

ClimateTech Index

1000 UK Startups Combatting
Climate Change

March 2024

STARTUP
C*ALITION

 Beauhurst

Authors

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About Startup Coalition

Startup Coalition, formerly the Coalition for a Digital Economy (Coadec), is an independent advocacy group that serves as the policy voice for Britain's technology-led startups and scaleups.

Startup Coalition was founded in 2010 by Mike Butcher, Editor-at-Large of technology news publisher TechCrunch, and Jeff Lynn, Chairman and Co-Founder of online investment platform Seedrs. Startup Coalition works across a broad range of policy areas that matter the most to startups and scaleups: access to talent, access to finance & regulation.

In 2022, Startup Coalition convened the ClimateTech Policy Coalition, consisting of the Startup Coalition, Undaunted, techUK, Tech Nation, Cleantech for UK, and TechZero. Together they represent a cross-section of entrepreneurs, inventors and innovators on the forefront of climate technology, or ClimateTech. The coalition publishes an annual report highlighting low to no cost policy opportunities to unlock climate innovation. The latest of these reports, from November 2023, can be found [here](#).

Acknowledgements

Many thanks to Beauhurst for supplying the data underpinning this Index. Many thanks also to the Index startups that are profiled in this report and for the hundreds of firms engaged in Startup Coalition's ClimateTech advocacy.

About Beauhurst

Beauhurst is the ultimate private company data platform. We source, extract and package data from thousands of locations to create the best source of information on the UK's companies, the investors that back them, and the people that run them. Whether you're interested in early-stage startups or established companies, we've got you covered. Our platform is trusted by thousands of business professionals to help them find, research and monitor the UK's business landscape. For more information and a free demonstration, [visit beauhurst.com](https://beauhurst.com).

Foreword

Christian Hernandez, Partner & Co-Founder at 2150

Innovation through investment and development of early-stage companies and their solutions is essential to economic competitiveness and growth. In a rapidly changing world characterised by climate change, technological advancement and political uncertainty, support for startups helping to build tomorrow's economies has never been more essential.

The private sector alone, however, is insufficient to unleash the full potential of startups. We need policymakers to set the signals and conditions to build new industries and businesses that support the public's interests. Particularly in the context of the fight against climate change, we need urgent, collective action to transition the UK's economy to maintain competitiveness in a world moving towards net-zero.

We at 2150 are excited to partner with Startup Coalition to highlight the achievements and immense potential of climate innovators in the UK. The ClimateTech Index reinforces the strengths of the UK's ClimateTech industries, while revealing key insights for policymakers to consider in developing further opportunities through future evidence-based policy responses. The UK is a historic leader on climate, with a strong foundation of policies and startups on which to further establish leadership. Our hope is that initiatives like these can enhance policymakers' access to the wealth of knowledge founders and their companies have of what it will take to grow ClimateTech industries.

We're proud of our own portfolio of 6 UK based ClimateTech companies that have collectively raised £95.5 million since their founding. This includes our most recent investment in a global leader in direct air capture, Mission Zero Technologies. The UK has proven to not only be productive for incubating companies, though, as we have a total of 12 companies deploying impactful climate solutions in the UK market in response to local demand.

As an early-stage investor, 2150 understands the opportunity for technology to accelerate climate action, particularly in hard-to-abate or more nascent sectors. Our founding mission is to invest in the companies and solutions helping to drive the transition towards sustainable cities. The ClimateTech Index reveals areas for improvement in the UK relevant to cities. The built environment, industrial decarbonisation and materials are disproportionately underfunded in comparison to their impact on daily lives, and their contributions to the UK's emissions and economy.

As the UK looks to chart a path towards economic growth, the local startups developing globally necessary solutions highlighted in this report should be a priority for policymakers to support.

Introduction

The UK's net zero ecosystem contributes over £70bn per year to the UK economy, supporting over 840,000 jobs.¹ Within this ecosystem, startups are a critical hotbed for invention and innovation, providing products and services which can then accelerate decarbonisation across the entire economy. Investors ploughed \$222bn into ClimateTechs globally between 2013 and 2022, with the UK second only to the US for the number of companies working to address the climate crisis, and there are over 5,200 ClimateTech companies in the UK to date.²

ClimateTech will be a critical sector of the economy going forward, as well as a vital tool in the UK's journey to net zero. Climate startups are creating jobs across the UK, with the spillover effects of their research and development supporting invention across the economy, alongside decarbonisation. At Startup Coalition, we're focussed on how Government policy can accelerate this contribution, and to support this we undertook an examination of the most successful forms in the sector today.

This Index covers the fundraising journeys of the 1,000 UK-based Climatetechs who have raised the most private funding. It is designed to demonstrate and celebrate UK ClimateTechs, and provide clues as to how policymakers can support it to reach an even higher level.

This first ClimateTech Index demonstrates that British entrepreneurs are leading the way in designing solutions that will mitigate greenhouse gas (GHG) emissions, enable adaptation to the impacts of climate change, and give more visibility of how our climate is changing. The ClimateTech Index is not an exhaustive picture of the ecosystem of UK firms innovating to combat climate change, but it does represent the 1,000 firms that have raised the most private capital to do so to date. Consequently, the patterns, trends and experiences of these firms provide clues as to the challenges and opportunities presenting the sector as a whole.

Methodology

This report was produced using data from [Beahurst](#). The 1,000 featured firms are the ClimateTechs that have raised the most private funding. We used a range of criteria to identify eligible firms, including descriptions of firms' primary activities and Beahurst's proprietary environmental "signals". Crucially, Startup Coalition defines "ClimateTechs" as firms who are engaged in activities which mitigate GHG emissions or impact to nature and the environment, adapt to the impacts of climate change, and know more about climate change, per PwC's foundational definition.³

Data is accurate up to 31st December 2023 and is limited to what is available through the Beahurst platform. The valuation metric was taken from the "post-money valuation" within a Beahurst fundraising event.

The number of employees recorded for each firm was the minimum number in the Beahurst "number of employees" metric. Where the "average" is referred to in this report, this is the median for grants received and the value of a firm to account for the large range in the dataset, and the mean for grant funding received and employees.

¹ <https://eciu.net/analysis/reports/2023/mapping-the-uk-net-zero-economy>

² <https://technation.io/climate-tech-report-2022/>

³ <https://www.pwc.com/gx/en/services/sustainability/publications/state-of-climate-tech.html>

The different financing categories were pulled directly from Beauhurst but where there is reference to “debt financing” below, this includes a combination of fundraising that was both solely “debt” and “debt and equity”, it does not include firms that obtained debt financing through the Coronavirus Business Interruption Loan Scheme (CBILS), though this is tracked. CBILS only constituted 0.02% of total funds raised meaning its exclusion from debt metric tracking is negligible.

List of sectors:

- Built Environment
- Business & Professional Services
- Consumer Goods
- Energy
- Financial Services
- Food & Agtech
- GHG Accounting, Offset & Verification
- GHG Removal
- Industrial Decarbonisation
- Materials
- Nature-based Solutions
- Packaging
- Transport
- Waste
- Water

The value of a firm was not tracked after its “death” or “exit” date within Beauhurst. If there was a monetary value associated with the exit event, this was recorded as the final “value” in the Index. The value of a firm that “died” was recorded as the latest post-money valuation, and the latest year that the value was recorded for was the last year where the firm was tracked for at least six months (e.g. if the firm died in April 2023, then the last value would be recorded as 2022, but if it died in August 2023, then the last value would be recorded as 2023). The “death date” of a firm refers to either the date of company dissolution, if this is available, or if not, it refers to the date that Beauhurst ceased tracking the firm.

Executive Summary

The 1,000 firms in the Index have collectively raised £15.4bn over more than two decades, across over 4,000 fundraising events. The total value of the 1,000 firms was over £26.4bn in 2023, with three ClimateTech Unicorns included in the sample, namely firms with a value of over £1bn. The vast majority of the funds raised were in the form of equity financing, with less than 10% of the total including some element of debt. Firms in the 2024 ClimateTech Index employed over 24,000 people at the end of 2023, and have also been in receipt of over £960m in grants.

Climate innovation is a £26bn UK success story, aided by ambitious policy goals over the last ten years, a vibrant startup ecosystem, and world class universities.

From Belfast to Brighton, Port Talbot to Perth, ClimateTechs are delivering growth and opportunity across the length of the UK, and there are five “unicorn regions”, home to firms valued at a combined £1bn. Many of these firms are the product of our world-leading universities: 10% of startups in the Index are “spinouts” from universities. Meanwhile, 17% of the firms in the Index had at least one female founder, in line with the national average.

2023 represented a down year for the ClimateTech Index, across funding, valuations and grants, but the drop was significantly less than the trend across the economy.

After an explosive rise in private funding, valuations and grant funding secured after the pandemic, 2023 saw overall funding drop by 4%, the first drop since 2019-2020, and the value of the sector dipped by 2%. Grant funding declined by 15% between 2022 and 2023, though this will also include a lag in the data. However, in contrast to a near halving of VC investment between 2021 and 2023 at an economy-wide level, this demonstrates that ClimateTechs in the Index remain an attractive investment and the sector as a whole is resilient. But beneath the headlines, the picture is more nuanced.

Funding is concentrated sectorally and geographically.

The energy sector constitutes the most populous single sector within the Index at a third of all firms, but secured 48% of the total funds raised and constituted 52% of the value of the Index. In contrast, startups in the built environment sector composed 9% of all firms, but only 4.5% of investment secured, and 3.3% of the value of the Index.

Regionally, London is far and away the largest hub for climate innovation in the UK, with 44% of all firms headquartered in the capital. London-based firms also secured 44% of all investment, though this is 20% less than London’s share of overall VC investment across the economy. On the other hand, grant funding is more equitably spread, with 20% going to firms based in London, 17% to Scottish firms, and 16% to firms in South East England.

This data shows that not all founders get equitable access to investment. Depending on the sector you’re in or where you’re based, the private investment markets, and indeed the public grant funding landscape, is different.

The picture is even more distorted if you are a female founder.

Whilst the ClimateTech Index mirrors industry trends in terms of share of mixed-gender founding teams (17%), it also reflects the embedded challenge of securing funding if you are a female founder. Only 8.6% of investment went to mixed-gender founding teams, and only 1.7% to firms with solely female founders. The average funds raised by female founded ClimateTechs in the Index was 25% lower than firms with solely male founders. Meanwhile, an Index firm with a mixed-gender team received, on average, 17% less in grant funding than a solely male founded firm.

Firms developing hardware and engaged in manufacturing have raised the majority of funding, but are more likely to fail.

To develop solutions to combat climate change, we cannot rely on software alone. 60% of firms in the ClimateTech Index are engaged in developing hardware, or engaged in manufacturing, including agricultural production, carbon sequestration or generating energy. These firms constitute the majority of private funding secured (70%), the total value of the Index (78%) and jobs (54%), but they also represent over 70% of the failures in the dataset. Further, the overall share of funds going to hardware has gradually decreased over the last ten years - it is still the best funded technology type within the Index, but this is a trend worth monitoring.

Across all firms, there is late stage funding Valley of Death.

Over the last few years, we have heard time and time again that there is a real challenge in securing funding beyond Series A for ClimateTechs. Whilst the challenge is not uniform for firms of all sectors, geographies and technologies, the point at which a firm transitions from proving a concept to entering a commercial market is a near-universal barrier. Data from the ClimateTech Index proves this challenge. Firstly, there is a steep cliff edge between the share of firms in the Index at Seed (24%) and Series A (52%), and later stages B (11%) and C+ (13%). Series A is the stage where the most firms failed in the Index (47%) and the share of firms progressing from one fundraising stage to the next is lowest between Series A and Series B than between any other stage - only one third of firms that made it to Series A progressed to their Series B fund raise.

