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SCALING THE HARDWARE HURDLE

Addressing the funding, policy and commercialisation
barriers facing early-stage innovation

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INTRODUCTION

A sector at a critical inflection point

The UK has long been recognised as a global leader in innovation. Nowhere is this more evident than in climate technology, where world-class research institutions and entrepreneurial talent continue to generate breakthrough ideas.

Yet, a consistent frustration persists.

Despite this strength, too few of these innovations successfully scale, and fewer still remain in the UK long enough to deliver meaningful economic and environmental impact¹.

This tension formed the basis of a recent roundtable discussion hosted by **Oxfordshire Greentech** (leading climate tech business network) and **James Cowper Kreston** (accountants and business advisors and Pioneer Member of the Oxfordshire Greentech network). The roundtable brought together entrepreneurs, investors, academics and advisors from across the Oxfordshire climate tech ecosystem to address scaling the “hardware hurdle”.

What the discussion confirmed was that the UK does not have an innovation problem, but that the scaling challenge is acute within hardware-based climate tech, and is driven by a few key areas.

¹Amoa-Gyarteng, K., & Dhlwayo, S. (2025). Globalization's startup paradox: When do global markets really create jobs? Munich Personal RePEc Archive, (Paper No. 126735).

THE ILLUSION OF PROGRESS: strong ideas, weak outcomes

At first glance, the UK ecosystem appears healthy. Research output is strong, funding mechanisms exist, and there is no shortage of entrepreneurial activity.

However, beneath the surface, a different picture emerges.

One participant described a highly innovative engineering business whose founders had already invested over **£6 million of their own capital** into developing hydrogen powertrain technology. Despite this commitment, and clear technical progress, the business is still struggling to attract sufficient investment to scale.

The consequences are not theoretical:

“They could be forced to move 500 jobs from the UK to Italy because of the current funding environment.”

The perception is that the European Union has a more sophisticated approach to the hydrogen economy in the round – not just supporting production but also infrastructure development.

Quoted in a different blog post, one co-founder said, *“The UK Government’s support for levelling out the price of hydrogen through the Hydrogen Allocation Rounds is welcome. However, if support were given to new and repowered hydrogen combustion engine vehicles, alongside hydrogen fuel, there would be a much quicker route to zero carbon and trace NOx and at much less cost to the Government. The EU are, and we are having to focus our business there.”*²

This example is not unique. Rather, it illustrates a recurring pattern:

- Ideas are successfully developed
- Early-stage support is secured
- But growth stalls before commercial scale is reached

This stalling is often described as the “Valley of Death”, the point at which technologies have proven they work, but lack the capital, market access or commercial validation required to scale.

It is here that many otherwise viable businesses stall.

As one participant observed:

“It’s not that the technology doesn’t work—it’s that you can’t quite get it to a place where investors are willing to step in at scale.”

And another attendee summarised bluntly:

“We capitalise great things... but then it hits a wall.”

Additionally, some attendees reflected that early stage support is now also increasingly difficult to secure, with a change in approach from major funder Innovate UK, shifting from broad, generalised funding toward a highly targeted, dynamic approach that backs fewer companies.

Some are referring to this as an earlier “Valley of Death”.

² Laxton, A. (2026) Patient Capital: The Risk of Losing Britain’s Climate Innovators. (Website) <https://mixologypr.com/blog/patient-capital-climate-tech-uk-risk-losing-innovators/>

THE REAL PROBLEM ISN'T CAPITAL, IT'S CONFIDENCE

A common narrative suggests that climate tech struggles because it lacks investment. However, climate tech capital in the UK is not absent; it just doesn't necessarily follow through to commercialisation.

While early-stage grants and support mechanisms are available, they are often concentrated at feasibility and prototype stages.

As a result, businesses can demonstrate technical success but still lack the support required to translate that into a scalable product or business model.

“There's no shortage of VC money... it's just not going into climate tech.”

Instead, investors are increasingly drawn to opportunities with faster returns, lower capital intensity, and clearer commercial pathways.

