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Insights

What role can software investors play in the climate tech revolution?

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With 2023 close to crossing the finish line as the hottest year on record, it's no question climate change is one of the defining issues of this generation. Those building solutions will not only help us transition to net zero, but also have the opportunity to tap into the $4 trillion spent globally each year to get there. Tech investment firms like AVP will play a role in backing the great entrepreneurs and outstanding companies tackling these challenges.

Yet the climate crisis also poses a paradigm shift for non-climate investors. Climate change is a physical problem, but for the past few decades, the darling of tech investors has been the intangible world of software, owing to software's infinite scalability, recurring revenue, and predictable growth. (Let's be clear: VCs, including AVP, continue to successfully fund technology outside of software, but decades of software successes have led to its dominance.) When the first cleantech boom hit earlier this century, venture capitalists used to software investing lost more than half of the $25 billion poured into the industry, prompting criticism that the venture model (and the venture capitalists' attachment to software) was unsuited to tackling climate change.

So, when climate tech seems to be going through a record second wave of VC funding, what to make of the new boom?

Do software investors, who comprise almost 40% of all venture funding, have a role to play in climate? If so, can their role extend beyond just bread-and-butter subscription software? Our answer is yes to both.

In this piece, we outline why now is the time for software professionals to lean in, the considerations that lie behind the intersection of software and climate, and where we at AVP are excited.

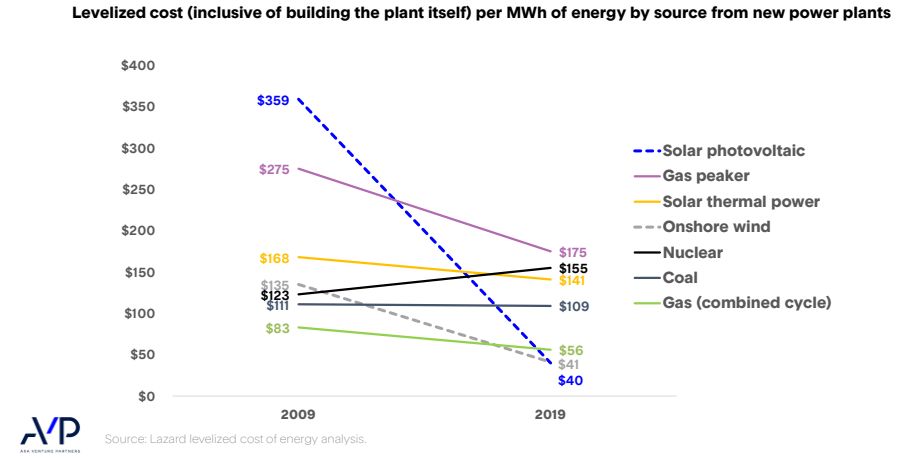
I. Why now?

Climate tech activity has been steadily increasing since the first climate bubble burst. A few factors make today's boom different from the prior wave of climate activity and undergird the promise of technology to accelerate this change.

1. Climate tech is making financial sense

   The first green tech boom got carried away by making unit economics an afterthought. Companies benefitted from billions in subsidies for models that did not work. Over the past decade, however, the cost of green energy has come down significantly. In 2016, the cost of solar became cheaper than that of fossil fuels, with the International Energy Agency describing solar as the "cheapest electricity in history" in 2020.

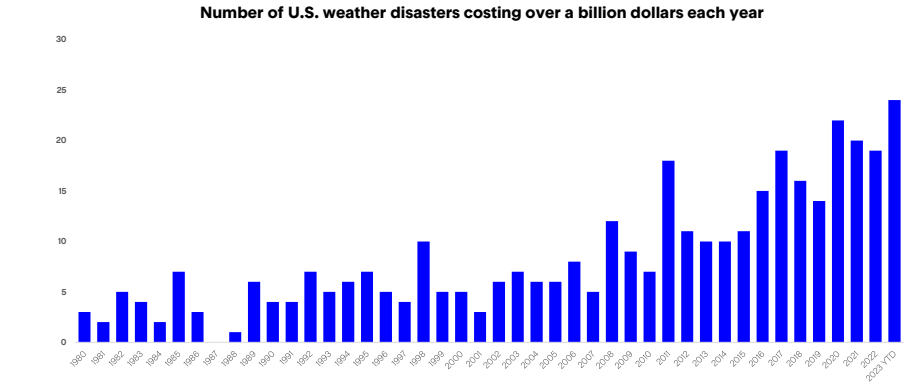
The costs of solar and wind have dramatically decreased