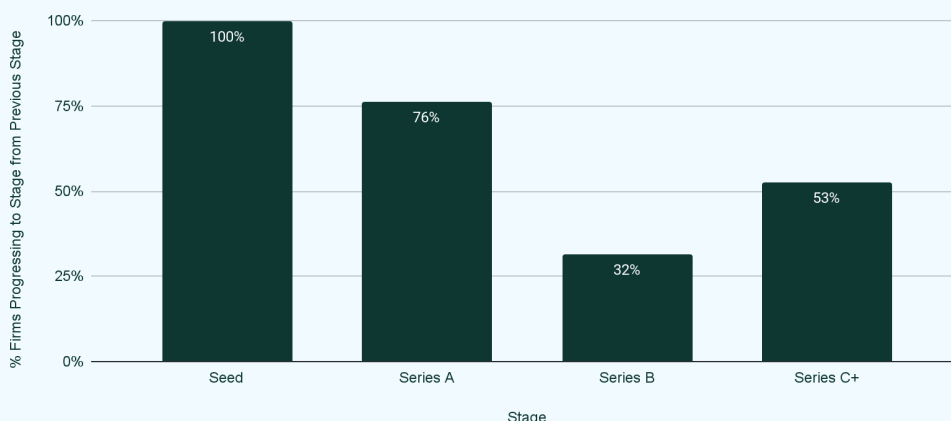


Figure 1, Share of firms progressing to each fundraising stage from previous fundraising stage

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This report is not designed to produce an extensive list of solutions, but we do outline lessons the Index has for British policymakers at the end of the report:

1. They should celebrate the success of ClimateTech in this country as a national asset
2. Consistent policy support is a proven enabler of attracting investment and is critical to the success of the ClimateTech ecosystem
3. There is a real late-stage valley of death funding gap that policymakers have a role in addressing

In 2024 we will see a General Election in the UK, and there remains a vital, but not invincible, political consensus across both major political parties to support action to combat climate change. Innovation is a fundamental ingredient in this action, and Startup Coalition hopes that the lessons of the ClimateTech Index can support defining the agenda of the next Government.

Our Findings

The 1,000 startups and scaleups featured in this report span the length and breadth of the UK and cover every sector of the economy, from renewable energy generation, to water desalination; from designing novel materials for building homes, to applying Artificial Intelligence (AI) to the carbon markets. The minimum funds raised by a firm in the sample was by Edinburgh-based Sunstore Technologies, which raised £606,000, and the maximum raised was by Octopus Group, at over £1.2bn.

Of the dataset, just over three quarters were “tracked” in Beauhurst at the end of 2023, meaning they were active according to Beauhurst. 25 were “zombies”, meaning their public presence has exhibited some form of neglect or administrators have been appointed. 124 of the firms were “dead” meaning they have ceased trading or dissolved. 87 firms had exited, meaning they have either been acquired or have floated on a public stock exchange, and have therefore ceased to be tracked by Beauhurst.

Funds Raised

Firms in the sample have raised **£15.4bn**, with the data spanning from 2001 to the end of 2023, and there were **nearly 4,000 fundraising deals** in the sample. To put this in context, Beauhurst data suggests that £12bn was invested in all UK startups in 2023 *alone*, with as many deals in the last two years as there have been for firms in the Index over the last 20.⁴

Whilst ClimateTech remains a relatively small sector in the economy, we have seen an explosion in funding for ClimateTechs in the last three years, with **over half of all funds raised by firms in the Index coming since 2021**. The vast majority (92%) of funds raised were in the form of investment for equity, 5% were debt based, and 3% were blended debt and equity investment.

As Figure 2 demonstrates, **2023 was the first year where the annual funds raised dipped since 2019-2020, with a 4% year-on-year drop**. This is additionally notable as the 2023 raise figure was inflated by three mega-rounds from Octopus (£632m), Zenobē (£270m), and Field (£200m). Further, looking at the trends by sector and region, there are more sectors and regions where funding dropped in 2023 compared to 2022, than sectors and regions where funding rose.

However, this drop mirrors broader macroeconomic headwinds facing startups across the economy, and when you look at cross-sector data, **firms in the ClimateTech Index appear much more resilient than other sectors**. Beauhurst data suggests that VC investment across the UK dropped 42% between 2022 and 2023, to its lowest level since 2018.⁵ Compared to this, a 4% drop in funding for firms in the ClimateTech Index demonstrates significant resilience and the fact that climate innovation remains an attractive investment despite pressures.

⁴ <https://www.beauhurst.com/research/the-deal-2023/>

⁵ <https://www.beauhurst.com/research/the-deal-2023/>

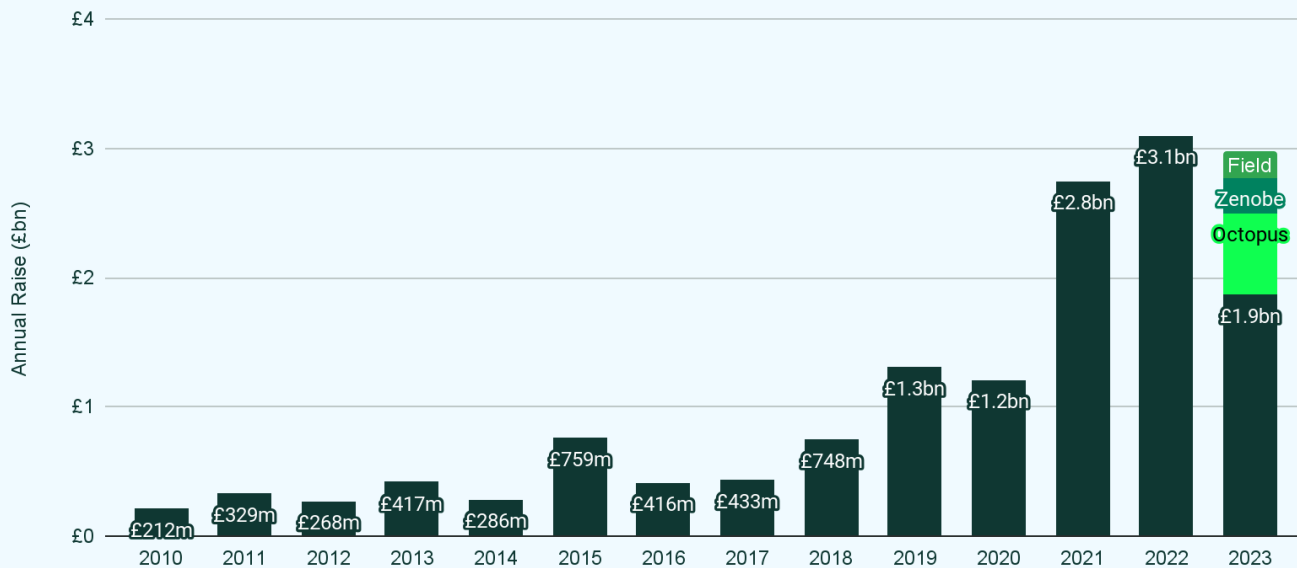


Figure 2, Annual Raise for the ClimateTech Index 2010-2023

Top 25

Figure 3 captures the top 25 most funded startups in the ClimateTech Index. 14 of these firms are in the energy sector and five are in the transport sector. Combined, they represent 40% of the total funds raised by the entire ClimateTech Index.

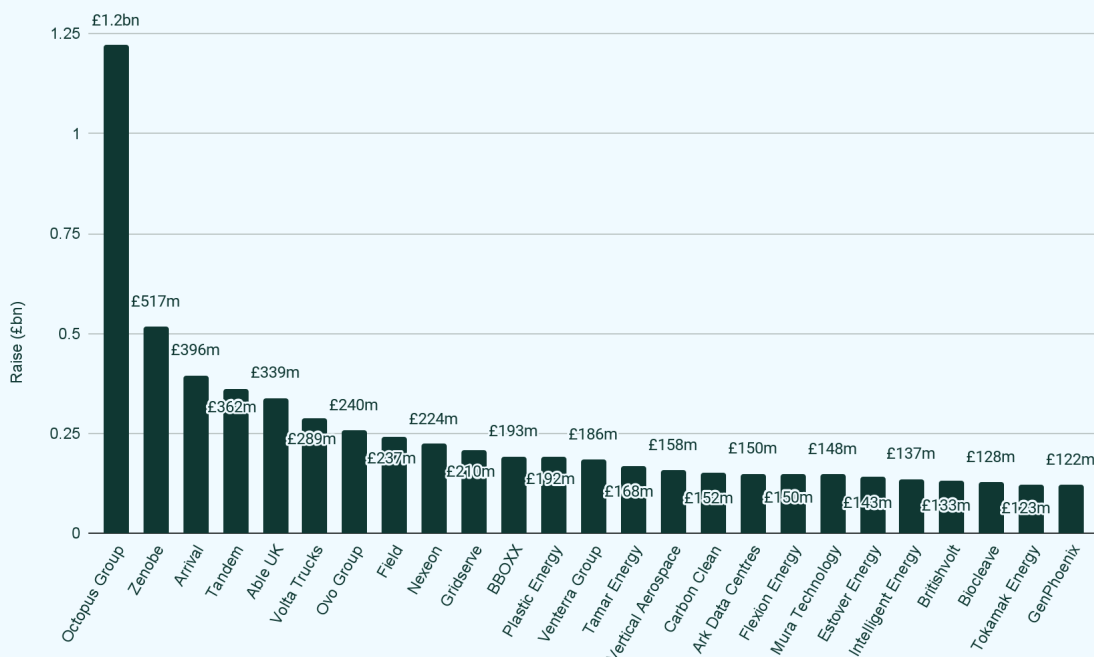


Figure 3, the Top 25 highest funded ClimateTechs in the Index

Value of the Sector

The value of the ClimateTech Index is **£26bn** at the end of 2023. The minimum value of a firm in 2023 is £113,000, and the most valuable firm in the dataset at the end of 2023 is Octopus Group, at £3.4bn. There are three unicorns (firms valued at over £1bn) in the dataset at the end of 2023, Octopus, Zenobē, and Ovo Group. Reflecting the decrease in funds raised in 2023, the value of the sector also decreased, demonstrating a number of failures, exits and down-rounds. This was a different pattern to the national picture, where the combined value of the UK VC-backed startups increased by 10% between 2022 and 2023 to over £780bn, the third most valuable ecosystem worldwide.⁶

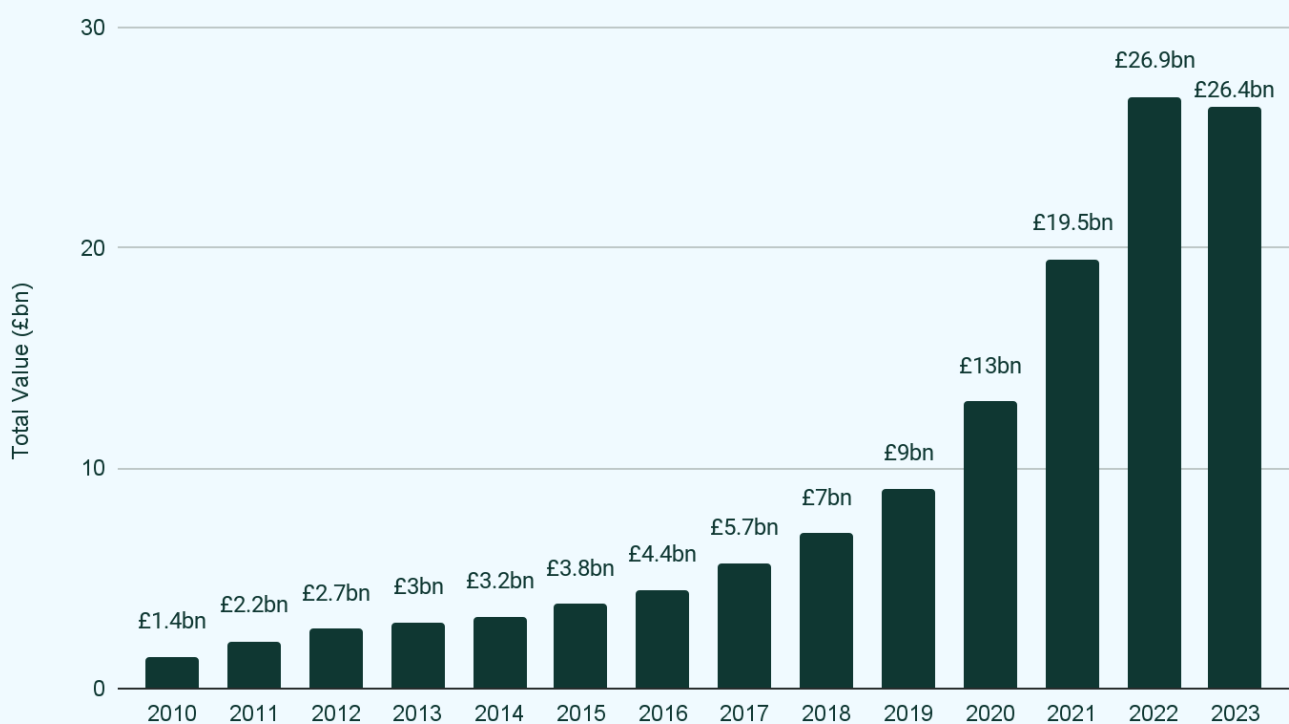


Figure 4, Annual value of the ClimateTech Index 2010-2023

⁶ <https://dealroom.co/guides/united-kingdom>

Grant Funding

The total amount of funds granted to firms in the Index was **£960m**. This included funding from UK Research & Innovation (UKRI), Government competitions and grant initiatives including the Net Zero Innovation Portfolio, devolved administrations and the European Union. The average grants received per firm was **£960k**.

