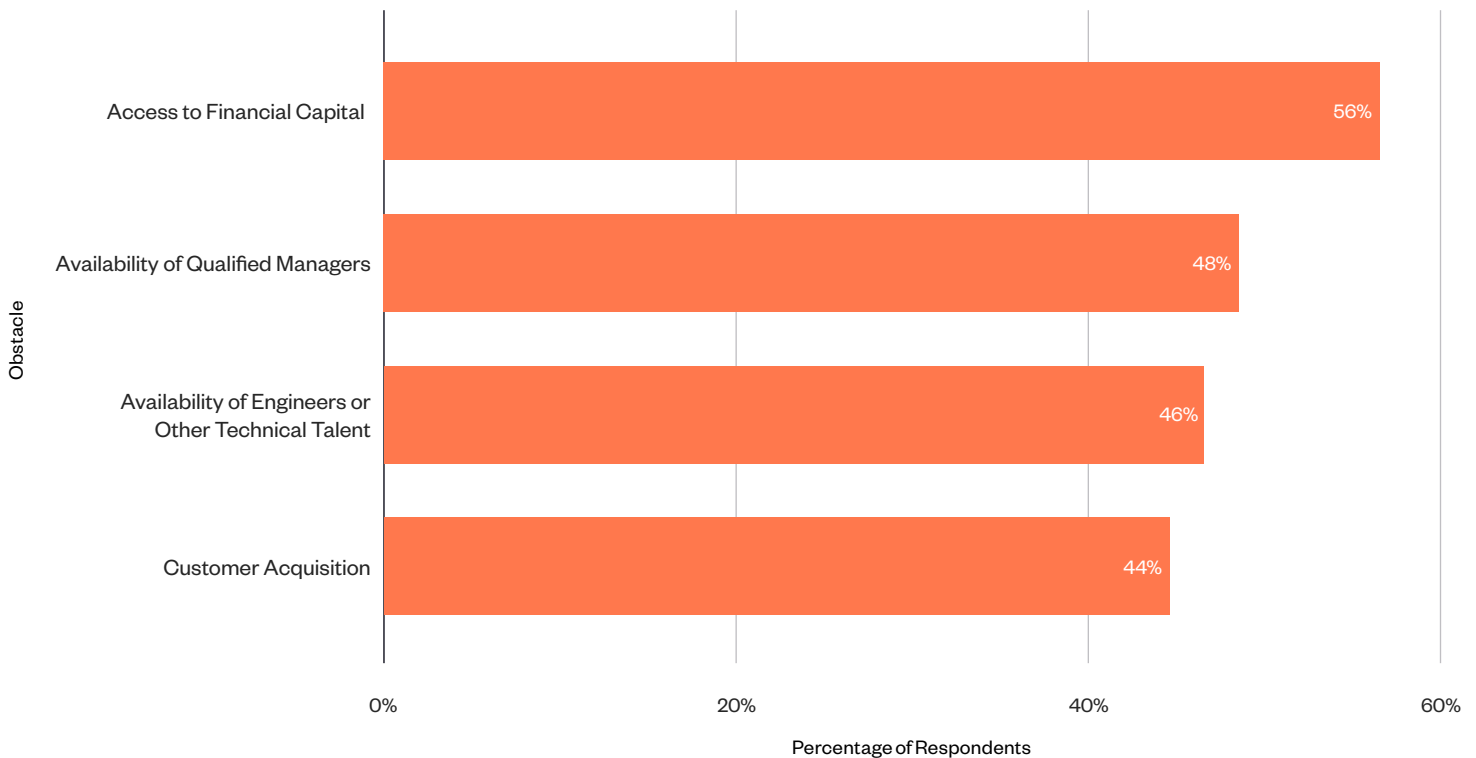
Note: Scale refers to companies that have 100 or more employees.
Sample sizes: 1,061 companies for “Previously Founded a Climate Tech Scaleup” and 956 companies for the degree categories. Sources: Endeavor Insight founder interviews and LinkedIn.

Founder Challenges

Endeavor Insight interviewed climate tech founders from around the world and asked about their most common challenges, how serious they considered them to be in operating and growing their businesses, and whether or not they were able to

overcome them. The purpose of this was to better understand founders' needs in this sector. The findings below are based on the responses of the 204 entrepreneurs who participated in the interviews.

OBSTACLES REPORTED BY CLIMATE TECH FOUNDERS



Note: Bars represent the percentage of founders who described each category as a major or severe obstacle.

Sample sizes: 200 for "Access to Financial Capital," 196 for "Availability of Qualified Managers" and "Availability of Engineers or Other Technical Talent," and 197 for "Customer Acquisition." Source: Endeavor Insight founder interviews.

Access to Capital

Despite growing investor interest, there are persistent gaps in funding.

Although investment in the sector is growing rapidly, founders interviewed by Endeavor Insight ranked access to capital as the greatest challenge to scaling up their businesses, as illustrated in the graph above. Founders with more than five years

of sector experience shared that when they started, investors did not understand or consider climate tech as an investment category, but now it is easier to access capital thanks to the growing number of climate tech-focused VC funds and impact investors.

A 2022 report titled "ClimateTech: Investment Trends, Market Analysis & Authoritative Commentary" discusses the

growth of climate tech investment in 2021. One cause of this surge is the diversification of investment firms active in the space as non-traditional firms, private equity, and corporate venture arms joined in a record number of financings.³ TechCrunch echoed this sentiment, noting that many new VC funds entered the climate tech space in 2021, with increased commitments from governments and family offices in addition to asset management firms and corporate companies.⁴

There remains some residual caution. As one founder noted, “The climate tech and cleantech space in the Bay Area went through a bad crash around 2010-11. So although it is growing again now, a lot of investors are still reluctant to invest.” For example, founders in relatively new or niche fields such as ocean agriculture, sustainable chemical separation, and hydrogen fuel reported that it was still difficult to raise capital as investors are unfamiliar with their technology and reluctant to commit large ticket sizes for its development.

Funds with explicit climate tech agendas mainly provide early-stage capital, and there is still a gap in funding for companies at the growth stage.

According to one founder, “There’s a big gaping hole in the middle of early-stage and late-stage growth capital, which would fund companies through the most critical stages of development.” With the memory of the failure of “Cleantech 1.0” still lingering, many investors remain risk averse or do not have experience investing large ticket sizes into companies looking to scale their solutions. The few growth funds that do exist have trouble selecting the right climate tech companies because there are relatively few examples of success stories at the Series B stage and beyond.

Limitations in investor knowledge contribute to the gaps in funding. According to **Heng Hiap Industries** founder Kian Hoe Seah, “Climate tech is new, and without the benchmark of successful companies, the investors don’t know how to invest

in the space, so they use their standard metrics.” Those indicators tend to come from the broader tech sector, in which entrepreneurial companies with a software business model are more common than in climate tech. Interviewed founders suggested that investors lack an investment rulebook on how to use relevant metrics to assess the growth potential of climate tech companies. Even at early stages, there is a lack of patient capital for hardware-based businesses, which are essential for mitigating climate change. (See the section on Hardware in Climate Tech on page 22.)

Entrepreneurs have implemented several solutions for accessing capital, the most common of which was building up their networks. First-time founders needed to rely more on introductions to investors via support programs or their other early investors. **Cell Propulsion** cofounder Nakul Kukar noted, “We are taking a multi-pronged approach; we are trying to leverage the network of our existing investors, the accelerators and incubators that we have been a part of, and our own personal networks.”

Attending and participating in conferences has also helped founders in this regard. One founder, who leads a company that addresses food safety and waste, commented, “I would definitely point to the Agri Food Innovation Summit. It’s a series of conferences that take place in San Francisco, London, and Singapore. And that tends to be an excellent venue for bringing together entrepreneurs, corporates, and investors.”

Some entrepreneurs have turned to alternative investment vehicles. One founder based in Europe, unhappy with the equity valuations he was being offered by European VCs, commented, “There are a lot of financial instruments where we are located, such as grants, subsidies, loans, and innovation credits. These subsidies and grants are mainly used as gap financing.”

Public funding was an important step for many climate tech founders that Endeavor

Insight interviewed. Founders mentioned that government grants for R&D from countries such as the United Kingdom, Netherlands, and the United States helped provide the capital needed to launch their businesses. Subsidies and tax breaks from governments around the world have also helped climate tech entrepreneurs. One Chilean founder explained, “Our main form of financing was non-refundable subsidies from the government. Also, if you are building an innovative company in Chile, you can apply for credit lines from CORFO, a government institution that supports innovation and entrepreneurship, or agricultural innovation funds.”⁵

Some subsidies are available only within certain innovation hubs or sectors. Houston’s East End Maker Hub is subsidized by the government,⁶ and founders there also benefit from a tax exemption for manufacturers purchasing equipment. In some countries, such as India, subsidies are provided to electric vehicle (EV) manufacturers.

Access to Talent

Founders ranked the availability of managers as a greater obstacle than technical talent, though both are challenging to acquire and retain.

Managerial Talent

Small talent pools, heavy competition, and high salary expectations are the top barriers for founders looking to hire managers.

Even in well-developed entrepreneurship communities, the problem of availability of managerial talent is significant because many of the industries within climate tech are small and nascent. They require niche skills and experience, which are limited. One London-based founder talks of the skills required, saying, “People who have familiarity with product or customer success in the climate space do not exist. You have to do training, you have to be iterative and flexible. We are building some of the first generation of climate tech product managers.” Founders also mentioned that startups tend to attract younger professionals, making it harder to hire mid-career managers.

Strong competition for management is a common theme throughout the industry, and is linked to both the size of the talent pool and salary expectations. Companies in fast-growing sectors such as energy storage face this problem more than most, as competition for talent among entrepreneurial companies is rising faster than the supply of experienced talent.

Even in well-developed entrepreneurship communities, the availability of managerial talent is lacking because many climate tech industries are small and nascent.

Endeavor Insight identified three main solutions that climate tech entrepreneurs are adopting to mitigate the challenge of acquiring managerial talent.

1. Some are recruiting experienced managers from adjacent traditional industries, such as automotives for electric vehicles, or oil and gas for renewable energy. This is easier to achieve for those in existing traditional hubs, as one Houston-based founder illustrates, “If it’s a manager for processing engineering, from oil and gas, that’s easy. But if it’s for genetic engineering for fermentation, there are fewer of them, and they’re not in Houston.”
2. Others have learned to rely on networks or word of mouth within the climate sector. According to one founder in the U.S. Midwest, “As my network has grown, I’ve gotten better access to people that I can bring in at the managerial level. Thanks to Endeavor and to our time in the space, I now have a bigger network to draw from. My advice to other companies would be, ‘if you don’t have access to hire good managers early on, don’t hire them. Don’t spend the money on people that really aren’t who you need, stay very flat. Then, as you grow your company and your network, you will then have access to the right people that you need to hire.’”
3. Founders also focus on building the company brand. This can include highlighting their leadership in the mission of addressing climate change, or emphasizing the intersection of tech and impact that appeals to many job seekers.

Other solutions include attracting managers from abroad, hiring talent remotely, and in-house training. One Singaporean founder addressed the barriers of hiring foreign nationals in a country that already has full employment by opening separate regional headquarters, “If we want to be the best in the world, the chances are better if we can get the best talent and that may not be possible just in Singapore. So having bases in Europe and the U.S. helps.”



Technical Talent

The main challenges for hiring and retaining technical talent are the same as for managerial talent — competition, salary levels, and supply shortages — though some individual factors differ.

Competition for technical talent comes from other climate tech companies in the rapidly growing field as well as from large corporations, making it difficult to attract and afford top-tier engineers. Tech corporations are expanding their operations, opening offices around the world, and hiring remotely. Increased demand from corporations with larger budgets than less established entrepreneurial companies may produce long-term benefits in terms of workforce skills as young people become encouraged to pursue careers in the field. But in the short term, climate tech companies are struggling to compete on salaries and benefits.

The issue of talent retention is exacerbated by the increased competition. This can be a costly issue if employees leave after the company invests in their training. As one founder notes, “When you’re disrupting a technology you have to hire and train your own people. So attrition is a challenge. If you’re the leader and disrupter, when you’re successful, the first thing your competition will do is hire your people. When big companies want to change, new companies or startups will be their first target to get people.”

The same founder advises focusing on the company culture as a solution. A flexible work environment will “keep people motivated and give them freedom, so that they operate like entrepreneurs. Then they will be afraid of going to the big company where things are more bureaucratic.”

Several founders of scaled companies have addressed this challenge by establishing their own internal training programs or partnering with vocational schools to prepare technical workers with the specific skills they need. Companies with innovative technology, such as first movers in hydrogen fuel, have a particular need to train talent internally because their potential talent pool is inherently limited. In more established industries, founders have identified specific geographies for recruiting experienced personnel. For example, founders looking for energy talent often look to Texas, while those looking for bioprocessing talent look to California, New Jersey, the United Kingdom, or Japan.

Some founders have hired foreign talent to address local shortages, but those companies often face legal complexities in hiring internationally and securing visas for employees. If such talent cannot be persuaded to relocate, some scaled companies have responded by opening regional offices in different talent hubs. At the same time, the COVID-19 pandemic accelerated the shift towards remote work and has given companies access to global talent pools, especially for technical roles like software development and coding.





Remote and purpose-driven work are changing how climate tech founders access global talent.

In some cases, software-focused climate tech founders mentioned that their companies were remote-first even before the pandemic for sustainability concerns, so they were well prepared for managing remote teams. **Amperon** cofounder Sean Kelly notes, “Amperon was already a fully remote company. So when COVID hit, we had an advantage on how to work effectively from home compared to our competitors who had tons of people in the office.” Other companies embraced remote working as soon as the pandemic struck. Kellee James, founder of **Mercaris**, explains the talent solutions that remote working has brought: “We went all remote, which was great for recruiting. The team has worked remotely for two years now and has been super productive. We’re going to stay 100 percent remote and that means we can source talent from everywhere.”

There are some downsides to this shift in professional norms, as maintaining company culture can be more difficult without in-person interaction. One founder notes, “Operating remote-first has meant that we can access a wider talent pool. However, when you’re building culture, it’s easier to be in-person.”

In terms of culture, climate tech is increasingly perceived as a more exciting sector to work in than so-called Big Tech. Being less mature, innovations are happening more quickly, and the sector does not carry the negative public perceptions of some established corporations. In contrast, climate tech is a space in which people are proud to work. Influential tech leaders are also turning their attention to the sector: Bill Gates has established the Breakthrough Energy Ventures climate fund, and the CTO of Meta, Mike Schroepfer, stepped down from his post in 2022 to focus on climate.⁷

Jonathan Strauss, the founder of Climate Draft, a company that connects tech talent with climate tech companies, highlights the growing trend of young technical talent entering the climate tech sector. He writes, “I think every generation has a zeitgeist...For Gen X that mission imprint for a lot of folks was the internet. I think for Gen Z that mission imprint is increasingly climate.”⁸ Climate tech businesses can take advantage of what is becoming a large migration of talent by stressing their companies’ missions and values. The fact that the problems they are looking to solve are complex can be another way to attract top talent.

Customer Acquisition

Founders face difficulty in boosting customer confidence and product adoption rates, which slows their potential impact.

Most of the interviewed climate tech companies have a business-to-business (B2B) model, serving other companies or corporations. Many founders experienced difficulties in convincing potential clients to trust their new technology and to switch over from using existing environmentally harmful products, even in cases without a “green premium.”

Founders frequently noted that securing their first customer was a major hurdle. This

is particularly difficult for B2B companies that are dealing with large corporate customers and hardware companies that require a customer to agree to a substantial capital investment. As one founder explains, “We’re a tiny company trying to talk to people like Duracell and Microsoft. It takes time to access the right people and time to have those discussions. The other thing is that nobody’s just going to buy your product off the shelf, they need to go through a test and evaluation process first.”

In order to address this, founders in the early stages have focused on segmenting the market to identify their customer niche, educating customers about their technology, and earning certifications

THE “GREEN PREMIUM”

The “green premium” is a concept introduced by Bill Gates in 2020 as a way to show the additional cost of choosing a clean technology over a traditional one that involves carbon emissions.⁹ It is not an exact science because of the number of variables involved in calculating the cost of new technologies and their carbon footprint, but can still provide a guiding point for policymakers and innovators. Gates’ example of the cost of jet fuel compared to biofuel from 2020 shows a green premium of more than 140 percent, a difference that makes a transition to biofuels not commercially viable.

Tax incentives and subsidies to either raise the cost of the carbon-intensive product or reduce the cost of the “green” product can reduce the green premium. Another option is to invest in innovation to reduce the cost of the new method. For example, innovations in energy storage and solar cells have combined with economies of scale to lower the green premium of solar energy. Consumer demand for clean alternatives also plays a role in influencing where investment is channeled.¹⁰

Within manufacturing, though, the green premium is more problematic, because of the number of carbon-releasing stages in production. The cement industry has a particularly challenging green premium. As one cement entrepreneur that spoke to Endeavor Insight states, “The cement and concrete industry is very antiquated. Anything with a green premium has had a problem getting off the ground. There were a few companies that started paving the way to get some adoption, but now the Global Cement and Concrete Association is making a commitment to get to net zero by 2050.” That founder’s company focuses on carbon capture in one stage of the production process.

Customer acquisition is clearly easier for products that do not have a green premium, or for products that can demonstrate a cost reduction over their lifetime, even if the initial outlay is higher than for a traditional product. EV producers use this factor to generate sales, and as unit economics improve, the initial purchase premium will fall further.

where applicable. By establishing credibility, founders gained their first few customers and then grew sales through referrals, word of mouth, and digital marketing.

This kind of thinking can also apply to geographic expansion strategies. Taras Wankewycz, founder of the B2B hydrogen-based aviation company **H3 Dynamics**, explains, “We have geographic flexibility, meaning we don’t know from the beginning which part of the world will adopt what we are doing the quickest. So we scan every bit of the world to find where things are moving the quickest and for which area of the business. For example, digitizing city infrastructure maintenance work in Singapore is much faster than in Europe because Singapore is leading on smart nation topics globally. But if we’re talking about decarbonization of flight, Europe becomes a more logical location for those activities.”

Long sales cycles present a tough challenge for B2B founders, especially in agriculture and energy.

One founder of an energy storage company highlighted, “The sales cycle is seven years, so if we acquire one customer we are successful, and if we acquire two customers we are wildly successful.”

In agriculture, securing enough volume is also an issue for companies whose primary customers are farmers. To address this, **Aerobotics** began to diversify its products and bundle its artificial intelligence (AI) technology with services like crop insurance to get more farmers on board. As cofounder Benji Meltzer explains, “In agriculture, products are sold over decades and generations, and trust is a big thing. As we have grown, it has become easier to gain access to growers, but it can be difficult to gain access to all of their acreage. We’re partnering with other companies, looking at product propositions we can layer on top of what we offer, so that our insurance product can be a lead generator to the rest of the business.”

Several entrepreneurs secured their initial customers through their pre-existing networks or with the help of their mentors or accelerator programs. Sunny Sanwar, founder of the energy consumption data platform **Dynamhex**, notes, “We had a fairly deep network, through mentors who introduced us to contacts at large companies who set net zero targets. So we were able to get people one to two degrees away from ourselves into our network.”

Companies operating a business-to-consumer (B2C) model do not face the same customer acquisition challenges of those in B2B markets.

For these companies, long sales cycles are less of an issue as they are less likely to have to communicate with multiple departments in a company to close a sale, but building credibility and brand awareness is key. COVID-19 has increased climate awareness among the public, boosting adoption rates for consumer products that address topics like pollution, transportation, and health. According to **uHoo** cofounder Dustin Jefferson Onghanseng, whose company sells air quality sensors that monitor airborne pollutants and other risk factors, “The increased awareness and focus on health and well-being, sustainability and the importance of ESG [environmental, social, and governance factors] has put the quality of air in the workplace as a priority amongst organizations. It’s no longer a question of why air is important. Today, excellent indoor air quality is a necessity and a bare minimum for asset owners and organizations.”