Source: Lazard levelized cost of energy analysis.

On the other hand, the cost of *not* doing something has gone significantly up. Last year, the cost of climate and weather disasters in the U.S. cost more than $165 billion. Perils are increasing in both prevalence and increased unpredictability, making it harder for homeowners to get insurance: since 2022, 31 states have experienced double-digit percentage rate increases, and soon homeowners in risk-prone states like California and Florida may not be able to get insurance at all. In Europe, only a quarter of climate-related catastrophes are even insured. Startups like Zesty.ai are offering analytics to help risk professionals better understand the risks and costs of climate.

Billion-dollar weather disasters are becoming more common



Source: NOAA. Disaster costs are adjusted for inflation

2. Business models are meeting customers where they are

Financial sense hasn't just come from costs and benefits; it's also been the innovation in business models making the upfront costs to "go green" less daunting than a decade ago. After all, cheaper energy means nothing if end users can't afford the investments required to benefit. Sunrun, founded in 2007, made it easier for homeowners to afford solar by paying zero down. Today, we're seeing companies like Sealed change the way people pay for home efficiency upgrades by only paying when efficiency gains are realized, or Omnidian, which offers financial assurance that businesses' solar investments perform up to par, compensating customers if not.

3. Regulation is driving change

Increased regulation is leading to stricter oversight and disclosure. In the EU, the European Climate Law makes reaching net zero legally binding by 2050, while the Corporate Sustainability Reporting Directive (CSRD) requires companies to publish sustainability data with their financial statements. While such wide-sweeping legislation is not yet in force in the U.S., California recently legislated SB 253, which requires companies with revenues of $1 billion or above to report Scope 3 greenhouse gas emissions, as well as SB 261, which requires disclosure of climate-related financial risk. Furthermore, the Inflation Reduction Act (IRA) signed by President Biden last year allocated $369 billion in spending and subsidies for climate-related initiatives.

Regulation is a boon for software companies that uncover Scope 3 emissions and enable regulatory reporting. Startups need to be careful when taking advantage of regulatory tailwinds, however, to not mistake incentives or subsidies for business fundamentals and product-market fit.

4. Investors are demanding more and better climate transparency and accountability

Both public and private markets investors are demanding better climate data from their investments, as well as deploying capital directly into climate. According to Morningstar, global sustainable funds comprise $2.7 trillion of assets. More broadly, 5,000 investors managing over $121 trillion have signed the UN Principles of Responsible Investment to protect portfolios from climate risks, with BlackRock CEO Larry Fink being especially well-known for saying "climate risk is investment risk". On the private side, LPs, often endowments and pension funds serving thousands, are demanding more ESG data from the funds they invest in, and 90% of private equity firms factor ESG into their investment decisions. These demands from investors are being heard and will turn into real climate action from companies, with technology paving the way.

II. What do software investors need to know before investing in climate tech?

While the climate opportunity is clearly present today, understanding how to avoid a few pitfalls will help investors—as well as entrepreneurs—better understand climate software.