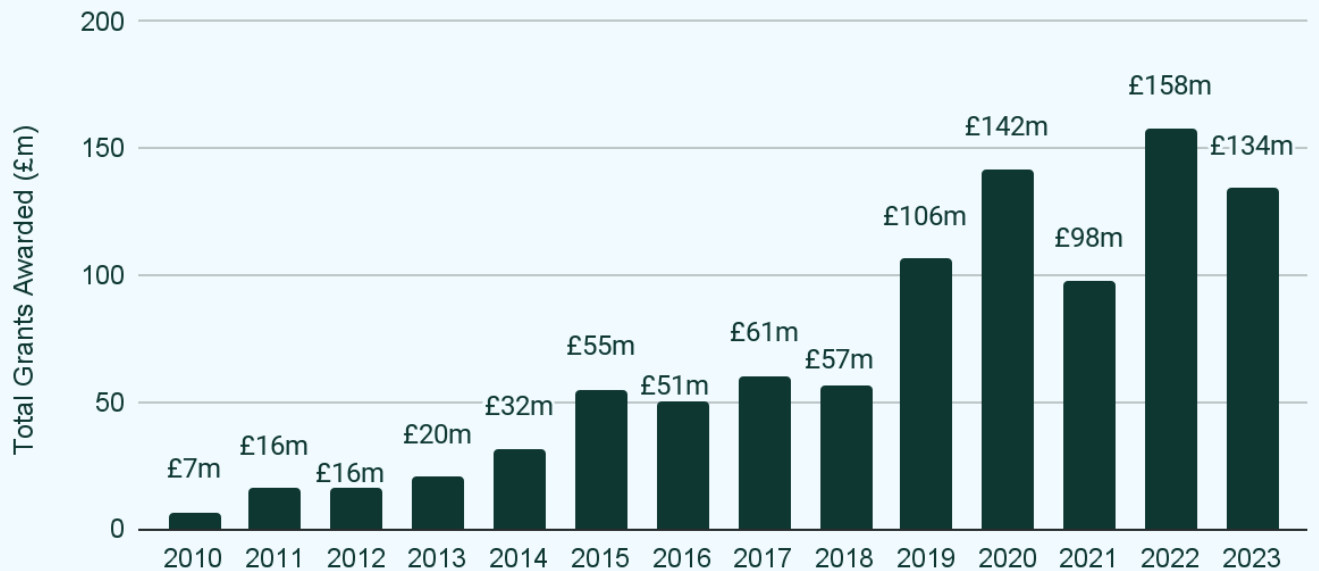


Figure 5, Annual grant funding received by the ClimateTech Index 2010-2023

Sectors

Climate innovation is occurring across the entire economy. From the food we eat to the way we transport goods and people, the way business is done to the houses we build, climate innovators are developing products and services that are simultaneously more sustainable and better than what has come before.

The Index reflects this diversity and breadth, and we have segmented the population into fifteen 'sectors'. Inevitably, innovation often crosses sectors, and therefore the below categorisation reflects Startup Coalition's evaluation of the sector which best describes the primary product or service offered by each Indexed startup. The breakdown of firms is shown in Figure 6, with an accompanied pie chart demonstrating the share of each in Figure 7.

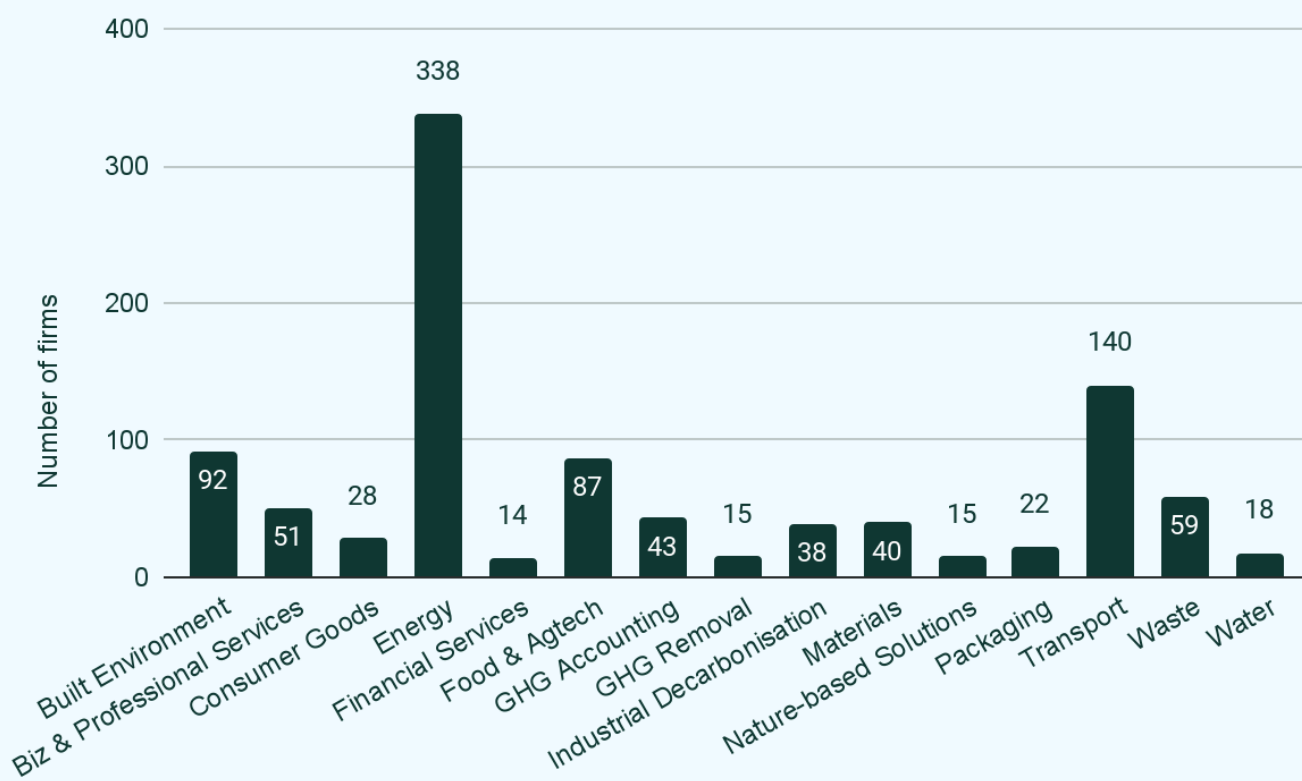


Figure 6, Number of firms by sector

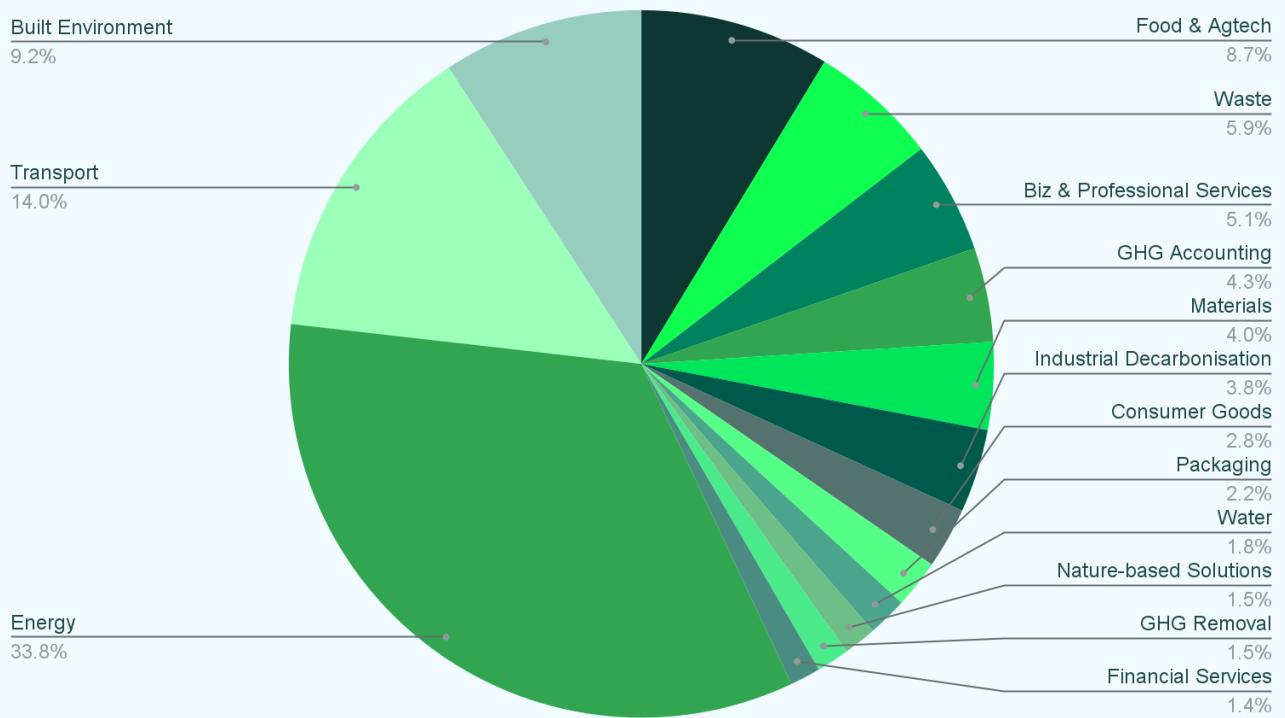


Figure 7, Share of firms by sector

The Energy sector is the largest sector represented in the Index, constituting nearly a third of the firms. There are 140 firms from the Transport sector represented in the Index, and nearly 100 startups from the Built Environment. At the other end of the spectrum, there are 14 startups in the Index whose primary sector is financial services, and 15 engaged in greenhouse gas emission removal.

Sector Findings

The sector that raised the most money in the Index is the energy sector, **with over £7bn raised**. Six of the top 10 highest funded startups in the Index are in the energy sector, with Octopus Group raising three times as much as the next highest firm, electric HGV producer Arrival which raised £396m before exiting in 2021 through a SPAC IPO. The transport sector raised the second highest amount of funds, with just under £2.9bn, and the food and agtech sector rounded out the top three with just under £1bn raised.