Entrepreneurs offering new solutions to the public have found that targeted marketing and customer education have helped. For example, consumers often do not realize that buying an EV or installing solar panels will be financially beneficial for them after just a few years. In those cases, campaigns to improve financial literacy by explaining the costs and benefits have been effective. Similarly, founders have strengthened their marketing and sales teams to differentiate their products from competitors and create a unique customer niche.

Hardware in Climate Tech

A transition to sustainability requires prioritizing hardware companies, but they are not receiving enough investment or support.

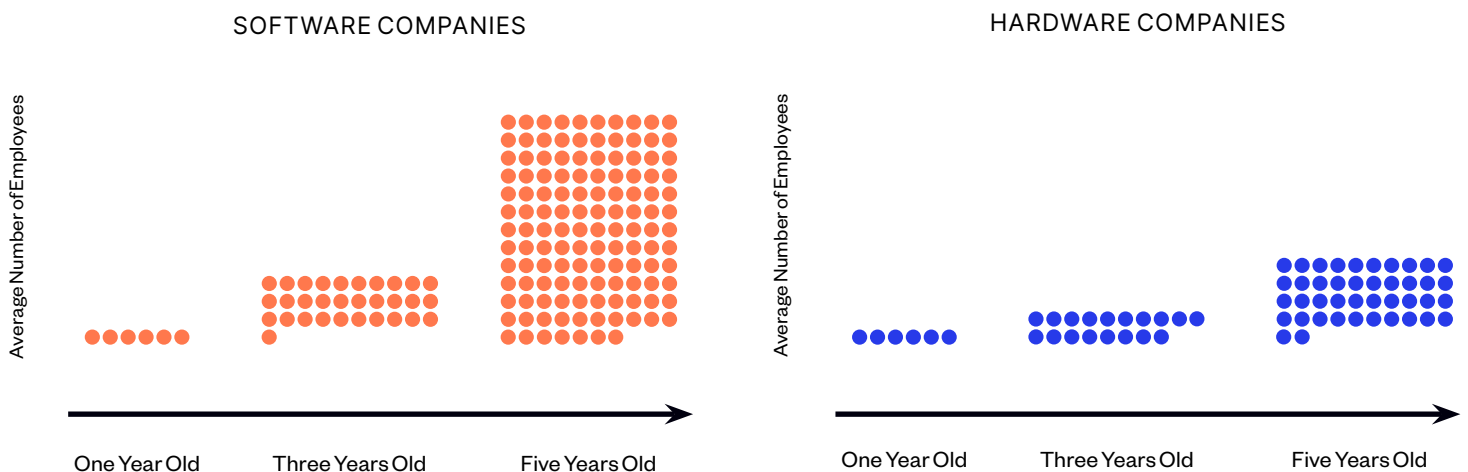
Hardware is particularly important in climate tech because software alone cannot transform how humans produce and consume energy, food, materials, or other resources. However, a combination of factors — including investor reluctance and supply chain shortages — are hampering founders' ability to scale up their companies.

Despite the growth of investor interest in climate tech, there is still a relative lack of funding for hardware businesses, even at the earlier stages. In the words of one founder, "It's almost impossible to do climate tech unless you have hardware. And the fact that we have hardware means that the traditional VCs just run away from us." This reluctance to invest in hardware is often the result of institutional investors predominantly engaging with software business models and not having the scientific and engineering expertise to assess the viability of hardware.

Long development timelines also contribute to investor hesitancy, as the VC model was initially designed for capital-efficient software companies. The founder of a plant-based plastic alternative company explained, "Our time horizon is seven years, while for software it's two years. So it's tough to get people to give us money." The graph below shows that hardware companies have longer development timelines, typically reaching fewer than 50 employees after five years, compared to over 120 employees for software companies. The different growth pace for hardware is often due to necessary steps such as R&D, prototyping, factory production, and shipping.

The longer development timeline for hardware companies requires investors to provide more patient capital and to adjust their expectations for the timeline of returns. New investment firms that are committed to investing in hardware companies have recently emerged, such as Third Sphere and The Engine, but the total amount of funding available for hardware is still insufficient.

COMPARATIVE DEVELOPMENT TIMELINES OF CLIMATE TECH COMPANIES BY BUSINESS MODEL



Note: Each circle represents one employee. Endeavor Insight collected primary data on comparative development timelines by asking climate tech founders how many employees they had after one, three, and five years of operations.

Sample size: 156 companies. Source: Endeavor Insight interviews and analysis.

Since the onset of the COVID-19 pandemic, hardware companies in climate tech have faced particular challenges that have disrupted their growth, including supply chain issues and semiconductor shortages.

According to interviewed founders, shortages in key components that are almost exclusively manufactured in China have continue to affect their growth. The founder of a company that engineers solutions for energy efficiency commented that “COVID has affected our supply chains all around, so we’ve got a huge order book, but we’re not able to fulfill everything because of bottlenecks in the supply chain. It’s been an anchor holding us back.”

While the lockdowns affected the whole world, factory and lab closures were more sustained in Asia, affecting both companies located on the continent and those based elsewhere relying on their products. Additionally, given a greater reliance on manufacturing and lab facilities, hardware companies were less able than their software peers to adjust their workforce to working remotely.

By mid-2022, operational capacity had improved and traction with customers recovered, though the knock-on effects of the pandemic and the war in Ukraine — such as the supply chain crisis and inflation — continue to have an impact on hardware companies. According to one entrepreneur, “A major constraint on our ability to scale is supply chain at this point. We’re tackling this through getting multiple vendors. We’ve also taken things in-house that make sense to take in-house and control our own destiny there.”

Founders expect that they will continue to face difficulties in this regard, which will delay the development, piloting, and launch of their products. In some cases, hardware founders have had to redesign their products to account for the unavailability of specific chips or components. However, recent legislation in the United States may provide some relief to hardware companies that are based there and facing input shortages.

In August 2022, the U.S. president signed into law the CHIPS and Science Act, which provides \$52 billion in subsidies for U.S. chip manufacturers, and over \$100 billion in technological and scientific investments, to support domestic semiconductor production.¹¹ The legislation aims to address the decline in U.S. manufacturing due to increased competition from Asia — the United States has seen its global share of semiconductor production capacity fall from 37 percent in 1990 to 12 percent in 2022.¹² This will help ease supply chain problems for such components for U.S. companies.

The wide-ranging Inflation Reduction Act (IRA), also signed into law in August 2022, will have a positive impact on climate tech entrepreneurs. It authorizes \$369 billion in spending on energy and climate change. This will mostly be via tax credit provisions for renewable energy manufacturing infrastructure, carbon capture, home insulation, clean household energy, and commercial clean vehicles. All of these measures will provide a substantial boost in domestic demand for climate tech products.¹³

Hardware companies have longer development timelines that require investors to provide patient capital and to adjust their expected time horizons for returns.

Scale and Connectivity

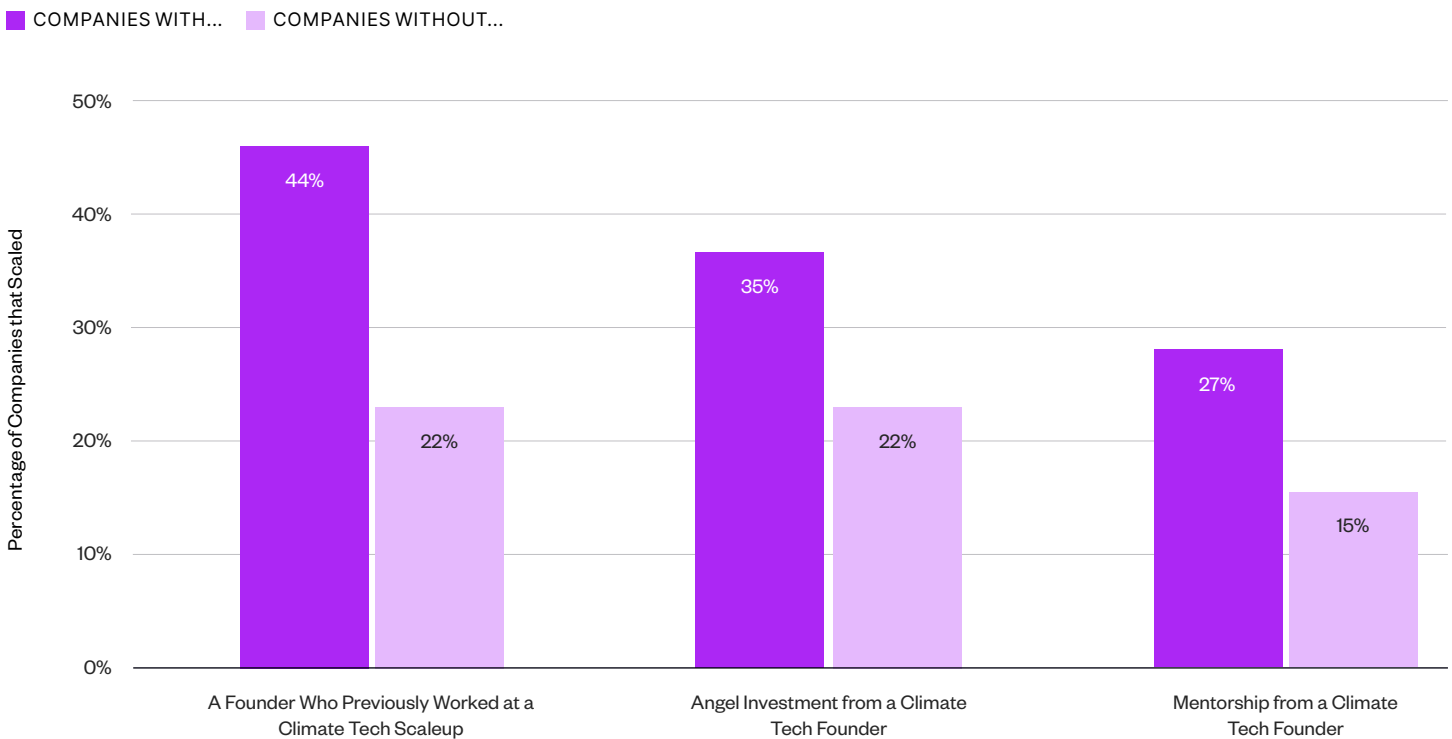
Founder-to-founder relationships help climate tech companies scale, and scaled companies are more likely to give back to their entrepreneurial communities.

Climate tech companies with certain traits are more likely to scale up, as illustrated in the graph below. The data collected for this study shows that climate tech companies with a founder who previously worked at a scaled climate tech company are twice as likely to reach scale than those that did not. The experience and knowledge of working at a growing company — and potentially the mentors and network gained from the

experience — confer advantages that founders can then leverage for themselves.

Climate tech companies that received angel investment or mentorship from the founder of a different climate tech company are also much more likely to scale than those that did not. This underscores the importance of founders giving back to the next generation of entrepreneurs, as they are well equipped to select and support the types of companies that have the potential to grow and have a high impact.

CLIMATE TECH FOUNDERS WHO ARE CONNECTED TO OTHERS ARE MORE LIKELY TO SCALE THEIR COMPANIES



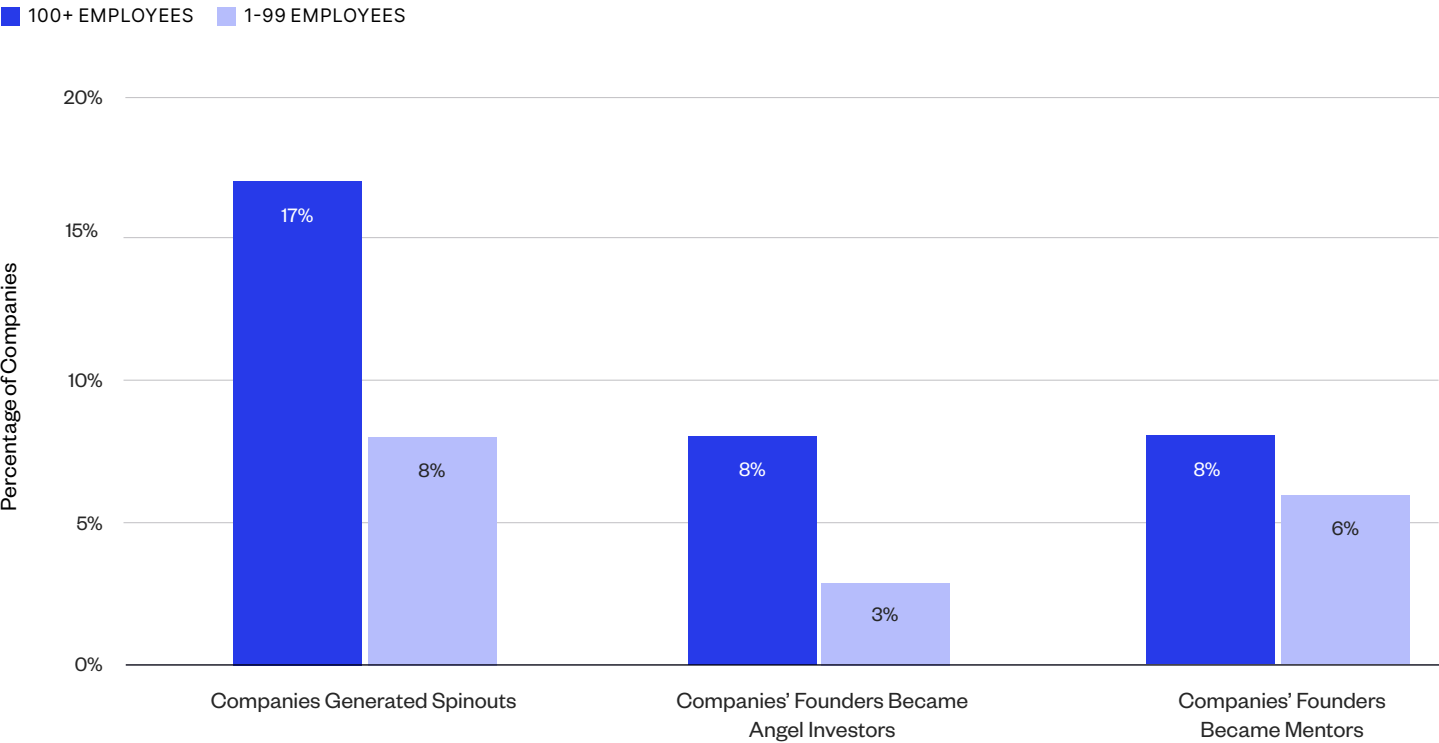
Note: Scale refers to companies that have 100 or more employees.

Sample sizes: 1,057 companies for "A Founder Who Previously Worked at a Climate Tech Scaleup," 1,061 companies for "Angel Investment from a Climate Tech Founder," and 198 companies for "Mentorship from a Climate Tech Founder." Sources: Endeavor Insight founder interviews, PitchBook, Crunchbase, and LinkedIn.

Reaching scale allows companies to have a greater impact on the world in terms of delivering products and services to address climate change, as well as job creation and financial success. On top of that, as the graph below shows, scaled companies are also more likely to give back to their entrepreneurial communities. Founders that give back to the community contribute to the growth of self-propelling entrepreneurial ecosystems, making it more likely that up-and-coming founders can succeed and scale their own companies.¹⁴

Within the climate tech sector, scaled companies are more than twice as likely to generate spinouts than companies that have not scaled. Given the advantage that previous experience at a scaled company gives to new founders, this is a particularly potent way for entrepreneurial communities to grow. The potential for such a virtuous cycle is further strengthened via scaled founders investing in or mentoring the founders of the next generation of companies. This is reflected in the data from this project, which shows that founders of scaled climate tech companies are more likely to become angel investors and mentors than those of non-scaled companies.

CLIMATE TECH COMPANIES THAT HAVE SCALED ARE MORE LIKELY TO PAY IT FORWARD TO OTHER FOUNDERS



Note: Endeavor Insight considered a company to be “paying it forward” if the company generated spinouts, or if its founders became angel investors and/or mentors to other entrepreneurs.

Sample sizes: 1,061 companies for spinouts and angel investment; 198 companies for mentorship. Sources: Endeavor Insight founder interviews, PitchBook, Crunchbase, and LinkedIn.

IV. Six Climate Tech Hubs

TECH HUBS AROUND THE WORLD BRING DIFFERENT STRENGTHS IN ADDRESSING CLIMATE CHANGE.

Six entrepreneurial ecosystems were selected for closer study: the San Francisco Bay Area, the New York Metro Area, the Houston-Austin Corridor, Greater Berlin, Greater London, and Greater Tel Aviv. They are all highly populated metropolitan areas that have built strong business environments to become leaders in the entrepreneurial climate tech sector. These climate tech hubs benefit from resources they attract from around the world, as well as their local strengths. Endeavor Insight analyzed more than 750 entrepreneurial climate tech companies from these six hubs to understand their comparative advantages, challenges, and interconnectivity.

Studying entrepreneurial companies in each hub can help decision makers and stakeholders identify the types of companies concentrated in their region, how they compare to their peer geographies, and their competitive advantages. Endeavor Insight conducted data analysis on several variables to compare entrepreneurial activity in the six climate tech hubs. The table below presents entrepreneurial indicators that measure five key aspects of climate tech entrepreneurship: scale, capital, dynamism, inclusion, and hardware. Decision makers can use this table to diagnose the relative strengths and weaknesses of their entrepreneurial ecosystems.

COMPARISON OF ENTREPRENEURIAL INDICATORS IN SIX CLIMATE TECH HUBS

	San Francisco	New York	Houston-Austin	Berlin	London	Tel Aviv
MARKET Number of Companies	240+	110+	90+	60+	130+	90+
SCALE Companies with 100+ Employees	Above Average	Average	Below Average	Average	Below Average	Below Average
CAPITAL Companies that Raised \$10M+	Above Average	Below Average	Below Average	Below Average	Below Average	Average
DYNAMISM Companies Founded in the Last 5 Years	Below Average	Average	Above Average	Above Average	Average	Below Average
INCLUSION Companies with at Least One Female Founder	Average	Above Average	Below Average	Above Average	Average	Below Average
HARDWARE Companies with a Hardware Business Model	Average	Below Average	Above Average	Average	Below Average	Average

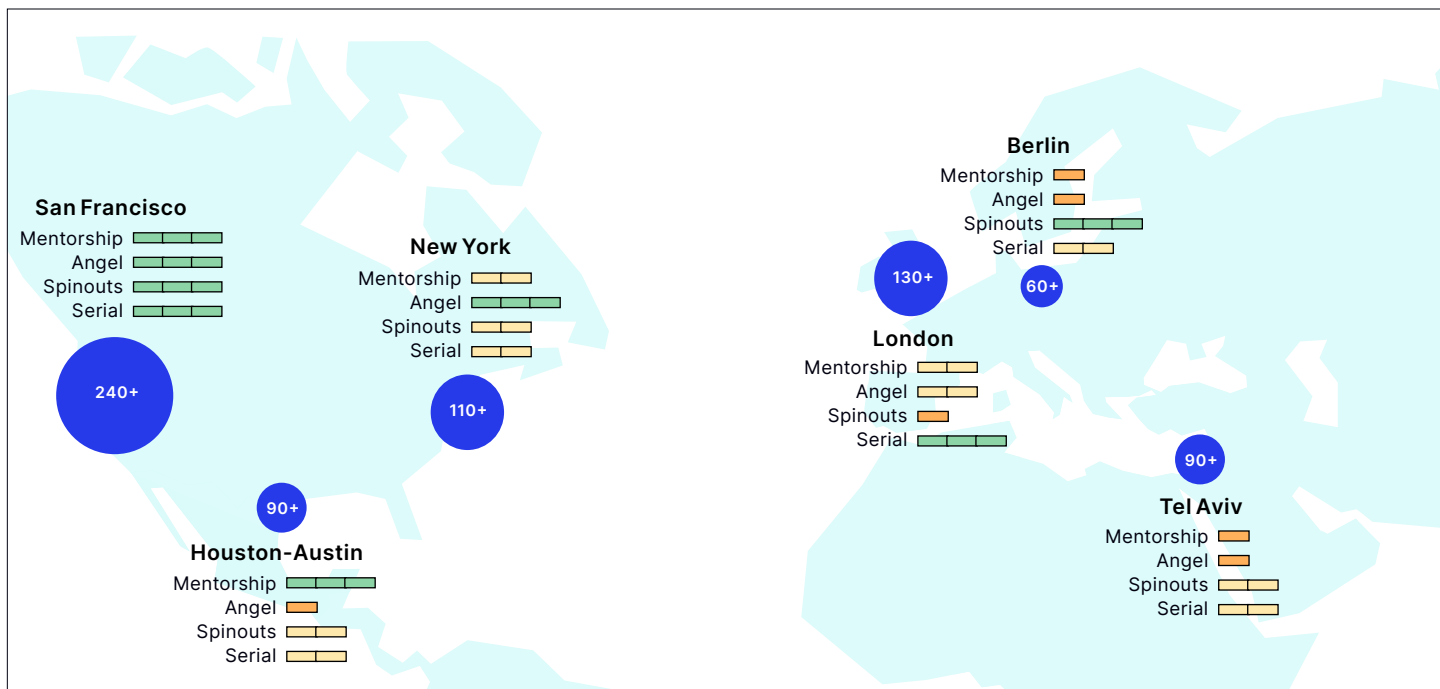
Notes: City names refer to the greater metropolitan or larger geography. For each indicator, Endeavor Insight categorized a hub as “below average” if the metric was at least 5 percent below the mean of the six hubs, “average” if it was within 5 percentage points of the mean, or “above average” if it was at least 5 percent above the mean. For the capital category, \$10 million was chosen as the threshold to serve as a proxy to identify growth-stage companies, similar to 100 employees for scale.

