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This time is different: the resurgence of clean tech VC funding

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After 13 years in the solar energy industry, entrepreneur Raffi Garabedian knew exactly how hard it could be to raise funding for the so-called clean tech startups, a wide category of technologies spanning different industries and aiming to improve the environmental footprint.

After an initial boom of investor interest in renewable energy over a decade ago, venture capitalists began turning away after losing billions. The funding drought that followed lasted several years for many clean tech companies, Garabedian recalled.

Now the urgency of climate change and a new generation of startups and investors are fueling another surge of funding into the clean tech space, especially the segment known as climate tech.

This time, the investor environment is different. That includes an increased availability of capital, providing companies the resources they need to bring their products to fruition, as well as a more robust customer base owing to an influx of pledges from governments and corporations to achieve net-zero emissions.

“There are a lot of drivers in the market that are radically different from any period of the past,” said Daniel Goldman, managing director at Clean Energy Ventures, an early-stage venture capital fund, in an interview with *Fortune*.

“Supercharged”

While investment in clean tech startups shot up since 2018, this year it has been “supercharged,” according to Shayle Kann, a partner at venture capital firm Energy Impact

Partners, who also serves as a nonresident fellow at the Columbia University Center on Global Energy Policy.

There is a “massive amount of capital flowing in fast,” noted Richard Youngman, CEO of research and consulting firm Cleantech Group.

During the earlier clean tech boom, considered to have lasted from 2006 to 2011, investors allocated about \$51 billion in total funding to clean tech companies globally. In contrast, in the first half of 2021, clean tech funding surged to \$64 billion, according to data from Cleantech Group. Based on this data, clean tech investments are on track to reach a record of \$100 billion this year.

After founding a new company, Electric Hydrogen, in 2020, Garabedian and his team had no issues raising [\\$24 million in Series A funding](#) in June, led by Breakthrough Energy Ventures, a [Bill Gates](#) investment firm.

“If you are a credible startup trying to solve an important problem in clean tech, there is really a lot of interest,” said Garabedian, a cofounder and CEO of the startup that is trying to redesign hydrogen electrolysis to make it radically more cost effective and larger scale.

“Electric Hydrogen has what it takes to make good on the promise of hydrogen as a clean and economical building block for the decarbonizing industry,” said Carmichael Roberts, a managing partner at Material Impact and a member of Breakthrough Energy Ventures, which invested in the startup.

The New Wave

Climate tech, which is broadly defined as technology aimed at reducing greenhouse gas emissions, has fueled much of the surge in clean tech investments.

Funding is pouring in from generalist venture capital firms and also newer firms dedicated to addressing climate-related challenges like Breakthrough Energy Ventures, [Lowercarbon Capital](#), and Blue Bear Capital. Last year [Amazon](#) launched its own \$2 billion corporate venture

capital fund, the Climate Pledge Fund, dedicated to investing in startups that can help it meet its net-zero goals, and [Microsoft](#) has its own \$1 billion Climate Innovation Fund also.

The jury is still out on how clean tech in the 2020s, particularly buoyed by the new climate tech wave, will prove to be different from the 2000s.

Industry analysts argue that investor enthusiasm will endure because of the new growth factors that were not around a decade ago.

“There is a ready and eager buyer pool for low- and zero-carbon products that didn’t exist in that last cycle,” says Kann. Many nations have pledged to achieve net-zero emissions by 2050 and are setting aggressive targets to meet that goal.

Also, this time around, funding is available “at all stages of a climate tech company’s journey” notes Kann, providing startups with the resources they need to test their technologies and business models.

This wasn’t the case in the previous boom, noted Edurne Zoco, director of clean energy technology at IHS Markit Zoco, noting that the last clean tech bust resulted from venture capitalists making high-risk investments in companies and technologies that then couldn’t raise enough capital to reach scale.

One new way that clean tech startups are raising large amounts of capital is through special purpose acquisition companies (SPACs). Since the start of 2020, 32 clean tech startups were acquired by SPACs. While there are clear benefits to SPACs, analysts are already raising concerns about SPAC investors who are overexuberant and companies that can be overvalued, leading to trouble down the road.

With solar, wind, and electric vehicles getting cheaper, a lot of the clean tech offerings are more familiar this time. Both entrepreneurs and investors have learned lessons and have more realistic expectations compared with the previous clean tech boom.

“One of our fundamental perspectives on climate tech is that it can’t be a charity,” said Valerie Shen, a partner at G2 Venture Partners, a venture and growth firm focused on green technology.

One consequence of all these new drivers is that activity is beginning to thrive in areas of clean tech that have been relatively dormant compared to wind, solar and biofuels, which played a prominent role in Cleantech 1.0. Many investors have a broader definition of what climate security looks like, which includes industries like agriculture and food technology that was absent from clean tech in the 2000s.

Green hydrogen, which is seen as a possible way to decarbonize industries like heavy transportation and high heat industries, is beginning to win more interest from investors this time.

“Companies and policymakers are trying to place hydrogen as the enabler of the next wave of decarbonization,” notes Zoco.

Also with development potential is carbon capture, utilization, and storage (CCUS) technology, intended to reduce carbon dioxide emissions by separating them and then either locking them into products or storing them permanently underground.

“It is early stage but critical if we are to limit global warming,” said Jim Giles, an analyst at the GreenBiz Group.

Investments are also increasing in areas like battery innovation, in which entrepreneurs are trying to produce batteries that perform better and have a better environmental footprint.

New infrastructure needed

Many of the startups’ innovations are capital intensive by nature, which will make it challenging to scale their technologies. There is also a dearth of infrastructure to support them. To replace gasoline with hydrogen fuel in long haul trucking requires not only green hydrogen at scale but also the infrastructure so the trucks can refuel.

“What keeps me up at night is the thought that perhaps we’re spending too much time investing in technology and too little investing in the infrastructure,” said Kelly Belcher, the managing director of energy and resource innovation at Silicon Valley Bank.

The challenge of effectively replacing an industrial system invented over two centuries ago with a whole new decarbonized one in such a short space of time is immense, noted Youngman, noting that private investment alone will not be sufficient to transition to a net-zero world.

“There will be disappointments and company failures along the way, but it won’t be all clean tech in one go,” said Youngman.

For entrepreneurs like Garabedian, there is an alignment of factors that feels different and gives him optimism. Yet he and his cofounders at Electric Hydrogen won’t put their faith in the current investment situation being the new normal.

“We don’t know when or how deeply it is going to shift, but we are prepared for it,” he said.