Sectors such as AI now dominate capital flows, attracting billions in investment while climate tech, particularly hardware-led innovation, remains comparatively underfunded.³

³ Whitman, B. (2025) "Advancing AI's Potential for Climate Innovation" - Adoption Insights from the Frontline of UK Climate Tech



FROM INNOVATION TO REVENUE: the missing link

While climate tech businesses often demonstrate compelling technology, they struggle to demonstrate something investors value even more highly: **predictable demand**.

One entrepreneur framed it succinctly:

“If I need £20 million, that’s one thing. But if I can say I’ve already got someone committed to paying £50 million for what I’ll produce, that’s what unlocks investment.”

The issue is not that technologies are unviable, it is that markets are uncertain. Adapting mechanisms like Power Purchase Agreements (PPAs) from the energy sector to other climate tech hardware verticals could change this entirely.

This current uncertainty is further compounded by investment expectations. Hardware focused climate and deep tech businesses typically require longer development timelines and higher upfront capital to get to proof points than software-led ventures. Yet much of the investment ecosystem is currently geared towards shorter-term returns.

However, the core friction isn’t just the timeline, it is the nature of the exit.

Currently, vast quanta of capital are flowing into massive AI labs. These investments are often driven by the pursuit of high-multiple liquidity events – like historic IPOs or mega strategic acquisitions – rather than immediate, revenue-focused business models.

As one investor noted, *“If climate tech had a path to great exits, people would pile in.”*

Because climate hardware rarely benefits from software-style strategic premiums, it cannot sustain an IPO or a metrics-based Private Equity sale without proven commercial traction. As a result, investors chase speculative liquidity rather than the timely, predictable revenue that actually builds sustainable value. The prevailing VC fund model could work for climate tech, but only if the market creates a clearer path to revenue-backed exits.

Relaxing regulations around pension funds, enabling them to invest in earlier stage, innovative business, could also play a role.

An investor noted, *“It puts more money into the sector so that you’re not just dribbling money. £500K does not help a hardware company. £2-3 million does.”*

Attendees spoke of the US market, mentioning the quantum of capital US pension funds deploy in US venture capital, private equity and even listed stocks. *“It goes all the way; scale-up doesn’t end at venture funding. It ends at IPO.”*

Although attendees round the table agreed that unlocking pension fund capital and having specific investment mandates around climate tech hardware could be a good thing, it was felt that voluntary pledges like the Mansion House Accord had yet to make a material difference.

One innovator said, *“My CEO was in The Times yesterday saying that it’s all great on paper, but nobody’s done it.”*

WHEN DEMAND EXISTS, GROWTH FOLLOWS

The most compelling examples shared during the discussion were not about funding, they were about **market access**.

In one case, a housebuilder took the decision to pre-purchase batteries from a startup. Despite internal resistance, the move proved transformational:

“That one decision helped the business get started... it completely changed their trajectory.”

In another example, a climate tech company only achieved scale after securing a strategic investor alongside a pipeline of real-world deployment opportunities:

“They came in and said, ‘We’ve got 70 sites that need this technology.’ That’s what brought in the financial investors.”

These examples demonstrate a consistent principle:

- Where demand is clear, capital flows
- Where demand is uncertain, innovation stalls

This is why sectors such as energy generation have successfully scaled:

“You generate power, we’ll buy it, that’s why investment flows into the space.”



POLICY THAT CONSTRAINS RATHER THAN ENABLES

Alongside market challenges, participants highlighted the role of government policy in shaping (and sometimes limiting) growth.

A recurring concern was the tendency to prescribe solutions rather than define outcomes.

“We need to specify the outcome—low carbon transport—not the solution, whether that’s electric, hydrogen or something else.”

The current prescriptive approach can have unintended consequences.

For example, a flagship government investment into electrification was seen as inadvertently benefiting overseas manufacturing:

“That funding is effectively moving straight to China... very little of it stays in the UK.”

The issue is not the ambition, but the execution.

By narrowing focus too early, policy can limit innovation, distort competition, and undermine domestic growth.



A SYSTEM THAT WORKS AGAINST ITSELF

Another striking theme was the lack of coordination across government.

Businesses described navigating a fragmented landscape of funding bodies, regulatory frameworks, and policy initiatives, often with little connection between them. This lack of coordination means that support available at one stage of the journey is rarely aligned with what businesses need at the next.