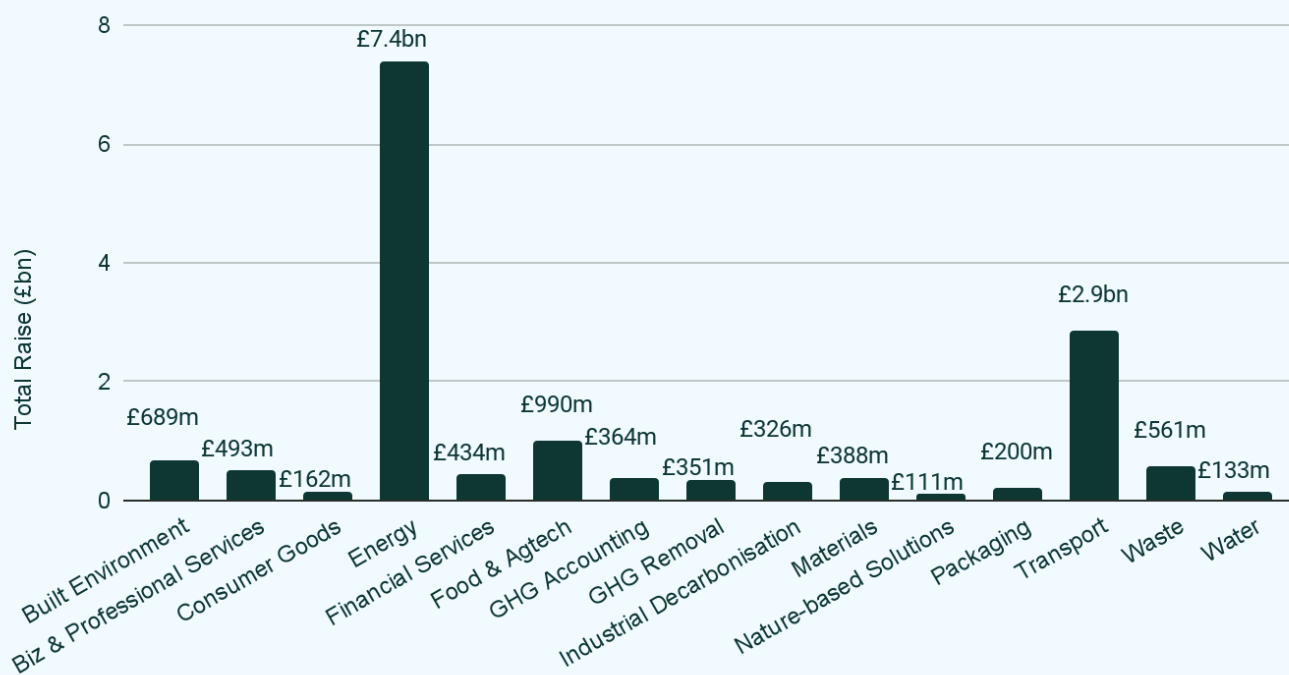


Figure 8, Total funds raised by sector

The sector values in Figure 9 mirror the fundraising, with the energy sector the most valuable sector in the Index at £13.7bn, the transport sector second most valuable at £4.1bn, and the food and agtech sector third, at £1.7bn. Whilst the grant funding picture looks similar, the gaps between the sectors narrowed: although energy constitutes 48% and 52% of the overall funds raised and overall value respectively, it only constitutes 42% of the total grant funding. The transport sector constitutes 24% of total grant funding, with industrial decarbonisation and GHG removal representing disproportionately more grant funding than their share of the Index by number of firms - industrial decarbonisation constitutes 4% of firms but 6% of grant funding, and GHG removal represents 1.5% of firms but 3% of grant funding.

The share of jobs by sector was slightly more evenly distributed than funds raised, value of the sector, or grant funding. At the end of 2023, six sectors employ over 1,000 people: energy, the built environment, transport, food and agtech, waste and business and professional services.

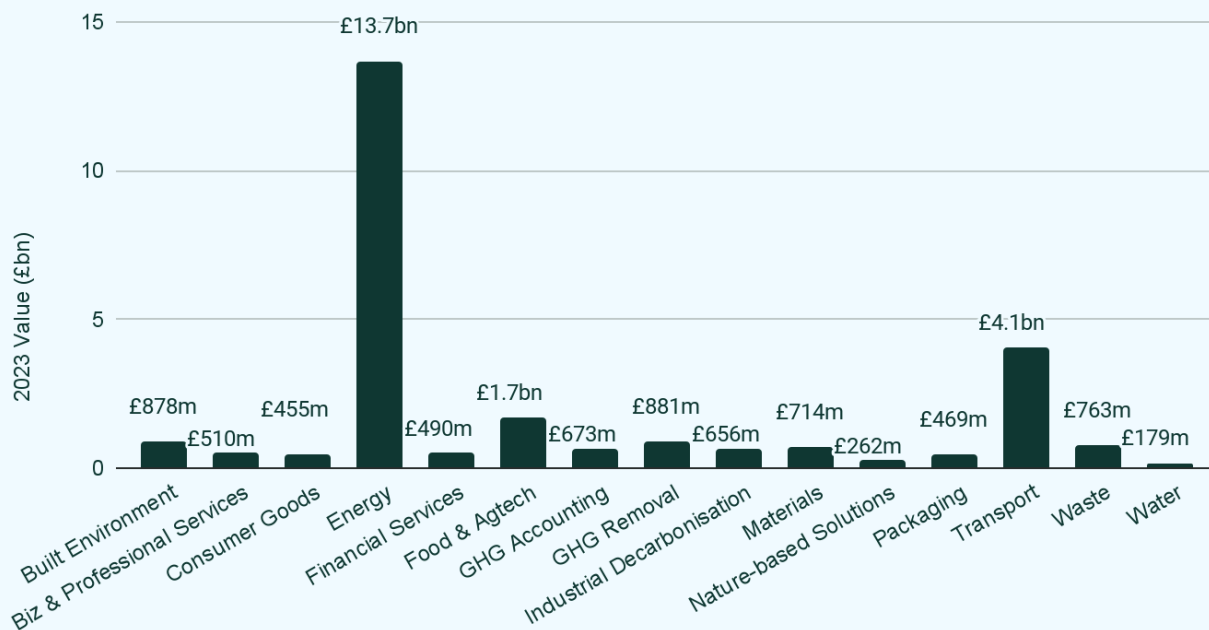


Figure 9, 2023 Value by sector



Figure 10, Grant funding received by sector

Grant funding has not increased for all sectors uniformly over the course of the Index sample. Index firms in the nature-based removal and packaging sectors, for instance, received no consistent grant funding prior to 2014 and didn't secure £1m in annual grants received until 2022 and 2019 respectively. In

contrast, the energy sector has always received the most grant funding of all sectors, and saw a seven-fold increase in annual grants secured over the last decade.

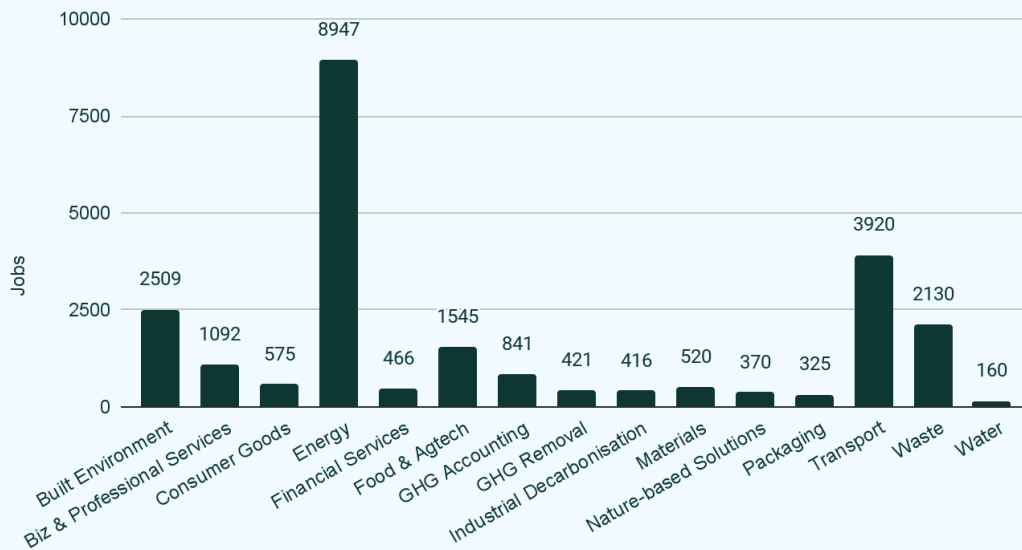


Figure 11, Jobs per sector at the end of 2023

A Tale of Three Sectors

Energy, transport and the built environment represent three critical sectors in the decarbonisation of our economy, and make up the three most populous, well funded, and valuable sectors in the Index. However, upon deeper inspection, there are some important variations. Across overall funds raised, debt funding, valuation and grants received, the energy and transport sectors are on par or exceed the Index average. In contrast, **startups in the built environment are consistently below the average across these four metrics**. The different experiences of firms in these three sectors reflect the investor appetite, the accessibility of the market, and government policy.

Energy startups have seen increasing investment globally in recent years, with annual funds raised increasing from \$1.9 billion in 2019 to \$12.3 billion in 2022, meaning the findings of the Index reflect a larger trend.⁷ The energy market is mature, revenue streams predictable and robust, in spite of global geopolitical headwinds, and the policy environment across many developed countries has incentivised investment in research and development. In the UK, policies like the Contracts for Difference regime create a pathway to commercialisation for nascent renewable energy technologies, and the net zero innovation portfolio has necessarily focussed on energy innovation. This is fundamental to electrification which underpins the net zero journey across much of the economy.

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<https://www.oliverwyman.com/our-expertise/insights/2023/may/investment-in-clean-energy-startups-is-booming.htm>

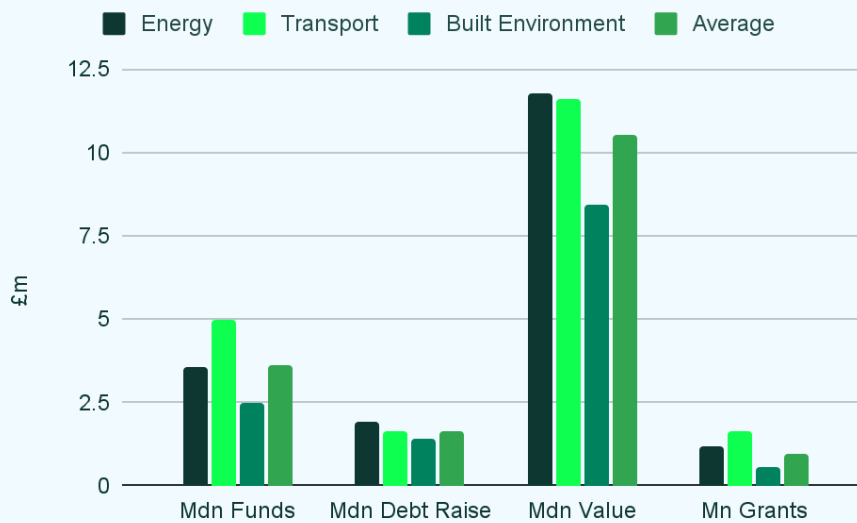


Figure 12, Average funds raised per firm, debt raised per firm, 2023 valuation and grants received per firm for the built environment, energy, transport, and Index average

Transport has also seen a favourable market and policy support backdrop, with subsidies for electric vehicle technology development and consumer adoption across many countries. In the UK the Advanced Propulsion Centre has been providing grant capital to mobility startups through competitions since 2014, with over £308m deployed to date.⁸ Meanwhile the UK also has a target to phase out the sale of new internal combustion engine powered vehicles by 2035.

Government policies have provided the foundations for innovation in the energy and transport sectors, however this has not been the case for the built environment. Startups in the built environment have lacked targeted support outside of heat pump technology, with successive governments unable to crack the challenge of insulating homes effectively and ensuring an effective policy environment that decarbonises new buildings and scales retrofitting at the scale required. Startup Coalition also believes that the foundational metric upon which domestic building sustainability is measured, the Energy Performance Certificate (EPC), is inadequate and does not incentivise optimum behaviours or technology adoption.

Indeed, it was a deliberate choice to categorise energy hardware deployed onto domestic properties as part of the “built environment” sector within the Index as these firms are disproportionately exposed to policies designed to support domestic retrofit or decarbonisation of new buildings than they are to conventional energy policy (though this is not a clean distinction, as firms involved in neighbourhood microgrids or seeking to connect domestic renewable generation to the grid will testify).

There are glimmers of hope, with VC investment in built environment startups within the Index doubling between 2021 and 2023, reflecting global trends in the sector.⁹ Nevertheless, to support investor certainty in this sector, it is vital the policymakers apply the same consistency and ambition as they did to the energy and transport sectors.

⁸ https://assets.publishing.service.gov.uk/media/60f81779e90e0764d3614521/apc-ii-final-report__1_.pdf

⁹ <https://pitchbook.com/news/articles/green-infrastructure-built-environment-vc-deals>

Geography

The Index features firms from across the UK, though London represents far and away the most populous single location, with a third of all firms in the Index headquartered in the Capital. Indeed, between them, the Golden Triangle locations of London, Oxford and Cambridge constitute 379 of the 1,000 firms. The second most populous region for startups in the Index is South East England, with the East of England completing the top three.