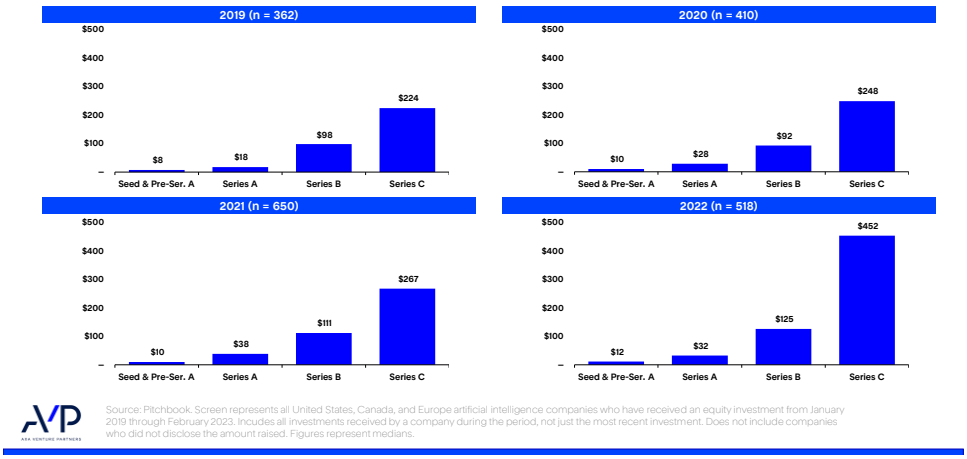
Hardware and services are things to embrace, not reject: Software investors often have difficulty deviating from traditional high-margin, recurring-revenue software businesses. The current climate crisis won't be solved by software alone, but what's less intuitive is that software companies can not only have lower-margin hardware and services, but they can also benefit from them. White label hardware such as Measurabl's meters or WINT's water flow sensors provide richness to data and analytics—a competitive moat for their software. More extreme examples include AMP Robotics, selling recycling-sorting robots with machine vision software, or RoadRunner Recycling, offering software-enabled recycling. While the latter two are beyond the software purview of this article, they show that the spectrum of hardware and service enablement for software ranges far and wide. Investors should do their due diligence to understand if the unit economics of such solutions work but be unafraid to deviate from "best-

in-class" SaaS metrics they are used to.

Climate adaptation vs. mitigation vs. resilience: Climate experts often categorize new climate technologies into three key functions: adaptation, mitigation, and resilience. Adaptation refers to technology meant to prepare us for a new climate reality. Mitigation refers to how we can minimize the actual impact of climate change. And resilience helps us better bounce back from growing climate perils. Investors would do well to understand what markets companies are selling to and how those market sizes are changing over time (for example, many vertical software companies assist companies with climate adaptation, while insurtechs may involve mitigation and resilience).

Valuations are going up and require investor thoughtfulness: The amount of capital being deployed into climate tech is reaching record levels, with returns starting to suffer. Smart investors will be able to discern which deals can hit their return thresholds. At the earliest stages, this requires rigorous research, conviction in the founders, and an understanding of the technology, while at the growth stage, this requires a commitment to business fundamentals and an understanding when companies' end markets are still growing and therefore could generate asymmetric growth beyond market expectations.

Median climate tech valuations have climbed over time, remaining resilient during the downturn



Source: Pitchbook. Screen represents all United States, Canada, and Europe artificial intelligence companies who have received an equity investment from January 2019 through February 2023. Incudes all investments received by a company during the period, not just the most recent investment. Does not include companies who did not disclose the amount raised. Figures represent medians.

Market sizes are still growing: On that note, investors often need to give companies some grace is market size. For many companies, total addressable markets are in their infancy as enterprise buyers figure out budgets and new legislation is passed. For example, before the passing of SB 253 in California in October, Scope 3 emissions reporting was not on the radar of most U.S. companies. Today, it's become a requirement for thousands of them. That said, verticals where catalysts are still emerging do pose risk. Investors must dive deep—including understanding the regulatory landscape—to get confidence in them.