One participant captured this frustration through a simple, real-world example:

“We spent six months trying to find out who owned a VAT exemption. We wrote to HMRC and BEIS at the time. And they both thought each other were responsible. I just wonder, is there a government RACI chart, so that people actually know who pulls the lever? It’s completely opaque.”

This disconnect also featured in HMRC’s administration of R&D Tax Credits as perceived by some of the innovators in the room. There was consensus that there were delays in the system, a lot of challenge around eligible costs, with an estimated 25% of claims that are now being submitted being held on an inquiry. Participants who had had 1-2-1’s with case workers spoke of their lack of understanding around core technologies being assessed, leading to delays in the system.

Additionally, participants mentioned “consultation burnout” from being asked the same questions multiple times in different forums about their needs regarding government and regulation with little meaningful changes to show for it.

“I think tapping into organisations that are already government-supported could help businesses avoid needing to retell the story and dedicating a lot of time into these consultations.”

The result of the above is a system that, while well-intentioned, creates friction at precisely the point where speed and clarity are most critical.

REGULATION: necessary but not neutral

Regulation emerged as one of the most consistently cited barriers to scaling climate tech hardware.

Participants did not argue against its necessity but questioned its effectiveness.

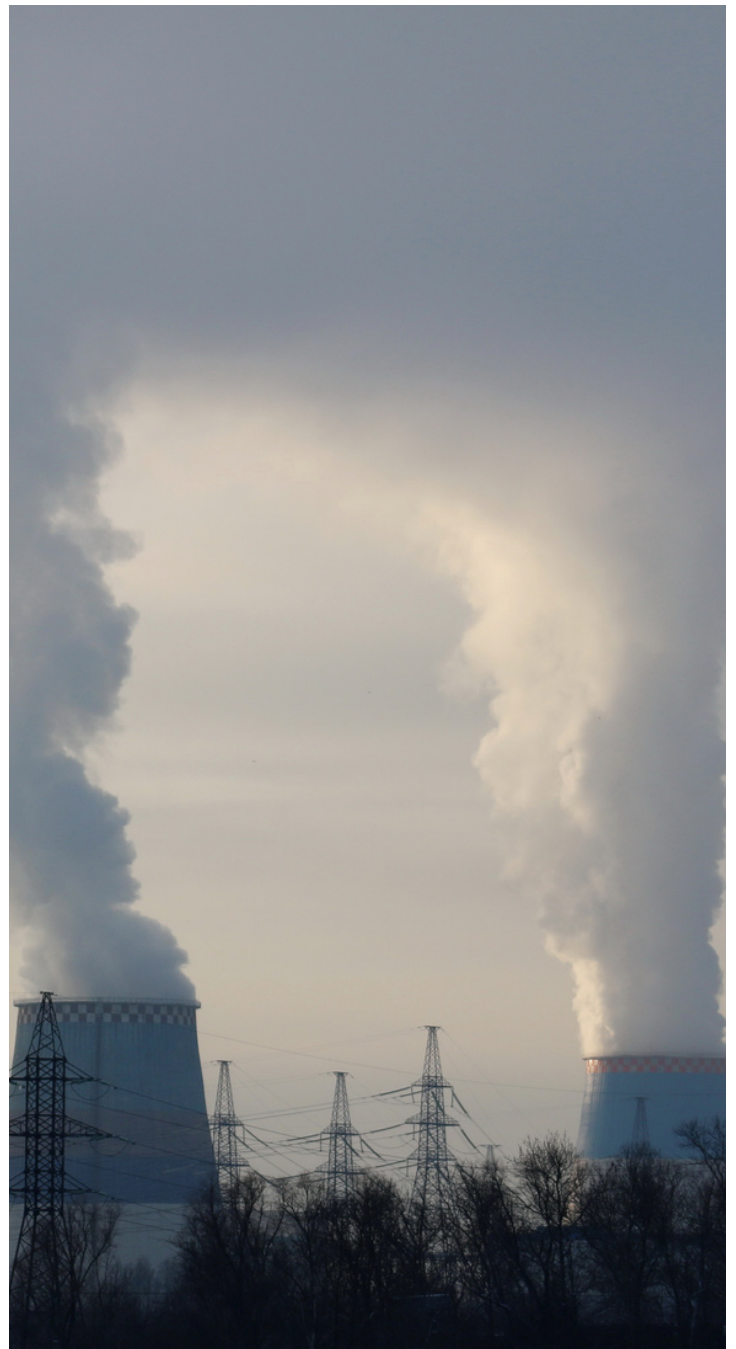
“We now have more people regulating things than making things.”