Sources: Endeavor Insight analysis, LinkedIn, PitchBook, and Crunchbase.

ENTREPRENEURIAL MULTIPLIER SCORES IN SIX CLIMATE TECH HUBS

An Assessment of the Entrepreneurship Ecosystems Based on Founder Connectivity and Reinvestment

● Number of climate tech companies ■ Robust ■ Promising ■ Lacking



Notes: City names refer to the greater metropolitan or larger geography. Endeavor Insight categorized hubs as “lacking”, “promising”, or “robust” depending on how each metric compared to the average of the six hubs. Mentorship scores are based on the percentage of active mentors per interviewed founder. Angel Investment scores are based on the percentage of angel investors per founder. Spinouts are companies founded by a former employee of a climate tech company before in the same hub, calculated as a percentage per company. Serial entrepreneurship is when a founder of a climate tech company went on to found one or more other climate tech companies in the same hub, calculated as a percentage of founders.

Sample size: 753 companies. Sources: Endeavor Insight analysis, LinkedIn, PitchBook, and Crunchbase.

When founders act as angel investors or mentors, have spinout companies, or become serial entrepreneurs, they have a multiplier effect on their entrepreneurial community. Founder reinvestment and founder-to-founder connections are key to the development of a self-propelling entrepreneurial ecosystem, in which new generations of companies can build on the successes of scaled founders.¹⁵ The map above presents the multiplier scores of mentorship, angel investment, employee spinouts, and serial entrepreneurship across the six hubs. These scores characterize the strength of each of the four connection types on a three tier scale. For climate technologies to reach scale rapidly, decision makers can identify which types of connections are lacking in their hub and support the development of those founder-to-founder connections.

Endeavor Insight also identified the specific characteristics of each hub. In dozens of interviews, founders explained the positive and negative aspects of the geographical location of their company. Additionally, Endeavor Insight identified sectoral strengths and emerging subsectors in each hub by analyzing trends in what types of companies were the most represented among the top performers in terms of scale and capital raised.

SAN FRANCISCO

San Francisco and the wider Bay Area have a strong entrepreneurial ecosystem across several climate tech industries, with capital readily available as well as environmentally conscious policies at the state and local levels.

Number of companies	240+
Scale	Above Average
Capital	Above Average
Dynamism	Below Average

RELATIVE STRENGTHS

Climate tech companies in the San Francisco Bay Area are more likely than those in other hubs to reach scale and raise at least \$10 million in funding, indicating the enduring strength of the renowned Silicon Valley community. Long regarded as the center of technologically innovative startups, the Bay Area is home to numerous founders, investors, and support organizations. This environment provides entrepreneurs with greater chances of encountering funding and networking opportunities with less time and effort. Due to the concentration of investors in the area, capital is readily available, and founders are able to raise rounds close to home.

The Bay Area’s deep history with tech entrepreneurship also means that it has a high concentration of experienced talent. Its local universities, such as Stanford University and the University of California, Berkeley, produce talented climate tech professionals. Software engineering talent is especially abundant. Furthermore, given the evolution of public sentiment around climate change, the number of tech professionals in the Bay Area interested in transitioning from working at a Big Tech company like Google to entering climate tech is growing.

SECTORAL STRENGTHS

- Energy
- Mobility and transport
- Climate change management and reporting

SUBSECTORS TO WATCH

- Climate data reporting
- EV chargers and batteries

RELATIVE WEAKNESSES

The preponderance of investors and support organizations in the San Francisco Bay Area can be a double-edged sword, as founders must sift through numerous options to find the ones that are most meaningful. The Bay Area is saturated with support programs, many of which require a lengthy time commitment without sufficient returns, hindering the development of entrepreneurial companies. Traditionally, investors in the Bay Area have focused on high-growth software companies. As a result, founders noted that some investors still do not have a sufficient understanding of longer-term hardware business models, like those in climate tech.

While the large number of companies in the Bay Area allows for numerous networking opportunities, it also leads to heavy competition for recruiting. The presence of the Big Tech giants drives up the cost of talent, making top-tier technical talent too expensive for early-stage companies. Climate tech founders expressed that they require more capital than companies located elsewhere to sustain and attract talent. General operational costs and costs of living are also high in the Bay Area. These factors may be contributing to the lower dynamism of the Bay Area, in terms of having a lower share of young companies compared to other hubs.

COMPANY HIGHLIGHT: PACHAMA

Tomas Aftalion, a machine learning expert, and Diego Saez Gil, a serial entrepreneur, founded **Pachama** in San Francisco in 2018 after seeing inefficiencies in the carbon credit market that they wanted to solve. Pachama is a software platform that uses satellite data, remote sensing, and machine learning to measure the carbon captured by forests and sell credits for projects that protect them. The platform eliminates the need for corporations seeking to offset their carbon footprint from doing costly, time-intensive due diligence on their investments in carbon credit projects as they reach their net zero targets. By 2022, the company had grown to employ over 70 people, and its carbon credits have protected and restored over 1.8 million hectares of forest.¹⁶

They initially faced a challenge in overcoming distrust in the legitimacy of the carbon credits market. As Aftalion explains, “When we started, investors still had a mindset of the 2009 carbon credit market crash and were pretty much risk-averse.”¹⁷ So they partnered with legacy industry players and increased transparency and integrity to overcome existing concerns about the true climate and community benefit delivered by carbon markets.

The company has benefited from its location in Silicon Valley. Pachama participated in a Y Combinator program, which gave them connections to Big Tech companies and support organizations in the area. This helped the founders land their first major client, Microsoft, giving them credibility and easing the challenge of further customer acquisition. In the past three years, Pachama has partnered with notable clients including Salesforce, Shopify, and Netflix. It has raised \$79 million, including a Series B round in 2022, supported over 150 projects in over 14 countries across the world, and launched new projects in Brazil, Mexico, and the United States.¹⁸



Left to right: Diego Saez Gil and Tomas Aftalion

COMMON UNIVERSITIES ATTENDED BY CLIMATE TECH FOUNDERS*

- Stanford University
- University of California, Berkeley
- Santa Clara University
- University of California, San Francisco
- San Francisco State University

COMMON FORMER EMPLOYERS OF CLIMATE TECH FOUNDERS

- Alphabet (including Google)
- Applied Materials
- SunPower
- NRG Energy
- Apple
- Lyft

PROMINENT CLIMATE TECH INVESTORS

- Plug and Play Tech Center
- Y Combinator
- Climate Capital
- Khosla Ventures
- Kleiner Perkins

NOTABLE COMPANIES



* Note on Methodology: For each hub, the lists of universities and former employers were generated by ranking those entities based on the number of connections they had to founders of companies in the dataset. For former employers, only companies that were identifiable and had at least 50 employees were listed, and universities were excluded as employers. The lists of prominent climate investors were generated by identifying the institutional investors whose offices are in that hub and ranking them by the number of investments they made in climate tech companies in the dataset.

Note: Yellow rings denote companies with at least one female founder. The listed companies were selected because they are high performers based on indicators such as employee size and amount of capital raised. This is not an exhaustive list.

NEW YORK METRO AREA

The New York Metro Area has a strong economy with experienced talent in the financial and marketing sectors, and strong public policy for climate tech.

Number of companies	110+
Scale	Average
Capital	Below Average
Dynamism	Average

RELATIVE STRENGTHS

The New York Metro Area is home to a host of mature industries as well as a large, diverse workforce, which leads to an inclusive and productive entrepreneurial ecosystem. The abundance of talent available within the hub, especially from the finance, business development, and marketing industries, means that climate tech founders can readily recruit experienced managers for those types of roles. Additionally, the concentrated presence of banking institutions — as evident by the list of most common former employers in this hub — provides strong access to financial services.

Entrepreneurs reported that New York benefits from a strong founder-to-founder network, which opens the way to mentorship and other connections that can provide access to capital, talent, and customers. As one founder noted, “The New York ecosystem is very big on helping each other, so some people have done whatever they could to help us.” The strong support for certain subsectors, such as built environment, from the New York State Energy Research and Development Authority (NYSERDA) and other public agencies also contributes to the entrepreneurial community’s strength. (See the Comparative Policy Analysis section on page 44.)

SECTORAL STRENGTHS

- Built environment
- Food, agriculture, and land use

SUBSECTORS TO WATCH

- Buildings/utilities efficiency
- Urban farming

RELATIVE WEAKNESSES

While there are large numbers of climate tech companies in the New York Metro Area, founders reported that the community needs greater coordination with climate tech support organizations and investors. Founders reported that they felt limited to their own industry’s circles and that efforts to bring together entrepreneurs and other ecosystem actors from across the various climate tech industries are not very well established in the hub. As a result, much of the capital from climate tech investors based in New York is going to companies based elsewhere.

The high cost of living in the New York Metro Area can make attracting and retaining talent difficult, especially for founders who have not raised sufficient capital. One founder from the area explained, “Unfortunately I’m outsourcing a lot of our work to lower-cost markets, whereas I would probably benefit from the entire team being in New York City.” This constrains the development of the local entrepreneurial network since those employees are likely to stay in other geographies if they create their own spinouts or become angel investors following an exit.

COMPANY HIGHLIGHT: AEROFARMS

AeroFarms was founded in 2004 by David Rosenberg, Dr. Edward Harwood, and Marc Oshima. Rosenberg, a serial entrepreneur who had developed circular economy solutions, wanted to transform agriculture by pioneering an indoor vertical farm. He combined forces with Harwood, a professor at the Cornell School of Agriculture, and Oshima, an experienced marketing executive from the food industry. As a Certified B Corporation, AeroFarms uses the latest breakthroughs in indoor vertical farming, artificial intelligence, and plant biology to improve the way produce is grown and distributed locally and globally.* Its technology enables year-round local food production using up to 95 percent less water than traditional farming.¹⁹

The combination of scientific, entrepreneurial, sales, and marketing skills on the founding team has been beneficial. As CEO, Rosenberg focuses on a culture of environmental awareness throughout the company. He says, "What we've done well is to ingrain what is environmentally smart in the organization. How do

we do more with less, in everything we do? That mantra resonates in design, R&D, operations, sales, and beyond."²⁰

AEROFARMS®

AeroFarms benefits from an excellent supply of talent in the New York region and has

further strengthened its technology by working with universities throughout the

United States. The company's newest indoor vertical farm in Virginia, opened in September 2022, is capable of growing over three million pounds of leafy greens annually and is the largest aeroponic smart farm in the world.²¹ To elevate agriculture globally, the company also launched AeroFarms AgX in Abu Dhabi in 2022, which is the world's largest R&D indoor vertical farm.²²

* B Corporations are for-profit companies certified by the nonprofit B Lab to meet rigorous standards of social and environmental performance, accountability, and transparency.

COMMON UNIVERSITIES ATTENDED BY CLIMATE TECH FOUNDERS

- Columbia University
- New York University
- Rutgers University
- City University of New York
- New Jersey Institute of Technology

COMMON FORMER EMPLOYERS OF CLIMATE TECH FOUNDERS

- Goldman Sachs
- J.P. Morgan
- Morgan Stanley
- Alphabet (including Google)
- McKinsey & Company

PROMINENT CLIMATE TECH INVESTORS

- Third Sphere
- URBAN-X
- Blackrock
- Lowercarbon Capital
- Energy Impact Partners

NOTABLE COMPANIES



Note: Yellow rings denote companies with at least one female founder. The listed companies were selected because they are high performers based on indicators such as employee size and amount of capital raised. This is not an exhaustive list.

HOUSTON-AUSTIN CORRIDOR

The growing climate tech community in the Houston-Austin Corridor is attracting talent from traditional energy giants to build innovative new hardware for sustainable manufacturing processes and renewable energy production.

Number of companies	90+
Scale	Below Average
Capital	Below Average
Dynamism	Above Average

RELATIVE STRENGTHS

The Houston-Austin Corridor is located in Texas, which is considered the energy capital of the United States. Therefore, this hub boasts a large supply of specialized talent with experience in the energy industry. This includes mechanical engineers, chemical engineers, electrical engineers, and project managers. Many of these skilled professionals are now bringing their expertise to climate tech companies as founders, employees, and mentors. As a result, the Houston-Austin Corridor has the highest proportion of hardware companies of all the six hubs. The hub is also leading the way for energy and industrial manufacturing, with three-quarters of its companies falling into those two industries.

Established energy corporations play a large role in the local climate tech community, and many are creating their own sustainability-focused divisions or venture arms. Corporations sometimes provide funding and support to climate tech founders, but they can also exacerbate competition for talent and customers.

The cheap costs of living, purchasing land, and operating a business in Texas are also drawing founders to the state. This is especially true for hardware companies because of their need for physical space for lab facilities and warehouses. As a result, Houston-Austin is a dynamic hub with a higher concentration of young, growing companies.

SECTORAL STRENGTHS

- Energy
- Industry, manufacturing, and resource use

SUBSECTORS TO WATCH

- Fuel cells and batteries
- Solar energy systems

RELATIVE WEAKNESSES

According to interviewed founders, the lack of local venture capital is one of the weaknesses in the Houston-Austin Corridor. As one founder described, “None of our investors are in Texas. We had to look outside to get investment.” Many of the local energy investors in Houston-Austin are oriented towards supporting established corporations such as the “tried and tested” giants that are now starting sustainability-focused divisions, rather than innovative startups. This dynamic requires Texas-based climate tech founders to spend more time building distant networks to gain funding.

Founders also observed that the entrepreneurial ecosystem does not have much support available for climate tech companies outside of the energy or manufacturing industries. One founder working on climate software explained, “I rely more on connections outside Houston because our business relates more to fintech than energy.” The limited local network for support and funding means that Houston-Austin companies experience greater difficulty scaling up to 100 employees and raising at least \$10 million. In addition, the Houston-Austin Corridor lags behind other hubs in terms of its presence of female-led companies.

COMPANY HIGHLIGHT: SYZYGY PLASMONICS

Syzygy Plasmonics was founded in Houston in 2018 by Suman Khatiwada and Trevor Best. The founders seek to decarbonize chemical manufacturing by producing a highly efficient chemical reactor based on technology that was developed at Rice University's Laboratory for Nanophotonics. Because Syzygy's breakthrough reactor uses light rather than heat to catalyze chemical reactions, it greatly improves the efficiency of producing several chemicals, including hydrogen, methanol, and ammonia. As a result, it has multiple use cases across industries, including the production of clean hydrogen and low or zero-emissions fertilizers and fuels. Syzygy expects its technology to prevent one gigaton of carbon dioxide emissions by 2040.²³

The cofounders previously worked together at the R&D division of Baker Hughes, a large oilfield services corporation. Their work at Baker Hughes gave them experience in product development, and Houston has proven to be a beneficial location to base the business. According to Best, "When you break it down, climate tech is energy tech. And from infrastructure to financing, Houston knows energy. We have had great success in finding top-tier talent coming out of the energy industry in Houston."²⁴

Best also acknowledges the strength of the entrepreneurial community in the city, with a strong founder network rich in mentors and energy expertise.

Syzygy signed its first commercial agreement in late August 2022 thanks in no small part to its connections within the energy and manufacturing industries. To accommodate growth and chemical reactor testing requirements, the company opened a new headquarters, R&D center, and manufacturing facility in the Houston suburb of Pearland earlier in 2022.²⁵ Supply chain slowdowns led them to hire dedicated personnel to manage vendors and to track the numerous orders at all points of the supply chain. The company has grown steadily to employ more than 70 people, and its focus now is on continuing to staff up to meet customer demand.²⁶



COMMON UNIVERSITIES ATTENDED BY CLIMATE TECH FOUNDERS

- University of Texas at Austin
- Rice University
- University of Houston
- University of St. Thomas

COMMON FORMER EMPLOYERS OF CLIMATE TECH FOUNDERS

- Shell
- NASA
- Baker Hughes
- Dell Technologies

PROMINENT CLIMATE TECH INVESTORS

- Capital Factory
- MicroVentures
- University of Texas at Austin
- Chevron Technology Ventures
- SXSW

NOTABLE COMPANIES



Note: Yellow rings denote companies with at least one female founder. The listed companies were selected because they are high performers based on indicators such as employee size and amount of capital raised. This is not an exhaustive list.

GREATER BERLIN

The Greater Berlin hub has a growing climate tech sector with environmentally conscious policies and strong consumer interest in sustainable products.

Number of companies	60+
Scale	Average
Capital	Below Average
Dynamism	Above Average

SECTORAL STRENGTHS

- Energy
- Mobility and transport

SUBSECTORS TO WATCH

- Solar energy systems
- Electric bikes/scooters

RELATIVE STRENGTHS

The climate tech sector in Berlin has been growing quickly, and the city is an inclusive hotspot for entrepreneurs. Berlin has the most dynamic climate tech sector out of all the hubs, with nearly two-thirds of its companies founded within the past five years alone. Many of these companies are led by female founders. Of the six hubs, Berlin has the highest proportion of climate tech companies with at least one female founder.

Germany's membership of the European Union provides easy access to other EU countries, making international expansion a relatively smooth process for Berlin-based companies. Companies also benefit from EU programs that provide funding and support for climate tech companies. One founder described Berlin as "the hub of Europe," especially since Brexit, which diminished London's integration with the continent.

On the talent front, the reputation of German businesses supporting a healthy work-life balance helps bring skilled professionals to the city. The presence of strong research universities also attracts international students to Berlin, which creates a talent pipeline for local climate tech companies. Additionally, there is a significant market for sustainable products due to customer demand, with many corporations looking to take advantage of climate tech innovations.

RELATIVE WEAKNESSES

The large, growing number of entrepreneurial companies in Berlin relative to the amount of support available in the climate tech community is beginning to oversaturate the market. Entrepreneurs reported slower responses from investors and support organizations as a result. In the words of one founder, "It's such an entrepreneurial ecosystem that having a startup is not so special; it's common to a point that there are startups that may get lost." Given the shortage of local investors, Berlin-based companies are less likely than those based in other hubs to raise at least \$10 million in funding.

Public policies in Berlin and Germany can pose a challenge for entrepreneurs. While there is a strong focus on climate and sustainability, few policy incentives for entrepreneurs exist. Founders based in Berlin also reported that the process of setting up and running a business can be costly and slow.

