

How to start a CDR startup: Six key lessons for aspiring founders

Carbon dioxide removal (CDR) will play an integral role in limiting the worst effects of climate change, and will be pivotal in helping businesses and governments in realising their net zero goals.

Temps de lecture : minute

21 May 2024

But because CDR is a new and emerging domain within climate tech, and the urgency of the climate challenge is so pressing, the scale-up challenge is immense. By 2050, the world needs enough capacity to remove between 5 and 16 billion tonnes of CO₂ from the atmosphere each year to limit global temperature increases to 1.5 °C per the Paris Agreement. Between now and 2050 we need to cumulatively remove 10 billion tonnes. We are at 0,1%.

This challenge demands new innovations and founders, from both scientific fields as well as commercial backgrounds, who are passionate about solving the world's most pressing challenge.

But where, as an aspiring founder, do you start? What exactly are you getting into when starting a business in the CDR space? And, just as importantly, how can you get the funding and support you need?

There are a few key lessons and learnings we've taken from working with over 120 early-stage CDR startups, policymakers and investors, through our remove accelerator:

1. We need solutions of all kinds

The first thing to know about CDR is that no single solution will be the silver bullet that saves the planet - we need thousands of CDR solutions, suited to different landscapes, climatic conditions and more. The founders who start businesses now and in the near future will play a critical role in removing the carbon dioxide we need by 2050.

From enhanced weathering, where new startups are already trialling spreading volcanic rocks or concrete dust on farmers fields to absorb more carbon, or to biochar, which involves burning organic waste in a low-oxygen environment, which can then be used as a soil amendment to improve fertility and store carbon, or direct air capture (DAC), which involves building machines which suck atmospheric carbon direct from the air to be stored underground or repurposed as concrete, or direct ocean capture, or soil sequestration, or reforestation, the list goes on.

We need more founders, more startups and more ideas to truly stand a chance of taking CDR to the significant capacity needed to solve this problem.

2. Many pathways need significant technological development

Many of the more novel approaches involve developing new technology, or using technology from other domains and applying it in new ways and in new combinations. This, inevitably, brings its own new technological challenges. Furthermore, many of these approaches have not been proven at scale. What works in the lab might not work at kiloton or megaton scale. Unfortunately, bringing tech out of the lab to scale takes time, and usually more time than initially planned. As a consequence, this

affects team-composition and funding-strategy.

3. Funding strategy: Financing will be a big challenge

Financing for deep tech startups is notoriously difficult. Simply put: investors are comfortable with assessing and taking market risk, but tech risk? Not so much. In CDR, it is similarly hard.

That's because going from a lab to a real-life setting (a First-of-a-kind or FOAK, a first tech demonstration at commercially relevant scale) involves a lot of not-trivial technical challenges. This requires a lot of capital, and financing all of this on a dilutive basis - by selling equity in your business - isn't an attractive proposition. In the end, it comes down to scenarios where founders and investors get rewarded for the risk they take if the business is successful. Giving away too much equity, or working on extremely high valuations early on, does not set up the business for future success.

The solution? Well, it's complicated. If we want CDR to succeed and hence scale, it needs more non-dilutive deployment funding focused on CDR, alongside policy instruments tailored to it. The good news is that governments, including the USA, UK & EU, are slowly but surely engineering policy frameworks which will encourage grants and subsidies to companies pioneering CDR approaches.

The bad news is that getting the funding puzzle pieces to fit together remains a messy business. Luckily CDR founders are creative enough to get it done. But this takes time, involves compromise and is far from future-proof. We need targeted, non-dilutive funding instruments for research & development and for deployment of CDR solutions if we want this industry to succeed.

4. Think about measurement early on

In many CDR pathways, measuring is not very straightforward: 1 ton of CO₂ removed through enhanced rock weathering is not so easy to measure. That brings us on to the next point: stringent monitoring, reporting and verification (MRV) are needed to enable this sector to scale and make the required impact globally. We need gigatons of removals capacity, and developing trust from the private and public sector that the removal credits they're purchasing are valued correctly is incredibly important. This means high quality and transparent standards and methodologies and robust reporting underpinned by independent accredited auditing, all guided by relevant insights from the best available science.

This is critical because the removals market can't afford to become beset with inaccurate or false measurements similar to those experienced by offsets providers. These issues destroyed trust in the offset credits companies were buying, and the sector is struggling to recover.

Rigorous measurement, reporting and verification will therefore be key, and they need to be thought about early on.

5. Sales is not that easy: be creative in your go-to-market

Carbon credits are sold in the voluntary market. Customers choose to buy them, they usually do not need them to sustain their critical core operations. The market is currently led by inspirational frontrunners. As a result, using playbooks for scaling sales is hard and price discovery is challenging.

One area in which we're seeing a number of startups innovate is finding

new go-to-market strategies: not relying only on carbon credit sales, but finding new revenue streams, which in turn finance the scaling of the solution. We see teams strategizing and sometimes already executing this, such as selling ecosystem restoration services, selling hydrogen, selling bacterial strains or selling CO₂. Finding customers for adjacent solutions with new value propositions in existing markets as a stepping stone helps these teams grow and develop their CDR solutions and reduces their current dependency on the still fickle CDR market.

6. Team composition: Science and business together

Building a startup is not easy and always requires exceptional teams. So far nothing new. Given a few of the characteristics of CDR, and depending on the pathway, scientific challenges still need to be solved. In some cases teams cannot only be a carpentry business entering the construction industry, but first need to find out the metric system and rulers first. So apart from the complete skill set required in every deep tech startup, and the competencies to navigate a market without clear sign posts, fundamental scientific acumen is needed on top of the engineering and business talent without which success will be hard to attain.

7. All hands on deck: Education and collaboration is key

The climate crisis is a pressing, urgent, global issue, and establishing a global CDR ecosystem quickly, one which can match the negative impacts of the trillion dollar fossil fuel industry, will be vital. Leveraging and connecting expertise globally will be key in scaling this sector to the significant levels it needs to achieve this.

The solution lies in collaboration, education and policy. The good news is, as we can attest to from our own experience, that the nascent CDR ecosystem is very collaborative. All of us seem to feel that the challenge ahead is so big that we can only meet it if we work together. We need to involve more people into this emerging ecosystem. We need to bring policymakers closer to the industry, to understand the intricacies and importance of every CDR method, and to pass policies which encourage growth and regulations which establish trust. We need NGO's to support work in CDR around the globe, we need entrepreneurs scaling solutions and we need academic institutions and the talent they bring forth to engage with CDR.

Establishing this ecosystem of CDR startups, founders, new talent, funders, NGO's, policymakers, and experts will be key in rising to the challenge of limiting global heating to less than 1.5 degrees.

Hans Westerhof is the cofounder of *CDR accelerator remove*.

Article by Hans Westerhof