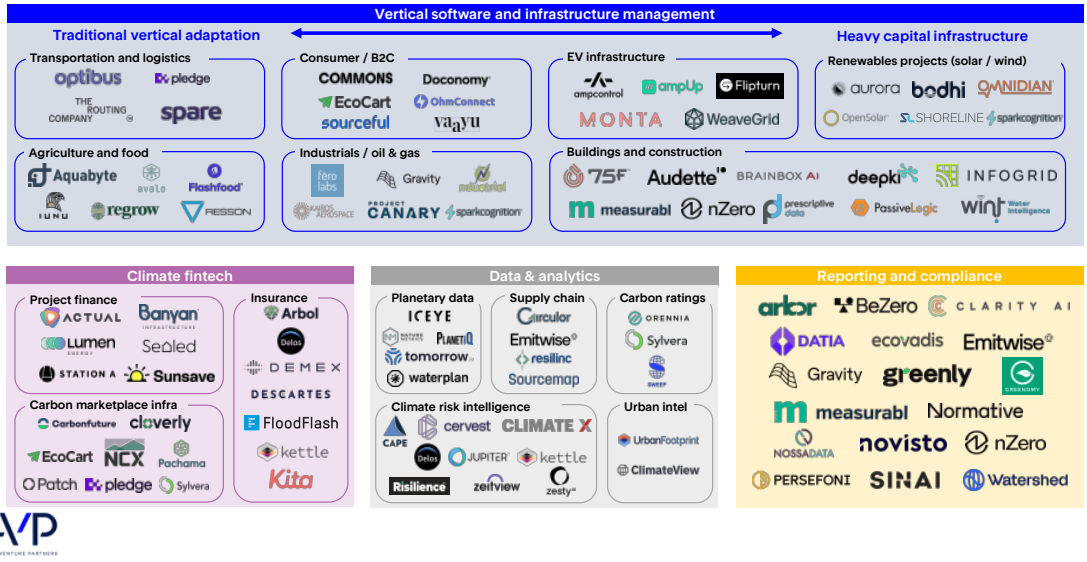
Recognize that you are just one source of capital tackling the climate crisis: Venture capitalists are not always the humblest of folks, and the first climate tech bust was emblematic of that. VC is only one source of funding for the businesses that will tackle climate change; luckily, one silver lining of today's high-rate environment is an increasing focus on structured equity and debt. For example, Tomorrow.io is disrupting the weather data ecosystem by launching satellites to provide higher-quality forecasting. While their core business is equity-funded, they can rely on debt to build and launch their satellites. Climate tech often involves R&D risk, manufacturing risk, and other risks that different kinds of capital can solve.

III. Where is AVP seeing opportunity in climate software?

As a transatlantic tech investment platform serving LPs around the world committed to tackling climate change, we share our LPs' goals in finding technology that will bring us closer to net zero. We see promise in the sectors on AVP's climate software market map.

To reiterate, many of these companies extend beyond bread-and-butter software; not all look like companies software investors are used to (many do!), whether it's business model, product, or cash flow dynamics. All can drive real-world impact and bring financial returns from doing so.

AVP's climate software market map



1. Traditional vertical efficiency software

When legendary entrepreneur and investor Marc Andreessen penned the famous phrase "software is eating the world" in 2011, he referenced how industries from retail to transportation to agriculture were being transformed by software at the deepest levels. Existing industries will require software to help them tackle the climate challenge. In transportation, The Routing Company's software for municipal transit agencies allows for flexible transit planning—reducing emissions and car reliance. As new industries are getting built to accommodate the climate revolution, software solutions are coming in to fill key technological gaps. WeaveGrid offers machine learning and analytics for EV charging, reducing impact on the electric grid.

2. Buildings and capital infrastructure management

As with vertical software, software companies will emerge to manage the infrastructure necessary to move to a net zero future. Infrastructure with the largest carbon emissions, such as construction, industrials, and real estate, also happen to be still on the cusp of digital transformation. Software solutions can disrupt these markets threefold, cutting costs, creating new business opportunities, and cutting emissions. WINT, for example, uses AI/ML to detect water leaks on construction sites, generating cost savings. PassiveLogic

uses generative AI to automate building management.

