

Accelerating the path to a decarbonised world, a profile of Extantia

With #QVCS, Maddyness profiles different funds to give founders and entrepreneurs the information they need to choose the right investor. Today we interview Iris ten Have, Head of Science at Extantia.

I'm a scientist turned into a climate tech venture capital investor. During my research years, I was working on the fundamentals of converting CO₂ into fuels and started wondering: how can I make a bigger impact? Converting greenhouse gas CO₂ into sustainable products has been a dream of mine since 2017. At that time, I was conducting research for my master's at the Chemical Engineering department at Stanford. Before going on a weekend trip, I was at the airport and thinking: what if I could just buy a bottle of booze to offset the carbon footprint of my travels?

My hunger for a deeper understanding led me to continue in academia for a few more years. Eventually, the academic ivory tower became frustrating, as relevant scientific concepts were rarely applied to make a difference in the real world. Building on prior knowledge from a minor in business and entrepreneurship as well as inspiration from living in Silicon Valley, I turned to climate tech venture capital. As Head of Science at *Extantia Capital*, I can finally make the impact I've always wanted to make. Apart from being the in-house chemist, I'm also an investor and a thought leader.

At Extantia, we accelerate the path to a decarbonised world with a €300M

platform consisting of three pillars: Flagship, Allstars, and Ignite. While Flagship is a direct investment fund that backs daring entrepreneurs whose breakthrough ventures can significantly reduce greenhouse gas emissions, Allstars invests in mission-aligned climate tech funds. Generally, we're always on the lookout for technologies that save at least 100 million tonnes of CO₂ equivalents per year. Ignite, our in-house research hub, identifies these technologies as well as early-stage investment opportunities through focused deep dives into specific sectors.

Apart from doing good for the planet, climate tech is also a lucrative investment opportunity. For many investors though, the bottleneck is understanding climate tech and feeling comfortable investing in something quite technical. Most solutions require a deeper technical understanding and sometimes address new markets that did not exist previously. This is where I come in with specific domain knowledge. What drives me is helping technical founders communicate their solutions and converting as many investors as possible to climate tech. Besides, as both chemistry and investing are highly male-dominated fields, I am passionate about bringing more women into the climate tech scene.

Which industries are you working in?

To understand the industries we are working in, we need to look at our global emissions as we tackle the big pieces of the decarbonisation puzzle. Our global annual emissions stand at about 50 billion tonnes of greenhouse gases. Most of them — roughly 70% — can be attributed to the energy our society consumes in the form of electricity, fuel and heat. Another 20% is emitted in the process of making food and the way we use land, forests and oceans. The rest is almost equally divided between industrial processes — producing cement, steel, and chemicals — and the waste we dump.

We generally identify as a sector-agnostic climate tech venture capital fund, which means that we would invest in any early-stage startup that can abate a large amount of greenhouse gas emissions. Therefore, as the first filter in our screening process, we use a carbon math exclusion principle: at least 100 million tonnes of CO₂ equivalents should be abated per year when the technology is deployed at full scale.

This mandate naturally drives us towards more hardware-based technologies and chemistry-related inventions in hard-to-abate sectors. We generally divide climate tech into seven key verticals: Buildings, Carbon Removal, Energy, Food & AgTech, Industrial Processes, Transportation, and Waste. Sub-verticals include, for example, clean baseload energy, direct air capture, e-fuels for sustainable aviation, or green hydrogen production.

Can you talk about your current portfolio?

Currently, we are invested in 12 startups of which 11 are developing hardware-based solutions. Together these companies can save up to 16 billion tonnes of CO2 per year. For example, *INERATEC*, a Karlsruhe-based startup that makes e-fuels, has recently secured additional funding and is building up a commercial e-fuels plant near Frankfurt. Another portfolio company based near Munich, *Reverion*, is commercialising a solution to double the amount of energy that biogas can deliver. *RepAir*, based in Israel, is developing an electrochemical solution for direct air capture (DAC).

What do you look for in a founder?