COMPANY HIGHLIGHT: ONOMOTION

Beres Seelbach, Murat Günak, and Philipp Kahle founded **ONOMOTION** in Berlin in 2017. ONOMOTION provides urban logistics solutions by manufacturing its ONO E-CargoBike, which is a replacement for other last-mile delivery vehicles and features a modular, three-wheeled design. Seelbach explains, “We wanted to create products that combine the best of electric bikes, cars, and trucks. We saw that electric vans are not ideal for cities because they are too big, so we had the idea of building smaller vehicles to overcome this.”²⁷ The design of the bike guarantees weather protection, a battery with a range of 30 km, and tracking through GPS.

Seelbach is a serial entrepreneur and met Kahle at his previous company, which was also in the field of electric mobility. They met Günak through professional connections, as Günak had worked at a client company. The three co-founders launched ONOMOTION with the goal of transforming urban mobility to be more sustainable and cost-effective. The company began prototyping and did customer trials in 2017, before renting e-bike fleets to its initial customers, which include couriers and parcel delivery companies, in 2020.²⁸ By early 2022, ONOMOTION had grown to over 60 employees. It reflects Berlin’s dynamic climate tech sector, having launched within the last five years and raised multiple rounds of funding, including a later-stage VC deal in 2022.²⁹



Left to right: Beres Seelbach, Philipp Kahle, and Murat Günak

The company has benefited from Berlin’s pool of talent, with Seelbach noting, “Berlin has a lot of young talented and motivated people who are looking to make an impact.”³⁰ He adds that their impact-driven mission has been a significant selling point for recruiting and retaining talent at the managerial level. The company has grown steadily in employee numbers, although the COVID-19 pandemic’s negative impact on the European supply chain has hindered growth. As a hardware company, ONOMOTION has experienced a shortage of materials that has been exacerbated by the war in Ukraine. However, COVID-19 also propelled the e-commerce and last-mile delivery sectors, having some positive effects on demand for the company.

COMMON UNIVERSITIES ATTENDED BY CLIMATE TECH FOUNDERS

- Freie Universität Berlin
- Technische Universität Berlin
- Hochschule für Technik und Wirtschaft Berlin
- Hertie School

COMMON FORMER EMPLOYERS OF CLIMATE TECH FOUNDERS

- Rocket Internet
- Nokia Siemens
- Delivery Hero
- Arup
- Soundcloud

PROMINENT CLIMATE TECH INVESTORS

- Global Founders Capital
- Innogy Innovation Hub
- Purple Orange Ventures
- Blue Impact Ventures

NOTABLE COMPANIES



Note: Yellow rings denote companies with at least one female founder. The listed companies were selected because they are high performers based on indicators such as employee size and amount of capital raised. This is not an exhaustive list.

GREATER LONDON

The Greater London hub has a well-developed entrepreneurial ecosystem for climate tech, especially in fields adjacent to finance and software tech.

Number of companies	130+
Scale	Below Average
Capital	Below Average
Dynamism	Average

RELATIVE STRENGTHS

London has a diverse, multicultural environment and advantageous geographical location that opens up access to international networks. Its central time zone allows for efficiency in communications with both the Western and Eastern hemispheres. The hub has a high concentration of prominent research universities that are well connected to the business world, and the British government is playing an active role in creating a founder friendly environment through initiatives such as Innovate UK.

The Greater London hub has an active network of entrepreneurs, experts, investors, and potential customers who have an interest in sustainability. Entrepreneurs report collaborating with experts at the numerous events, such as investor pitches and networking sessions, that take place there. Investors recognize the advantageous regulatory frameworks for VC deals in London. There are also many multinational corporations with net zero or other environmental commitments based in the hub, providing a large pool of B2B customers for climate tech entrepreneurs.

SECTORAL STRENGTHS

- Climate change management and reporting
- Industry, manufacturing, and resource use

SUBSECTORS TO WATCH

- Climate data reporting
- Waste management

RELATIVE WEAKNESSES

London-based climate tech founders are still experiencing the fallout of Brexit, which has complicated international expansion. In the past, founders eyed other markets in the European Union as a logical and easy first step for expansion, but now selecting a second market and working out the logistics requires more effort. The amount of paperwork and requirements needed for export-oriented businesses have expanded. The combination of Brexit and COVID-19 has made accessing EU supply chains more arduous, which is detrimental for the growth of hardware companies.

Interviewed founders also noted the high cost of operating in London as a challenge, especially for office space and talent. There is significant competition from corporations and other entrepreneurial companies to recruit talent, which is driving up salaries. However, climate tech founders have used their mission-driven nature to appeal to and retain talent.

London-based climate tech companies are less likely to reach scale and raise at least \$10 million compared to their peers in other hubs. The investor community in London is strong, but it is concentrated with experts who are not entrepreneurs and may not have the technical nuance to assess climate tech companies. This is hindering successful investment in the sector. As one London-based founder described, “We need access to risk capital and to venture capitalists that are entrepreneurs, not ex-bankers, ex-lawyers, and ex-consultants.”

COMPANY HIGHLIGHT: OLIO

OLIO has developed a waste reduction app that connects neighbors so that they can share surplus food and other resources instead of throwing them away. The company was founded in 2015 by Tessa Clarke and Saasha Celestial-One, who had met while earning their MBAs at Stanford University. Clarke came up with the idea after becoming frustrated at having to discard food products during a house move, as there was no easy mechanism to give the items away. The pair first tested the idea through a survey and then a WhatsApp group. When they realized that there was demand for such an app, they launched the company focusing on a few neighborhoods in London. By September 2022, they had expanded coverage to 62 countries and grown the team to nearly 100 employees.³¹

The founders have a strong focus on measuring the climate impact of their company. According to Clarke, consumers have gifted 66 million food portions and six million non-food items through the OLIO app. This is equivalent to taking 200 million car miles off the road, a saving of 58,000 metric tons of CO₂.³²



Left to right: Tessa Clarke and Saasha Celestial-One

Clarke considers that being based in London has been advantageous, saying that, "We do a lot of business, networking, and events in London. It's the hub where most people are, it's convenient to travel to and has entrepreneurs, investors, prospective clients you can sell to, as well as the media."³³ Having always been a remote-first company, they never had a physical office and work patterns did not have to change during the COVID-19 lockdowns. The effects of the pandemic also increased customer awareness for their app. According to Clarke, "The world seemed to wake up to the climate crisis during COVID-19. And people wanted to connect to their communities, which saw OLIO grow almost five times through the pandemic."³⁴

COMMON UNIVERSITIES ATTENDED BY CLIMATE TECH FOUNDERS

- Imperial College London
- University of Cambridge
- University of Oxford
- University of London
- University College London

COMMON FORMER EMPLOYERS OF CLIMATE TECH FOUNDERS

- Barclays
- Deloitte
- Boston Consulting Group
- Blippar
- Shell

PROMINENT CLIMATE TECH INVESTORS

- CPT Capital
- OGCI Climate Investments
- Softbank Investment Advisers
- Startupbootcamp
- Entrepreneur First
- BP Ventures
- Phoenix Court

NOTABLE COMPANIES



Note: Yellow rings denote companies with at least one female founder. The listed companies were selected because they are high performers based on indicators such as employee size and amount of capital raised. This is not an exhaustive list.

GREATER TEL AVIV

Greater Tel Aviv has a thriving and innovative entrepreneurial community, with tech talent from the hub’s mature industries such as security, robotics, and agriculture.

Number of companies	90+
Scale	Below Average
Capital	Average
Dynamism	Below Average

RELATIVE STRENGTHS

Tel Aviv benefits from a pool of highly skilled professionals across STEM fields, coming from sectors in which Israel has historically been a leading innovator, like security, robotics, and agriculture. Endeavor Insight’s analysis shows that, compared to the other hubs, Tel Aviv’s companies are more likely to have at least one founder with over 20 years of experience — often as an entrepreneur in one of those other sectors. The broader entrepreneurial ecosystem provides a strong foundation for climate tech to thrive. **GenCell** cofounder Rami Reshef explains, “Tel Aviv is a hub for different disruptive technologies, so in any direction that you want to take the company, you could easily learn from colleagues and add more and more talented personnel to your team.”

The relatively small size of Israel and concentration of economic activity in Tel Aviv allow founders to quickly develop networks and meet with actors in the community. Multiple meetings with investors can happen within a few blocks, and people are well connected with each other.

Geographically, the diversity of climates near Tel Aviv benefits climate tech founders, allowing them to test their products in a variety of conditions within Israel. This is especially useful for food and agriculture companies. The country borders both temperate and tropical water, and it has both a hot desert region and colder areas with snow.

SECTORAL STRENGTHS

- Food, agriculture, and land use
- Mobility and transport

SUBSECTORS TO WATCH

- Precision agriculture
- Meat alternatives

RELATIVE WEAKNESSES

Several founders reported Tel Aviv’s small domestic market as a disadvantage. Climate tech entrepreneurs based there have to build international networks in order to validate their products and to secure customers in other markets. This requires significant time and effort from founders even in the early stages of growth. As a result, companies from Tel Aviv are less likely to reach scale than those based in other hubs. Those that do scale tend to build larger portions of their operations in other geographies, such as Europe.

The financial cost of reaching larger markets is negatively affecting companies that manufacture within Israel and ship their products abroad. In the words of one founder, “With the cost of shipping rising, it has become less effective to manufacture here. Europe can still be serviced from Israel in a decent way, but reaching the U.S. and Far East is becoming difficult.”

While there is a significant pool of technical talent in Tel Aviv, talent for other roles such as marketing, sales, and business development is more limited. Finding experienced managers with these skills takes longer and slows the growth of Tel Aviv’s businesses. This can make it difficult to transform innovative technology into commercially viable and scalable business models. In terms of inclusion, the Tel Aviv hub also has a lower percentage of female-led climate tech companies compared to other hubs.

COMPANY HIGHLIGHT: PLANTISH

Plantish produces plant-based whole-cut fish, with the aim of reducing the negative environmental consequences of industrial fish farming. The fishing industry is a major factor in depleting fish populations, reducing marine biodiversity, and emitting carbon.³⁵ A four-person team with a wealth of experience in the food and biotech industries founded Plantish in Tel Aviv in 2021. Ofek Ron, who had worked as VP of Global Business Development for a company promoting plant-based diets, started the company after learning about applications of additive manufacturing in food production. He first met Ron Sicsic, who has a PhD in Animal Sciences, and Ariel Szklanny, who has a PhD in Biomedical Engineering.³⁶ Then they were connected to the fourth co-founder, Hila Elimelech, who has a PhD in Materials Chemistry, through a university professor. Dr. Szklanny developed a concept for a salmon alternative, and since then they have been piloting and testing the product.



The CEO, Ron, considers their location to be key, saying, "There's a strong startup ecosystem in the country. People are used to the idea of new startups and working for them. This makes it easy to attract employees

from large corporations to new startups. We have about 10 food tech startups on the same street as our company, and our community is strong."³⁷ Israel's universities have a great reputation for producing scientific talent, meaning that talent acquisition has not been a major challenge for Plantish. Ron also considers that the country's size can be advantageous, "Because Israel doesn't have a big market, from day one companies are thinking globally. From day one you're thinking of Europe, the U.S., Japan, in terms of infrastructure, language, software, making things that will enable you to scale."³⁸

There have been some drawbacks to the location. Its distance from global markets means that founders must travel frequently. For the future, Ron views the United States as an early adopter market, and Japan, the world's largest fish consumer, as the most likely markets to expand to, once the company has perfected the technology and scale.

COMMON UNIVERSITIES ATTENDED BY CLIMATE TECH FOUNDERS

- Tel Aviv University
- Bar-Ilan University
- Reichman University
- Weizmann Institute of Science
- Open University of Israel

COMMON FORMER EMPLOYERS OF CLIMATE TECH FOUNDERS

- Israel Defense Forces
- Shikun & Binui
- COMDA
- Weissberger

PROMINENT CLIMATE TECH INVESTORS

- Bird Foundation
- Capital Nature
- Maniv Mobility
- Meitav Investment House
- MoreVC

NOTABLE COMPANIES



Note: Yellow rings denote companies with at least one female founder. The listed companies were selected because they are high performers based on indicators such as employee size and amount of capital raised. This is not an exhaustive list.

INTERHUB CONNECTIVITY: THE GLOBAL EXCHANGE BETWEEN CLIMATE TECH HUBS IS CRUCIAL TO PREPARING AND SUPPORTING FOUNDERS.

Oftentimes, entrepreneurs need to look beyond their immediate region or country to gain the experiences and resources that will most help them on their path to scaling. Likewise, entrepreneurs who founded a company after gaining experience elsewhere in the world benefit the local network by bringing with them outside networks and knowledge.

Understanding where climate tech founders are getting their training and support can help decision makers facilitate a better global exchange for climate tech entrepreneurs. Hubs can begin to identify sister cities to partner with, engage diaspora networks who are supportive of founders back at home, and work to retain promising founders who would otherwise depart after attending university or leaving their job to start a company.

Endeavor Insight studied the exchange of connections between the six hubs. This revealed distinct patterns in the flow of resources and founder talent from certain hubs to others. The results also point to notable differences between which hubs are net providers and which are net recipients of different resources. In other words, certain metropolitan areas are preparing and supporting climate tech founders who end up growing their companies somewhere else in the world.

Pre-Launch Founder Experience

London is a training ground for the world's climate tech founders, as a net exporter of education and employment for founders of companies based elsewhere. As the Sankey graphs on the next page illustrate, entrepreneurs often study or work in the Greater London area as part of their pre-launch academic and professional experience.

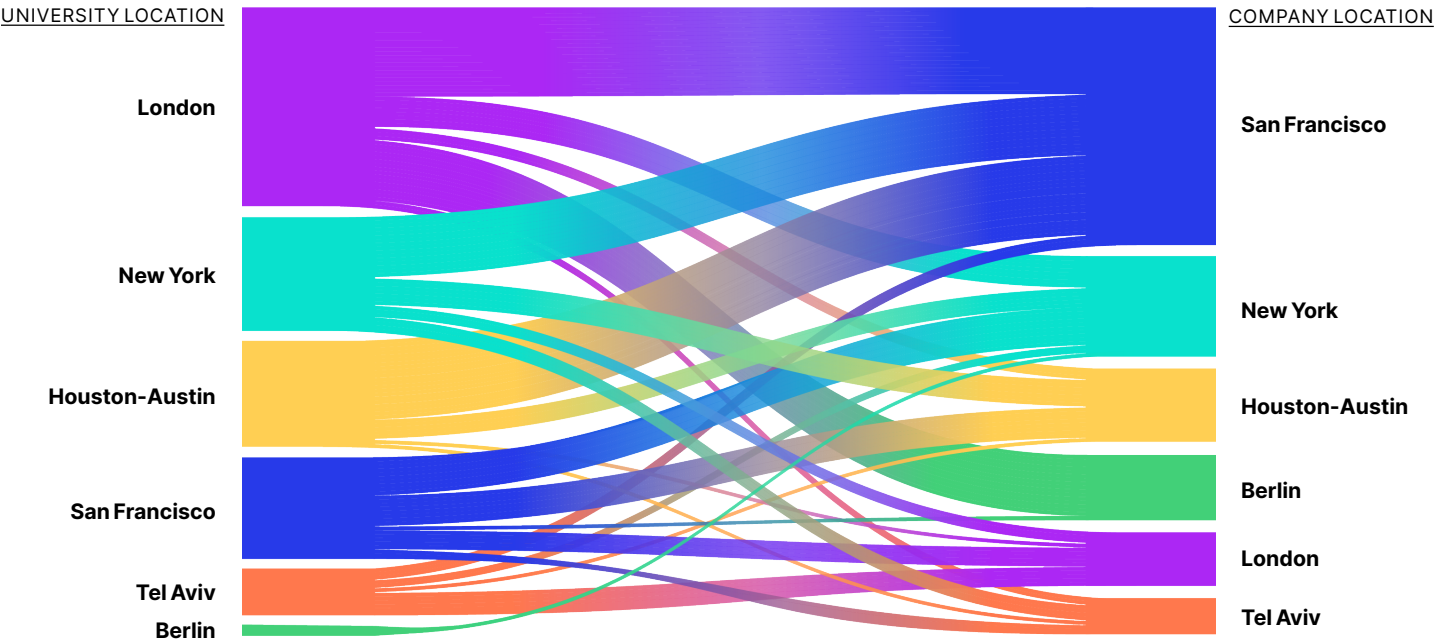
The first Sankey graph shows the academic experiences of climate tech founders who studied in one of the six hubs before founding their company in a different one. The left column represents the location of universities where founders earned a degree and the right column represents where they ultimately founded their company. The thickness of the lines corresponds to the number of degrees earned by climate tech founders.*

Among all six hubs, entrepreneurial talent flows accrue to the Bay Area and New York — those two hubs have the largest presence of companies started by founders who worked or studied in other hubs. Berlin and Tel Aviv are also net recipients of educational and employment flows, and they exhibit limited pre-launch connectivity to the other hubs. Relatively few climate tech entrepreneurs worked or studied in Berlin or Tel Aviv before founding their companies elsewhere, with over 90 percent of both the talent flows from those two hubs staying within the same hub.

London is a training ground for the world's climate tech founders, as a net exporter of education and employment for founders of companies based elsewhere.

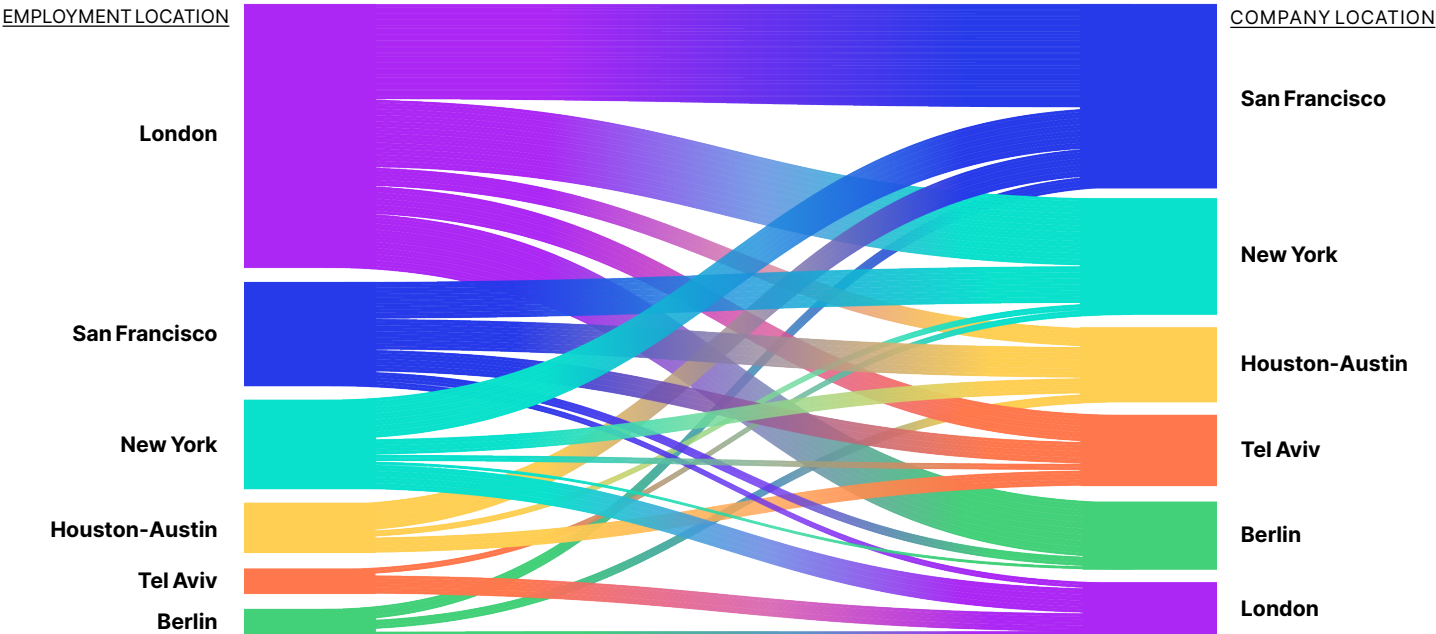
* The other Sankey graphs follow a similar format, showing the exchange of resources between the six hubs for former employment that founders have prior to launching their companies, then angel and institutional investment. These visualizations do not depict connections within the same hub, as those do not represent a geographical flow.