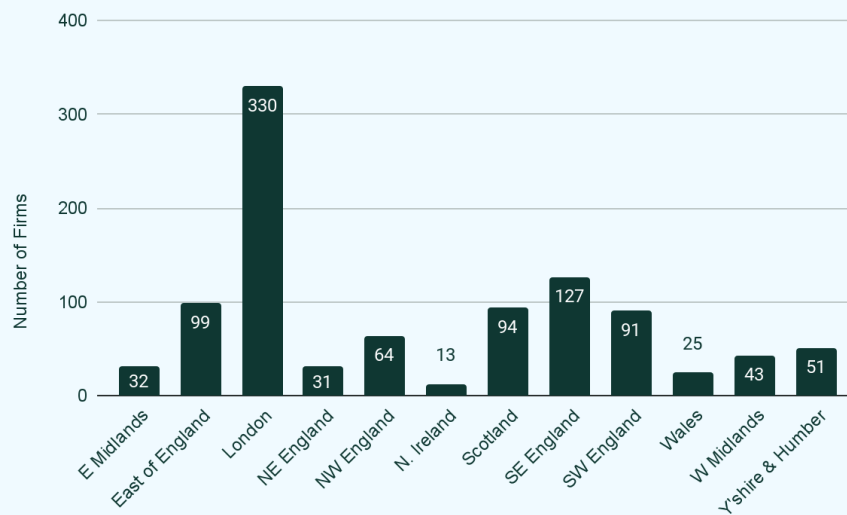


Figure 13, Total ClimateTech Index firms by region

Geography Findings

London is the most populous, best funded and most valuable single region, and it employs the most people in jobs at ClimateTechs within the Index, though data suggests that funds going to ClimateTechs are less concentrated in the Capital than in other sectors. London-based firms in the Index raised 44% of the total funds raised, but Dealroom data suggests that in 2023, two thirds of total VC investment in the UK went to London-based startups.¹⁰

There are **five unicorn regions** that are home to startups within the Index that were collectively valued at over £1bn at the end of 2023: London, South East England, the East of England, South West England, and Scotland.

The headline findings of funds raised, valuations and jobs follow the trend of where firms are headquartered, however grant funding is slightly different. Here, Scotland as a region received the second highest proportion of grant funding after London. As Figure 16 demonstrates, this is due to the increased proportion of non-UKRI UK Government grant funding, as well as a greater amount of EU grant funding. Indeed, Scotland was the biggest single recipient region of Horizon funding, with £22m secured, a third of all Horizon funding granted to firms in the Index.

¹⁰ <https://dealroom.co/blog/uk-startup-ecosystems-on-the-rise-outside-london>

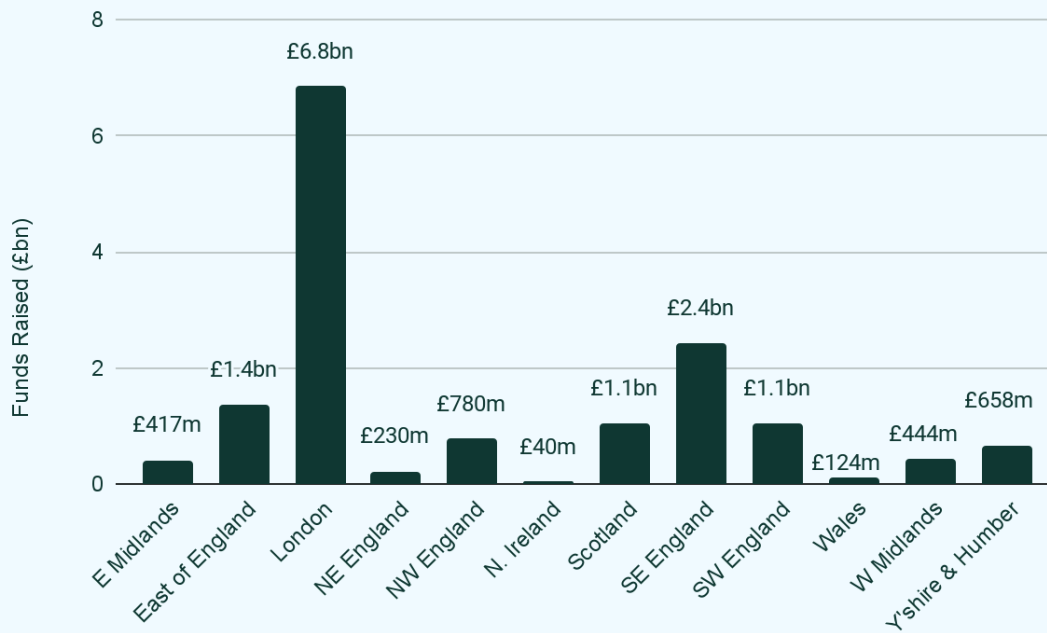


Figure 14, Total raise by region

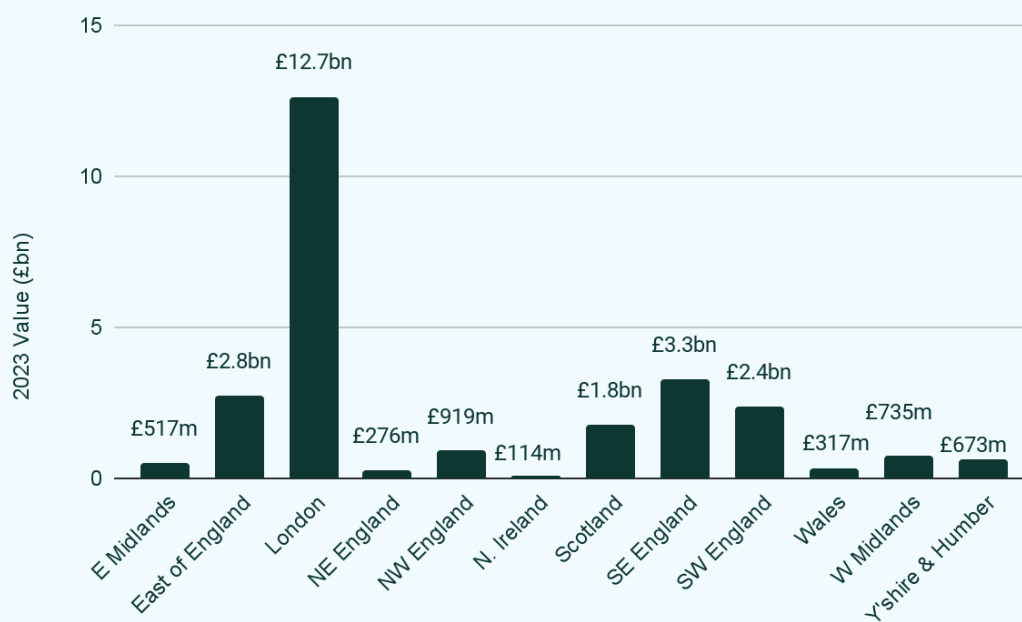


Figure 15, Total value by region

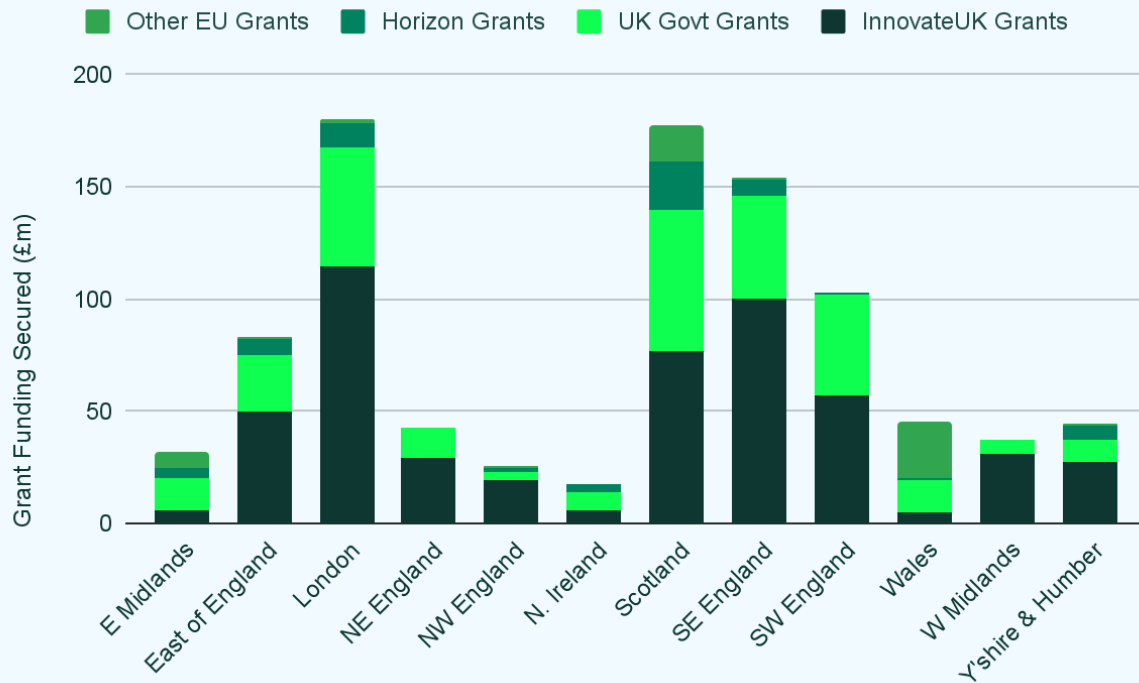


Figure 16, Total grants by region

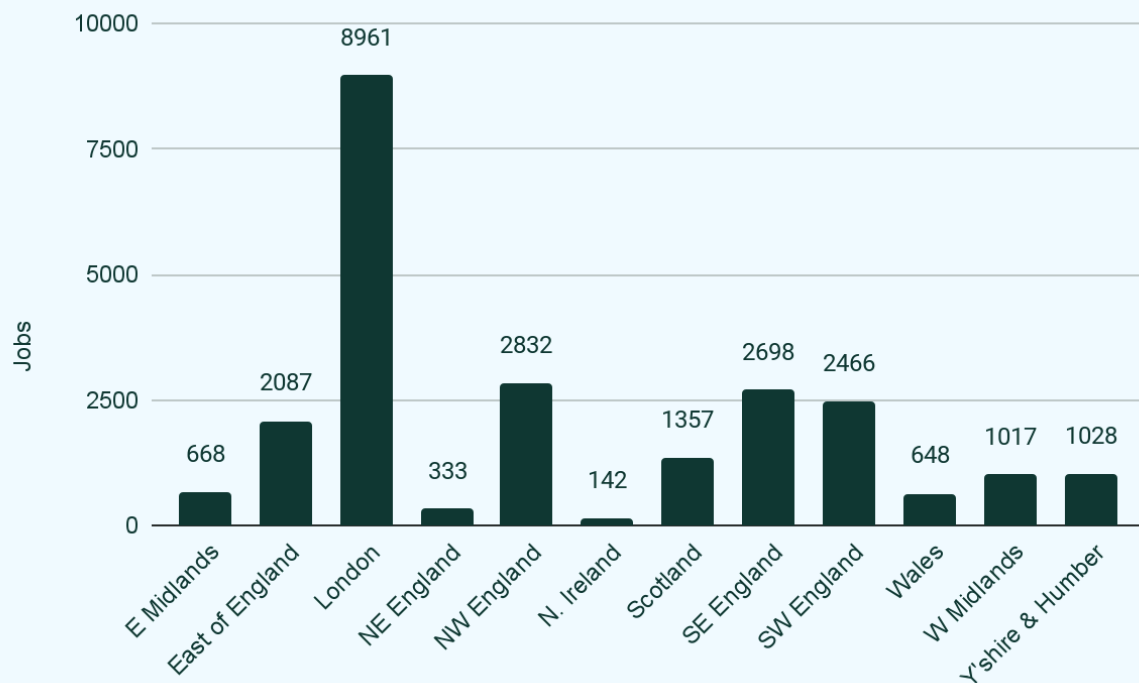


Figure 17, Total jobs by region

University Spinouts

The UK has some of the world's best universities, with four of the world's top ten and research institutions based in the UK.¹¹ These universities can often be a source of innovation and invention, and intellectual property that can then be converted into a commercial enterprise - the companies created by this process are known as “university spinouts”.