Beyond complexity, there was concern that regulation can actively distort behaviour.

In housing, for example, companies are sometimes forced to optimise against regulatory metrics rather than real-world performance:

“We’re reaching a point where we have to ask—do we build the best house, or the one that scores best in the system?”

This creates perverse incentives, where compliance becomes the goal, rather than outcomes such as energy efficiency, cost reduction and carbon impact.



A DEEPER STRUCTURAL CHALLENGE

Beneath these issues lies a more fundamental challenge: the UK's economic environment is not optimised for scaling.

Participants pointed to high energy costs, lower productivity and reduced manufacturing capability.

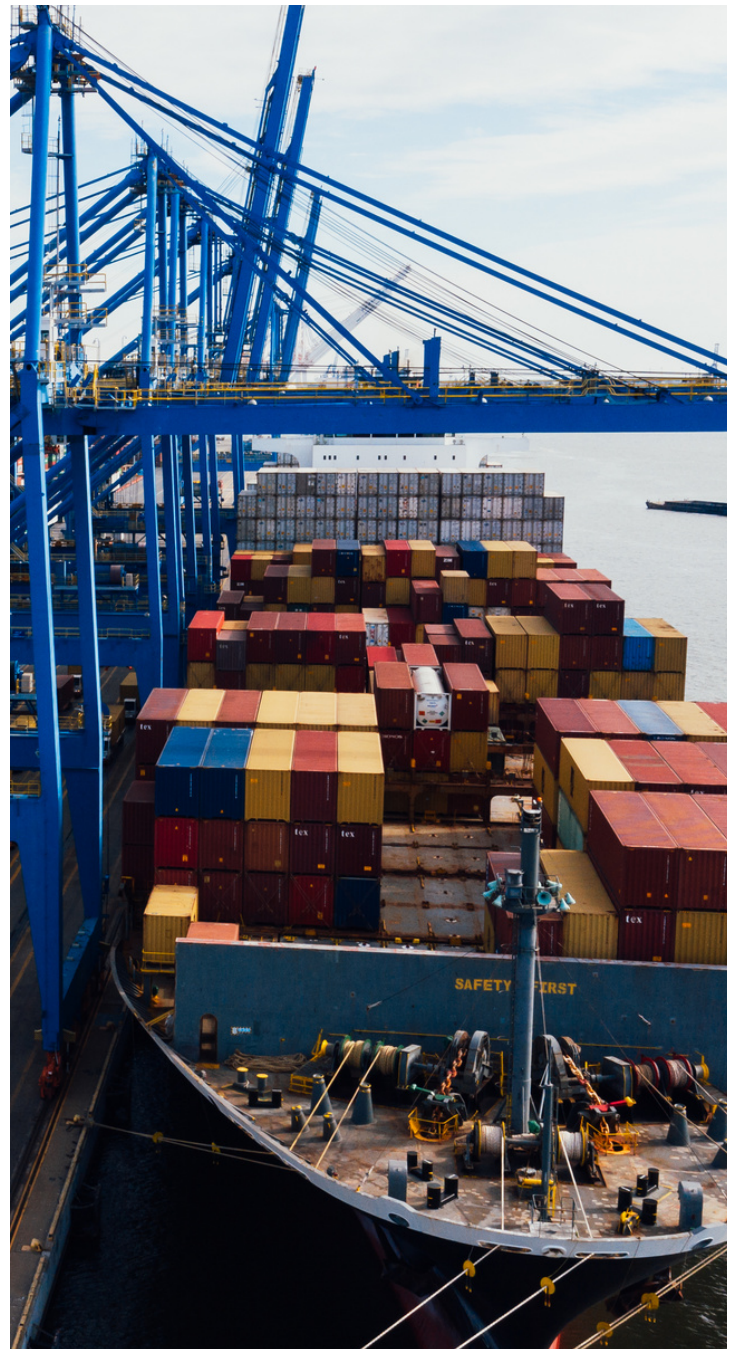
As one attendee put it:

“We don’t actually have a market where we can succeed at scale.”