GLOBAL CONNECTIONS: UNIVERSITY DEGREES EARNED BY CLIMATE TECH FOUNDERS



Note: The thickness of the lines corresponds to the number of degrees earned by climate tech founders. The origin on the left indicates the location of the university attended by a founder, and the destination on the right indicates the headquarters location of that founder's company. Multiple degrees earned by a given founder from the same university were counted once. City names refer to their broader geographical hubs. Connections within the same hub were excluded to show only interhub results.
Sample size: 148 connections. Sources: Endeavor Insight analysis and LinkedIn.

GLOBAL CONNECTIONS: FORMER EMPLOYMENT OF CLIMATE TECH FOUNDERS



Note: The thickness of the lines corresponds to the number of former professional work positions held by climate tech founders. The origin on the left indicates the location of the employer, and the destination on the right indicates the headquarters location of that founder's company. Multiple positions held by a given founder at the same employer were counted once. City names refer to their broader geographical hubs. Connections within the same hub were excluded to show only interhub results.
Sample size: 181 connections. Sources: Endeavor Insight analysis and LinkedIn.

Post-Launch Investments

Endeavor Insight studied the flows of angel and institutional investment between hubs after companies launched. As the two Sankey graphs on the next page show, New York is a major supplier of the world's investment in climate tech, as a net exporter of angel and institutional investment. In particular, the pipeline of capital from New York's angel investors and investment firms to the San Francisco Bay Area's climate tech companies is substantial. However, there are significant flows in the opposite direction as well.

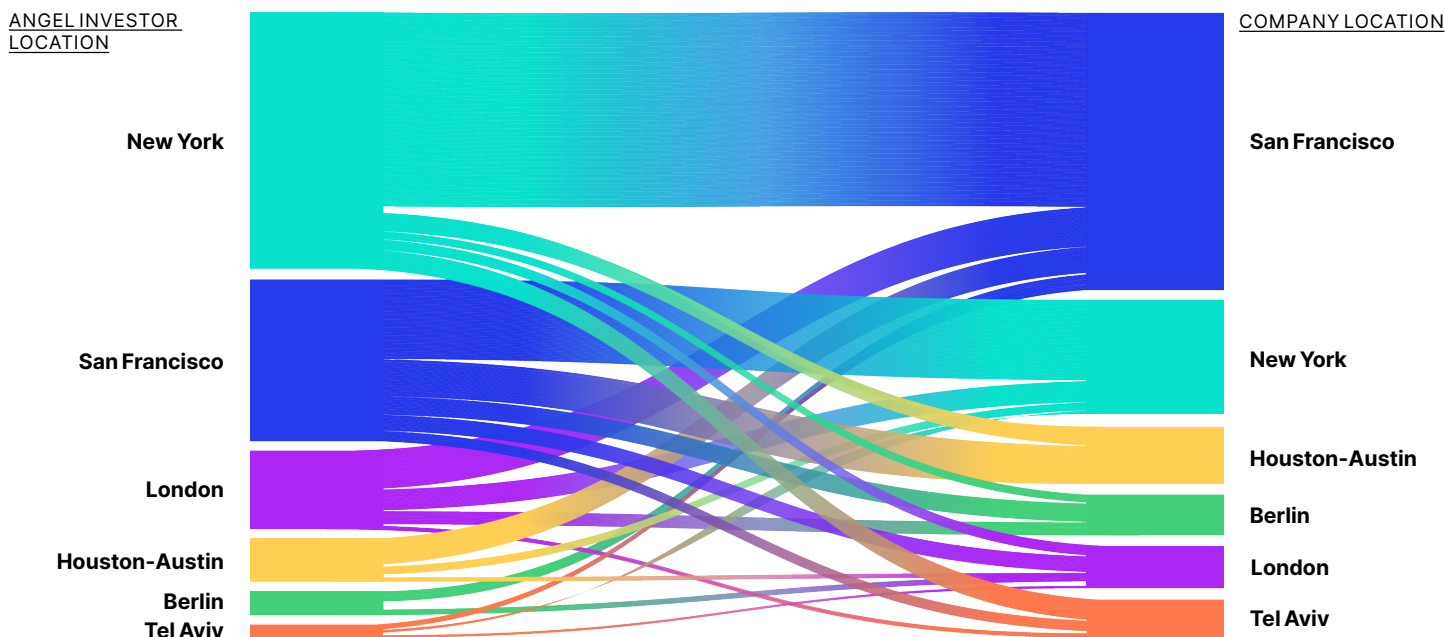
Similar to pre-launch founder experience, the San Francisco Bay Area has the largest accrual of investment connections from other hubs. This suggests that despite the preponderance of investors in the Bay Area, climate tech companies based there still do reach out to investors based elsewhere.

For Tel Aviv, connections to other hubs represent a small share of its overall investments. Relatively few angel and institutional investors based in Tel Aviv are providing capital to climate tech companies elsewhere, as less than 15 percent of investments from there accrued to companies in other hubs. In contrast, nearly 65 percent of investments from New York flowed to companies outside of New York.

When looking at the flow of incoming investment connections, only 35 percent of Houston-Austin's incoming investments originate from the same hub. Meanwhile, companies in all of the other five hubs receive more than half of their investments from their own geography. This suggests that Houston-Austin climate tech companies have to rely on other hubs for access to capital.

New York is a major supplier of the world's investment in climate tech, as a net exporter of angel and institutional investment.

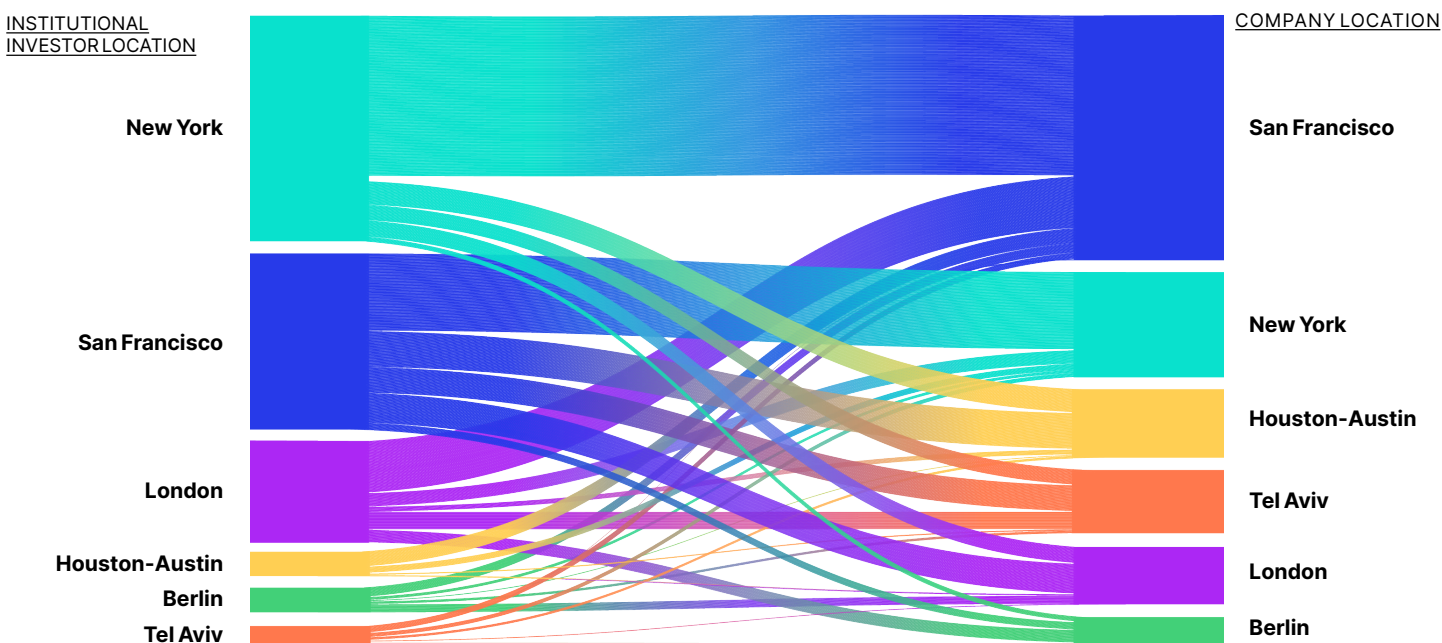
GLOBAL CONNECTIONS: ANGEL INVESTMENT IN CLIMATE TECH COMPANIES



Note: The thickness of the lines corresponds to the number of connections between angel investors and climate tech companies. The origin on the left indicates the location of the angel investor, and the destination on the right indicates the headquarters location of the company. Multiple investments from a given investor to the same company are counted once. City names refer to their broader geographical hubs. Connections within the same hub were excluded to show only interhub results.

Sample size: 211 connections. Sources: PitchBook, Crunchbase, and Endeavor Insight interviews and analysis.

GLOBAL CONNECTIONS: INSTITUTIONAL INVESTMENT IN CLIMATE TECH COMPANIES



Note: Note: The thickness of the lines corresponds to the number of connections between institutional investors and climate tech companies. The origin on the left indicates the location of the institutional investor, and the destination on the right indicates the headquarters location of the company. Multiple investments from a given investor to the same company are counted once. City names refer to their broader geographical hubs. Connections within the same hub were excluded to show only interhub results.

Sample size: 1,378 connections. Sources: PitchBook, Crunchbase, and Endeavor Insight interviews and analysis.

COMPARATIVE POLICY ANALYSIS OF SIX CLIMATE TECH HUBS

ASSESSMENT OF THE PUBLIC SUPPORT ECOSYSTEMS FOR CLIMATE TECH FOUNDERS ACROSS THE HUBS

	San Francisco	New York	Houston-Austin	Berlin	London	Tel Aviv
Business Environment	Medium	High	High	Medium	High	Low
Entrepreneurship Policy	High	Medium	High	Low	High	Medium
Direct Funding and Support for Climate Tech	High	High	Low	Low	Medium	Medium

Note: The ratings are based on how a hub performs relative to the five other hubs in the sample.

Sources: World Bank "Ease of Doing Business" rankings; "Global Cities Talent Competitiveness Index Ranking"; "Patent Enforcement Index"; government websites; Endeavor Insight interviews and analysis.

Endeavor Insight conducted a literature review of public support for climate tech entrepreneurs in each of the six hubs to identify local practices and shortcomings. The review covered laws, regulations, policies, and publicly funded programs at the city, state or region, and national levels that affect climate tech entrepreneurs. The public policies and programs can be grouped into three dimensions:

1. Business environment includes the corporate laws, infrastructure, human capital, and openness that private firms need to succeed and grow.
2. Entrepreneurship policy covers government regulation and policy actions to actively promote innovation and entrepreneurship.
3. Direct funding and support for climate tech entrepreneurship encompasses grants and loans for R&D, publicly funded accelerators, and government procurement opportunities.

After examining this information, Endeavor Insight rated each hub on a three tier scale, as summarized in the table above. The New York, San Francisco, and London hubs have the most well-developed public support for climate tech founders, though Houston-Austin, Berlin, and Tel Aviv have certain strengths too. By understanding the successful policies of other hubs and implementing similar strategies, policymakers in each hub can further strengthen the competitiveness of their ecosystem and encourage climate tech innovation.

Business Environment

All six of the hubs operate in economically developed countries, but some differences exist. According to the World Bank's 2019 "Ease of Doing Business" rankings in which countries are rated according to how conducive they are for starting and operating a local company, the United States was ranked 6th, the United Kingdom 8th, Germany 22nd, and Israel 35th.³⁹ These rankings encompass factors such as getting credit and trading across borders. Israel fell behind on these rankings, in part due to the complexities in obtaining permits. One Israeli climate tech founder told Endeavor Insight, "We would always like to do pilots in Israel, and not travel to different places in the world. But we had some difficulties getting the permits to do so. It takes us a lot of time."

On the talent front, the "Global Cities Talent Competitiveness Index Ranking" tracks how cities attract, grow, and retain talent. In 2020, New York City ranked first among 155 cities, with London a close second. San Francisco came in fourth, Houston 19th, Berlin 39th, and Tel Aviv 72nd.⁴⁰ Although lagging behind its U.S. counterparts for talent competitiveness, the Houston-Austin hub has a business-friendly environment that is open to global connectivity. This has contributed to an influx in foreign direct investment (FDI) in the hub, with disclosed FDI in Houston amounting to \$33 billion over the past decade,⁴¹ making Texas the top state in the United States for FDI capital expenditure.⁴²

In addition to encouraging local founders, some hubs have adopted startup or innovator visa programs to welcome foreign entrepreneurs. Israel, Germany, and the United Kingdom each have their own variant of an innovation visa for foreign entrepreneurs to start their businesses in those countries. For example, the United Kingdom's Innovator Visa allows founders with an approved business idea to set up and run a business in the United Kingdom.⁴³ In contrast, the United States does not have a specific entrepreneur

Ease of Doing Business Rankings	
#6	United States
#8	United Kingdom
#22	Germany
#35	Israel

Source: World Bank. "Ease of Doing Business Rankings." May 2019. archive.doingbusiness.org/en/rankings. Accessed 30 Aug. 2022.

Talent Competitiveness Rankings	
#1	New York
#2	London
#4	San Francisco
#19	Houston
#39	Berlin
#72	Tel Aviv

Source: INSEAD. "The Global Talent Competitiveness Index 2020: Global Talent in the Age of Artificial Intelligence." 2020. insead.edu/sites/default/files/assets/dept/globalindices/docs/GTCI-2020-report.pdf. Accessed 30 Aug. 2022.

visa. Entrepreneurs can instead choose to apply for visas such as the E2 Visa, which requires around a \$100,000 investment in a company, or the EB-5 Visa, which requires a minimum investment of \$500,000 in a company.⁴⁴ According to the National Security Commission on Artificial Intelligence, this financial barrier makes the U.S. less attractive for international talent, and makes it harder for startups and businesses to hire skilled workers.⁴⁵

Entrepreneurship Policy

This dimension includes founder-friendly rules and regulations including tax benefits, other financial incentives, the protection of intellectual property rights, and export support. For example, in the state of Texas, founders who create at least 10 permanent jobs and conduct certain types of tech research are eligible for tax refunds and credits.⁴⁶ Texas also does not levy a corporate or individual income tax, which founders cited as a significant advantage in running a business.⁴⁷ These kinds of policies help lower the financial risk for climate tech entrepreneurs to pursue an innovative business idea.

Employee stock option policies are important for incentivizing the staff at climate tech companies and contribute to the growth of entrepreneurial ecosystems. While legal frameworks for employee stock options are present in all six hubs, Israel stands out by offering a tax deduction on stock option plans, which encourages companies to share the success of the company by extending equity to employees.⁴⁸ Germany’s 2021 Income Tax Act eliminates immediate income taxation of the transferred shares, but still has limited incentives for stock option plans.⁴⁹ One founder notes that “German policy is not founder friendly, especially when it comes to how employee stock option plans are taxed.”

The strength and implementation of laws to protect intellectual property rights also encourages entrepreneurs to pursue innovative ideas. According to the 2020 Patent Enforcement Index (PEI) which tracks the strength of patent enforcement, the United Kingdom received a score of 8.7 out of 10, ranking 7th among the analyzed countries, Germany and the United States received a score of 8.3, putting them in 11th place, and Israel was ranked 20th, with a score of 7.5.⁵⁰

Patent Enforcement Rankings		
#7	United Kingdom	
#11	United States	Germany
#20	Israel	

Source: Papageorgiadis, Nikolaos and Wolfgang Sofka. "Patent Enforcement Across 51 Countries – Patent Enforcement index 1998–2017." *Journal of World Business* 55:4. Jun. 2020. [sciencedirect.com/science/article/pii/S1090951620300201](https://www.sciencedirect.com/science/article/pii/S1090951620300201). Accessed 30 Aug. 2022.

All six hubs have government bodies or programs that help businesses with exporting products in support of their international expansion. Typically, the services include trade shows, connections with international sales agents and distributors, and information on foreign markets. Facilitating connections with local entrepreneurial leaders is an area where governments can play a larger role to support market expansion.

Direct Funding and Support

Local and federal governments in the hubs have implemented a wide range of programs to accelerate entrepreneurship specifically in climate tech sectors. The hubs are home to numerous support organizations that are funded by their governments, ranging from incubators to university programs that cater to climate tech. For example, the Mayor of London's Energy Efficiency Fund (MEEF) is a £500 million* investment fund for projects that can offer solutions to the climate crisis. Since July 2018, MEEF has invested in projects that have reduced London's CO2 emissions by more than 15,000 metric tons per year.⁵¹ Supported by the Tel Aviv-Yafo Municipality, 8200 Impact is an accelerator for startups that are solving social and environmental issues through technology.⁵² Its program provides participants with workshops and a network of mentors and investors, and its alumni had raised over \$51 million by 2021.⁵³

Certain government agencies stand out for their depth of support for climate tech entrepreneurs. The New York State Energy Research and Development Authority (NYSERDA), established in 1975, is a public benefit corporation created through the State Public Authorities Law that is governed by a board appointed by the Governor with guidance from the New

York Senate. NYSERDA has supported hundreds of companies through programs such as the Entrepreneurs-in-Residence network, which provides executive-level mentoring to companies,⁵⁴ and the Buildings of Excellence competition, which provides funding to firms that design and construct carbon-neutral ready buildings.⁵⁵ Another example is the California Energy Commission (CEC), which is that state's primary energy policy and planning agency. It had a budget allocation of \$455 million in 2020-21.⁵⁶ CEC's California Energy Innovation Ecosystem supports clean energy entrepreneurship across the state through grants and access to lab facilities.

Not all of the hubs have a high degree of direct public support for climate tech entrepreneurship. Germany's Climate Action Law has strict greenhouse gas reduction targets,⁵⁷ but the Berlin ecosystem has less direct support for climate tech entrepreneurship compared to other hubs, where local public agencies partner with support organizations or directly provide grants and research facilities. In the Houston-Austin hub, public involvement is also limited and support programs that do exist are largely sponsored by corporations.

Employee stock option policies are important for incentivizing the staff at climate tech companies and contribute to the ongoing growth of entrepreneurial ecosystems.

* £500 million is approximately \$555 million, as of October 2022.

V. Rising Climate Tech Markets

RIISING CLIMATE TECH MARKETS, LOCATED IN GEOGRAPHIES OUTSIDE THE HUBS, HAVE INNOVATIONS THAT WILL BE KEY TO THE GREEN TRANSITION.

The effects of climate change are global, so the solutions must be as well. Innovations addressing some of the most urgent aspects of climate mitigation are coming from markets outside typical climate tech hubs, but are too often overlooked by decision makers and investors. Drawing on Endeavor's strengths in regions like Latin America and the Southeast Asia, Endeavor Insight analyzed hundreds of companies in rising markets for climate tech.

Founders in these geographies are helping farmers reduce water usage while improving yields and incomes, optimizing transit to reduce CO2 and traffic congestion, and facilitating the creation of a circular economy by recycling waste. The founders bring lived experience and a customer-centric approach that improves product uptake and circumvents the pitfalls of imported solutions.