This process of “spinning out” firms from university research into commercial enterprise is present across many sectors within the ClimateTech space. There are 109 university spinouts in the Index, with the most coming from the universities of Oxford and Cambridge - with 17 apiece. The third most prolific university for ClimateTech spinouts was Imperial College London. Imperial is also the origin of London's largest ClimateTech accelerator, the Greenhouse ClimateTech accelerator run by Undaunted, part of the Grantham Institute at Imperial.

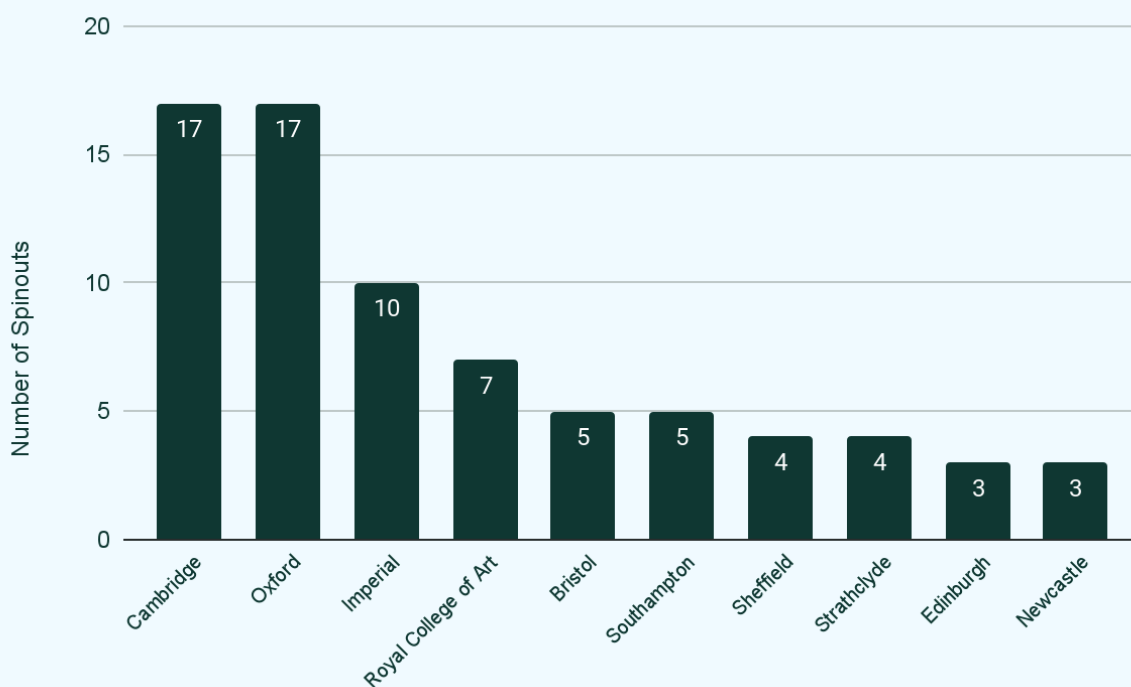


Figure 18, Top 10 Universities for ClimateTech Index firm spinouts

The Index features spinouts from across every sector of the economy excluding financial services, with energy the most represented sector with 31 spinouts. Two notable sectors with an above average number of spinouts are industrial decarbonisation, where 32% of all firms in this sector within the Index are spinouts, and materials, where 30% of firms are spinouts.

¹¹ <https://www.timeshighereducation.com/student/best-universities/best-universities-uk>

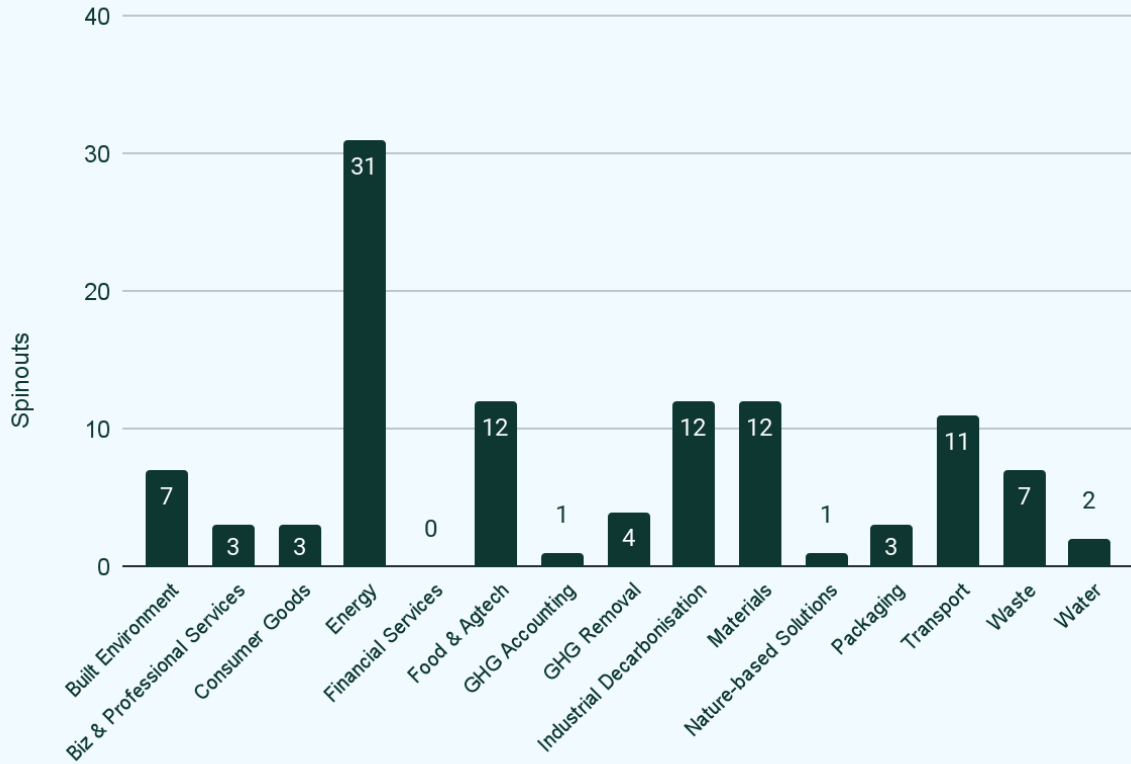


Figure 19, Spinouts by sector

Female Founded Firms

At 17% of firms, startups in the ClimateTech Index broadly reflect available industry metrics of the proportion of firms with at least one female founder (somewhere between 15-20%). However, they are disproportionately underfunded and undervalued, and received less grant funding than their proportion of firms.

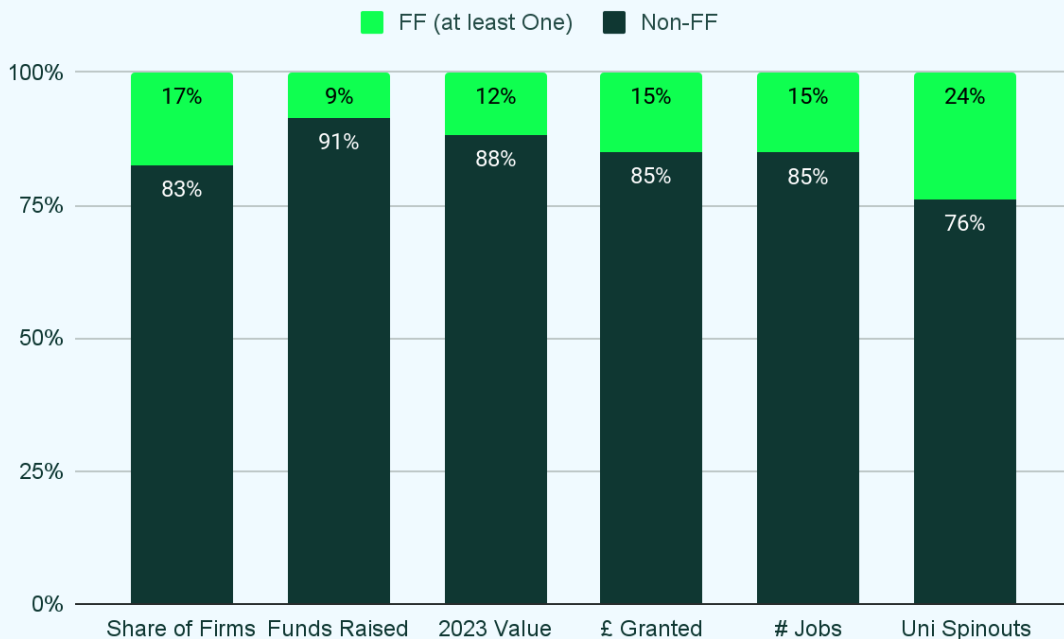


Figure 20, ClimateTech Index startups with sole female and/or mixed-gender founder teams, share of key metrics

In 2022, firms with at least one female founder received 12% of total funds raised. This was slightly higher than the 10% of total investment recorded across the economy that goes to firms with at least one female founder.¹² However, when looking at the share of the number of deals (and not the value of the investment), in 2023 mixed-gender founder teams in the Index secured a smaller share (20%) than mixed-gender founder teams across the economy (28%).¹³

The trend of more money going to mixed-gender founder teams has been increasing over the last ten years, with average annual funding double in 2023 what it was in 2013. There is a concentration of female-founded firms at the earlier stages: the vast majority of firms with at least one female founder were Series A, with less than one in ten Index startups with a female founder having raised Series C or beyond. This could be a case of timing: the average female founded firm is at least one year younger than a firm without a female founder and female founded firms raised money more recently than non-female founded firms on average. However this growth in funding isn't linear, and funding for firms with at least one female founder dipped to 9% of total funding in 2023, as shown in Figure 21. It will be critical to monitor this going forward to understand if the funding gap is closing.

¹² <https://www.british-business-bank.co.uk/uk-vc-female-founders-report/>

¹³ <https://www.beahurst.com/research/the-deal-2023/>

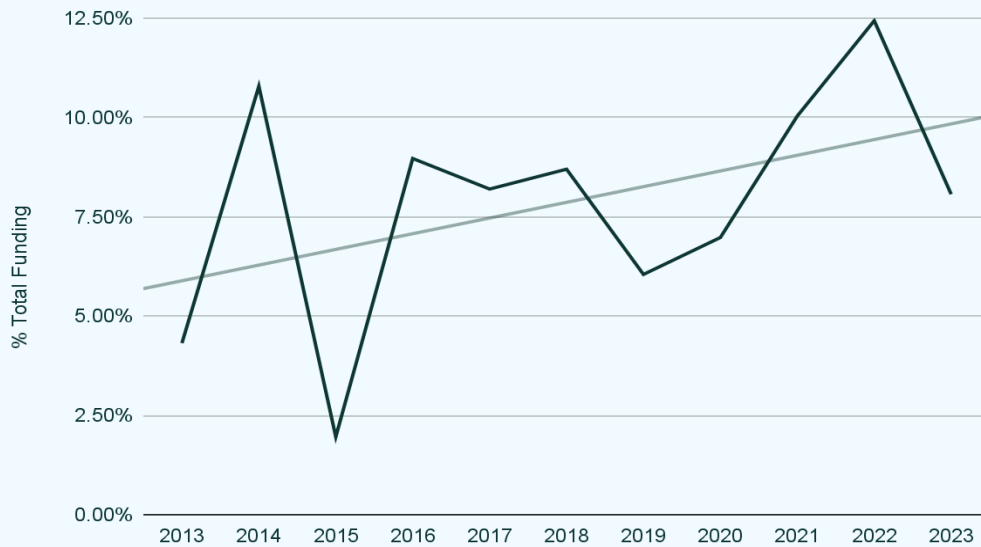


Figure 21, Share of funding going to ClimateTech Index firms with a mixed-gender founding team

This trend is mirrored in the share of funding going to startups with a solely female founding team which has also doubled between 2013 and 2023, though the absolute share is much lower.