This is compounded by international competition. In some cases, UK firms are competing with overseas products priced at or below cost:

“We’re competing with products from China being sold at our cost of production.”

Without addressing these structural dynamics, even well-funded innovation will continue to struggle to scale domestically.



REFRAMING THE DEBATE: from supply to demand

Perhaps the most important shift emerging from the discussion is this:

- The UK has focused heavily on **supporting supply (innovation)**
- But insufficiently on **creating demand (markets)**

This imbalance explains why early-stage innovation thrives, but scaling remains elusive.

It also explains why participants repeatedly returned to one solution - often from different perspectives:

“The answer is offtake.”

In practical terms, this means:

- Guaranteed contracts
- Government-backed procurement
- Long-term demand signals
- Trade finance

Businesses are not looking for subsidies, but are looking for mechanisms to **reduce commercial uncertainty** and stretch seed capital further.

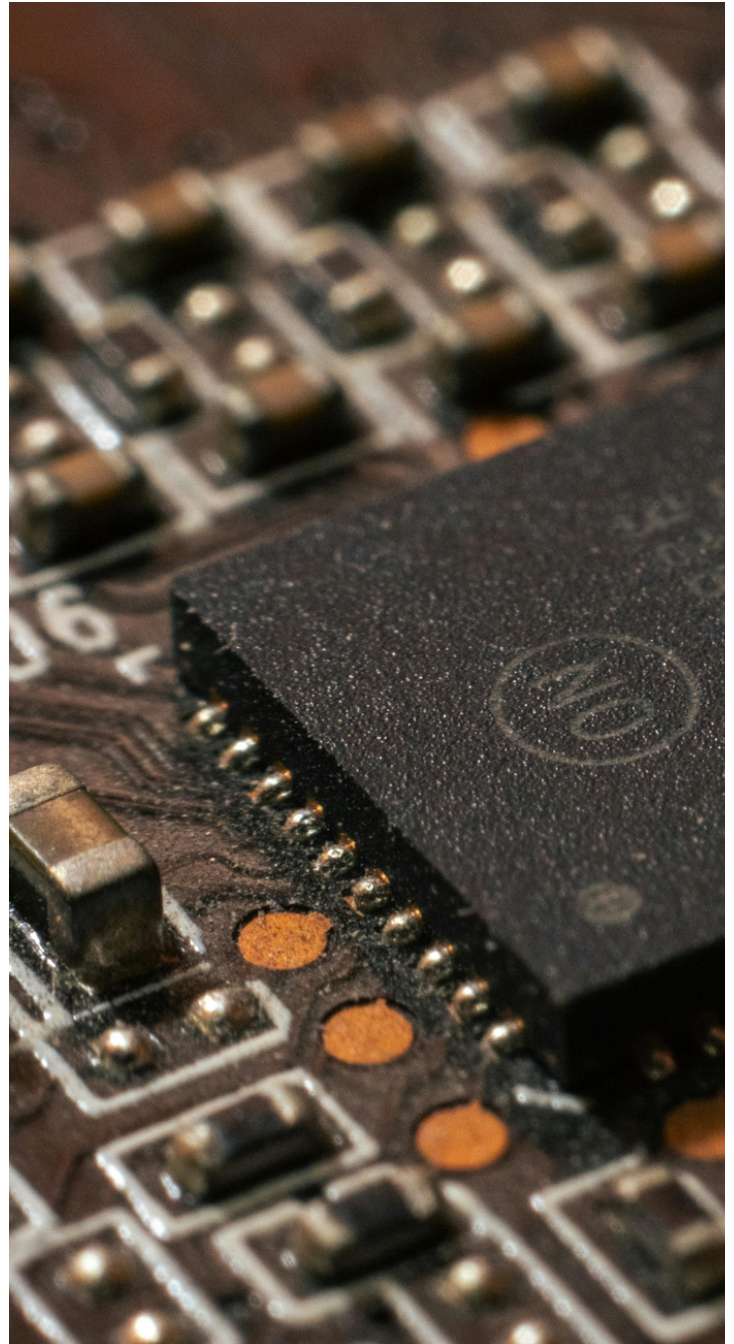


RECOMMENDATIONS: for policymakers

- **Shift policy from prescribing technologies to specifying outcomes.** Rewrite future net-zero and climate tech policies to mandate strictly **technology-neutral, outcome-based metrics** (e.g., target a specific carbon reduction or energy efficiency threshold). Let electric, hydrogen, and emerging deep-tech hardware solutions compete on a level playing field to solve the problem.
- **Deploy government procurement as a market creator (offtake guarantees).** Leverage the immense purchasing power of the state to act as a "First Buyer". Introduce **Government-backed Public Offtake Agreements** and **forward-procurement** contracts for infrastructure, housing, and transport projects. Providing hardware startups with guaranteed public contracts reduces commercial uncertainty, giving private investors the confidence to step in at scale.
- **Create regulatory sandboxes for fast-track hardware testing.** Launch dedicated, geographically bound **Climate Tech Regulatory Sandboxes** (potentially linked to regional clusters like Oxfordshire). In these zones, early-stage hardware developers should be allowed to test and iterate live prototypes under relaxed or fast-tracked regulatory frameworks, shifting the focus from rigid upfront compliance to real-world data and carbon-reduction outcomes.
- **Introduce climate tech feed-in tariffs or Contracts for Difference (CfD) for emerging hardware.** Adapt the highly successful **Contracts for Difference (CfD)** framework, which scaled the UK's offshore wind sector, to other critical climate hardware domains like hydrogen powertrains, industrial carbon capture, or thermal storage. By guaranteeing a minimum floor price or subsidising the early-stage cost gap between green hardware and fossil alternatives, the government can instantly de-risk the sector for commercial investors, capable of funding the growth necessary to achieve economies of scale and profitability.