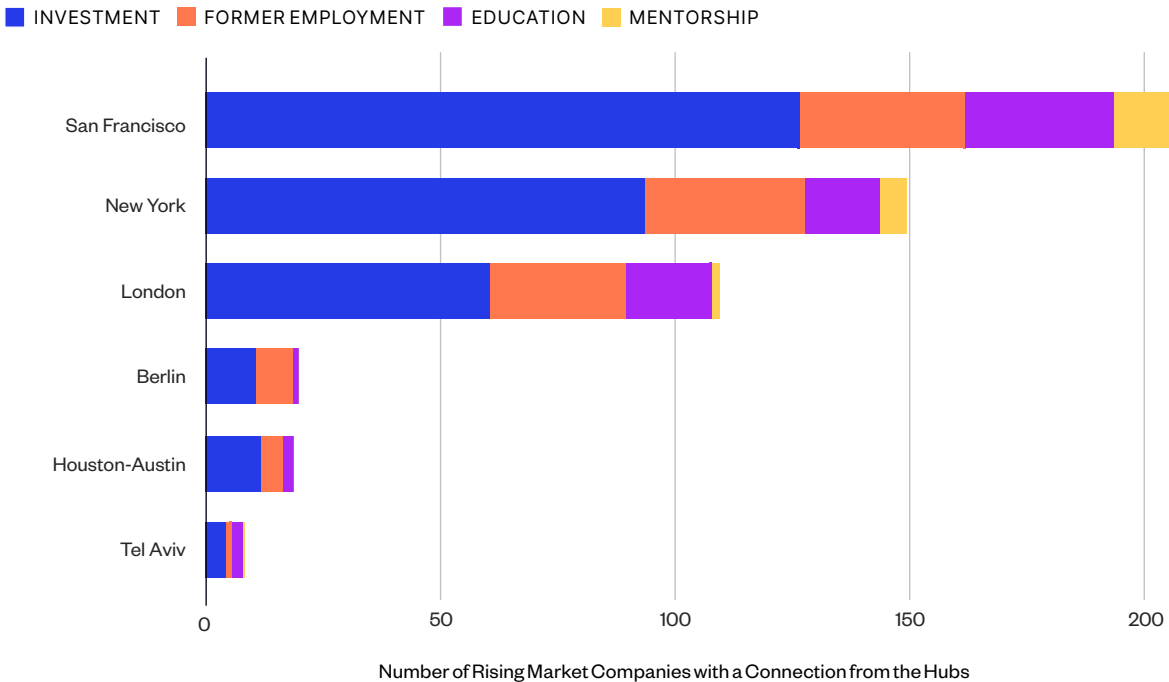
Although these innovative products and services are developed according to the local contexts of emerging economies, the opportunity to also deploy them in developed economies is underrecognized. For example, rapid urbanization and inadequate waste management infrastructure have made plastic pollution a particularly acute problem in Southeast Asia.⁵⁸ A Malaysian company, **Heng Hiap Industries**, is tackling the issue by transforming ocean-bound plastic waste into manufacturable materials, which it has exported to companies in 35 countries, including the United Kingdom and Australia.⁵⁹



*Kian Hoe Seah, founder of
Heng Hiap Industries*

CLIMATE TECH COMPANIES IN RISING MARKETS ARE RECEIVING HUB RESOURCES

Companies Outside the Hubs Often Receive Investment, Work Experience, and Education from the Hubs.



Note: Connections include investment, mentorship, university-level education, and former employment. Investors, mentors, universities, and former employers were included if they were located in one of the six hubs. Companies were only included if they were not located in one of the six hubs. Companies may be counted more than once across each connection type and source.

Sample sizes: 310 companies for investment, 112 companies for former employment, 71 companies for education, and 21 companies for mentorship. Sources: Endeavor Insight analysis, PitchBook, Crunchbase, and LinkedIn.

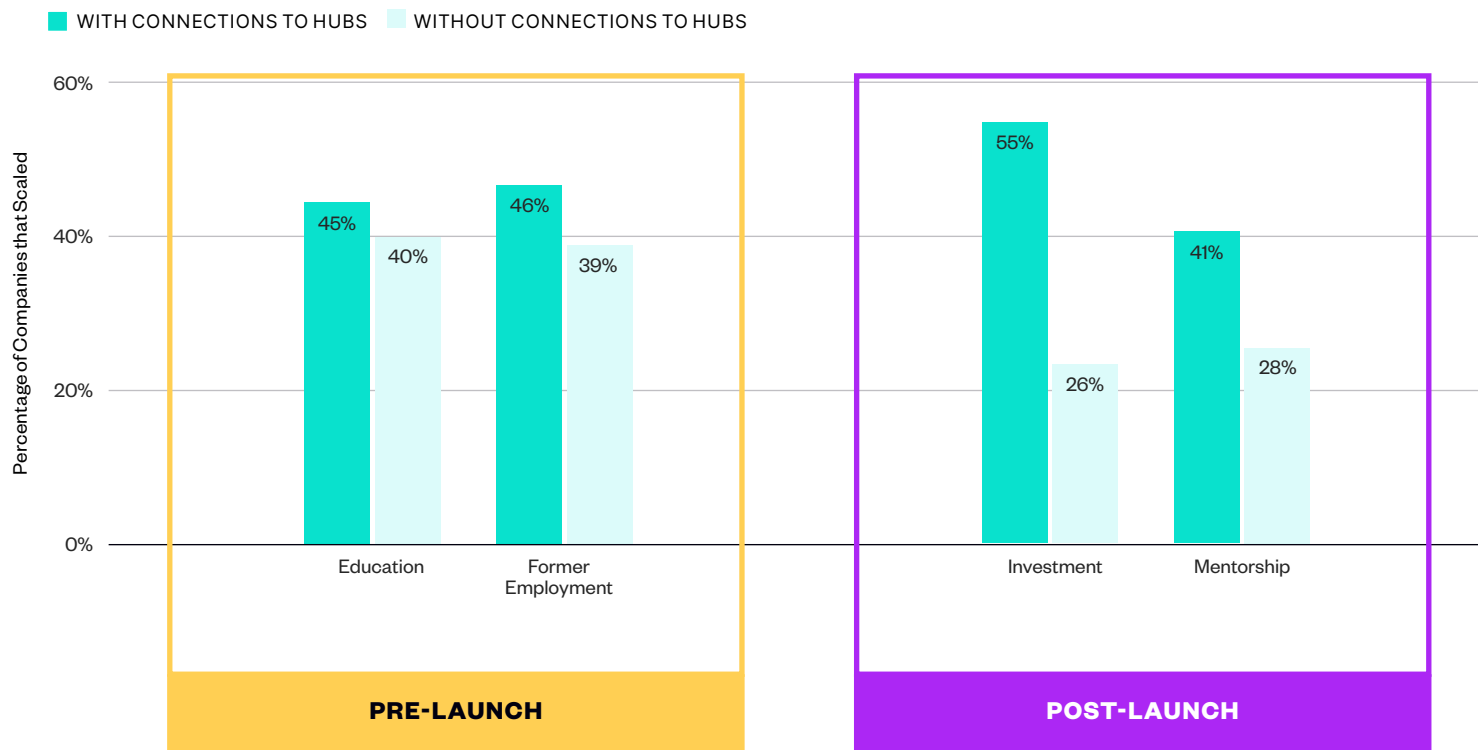
The unrealized potential of many innovations in rising markets can be addressed by improving the way founders access resources through global connections. Founders based in those geographies are already utilizing resources from the hubs, especially from San Francisco, New York, and London. As the graph above shows, many climate tech founders from rising markets have received capital from or previously worked in the six hubs. Mentorship from hubs to rising markets continues to be rare, but comes primarily from the Bay Area.

Quantitative analysis shows that companies in rising climate tech markets are much more likely to reach scale if they have connections to the six hubs.

Before launching a company, if at least one founder of a company previously studied or worked in one of the hubs, they have a better chance of growing to 100 or more employees, as illustrated in the graph on the next page. The same pattern holds true for activities after they launch their company — those who receive investment or mentorship from the six hubs are more likely to scale than those who do not have such connections. Companies from the rising markets that received investment from New York or whose founders studied in the Bay Area were more likely to scale than those that had the same types of connections from other hubs.

CLIMATE TECH COMPANIES LOCATED IN RISING MARKETS ARE MORE LIKELY TO SCALE WHEN CONNECTED TO GLOBAL HUBS

Founders Receiving Pre-Launch Training and Post-Launch Support from San Francisco, New York, Houston-Austin, Berlin, London, or Tel Aviv Are More Likely to Scale Their Companies.



Note: Connections include investment, mentorship, university-level education, and former employment. Investors, mentors, universities, and former employers were included if they were located in one of the six hubs. Companies were only included if they were not located in one of the six hubs.

Sample sizes: 286 companies for investment, 99 companies for mentorship, 250 companies for education, and 272 companies for former employment. Sources: Endeavor Insight, PitchBook, Crunchbase, and LinkedIn.

Many of the challenges for climate tech founders discussed earlier in this report are greater in rising climate tech markets.

For growth and late stage rounds, entrepreneurs based in these geographies reported that they had to seek investors from the United States and Europe, as large funding rounds were not available in their local regions. In many of these markets, climate tech has yet to emerge as a high priority in the minds of large investors.

The scarcity of qualified managers is also magnified in rising climate tech markets. According to one African founder, “There needs to be a high understanding of the market, which means that we need to be hiring locally, where there is a small pool of people that have built and scaled tech startups.” The explosion in remote work since the COVID-19 pandemic has also changed the landscape for entrepreneurs, as those in rising markets are now competing with larger foreign companies for talent. Companies in rising climate tech markets can find it particularly difficult to fill senior positions, because those candidates are more likely to get a job offer from abroad.



COMPANY HIGHLIGHT: SOLINFTEC

Scaling Up and Exporting Agtech Innovations from Latin America



Solinftec is a global agtech company that has thrived from outside a major climate tech hub. A team of six Cuban engineers who had migrated to Brazil founded Solinftec in São Paulo in 2007. The founders wanted to change prevailing methods of agricultural production by leveraging their experience in industrial sugar production. First, they automated the logistics process of sugar harvesting, before expanding their scope to grain harvests, fibers, and perennial crops such as coffee and citrus. Solinftec uses AI and Software-as-a-Service (SaaS) technology to monitor all aspects of the crop cycle, connecting the agricultural production chain from end to end. The company's mission is to change traditional agricultural methods by minimizing impacts on the environment and helping farmers produce more and in a sustainable way.

According to cofounder Anselmo Arce, "We use sensor data to measure plant nutrition, pests, and weather conditions, so we can evaluate the efficiency of operations and microclimate data in real-time to reduce inefficiencies. We

reduce water consumption and the machinery used in the field, and we prevent chemicals and fertilizers from being applied in an excessive way, which is another agriculture process that is changing the climate."⁶⁰ Improved efficiency through Solinftec allows farmers who use the company's technology to reach net zero carbon emissions. In 2021 alone, Solinftec's solutions avoided the emission of around 363,000 metric tons of CO₂. Between 2012 and 2021, by reducing the use of diesel oil in agricultural machines, Solinftec helped customers avoid emitting more than 1.3 million metric tons of CO₂. This reduction is equivalent to planting more than 167 million trees.⁶¹

Within Brazil, the company monitors more than 90 percent of the country's sugarcane production.⁶² Having validated their concept in Latin America, the founders started operations in the United States in 2019, using their systems to serve agricultural retailers, and now operate in 11 countries, managing more than 27 million acres of land.⁶³ The company employs over 800 people globally, and has developed an internal training program for technical talent, upskilling the agtech workforce.



Anselmo Arce

COMPANY HIGHLIGHT: INVEKO GREEN

Using Global Connections and Creating a Circular Economy



Aziz Slassi



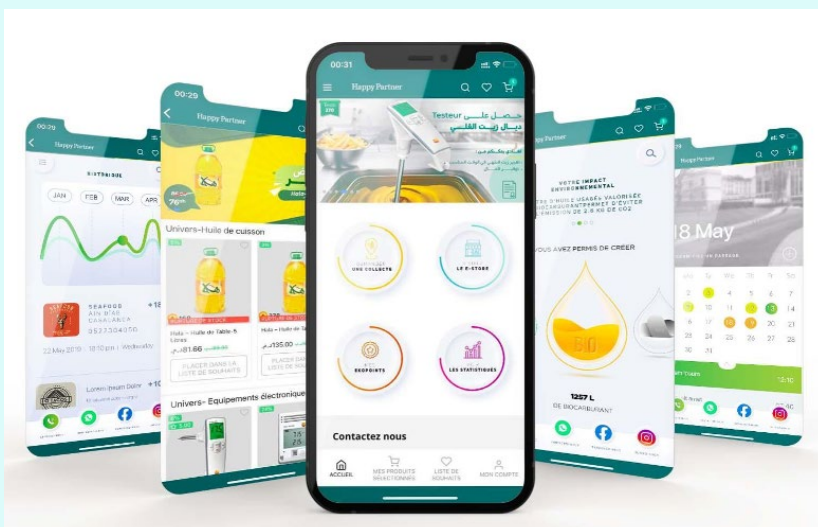
Youssef Chaqor

Inveko Green is a cleantech circular economy company that tackles climate change by identifying waste generators, offering them better value for their waste, and selling the waste-based feedstock to strategic off-takers. The company was founded in Casablanca, Morocco in 2020 by Youssef Chaqor and Aziz Slassi. Inveko Green currently focuses on the biofuel industry, sourcing used cooking oil from restaurants and hotels. It delivers its certified waste products to major oil companies, enabling them to create cleaner biofuel for sustainable transportation. According to Inveko Green, every liter of recycled oil saves one million liters of water and reduces greenhouse gas emissions by 88 percent.⁶⁴ Every metric ton of biofuel that the company puts into the market saves 3 metric tons of CO₂.⁶⁵

Chaqor and Slassi are both serial entrepreneurs with decades of international work experience. They met in 2015 through the Endeavor network and were early movers in the climate tech space in their region. The founders have grown the company through sales revenue, rather than traditional VC funding. Opportunities to raise capital in climate tech continue to be rare in markets like the Middle East and Africa. According to Slassi, “ESG Investments have started growing elsewhere

but not in our region. If you look at the track record, you don’t find a lot of startups in climate tech that have made it.”⁶⁶ Industry-relevant mentors also continue to be difficult to find. Slassi mentions that while they have been in touch with business leaders from logistics and tech companies, “people with a background in the environment or with an understanding of recycling are missing.”⁶⁷

Global connections like the Endeavor network have helped fill gaps in reaching investors and mentors. With over 50 employees and satellite offices in France and the United Arab Emirates, Inveko Green has ambitious goals to become a global cleantech company and plans to manage different types of waste feedstocks beyond biofuel, including plastic and glass.



Climate Tech Innovation in Asia

Asia is a highly active region where innovative entrepreneurs are building new climate tech companies and testing the scalability of their solutions. The continent's densely populated cities face unique challenges related to energy, pollution, food production, and urban mobility. Entrepreneurs are tackling these issues, often with high product adoption rates due to public interest.

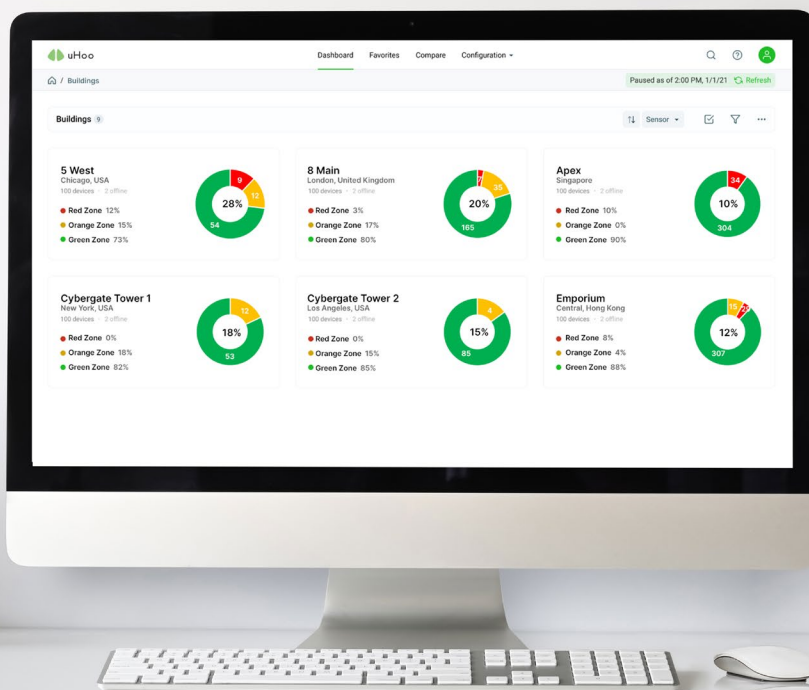
Some countries in Asia are emerging as prominent centers for climate tech due to a combination of strong technical knowledge, low research costs, and government support. Endeavor Insight's quantitative analysis found that climate tech companies in Asia are more likely to have a founder with a STEM degree than companies based in the six hubs. Because of their firsthand technical knowledge, these Asia-based founders are well equipped to tap into their alumni networks and recruit the right engineers and other technical talent for their companies. In some cases, founders also fill gaps in local talent pools by attracting experienced returnees — those who have worked or studied abroad — to join technical and managerial roles at their companies. Hiring talent and conducting R&D tend to be less expensive in Asia than in developed markets, allowing Asia-based companies to deliver products and services more efficiently.

These factors are creating a competitive advantage for Asia-based companies in making certain industries more sustainable. In particular, the mobility and agriculture sectors are better represented among climate tech companies in Asia than in the six hubs. Government policies have often helped these specific sectors grow. The Indian government, for example, launched the National Electric Mobility Mission Program (NEMMP) in 2013 to

provide support for the mobility sector. It provides demand- and supply-side incentives to subsidize both the purchase and use of EVs, and promote R&D and manufacturing capacities.⁶⁸ This enabling environment has helped India build a strong entrepreneurial network of EV companies.

Still, there are some unique challenges facing climate tech companies in Asia. For example, several interviewed founders reported that inconsistent or unclear government policies and a lack of intellectual property protection are common challenges in the region. Some entrepreneurs working on issues like clean energy, air pollution reduction, and agriculture have addressed this by working with policymakers in Singapore, Japan, and India to develop better regulations and policy standards.

In Asian markets, founders reported that risk-tolerant angel investment is also difficult to find in climate tech. Angel investors in the region typically look to see how quickly companies can start to earn, aiming to have an exit within three to five years — a strategy that does not align with most climate tech business models. As one India-based founder recounted, “You need investors who understand climate tech challenges, who are ready to take bold bets. That is missing, so we don't have an early-stage investing ecosystem in India yet. That will probably change as more entrepreneurs get into this space. When you have the Peter Thiels or the Elon Musks, when you have such people in India betting on companies, maybe that will change.” Quantitatively, Endeavor Insight found that Asia-based climate tech companies are as likely to receive institutional investment as those in the hubs, but less likely to receive angel investment.



Based in Southeast Asia, **uHoo** is a company that produces sensors to monitor air quality, as pictured above. See page 21 for perspectives from its cofounder, Dustin Jefferson Onghanseng, on customer acquisition.

COMPANY HIGHLIGHT: ION MOBILITY

Building Hardware Capacity in Southeast Asia



James Chan

James Chan founded **ION Mobility**, an electric motorcycle company, in late 2019. The company is based in Singapore, which has a strong software industry but lacks the hardware capabilities of other Asian countries. Chan, a serial entrepreneur with an MSc from Stanford University and experience in venture capital, saw the opportunity for a locally built, road-vehicle category motorbike EV to improve urban mobility in Southeast Asia after living and working in Indonesia, Vietnam, and Thailand. He recognized that large EV manufacturers were developing in China and India, but there was a regional gap in Southeast Asia that needed a tailored approach.

As EVs are more fuel efficient and emit less carbon than internal combustion engine vehicles, ION Mobility is playing a direct role in accelerating the transportation sector's transition to a cleaner future in Southeast Asia.⁶⁹ ION Mobility aims to serve the regional motorcycle market and is a full-stack original equipment manufacturer (OEM) for its own parts, modules, and motorcycles, while building up local engineering capacity and removing dependence on imports.

There were few precedents of Singaporean hardware companies successfully raising capital in the region, but Chan's VC experience helped him to raise his seed round locally. Still, he opines that "Historically, Singapore has not been known as a hub for early-stage hardware, and there is not enough appetite among funds to bet on hardware companies without seeing a positive exit track record."⁷⁰ The company's location has also made accessing the right technical talent a challenge. Chan says, "For what we are doing — industrial product design, electrical and embedded systems, mechanical, firmware, software, hardware, end-to-end production — it is not easy because there are no prior companies in this space for us to hire from."⁷¹ Given that automotive expertise is concentrated in other countries, Chan has had to import talent. There are employees from 11 different nationalities working in ION Mobility's Singapore office alone, and the count rises to 13 when its Shenzhen and Jakarta offices are also taken into account.