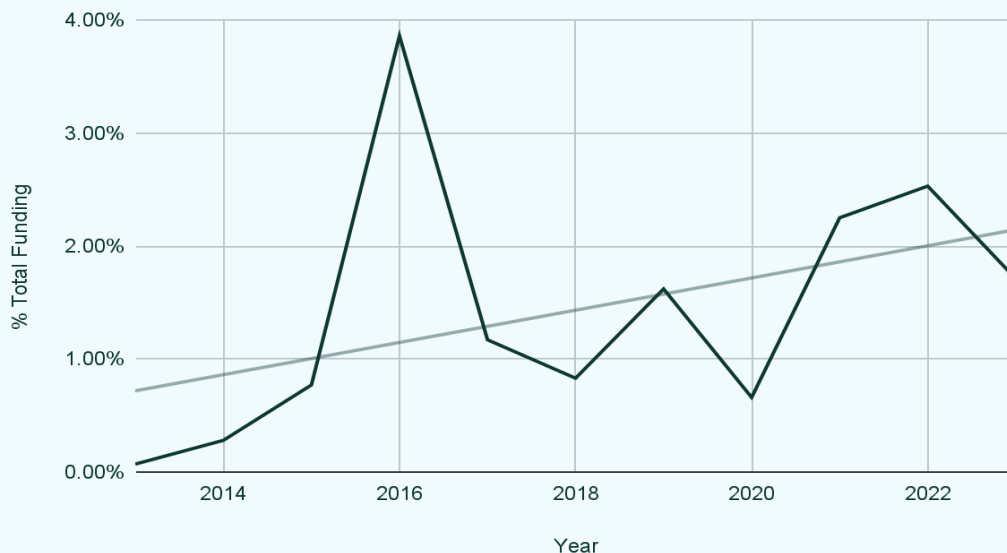


Figure 22, Share of funding going to ClimateTech Index firms with a solely female founding team

Startup Coalition will shortly be releasing a report outlining tangible opportunities for policymakers to address this chronic underfunding of female founded businesses.

Accelerator Attendance

Startup accelerators can enable ideas to be tested and proven quickly, enabling early stage startups to flourish. Time limited and targeted to a specific sector, technology or founder background, accelerators provide access to tools, capital and people to literally ‘accelerate’ a startup’s growth.

Accelerator attendance is a critical enabler for firms in the Index.

Firms that attended accelerators raised more money on average per firm (+17%) and obtained more grant funding per firm (+57%). One in five startups featured in the Index attended an accelerator including nearly half of all university spinouts featured in the Index.

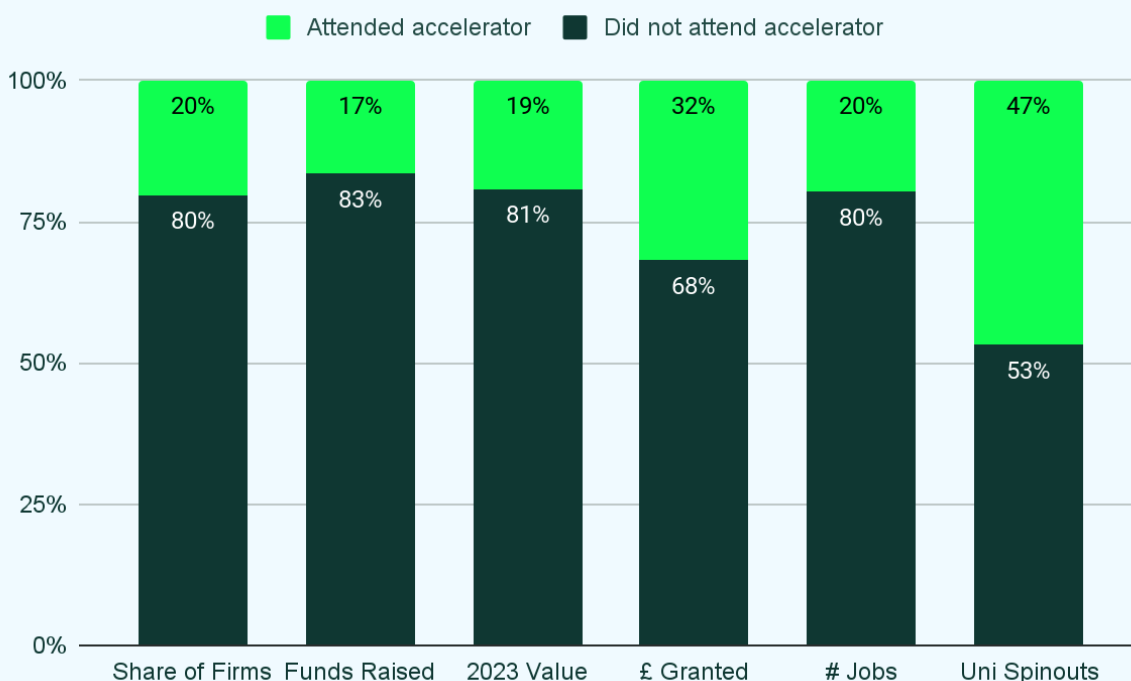



Figure 23, Breakdown of key metrics for ClimateTech Index firms based on accelerator attendance

Case Study: Imperial College London’s Greenhouse Accelerator

Undaunted  Imperial College’s Undaunted accelerator exists to build a bridge from the experimentation and discovery stage of climate technology, nurturing innovation until it is ready to be scaled up. Their activities stimulate the commercial sector to follow and develop a wider ecosystem where green solutions can flourish.

Given the urgency and importance of the climate crisis, Undaunted believes that innovation on climate will play a vital role in net zero. Therefore, their focus was to address the innovation gap and encourage

climate entrepreneurship and to nurture and build a pipeline of new start-ups addressing the climate challenge.

Like all bodies that support cleantech in the UK, Undaunted's aspiration is for a stable business and policy environment with the right incentives and smooth regulatory processes that will enable the sector to flourish. Undaunted is a founding member of both the ClimateTech Policy Coalition and Cleantech for UK which works towards this.

"The UK brings excellence in science together with long-standing work on climate change and a healthy investor ecosystem. Here at Undaunted we continue to create programmes to stimulate new start ups and help them scale to deliver significant real world impact. A policy environment that focuses on ambitious climate outcomes and encourages entrepreneurs to be ambitious will support these entrepreneurs to achieve success quickly." - **Alyssa Gilbert, Director at Undaunted**

Technology Type

The “technology type” category assigned to each firm in the Index was based on the judgement of Startup Coalition using publicly available information, such as the firms’ websites, and articles about the activities of the startups. The four main “technologies” developed by firms in the Index are:

- “Hardware”: firms producing tools, machinery and other durable equipment.
- “Manufacturing”: firms engaged in the production of physical goods that are not tools, machinery and other durable equipment, such as raw materials, chemicals, textiles or consumer goods. Manufacturing also includes firms engaged in agricultural production, energy generation, and carbon sequestration.
- “Services”: firms engaged in the provision of activities to support the delivery, improvement of, or advice on a company need. Importantly, “services” are provided by a company or human being, and not primarily via the provision of software.
- “Software”: firms offering computer-based programmes or platforms as their primary activity. This includes “software-as-a services” (SaaS).

Necessarily, many startups in the Index bridge multiple technology types, but for the purposes of analysis their primary technology type was assigned and the breakdown of the Index is shown in Figure 24.

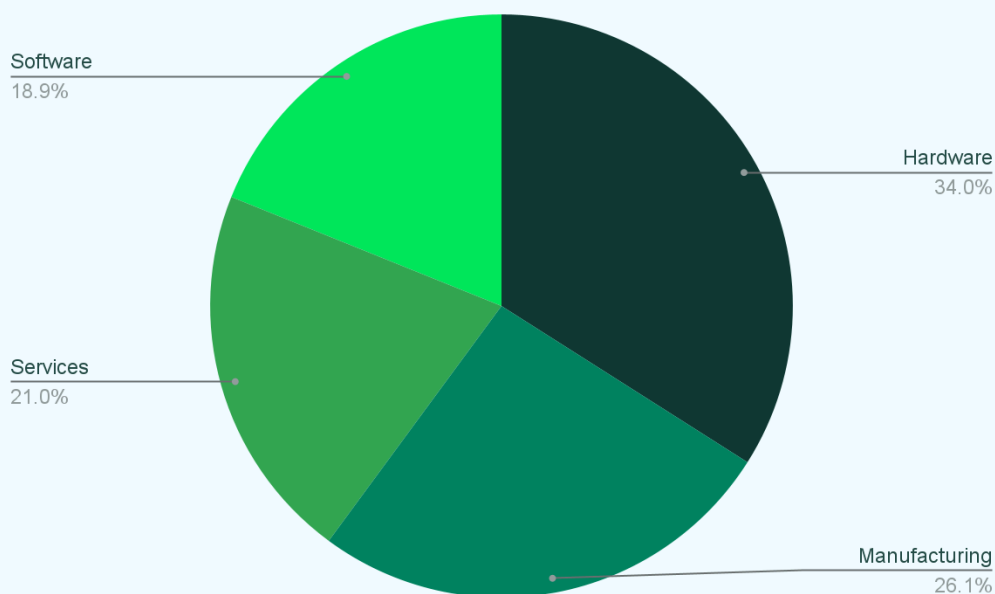


Figure 24, Breakdown of ClimateTech Index firms by primary technology type

Firms in the Index producing either hardware or engaged in manufacturing constitute 60% of all firms and received 85% of the grant funding secured by firms in the Index. Combined, they also constitute the majority of funds raised (70%), the total value of the Index (78%), and jobs (54%). However, over the last ten years, the share of funding going to hardware firms has been steadily decreasing, as shown in Figure 26, with a corresponding rise in the share of funding going towards ClimateTechs developing software.

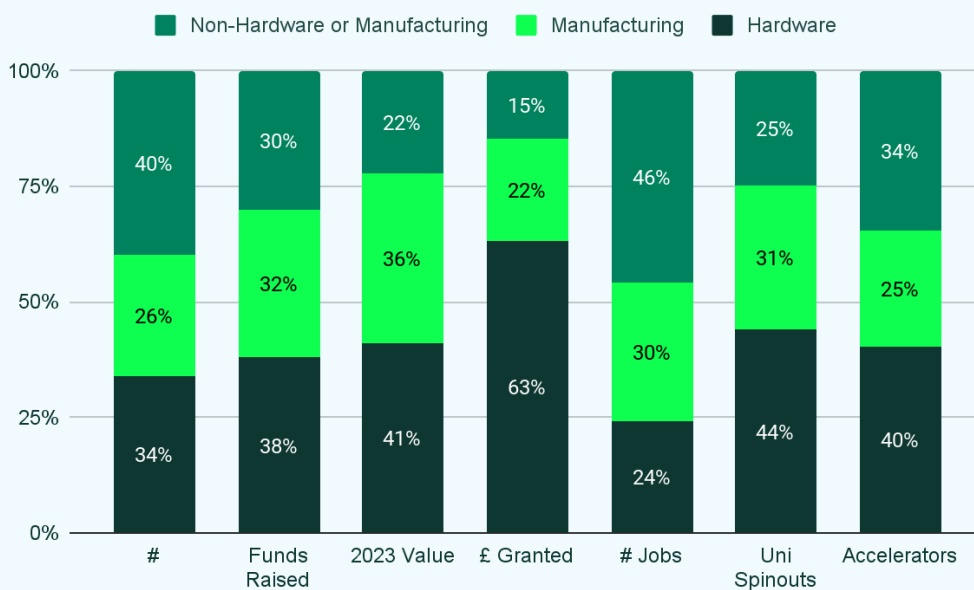


Figure 25, Breakdown of key metrics for ClimateTech Index firms based on hardware and manufacturing technology type