RECOMMENDATIONS: for industry leaders & corporates

- **Champion strategic forward-purchasing and early offtakes.** Corporate buyers should actively seek out early-stage UK hardware innovators and offer **pre-purchase commitments or multi-site deployment pilots**. As demonstrated by the housebuilder who pre-purchased startup batteries, these strategic demand signals fundamentally transform a startup's trajectory and de-risk them for financial investors.
- **Create long-term, co-investment partnerships.** Industry leaders and corporate venture capital (CVC) arms should champion patient capital funds and structured joint ventures. By pairing financial capital with corporate assets—such as providing startups access to existing factories, testing grounds, or 70+ deployment sites—corporates can drastically reduce the startup's upfront capital intensity while securing cutting-edge IP.
- **Build domestic supply chain alliances.** Industry leaders should form domestic consortia and supply chain alliances to pool purchasing power and share the infrastructure costs of advanced manufacturing. Collaborating on localised assembly or shared testing facilities helps protect UK-based engineering talent, boosts lagging productivity, and retains high-value manufacturing jobs within the country.



CONCLUSION: a moment of opportunity

The UK has all the core ingredients to lead in climate technology:

- Strong research base
- Entrepreneurial talent
- Access to capital

But without structural change, it risks continuing a familiar pattern:

- Innovate early
- Sell or relocate
- Capture limited long-term value

The key insight from this discussion is both simple and profound:

If we want to unlock scale, we need to stop focusing solely on how we fund innovation - and start focusing on how we create markets for it.

Getting this right will not just improve outcomes for individual businesses, it will determine whether the UK can translate its innovation leadership into long-term economic and climate impact.



ABOUT US

Oxfordshire Greentech is a leading business network creating a world-leading climate tech innovation ecosystem. As a not-for-profit, it brings together climate tech start-ups, established enterprises, local authorities, academics, and investors to foster cross-sector innovation and collaboration. Through bespoke business support, knowledge-exchange events, and strategic pan-regional links—including a close partnership with sister network Cambridge Cleantech—Oxfordshire Greentech helps low-carbon solutions scale, secure investment, and accelerate regional decarbonisation.

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At *James Cowper Kreston*, we are passionate about helping businesses and individuals maximise their potential. Beyond delivering audit, accounts and tax compliance services, we work closely with our clients to understand their goals, provide tailored advice and support, and help them achieve long-term success.

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