COMPANY HIGHLIGHT: SEA6 ENERGY

Developing Innovative New Technology at Lower Costs



Sowmya Balendiran



Sri Sailaja Nori



Shrikumar Suryanarayan



Nelson Vadassery

Sea6 Energy is an Indian company founded in 2010 that focuses on ocean agriculture and has developed sustainable farming techniques for seaweed and other ocean plants. Its technology helps mitigate climate change as ocean plants produce over 50 percent of the oxygen that humans breathe, as well as store twice as much carbon captured by an average terrestrial forest.⁷² Sea6 Energy uses its patented cultivation technology to create food ingredients, health products, biodegradable materials, and biofuels from ocean plants, contributing to the sustainability of multiple industries.

The four-strong founding team includes two men and two women. Three of the cofounders graduated from the Indian Institute of Technology-Madras, one of the premier STEM institutions in India. According to cofounder Nelson Vadassery, the team's strong technical background "has allowed us to understand research, read publications, and be on par with the best in the world. Coming from a good institution also gives us the network to rely on and to ask for help when needed."⁷³

The company is based at the publicly funded Center for Cellular and Molecular Platforms in Bangalore, which gives Sea6 Energy access to advanced research facilities. The lower cost of doing research in India compared to the United States or

Europe has also been an advantage for the company. Sea6 Energy has received local funding from Tata Capital, but as a hardware company, it had to seek further investment for growth and expansion from foreign capital. In August 2022, the company secured an \$18.5 million Series B round from European investors BASF Venture Capital and Aqua-Spark.⁷⁴ Sea6 Energy has built its initial global distribution networks in Europe, the United States, and Latin America, and the founders aim to strengthen those channels while also developing additional product lines.



VI. Underrepresented Founders in Climate Tech

FEMALE-LED CLIMATE TECH COMPANIES

Female founders in climate tech face bias and difficulty raising capital, though this can be improved through strong networks and greater representation.

Female founders who were interviewed across various geographies mentioned raising capital as their primary challenge. During 2021, only 2 percent of venture capital raised in the United States went to female founders.⁷⁵ Several female founders who were interviewed by Endeavor Insight attributed this to unconscious bias, as investors — who are predominantly men — tend to be drawn to founders that look like them or have similar experiences. In fact, several female founders expressed that when they reach out to potential clients or investors, their male cofounders or even more junior male colleagues receive more responses and attention. One female founder recounted, “I have often had a situation when I went to a meeting with my male colleague who was not a founder, or not even in a leading role, and the other party looked at my colleague rather than me.”

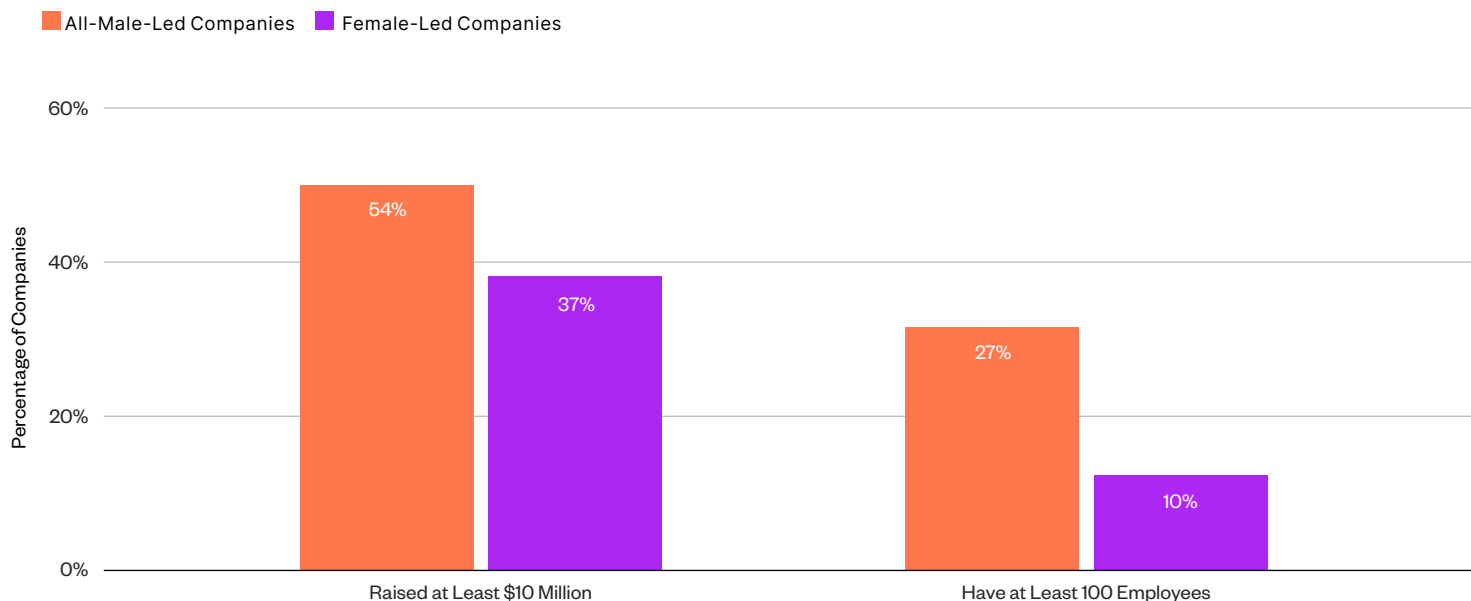
Female founders also described facing disrespect in the form of unfair questioning of their ability to lead, especially in hard sciences and engineering. One founder disclosed that “Being a female entrepreneur in a manufacturing space, people don’t generally take you very seriously. That’s been my experience, they don’t understand that you can understand technology really well, that you can talk about serious stuff and that you know what you’re doing. They wouldn’t initially take the time to talk and have those discussions we wanted.”

Endeavor Insight conducted quantitative analysis to identify any differences in outcomes between all-male-led and female-led climate tech companies. The analysis showed large discrepancies between companies with all-male founding teams and those with at least one female founder. As illustrated in the graph on the next page, female-led climate tech companies are much less likely to raise at least \$10 million in funding or to have at least 100 employees than companies with all-male founding teams.

Female founders reported that they benefit from creating networks with other female founders, as they can learn from each other’s experiences. Today’s female founders are mentoring the next generation of female entrepreneurs in order to improve gender representation. Inna Braverman, cofounder of **Eco Wave Power** reported, “I mentor several female interns each year from leading universities around the world and assist them with developing the skills and tools necessary to succeed as the female entrepreneurs of the future.” In addition, interviewed female founders mentioned the need for encouraging women to study the STEM disciplines that will enable them to succeed in this sector and increase representation.

CLIMATE TECH COMPANIES WITH FEMALE FOUNDERS ARE LESS LIKELY TO RAISE SIGNIFICANT CAPITAL AND REACH SCALE

Comparison of Outcomes Between All-Male-Led Companies and Companies with at Least One Female Founder



Note: "All-Male-Led Companies" refers to those with only male founders, while "Female-Led Companies" refers to those with at least one female cofounder.

Sample sizes: 980 companies for capital raised and 1,056 companies for number of employees. Sources: Endeavor Insight analysis, PitchBook, and Crunchbase.

Despite the many existing challenges, female-led investment firms are starting to emerge in climate tech. This trend can help mitigate the unconscious bias from investors that female founders face. For example, Sarah Sclarsic, a former entrepreneur, and Sierra Peterson founded Voyager Ventures in 2021, bringing 28 years of combined experience in climate stabilization. In April 2022, Voyager Ventures announced a \$100 million fund for early-stage climate tech companies.⁷⁶ Chloe Capital, founded by Elisa Miller-Out and Kathryn Cartini, is a seed-stage venture capital firm that invests in female-led innovative companies. In 2021, Chloe Capital partnered with Cornell University and NYSERDA to found the Diversity in ClimateTech program, a business accelerator that provides funding options for climate tech founders who are women or from underrepresented minority groups.⁷⁷

Other support programs and business competitions are also dedicated to supporting female founders in climate tech. The Women4Climate Program aims to empower female climate leaders through its Mentorship Program, which matches government and business leaders to women founders. It also runs the Women4Climate Tech Challenge, which provides funding and support to women implementing climate innovations in C40 cities, a network of nearly 100 cities that have committed to halve their emissions by 2040.⁷⁸ Additionally, the Aspen Network of Development Entrepreneurs (ANDE) spearheaded the Accelerating Women Climate Entrepreneurs (AWCE) project, which provides grants to projects that promote investments towards female climate tech entrepreneurs.⁷⁹ One of the 2021 winners of AWCE funding, the Future Females Empowerment Initiatives, runs a platform that connects over 200 women climate entrepreneurs in sub-Saharan Africa to stage-appropriate funding.⁸⁰

CASE STUDY: C16 BIOSCIENCES

Creating a Sustainable Alternative to the Palm Oil Industry

SHARA TICKU, DAVID HELLER, AND HARRY MCNAMARA FOUNDED C16 BIOSCIENCES IN 2017.

The company replaces conventional palm oil production with an environmentally friendly oil created through precision fermentation.⁸¹ C16 Biosciences has proven its concept and raised enough funding to support a team of 38 employees, with Ticku as CEO.

The founders wanted to address deforestation after witnessing the destruction of forests caused by the palm oil industry and the ensuing environmental problems. The trees from which palm oil is harvested can only be grown within 5 to 10 degrees of the equator, an area that is home to much of the world's tropical rainforest, which has steadily been cleared to meet growing demand for the product.⁸² Palm oil is an ingredient in half of the products on supermarket shelves, making the industry worth \$60 billion per year.⁸³

Ticku was also struck by how palm oil production affected living standards in the region, saying, "I saw the impact in Singapore, because the air quality index was over 400, which is hazardous enough for them to have banned pregnant women from walking outside. The reason was that plantations in Indonesia were burning trees, and the smoke and haze were coming over into Singapore, causing a massive impact to air quality and human health."⁸⁴

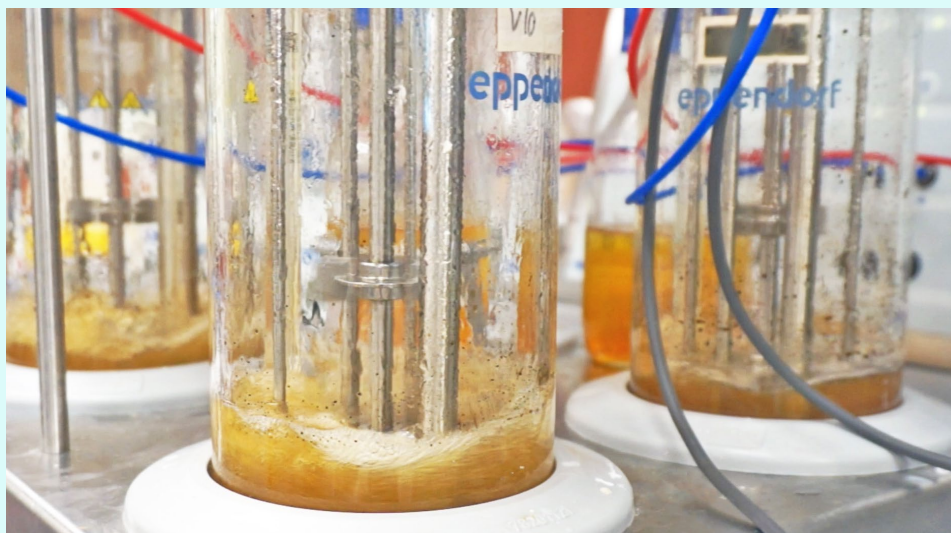
Ticku holds an MBA from Harvard Business School and has several years of experience working in global health, including with the Clinton Health Access Initiative and for the UN Secretary General's Special Envoy for Health and Malaria. This background gave her experience in addressing market failures in developing countries, and she sees the issue of palm oil as another global problem rooted in market failure that her company can address.

While taking a class at the MIT Media Lab, Ticku met Heller and McNamara. They researched the industry and discovered that despite 250 consumer goods producers and nine countries committing to end the use of so-called "conflict" palm oil (referring to palm oil producers who commit human rights and labor violations, or who burn high carbon stock land), no viable alternative had been found.⁸⁵ With \$1,000, the founders produced their first sample of an oil which looked and functioned like palm oil. Positive

feedback on their technology and market opportunity encouraged them to pursue the idea.

Ticku's status as a female founder has brought challenges that she continues to battle. As she explains, "Bias is the main challenge, especially since I'm running a hard tech and science based company. It really comes down to unconscious bias, that's where I see it the most. If the major group of investors or mentors or executives are men, they will default to people that look like them. You just have to grin and bear it at times."⁸⁶

C16 Biosciences participated in Y Combinator's accelerator in 2018. Ticku credits the accelerator for its focus on pushing the company "to act really quickly in a short amount of time to deliver results."⁸⁷ She adds that the program provided "a peer network of other founders, which has been deeply meaningful and helpful in my journey, and also a network of investors. It helped me raise our seed round really



quickly.”⁸⁸ Ticku closed that round in 2018, and the company raised a \$20 million Series A round led by Breakthrough Energy Ventures in 2020.⁸⁹

Since 2018, the company has been headquartered in New York City. This has been a useful location for the company because, according to Ticku, “it has a really rich talent pool for people across research and development, marketing, and business development, and it allows us to bring best in class talent from various fields.”⁹⁰ For example, the company’s head of marketing came to C16 Biosciences after building a career in New York’s advertising industry. Ticku believes that more can be done in the city for climate tech, saying, “There are government incentives, but they are related to things like reducing building emissions. But we focus on Scope 3 emissions,* which comprise most of the impact that you and I have on climate — the stuff that we buy, like soap and all the ingredients and components that go into it. I have not seen the city or state focusing on this type of impact for climate change.”⁹¹

Ticku seeks to address the challenges that female founders face. In her eyes, connecting with other female leaders is essential for lifting one another up and reducing biases in existing structures. As she says, “Building a really strong network of other female founders, and female executives, investors, thinkers, has been really important.”⁹² Ticku is pushing her own international leadership credentials as well. She is the only U.S.-based member of the Climate Tech Council, a London-based platform that focuses on knowledge exchange, events, information, and networking.⁹³ She is hopeful that the Council will expand into the United States.



* According to the United States Environmental Protection Agency, “Scope 3 emissions are the result of activities from assets not owned or controlled by the reporting organization, but that the organization indirectly impacts in its value chain.” See: [epa.gov/climateleadership/scope-3-inventory-guidance](https://www.epa.gov/climateleadership/scope-3-inventory-guidance).



MINORITY-LED CLIMATE TECH COMPANIES

Minority founders in the United States also face bias and difficulty raising capital. This can be improved through network building, providing resources, and encouraging more members of minority groups to become entrepreneurs.

Minority founders of climate tech companies who were interviewed by Endeavor Insight described accessing networks and raising capital to be greater challenges for them than for non-minority founders. Their backgrounds often make them less likely to be privy to certain institutions like Ivy League universities, which play a large role in building networks that improve access to capital, support, and mentorship. It can be harder for founders from minority groups to connect with investors and mentors without having those shared professional or educational experiences.

This can lead to greater scrutiny and implicit bias. In the words of one Black climate tech founder, “Access to direct capital is hard at every step: getting the meeting in, getting the capital approved, getting emails back. As a Black entrepreneur, you may be questioned a lot more for something that makes a lot more sense.”

Many minority founders are also female. One founder noted, “What is particularly frustrating is the intersectionality of female and diverse founders with climate tech solutions. Because of all the biases against those founders, we are underinvesting in the climate tech space.” Reducing implicit bias and underrepresentation in key decision-making roles will be important for increasing investment in climate tech.

According to interviewed minority founders, actively building networks through fellowships and other professional experiences helped improve their access to capital. As with female entrepreneurship,

underrepresentation of minorities also requires encouraging fields such as venture capital, tech, and entrepreneurship to actively promote underrepresented founder groups.

There are several initiatives and programs working to improve the inclusion of minorities in the climate tech space. VC Include’s Climate Justice Initiative provided \$100,000 in 2021 to diverse-led funds that invest in climate tech solutions.⁹⁴ Apple Impact Accelerator is a 12 week program for Black-, Hispanic/Latinx-, and Indigenous-owned businesses focusing on green technology and clean energy that has selected two cohorts as of 2022.⁹⁵ The Los Angeles Cleantech Incubator (LACI) launched a Cleantech Debt Fund in 2022, a \$6 million loan program that aims to support founders from historically underrepresented groups.⁹⁶ Additionally, peer networks like Greentech Noir are helping create a well-connected community of Black people working in climate tech who are founders, investors, and other business leaders.⁹⁷

It is also necessary for legislation to take steps to boost the representation of minorities among future climate tech innovators and entrepreneurs. The CHIPS and Science Act of 2022 has dedicated funding to support Historically Black Colleges and Universities (HBCUs) in expanding their STEM programs and research.⁹⁸ More students at HBCUs will have the resources and opportunities to acquire skills in the fields that are common among climate tech entrepreneurs.

CASE STUDY: DOLLARIDE

Bringing Cleaner Transportation to Underserved Areas

SULAIMAN “SU” SANNI AND CHRIS COLES FOUNDED DOLLARIDE IN 2018, AIMING TO MODERNIZE THE BUSINESS MODEL OF DOLLAR VANS IN NEW YORK CITY.

Dollar vans are an informal network of buses or vans that run set routes in so-called transit deserts, with passengers hailing the vehicles to and from areas underserved by the mass transit system.

Although they now charge an average of \$2 per ride, the “dollar van” nickname has endured. They are a common form of urban transportation in urban Africa, the Caribbean, and Latin America, and appeared in New York in the early 1980s. By 2019, New York had an estimated 2,000 drivers operating dollar vans, serving around 120,000 people per day. Many of these vans are unlicensed.⁹⁹

Sanni saw an opportunity to help such businesses through technology. Dollaride’s app allows users to see the location and route of licensed dollar vans within a one-mile radius, book a space, and pay. The app also allows drivers to see where potential passengers are located. Dollaride aims to provide clean, affordable transportation, especially for underserved urban areas, to help reduce pollution from carbon emissions.¹⁰⁰ This is a large opportunity because vans emit less than a quarter of

the average single-occupancy vehicle’s greenhouse gas emissions per passenger mile.¹⁰¹

Sanni developed the business idea based on his personal experience of working one summer for his uncle’s transportation business, which has a fleet of around 30 dollar vans. Sanni also had some entrepreneurial experience, and knew that he wanted a cofounder with a technological background. He reached out to an email list for entrepreneurs, investors, designers, and engineers from minority groups based in New York City. Coles, a software engineer, responded to Sanni’s idea, and the two started the business.



Left to right: Chris Coles and Sulaiman “Su” Sanni

Unlike a traditional software company where one can “move fast and break things,” Sanni says that he has had to take extra steps and grow the business more slowly due to the nature of the industry. Mobility and transportation is a highly regulated industry that involves real-life concerns like the safety of users. Sanni has gained trust by ensuring that the company only uses licensed vans, and has focused on pilot projects and small scale demonstrations with clients. One such pilot was with Gateway JFK, a business improvement district that supports around 8,000 jobs at businesses close to the airport. In 2021, Dollaride started running an express shuttle linking the underserved area of Southeast Queens with the district, coordinated with Gateway JFK and the local borough government.¹⁰²

By mid-2022 Dollaride had around 12,000 daily users, two-thirds of whom are passengers working at the corporations who purchase the service. Partnerships with corporate clients have allowed Dollaride to test and improve their ride services for a consistent stream of actual users. There is also traction in the general population, as Sanni explains, “The passengers that are not affiliated to the corporate clients are finding our drivers, using our app, and paying for rides.