Most investors would probably say something down the lines of “grit” or “creativity”. At Extantia, we see founder qualities from a different angle. In climate tech specifically, we always look for a founding team; not just for one founder. Why do we want a team? The foundation for a great product or solution in the climate space is almost always technology. This means that a technical founder, for example, a scientist or engineer, is a must. However, the technical founder alone cannot build a great business out of a great solution or product. For that, a commercial founder, such as a business developer or a salesperson, is instrumental.

Maybe even more important: these characters, i.e. the technical and the commercial founder(s), should work together as a well-oiled machine. To work together, they have to (at least partially) learn to speak each other’s language, so a fair amount of empathy, curiosity, and communication skills are required.

What does the future look like? New trends/technologies/changes in the global/local economic landscape?

Although the venture capital scene is notorious for its astronomical gains in the software space, this might change over the coming decade. Experts such as BlackRock CEO Larry Flink, have predicted that the next generation of “unicorns”, startups that are worth \$1B or more, will be in climate tech. More funding will flow into the climate space and moving the needle on climate change will require larger amounts of capital, longer investment times, and more domain expertise. Moreover, climate change is urgent. If we want to

make sure not to overshoot the 1.5-2°C net zero target, we need to act with speed and at scale. In more detail, that means we need to deploy readily available transition technologies instead of waiting decades for new technologies to mature. Besides, suitable regulations and policies should be in place to incentivise industrial players as well as consumers to make greener decisions.

Zooming in on our concrete action plan at Extantia, we identified the top 6 trends in climate tech for 2023. Personally, I am most excited about green ammonia and mining & raw materials.

Green ammonia is a lucrative investment opportunity: the ammonia demand has been predicted to increase in the coming decades through its use as fertiliser, hydrogen carrier, and sustainable fuel in the maritime industry. The International Renewable Energy Agency (IRENA) estimates that by 2050, the total ammonia market will be about four times as big as it is today. Keeping the two additional use cases in mind, it becomes a lucrative investment opportunity and we simply cannot ignore green ammonia anymore. Although that sounds promising, only tiny amounts of green ammonia are actually being produced at the moment. This is exactly why green ammonia is such an interesting space for venture capital funding: a market with huge potential that requires cash influx to flourish.

Raw materials will be instrumental in the energy transition. Think, for example, of lithium and graphite required for batteries. The vast majority of natural lithium deposits is concentrated in Chile, Australia, and Argentina. To secure supply chains, we have to change the way we extract and recycle lithium. Graphite is currently either mined (natural) or made from fossil-based resources (synthetic). Its mining as well as processing occurs mostly in China. Apart from having a significant carbon footprint, this also creates supply chain dependency.

In general, the coming decade will likely bring us more modular and decentralised production facilities for energy, fuels, and essential chemical building blocks. As the amount of raw materials needed will increase during the energy transition, supply chains will have to become more secure. We will likely see more localised chains facilitated and supported by proper recycling procedures for a wide variety of materials.

What makes Extantia different?

While the venture capital world is famous for its lucrative software investments, we mostly invest in hardware-based solutions. Most investors get nervous thinking of all the CAPEX costs involved, but the truth is: hardware is not as hard as most people think. Especially not if a startup is adopting a

modular approach to facilitate upscaling.

Why are we telling you this? As cool as many software solutions might be, greenhouse gases simply cannot be removed from the atmosphere with an app on your phone. So we're not only excited about hardware, we believe it's instrumental to moving the needle on climate change.

What one piece of advice would you give founders?

When you're fundraising, make sure you do your homework before talking to specific investors. Find out what they or their fund look for in a company. If it's a good fit: go ahead and reach out. If it's not a good fit: look further. This is important not only for the investor but for you as well. You need to make sure that this is the type of investor you want to work with and that they can add value to your company. Once you have identified relevant investors, make sure to prepare your materials (e.g. the pitch deck) in a targeted approach. You can start from a general template and then tweak that to address specific investors in the best way possible. This will help you to secure the financial means and also the non-financial assets that you need to build a successful company.

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