3. Climate data and analytics

Data is the new oil, they say, and when it comes to climate, data can also help us move away from oil. A new class of startups is emerging to help climate-related decision-makers act with better information, whether it's ensuring carbon neutrality in the supply chain, understanding underwriting risks, or enabling better planning. Insurers particularly stand to benefit, as they now have data not only to better understand risk in a changing climate, but also to offer insurance in markets that were or are becoming uninsurable. For example, Jupiter Intelligence has an advanced flood model to help insurers predict current and future flood risk, while Zesty.ai has a wildfire risk insights model, hopefully helping keep homes in places like California insurable for longer.

4. Climate fintech

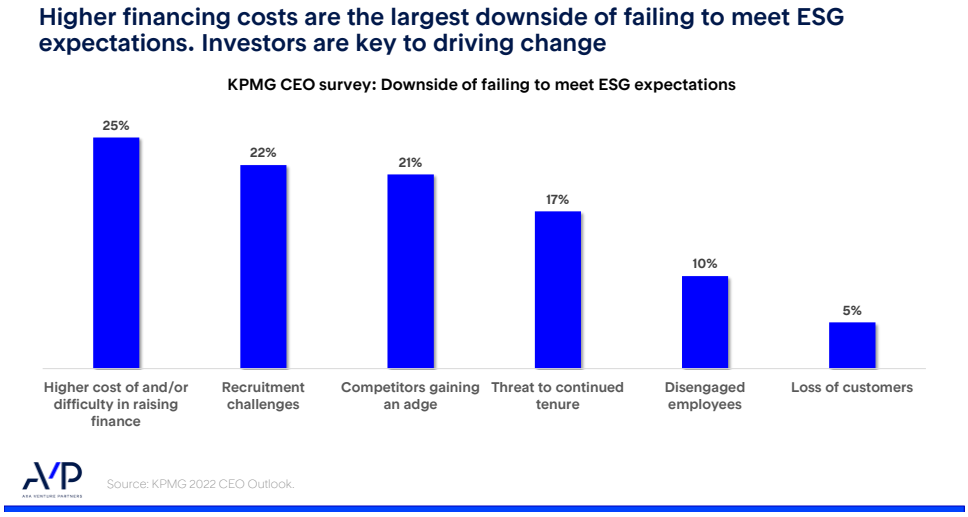
Including fintech in an article about software may be a stretch, but one only needs to look at software companies like Toast or Spotify to see the benefit of embedding fintech. Furthermore, as mentioned above, fintech and marketplace companies meeting customers where they are has enabled success in the climate sector.

One category within climate fintech includes project finance companies that offer better ways of engaging in climate-positive capital projects, such as Actual, which provides CFOs SaaS tools for understanding the climate costs of capex investments. We're also excited by insurtechs such as Descartes, whose parametric insurance means more people can get insured in changing times, or Kita, which insures the delivery of carbon credits. Finally, carbon credit marketplaces such as Pachama offer liquidity for high-quality carbon offsets.

5. Climate investor and regulatory reporting

Several startups are creating solutions to help their customers fulfill regulatory and investor demands and drive better transparency. The global Governance, Risk Management, and Compliance (GRC) market is over $50 billion, and climate needs are well-positioned to expand this market. The strongest-positioned companies here avoid selling into sustainability or ESG budgets at organizations; rather, they will sell directly into finance or other critical operational budgets.

CEOs have cited the largest consequence of not meeting ESG expectations to be more difficulty in finding financing, making the need for clear, actionable climate risk reporting a board-level concern.



Parting thoughts

Technology investors and entrepreneurs need not stand still because software is just a piece of the climate tech wave. The lift required by society to reach net zero, and the trillions of spending that come with it, will enable an unprecedented opportunity to build successful products that also help our planet.

If you're an early stage or growth stage company actively building within the space, or if we missed your logo above, we would welcome the opportunity to speak with you.

You can reach out at eric.li@axavp.com, and connect with the rest of our colleagues at www.axavp.com.