Because we have this shared model, we are seeing that the general population uses the service too.”¹⁰³

Since Dollaride addresses the transportation needs of underserved and ethnically diverse communities, unconscious bias and underrepresentation may play a role in exacerbating the challenge of fundraising. Sanni explains, “I think that some of the challenges I’ve had with raising capital relate to the type of business that I have, and the fact that the end beneficiaries of my business are riders who are typically people of color, or people living in low income neighborhoods. An investor, who more than likely is going to be a white male, is going to have a harder time connecting with that value proposition, because he is less likely to experience the problem that I’m solving for my customers. Although he might be impressed with me, it’s harder for him to really imagine how big of a problem this is, since he doesn’t come from Brownsville, Brooklyn, or live on a salary of \$50,000 or less.” He continues, “Whether you completely remove race from it, the relevance or proximity to the problem still affects the whole fundraising process.”¹⁰⁴

The two support programs that Dollaride has participated in — Elemental Excelsator and the NYU Urban Future Lab — have helped introduce the company to potential investors and customers.

Sanni has benefited from building relationships with investors that understand the climate tech arena. He explains, “I get the sense that climate tech-focused investors, unlike traditional tech investors, are less interested in growth at all costs and far more instructive about sustainable development. So, it’s almost like patient capital. They understand that we have to leverage partnerships and relationships, and engage with the local community, because we are trying to create systemic change.”¹⁰⁵

Dollaride monitors some environmental impact metrics and has plans to support further decarbonization. “We track the reduction of greenhouse gas emissions by having people replace their single-occupancy vehicles with a shared-ride dollar van. Going forward, we’re trying to get the drivers to adopt electric vehicles and we’ll be measuring the environmental impact of that conversion, too.”¹⁰⁶ Sanni also hopes to expand Dollaride to other cities — such as Jersey City and Washington, DC — within two years.



VII. Support Systems

MENTORSHIP

Climate tech founders are receiving mentorship, but not from within the sector, so successful founders should be encouraged to give back.

Previous research by Endeavor Insight has found that a company is more likely to reach scale after its founder receives mentorship from a scaled founder.* During interviews, climate tech founders reported that many of the available mentors within the sector are subject matter experts or consultants, or founders from other sectors. Founders frequently encounter challenges finding experienced climate tech entrepreneurs to mentor them. Many founders attributed this to the immaturity of the climate tech industry, especially for some of the relatively nascent sectors like circular economy or carbon capture.

Quantitative analysis of the top mentors and angels in the sector (those who had at least two connections) supports these findings. Endeavor Insight found that over 70 percent of the top mentors and angels in the sector were themselves founders. However, relatively few of them had sector-relevant experience for climate tech. Although 58 percent had some professional experience in finance, and 43 percent had experience in tech, only 10 percent had experience in energy and 2 percent in agriculture.

Climate tech entrepreneurs therefore often rely on networks and mentorship from founders in the broader tech sector or other traditional sectors, as those are more likely to have insight about scaling up. For some, such as those involved in EVs, there are experts from parallel industries that they can turn to for advice. But companies

still need more specialized advice. As one founder noted, “The more the company evolves, the more specific problems you have. And the harder it gets to find the right person to give you advice.”

Advice from those who are not entrepreneurs is often not ideal. As **Vertoro** cofounder Panos Kouris recounts, “Climate tech mentors and experts mainly come from big corporations. But they have a different mindset. There are climate tech mentors who are inspiring executives and have been working in energy transition for years, but it is difficult to develop a close relationship and to get them to advise you. Furthermore, there is sometimes some sense of conservatism when it comes to radical changes. We believe that biorefinery companies like us can play a major advisory role in the future since we develop everything from scratch, driven by strong motivation to make an impact.”

The lack of specialist climate tech mentors has also meant that founders have adapted their strategy. Some have relied on a network of peers, and others have brought in a range of mentors who are specialized in different aspects of business, but not entrepreneurs. Others have relied on investors or support programs to lead their mentorship. Several VCs or investment arms of VCs specialize in climate, and these can provide tailored advice on certain aspects of the business or help in establishing an advisory board.

However, these solutions are more applicable for companies at an earlier stage of growth. Several interviewed founders described that suitable mentorship was available when they first started, but rare after a few years of growing their

* This finding has been consistent in several studies and various geographies. For more information see “Fostering Productive Entrepreneurship Communities” (2018) and recent network mapping reports at endeavor.org/research.

companies. That is the stage when founders need to make critical decisions to manage growth successfully, and advice from entrepreneurs who have already scaled their businesses in the same sector would be most beneficial.

Founders in emerging economies found it particularly difficult to access mentors with the requisite skills and experience. Again, the relative maturity of the sector is a major factor, and the European and North American hubs appear to offer a greater network of mentors. According to one Asia-based founder, “It’s been a challenge here as you won’t really hear about climate tech companies. I’m trying to tap into the networks in Europe.”

Valuable mentoring connections have still been made, often through a combination of programs, support organizations, and peers. As one founder recalls, “Endeavor, Techstars, and accelerators really connect people. I think that’s where the power is because we all want to help each other grow. The mentors certainly add value from experience and so do the other cohort members.”

SUPPORT ORGANIZATIONS

Support organizations can adjust their services to better serve the needs of climate tech entrepreneurs.

Support organizations are serving some useful needs for founders, but there are still gaps to address as the climate tech sector grows. Endeavor Insight quantitatively analyzed the support and services offered by more than 60 climate tech incubators and accelerators that are headquartered in the six hubs. The graph on the next page illustrates that access to capital was the most common activity, which aligns with also being the most severe obstacle reported by founders. Mentorship is the second most common

service available, which is particularly useful, as discussed in the section above. A few programs also have support for sales and access to customers — the lowest ranking obstacle reported by founders.

Only 13 percent of the programs were explicit about helping founders access talent, even though nearly half of founders rated this as a major or severe obstacle (making it the most pressing challenge after access to capital). Additionally, only one-third of programs offer access to lab facilities and technical expertise, which is relatively low considering the abundance of hardware companies in climate tech and their need for specialized support.

When asked about the most helpful aspects of participating in a support program, interviewed founders reported that the primary benefits were the opportunities to network with investors and mentors. They also see their acceptance as a “stamp of approval” from prestigious programs that acts as a signal to potential investors, customers, and partners.

Participating in a program like Techstars proved beneficial for waste trading platform **Xworks Tech**. According to cofounder Electra Coutsoftides, “They had some great workshops, but really it’s the connections, it’s the network, it’s the opportunity to reach into this pool of people that you wouldn’t have had otherwise. And because they invested in us, and they already verified us, that gave us a certain amount of kudos as well.”

Specialized programs are useful for filling in the gaps of founders’ skills or knowledge. For example, participating in an accelerator helped **EConcrete**, a company whose two cofounders are scientists. Cofounder Ido Sella explained, “Coming from a life sciences background, as we started to build the company, we were lacking some basic business knowledge. We used accelerators to help us close the gaps with subjects such as structuring a budget, sourcing funding, contracting agreements, and compliance.”

Programs run by industry giants can also provide specialized benefits to climate tech founders operating in similar domains. Hardware founders reported that programs run by large corporations such as Shell or Mitsubishi were helpful in the early stages for access to domain experts, lab facilities, R&D capital, investors, and potential customers. These companies can also be influential in other ways, as one founder who used Shell's R&D facilities in three continents explains, "Shell is a huge name and they are very well connected in the startup ecosystem. I have met premier VCs in India thanks to Shell connections." Similarly, Johnson & Johnson's JLABS accelerator and innovation center has proved beneficial for some companies in the biotech and food areas of climate tech.

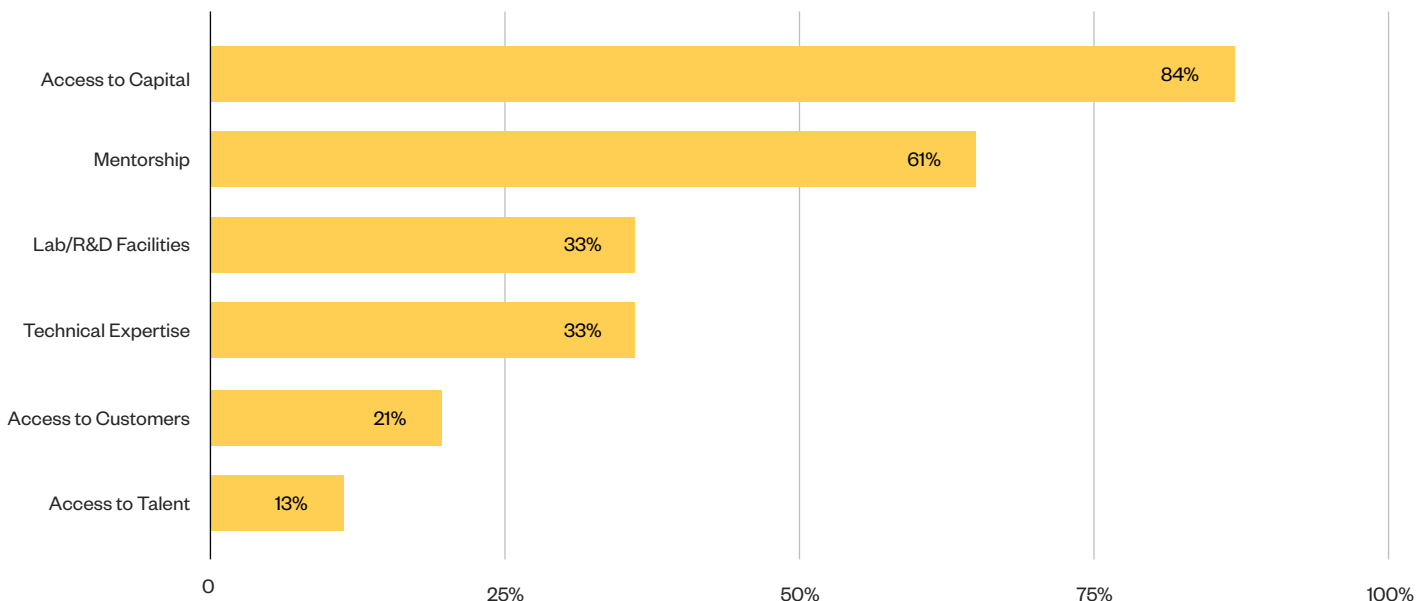
Accelerator programs have also helped some founders to reach their first large

customers. Nisan Katz, cofounder of the smart mobility company **Make My Day**, highlighted, "We are working with large corporations, and there is a gap between how startups and corporations function. Support programs helped us overcome this gap, they helped us understand what the corporates need, who are the key people to connect with, and how we can work with them. They also understand how we work so they act as middlemen."

Although interviewed founders were broadly positive about their experiences with support programs, they also mentioned some downsides to participation.

Their criticisms included the opportunity cost of time spent in the program, a lack of focus on either stage or sector, and generic advice that did not address their specific

SUPPORT AND SERVICES PROVIDED BY CLIMATE TECH SUPPORT ORGANIZATIONS IN THE SIX HUBS



Note: Data includes entrepreneurship support organizations (SOs) that are focused on climate tech and headquartered in one of the six hubs.

Sample size: 61 support organizations. Sources: Endeavor Insight and support organization websites.

business needs. A few entrepreneurs also mentioned that the equity stakes demanded by support organizations were too high.

There still appears to be an insufficient number of support programs that are specifically oriented towards companies in the climate tech sector.

One founder who attended a program with a general industry focus recounted, “It wasn’t very helpful, but that’s not a reflection of the program, it’s just that our industry is very different from the industries they usually support so there wasn’t a lot of alignment. The focus on business stuff wasn’t so useful as I know a lot of that already.”

Founders also advised that it is important to consider what stage of growth a program is directed towards, and to pick programs carefully as they may have overlapping

information. One founder considered early-stage focus accelerators to be of little use because, “In the early stages, innovation has to come from the founder. When the company is at a later stage, you can get actual feedback on specific topics such as growth and scalability. But the founders have to build the base of the company first.”

The COVID-19 pandemic also affected the quality of support available. Several founders mentioned that virtual support programs were less helpful than in-person programs from before the pandemic, which allow for greater focus and more meaningful networking.

“They had some great workshops, but really it’s the connections, it’s the network, it’s the opportunity to reach into this pool of people that you wouldn’t have had otherwise.” - Electra Coutsoftides, cofounder of Xworks Tech

VIII. Recommendations

Entrepreneurs are a necessary force in addressing climate change. Founders that develop, commercialize, and scale new technologies and services are having a profound impact on climate mitigation. However, more needs to be done to support entrepreneurs around the world and avoid the mistakes of the last boom-and-bust cycle of investor interest.

Endeavor Insight's analysis identifies specific gaps that each actor in an entrepreneurial ecosystem can address in order to achieve these goals. The following pages provide recommendations for entrepreneurs, investors, support organizations, policymakers, corporations, and universities who are interested in mitigating climate change.

RECOMMENDATIONS FOR ENTREPRENEURS

Build a Network to Access Capital:

Entrepreneurs with strong networks have an advantage in accessing capital. Founders should focus on building relationships with investors, even in the earliest stages of a company's development and often in other geographies. When choosing whether to participate in a support program, founders should prioritize those that provide introductions to investors around the world.

Anticipate Talent Needs as the Company

Scales: For many interviewed founders, recruiting and retaining talent — especially qualified managers — is a major challenge in the climate tech sector. Founders should prepare to do in-house training to upskill managers and specialized technical employees. Emphasizing the company's positive climate impact is a powerful way to attract experienced talent from established corporations, and providing a flexible

work environment improves retention. Additionally, founders of both software and hardware companies can create remote-first systems to access global talent pools.

Pay It Forward: Entrepreneurs thrive when connected with other founders because they benefit from the exchange of knowledge and networks. In the climate tech sector, there is a shortage of qualified mentorship available from successful founders, as many of the industries within climate tech are still maturing. As more founders scale their companies, entrepreneurs should give back to their community by supporting up-and-coming founders through mentorship and angel investment.

RECOMMENDATIONS FOR INVESTORS

Provide Later-Stage Funding: Later-stage funding is essential for scaling climate tech solutions. While more climate tech entrepreneurs are reaching the point where they require growth-stage capital, institutional investors are still prioritizing early-stage funding.

Tailor Deals and Metrics to the Differing Needs of Climate Tech Companies:

Investors should also tailor their selection criteria based on the business model of the company. Hardware companies are crucial for climate change mitigation, and they typically require longer timelines and patient capital, so their growth potential should be assessed differently from software companies.

Fund Innovation from Rising Markets:

Investors should not overlook rising markets when identifying solutions that can have a global impact. In rising climate tech markets like South Asia or the Middle East, large ticket sizes are rare and local investors tend to be more risk averse. Investors based in

established hubs have an opportunity to fund scalable climate tech companies from rising markets that would not otherwise reach their potential.

Contribute to Local Entrepreneurial Ecosystem Development:

Robust entrepreneurial ecosystems throughout the world are necessary for climate impact. If funding a company in another geography, investors should partner with local investors who are knowledgeable about the local entrepreneurial network and can support its ongoing development when an exit occurs.

Reduce Systemic and Unconscious Bias:

Endeavor Insight found that underrepresented groups such as female and minority founders face greater difficulty in accessing capital. Investors can reduce the systemic and unconscious bias that may be causing underinvestment in those groups and increase the number of people from underrepresented groups among their own investment teams.

RECOMMENDATIONS FOR SUPPORT ORGANIZATIONS

Elevate Successful Climate Tech Founders:

Previous Endeavor Insight research has found that entrepreneurial ecosystems thrive when the most influential actors are successful founders.¹⁰⁷ Support organizations should prioritize the inclusion of founders of scaled climate tech companies in leadership and mentorship roles in their programs, rather than those who do not have firsthand entrepreneurial experience. In addition to providing mentorship, scaled founders can offer valuable insights about program design and selection decisions.

Address Pressing Obstacles by Listening to Founder Needs:

Access to talent is a major challenge for climate tech entrepreneurs, but support organizations rarely have services to help founders recruit top-tier employees, especially for managerial roles. Programs can connect their current portfolio

companies with alumni companies as well as other industry contacts to facilitate the recruitment of managers. Additionally, support organizations can play an important role in addressing the R&D needs of hardware companies by helping entrepreneurs access labs at local universities or other research facilities.

Facilitate Global Connections: Support organizations should act globally to secure the resources that can help their portfolio companies scale faster. This research shows that investors in New York and trained talent from London are supporting the growth of climate tech companies in other cities. For niche or nascent subsectors, qualified mentors may only exist in particular geographies, so support organizations can help their entrepreneurs identify and connect with those individuals.

RECOMMENDATIONS FOR POLICYMAKERS

Enact Founder-Friendly Legislation:

Policymakers can make a significant contribution to the growth of entrepreneurship in climate tech through founder-friendly policies and regulations. Employee stock option plans, ease of starting a business, visa programs, and frameworks for venture capital are all necessary for becoming a globally competitive home for climate tech entrepreneurship. These steps will encourage founders to keep their business in their country or city, rather than relocating to other hubs with more favorable laws.

Secure Supply Chains: Many founders of hardware companies told Endeavor Insight that they continue to be affected by shipping delays and input shortages following the effects of COVID-19 and the Russian war in Ukraine. To help climate tech entrepreneurs reach scale, policymakers can boost the domestic production of key hardware components. For example, the CHIPS and Science Act in the United States will provide funding and support to increase the domestic production of semiconductors.

Learn from Other Markets: Decision makers can benchmark their climate tech ecosystem to other countries or regions, as this report demonstrates on pages 44-47. Countries with robust business environments, entrepreneurship policies, and direct support for founders can serve as examples for policymakers seeking to create more effective legislation and initiatives.

Support the Scaleup Stage: Much of the existing public support for climate tech entrepreneurs is for early stage companies. Governments and multilateral institutions should provide greater funding and support to growth-stage companies whose products are ready to scale and have the potential for wide climate impact. Government-organized trade shows and missions are a beneficial service to support scaleup entrepreneurs achieve international expansion.

Accelerate the Green Transition:

Governments can use their power to accelerate the uptake of clean technologies. For example, enforcing higher standards of sustainability in industries like agriculture, energy, construction, and transportation will generate greater demand for the products and services that climate tech companies offer. Providing consumer subsidies can also accomplish this by reducing the green premium. In the United States, the Inflation Reduction Act will provide consumer rebates and tax credits for clean technologies.¹⁰⁸

RECOMMENDATIONS FOR CORPORATIONS

Source Tech Directly from Entrepreneurs for Impact Goals: Corporations should prioritize entrepreneurial companies as vendors to accomplish their net zero targets to reduce their carbon footprint. Choosing to buy from local entrepreneurs will have a multiplier effect on the entrepreneurial community. Oftentimes, early stage B2B climate tech companies rely on an established first customer to gain legitimacy. When those founders go on to succeed, they are more likely to keep scaling and pay it forward to the next generation.

Incentivize Clients to Adopt Clean Technologies: Corporations can play a role in accelerating the green transition by incentivizing their clients to adopt clean technologies. Behavioral economics research has shown that corporations can drive consumer behavior through

small interventions to improve demand for sustainable choices.¹⁰⁹ For example, banks can offer incentives like more favorable loan rates to clients and potential customers that adopt technology from climate tech companies.

Support Climate Tech Spinouts: Spinouts benefit their parent corporations by creating a larger network for sharing talent and knowledge, as well as becoming potential vendors or customers.¹¹⁰ Corporations can establish mutually beneficial relationships with climate tech spinouts launched by their former employees, and should support female and minority alumni in particular. Having successful spinouts also attracts talent by serving as a signal that the parent corporation adds value to its employees' careers.¹¹¹

RECOMMENDATIONS FOR UNIVERSITIES

Bring Together Students from Business and STEM Fields to Work on Entrepreneurial Projects: Climate tech founders often develop their business ideas through class projects or start their companies with classmates. Because successful entrepreneurial companies often have teams with both business and STEM experience, universities can establish programs and classes that bring together students from those fields. On-campus events and programs will help students identify potential cofounders and develop business ideas.

Provide Go-To-Market Services and Lab Facilities to Pilot-Stage Founders: Universities have an opportunity to provide greater support to climate tech entrepreneurs with their existing resources. For example, they can facilitate meetings with industry experts and legal advisors as students develop their go-to-market strategies. As hardware-based models often require access to labs for R&D and product testing, universities can prioritize the use of facilities for climate-focused projects.



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