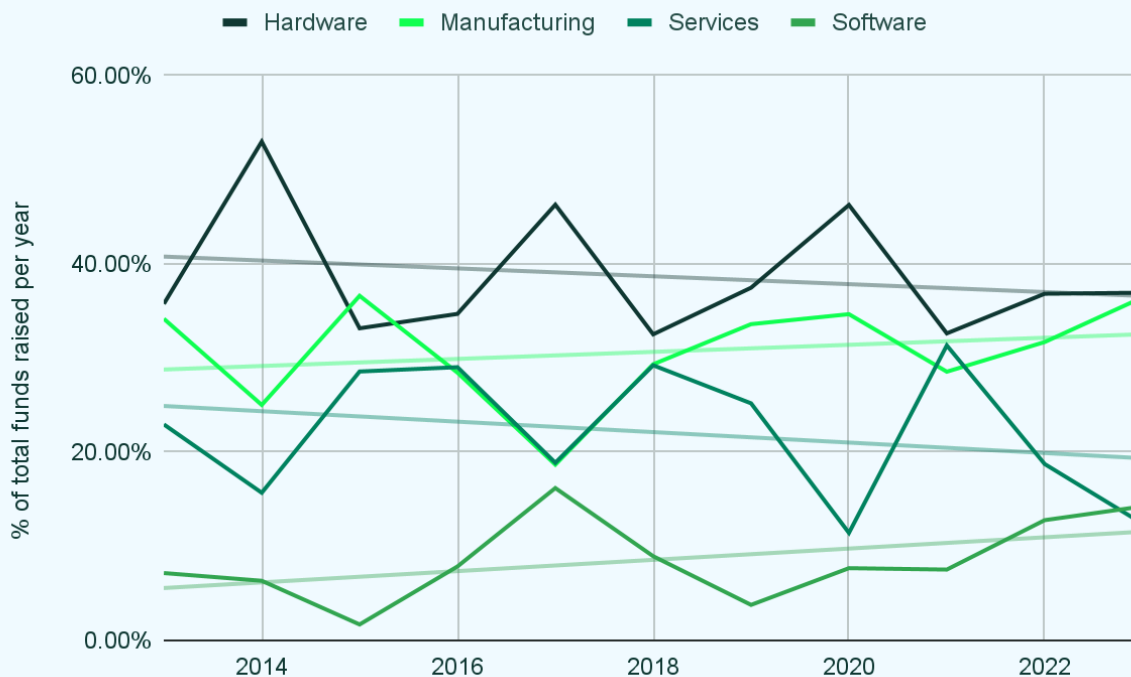


Figure 26, share of total funds raised per year by primary technology type 2013-2023

Additionally, hardware and manufacturing firms also receive less than half of all debt financing, despite hardware and manufacturing often being much more capital intensive than services or software

development. Hardware and manufacturing firms also represent over 70% of the firms that have failed in the dataset.

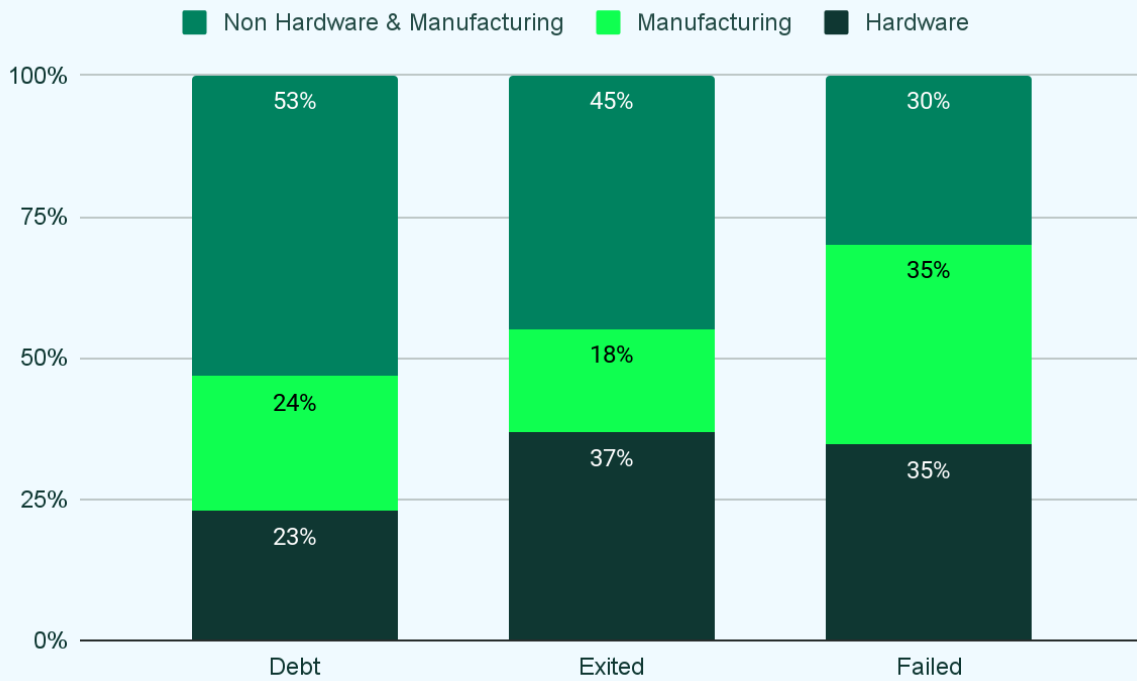


Figure 27, Share of debt, exits and failures based on primary technology type of hardware or manufacturing

Stage

The “fundraising stage” was assigned based on industry standard definitions. There were no “pre-seed” firms in this Index, referring to startups that have raised less than £250,000. The segmentation was made to support analysing where funding is concentrated across sectors and regions, and because policymaker interventions to support investment in startups are often targeted based on these different stages of firm development. For instance, the Seed Enterprise Investment Scheme (SEIS) is capped at £250,000, which is the threshold at which “seed” stage begins, whilst the Enterprise Investment Scheme (EIS) is capped at £12m per firm, which is the threshold at which Series B begins in the stages below.

For this Index:

- Seed stage refers to firms that have raised between £250,000 and £1,499,999
- Series A refers to firms that have raised between £1,500,000 and 11,999,999
- Series B refers to firms that have raised between £12,000,000 and £23,999,999
- Series C+ refers to firms that have raised over £24,000,000

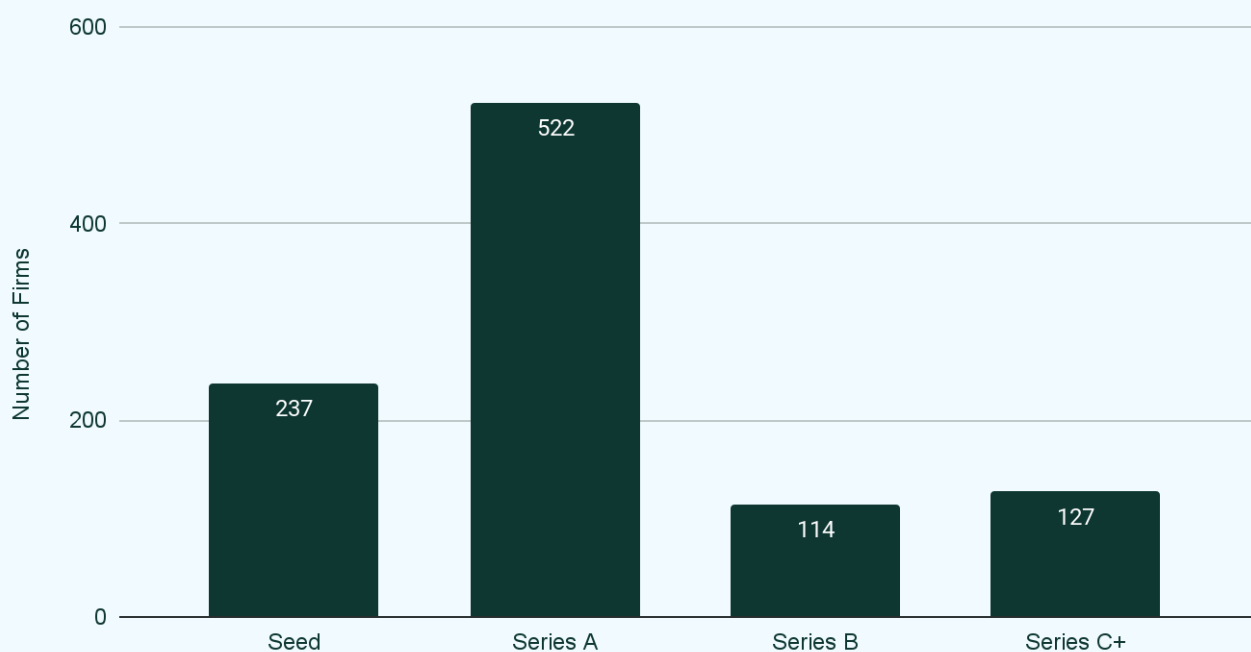


Figure 28, ClimateTech Index firms by fundraising stage

The majority of firms in the data set had raised their Seed or Series A rounds, with a steep cliff edge to Series B. However, the share of funds raised and value were heavily skewed towards the later stage firms. The majority of startups that failed in the Index never made it past Series A.

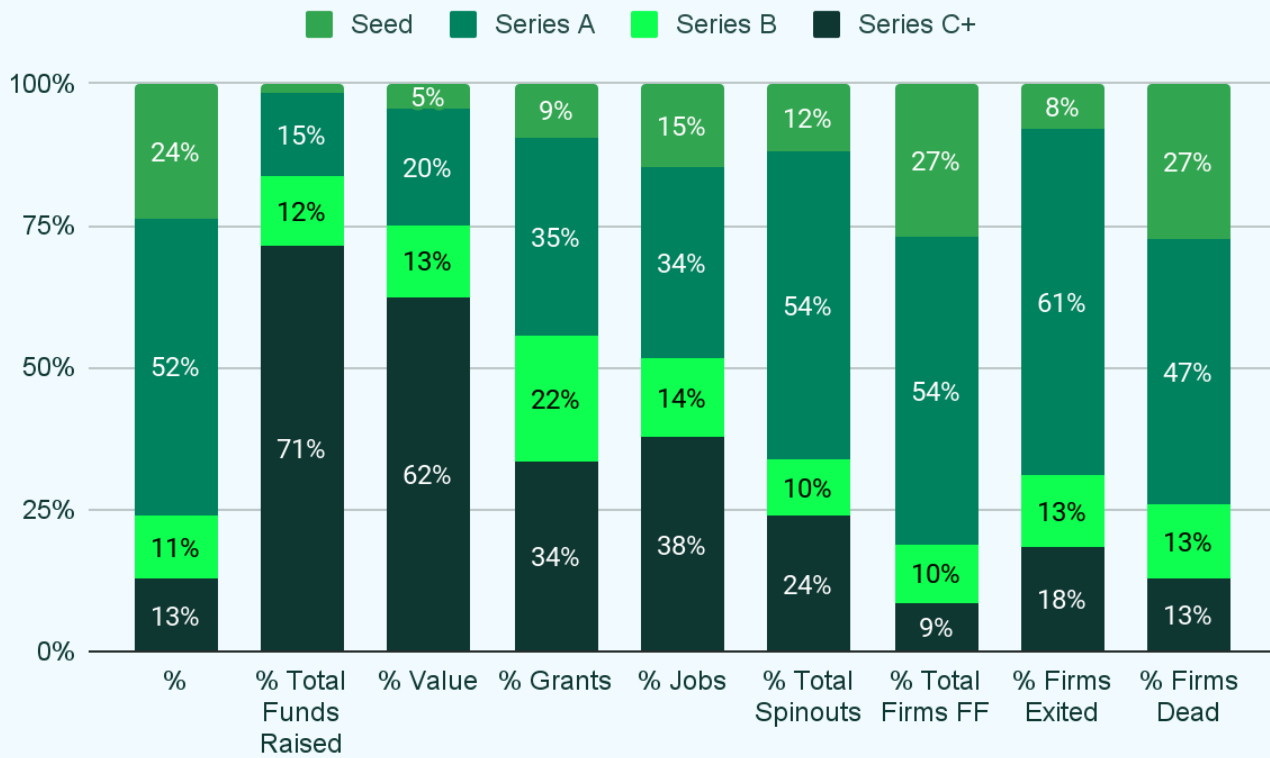


Figure 29, Breakdown of key metrics for ClimateTech Index firms based on fundraising stage

Failures & Exits

The vast majority of startups fail - this is part of the natural creative destruction of innovation and failure enables lessons, knowledge and talent to be recycled through the ecosystem. But some startups will reach an elusive exit event, realising a financial return for investors, founders, and employees, usually through an acquisition or a stock market flotation. For firms within the Index, the majority were being actively tracked at the end of 2023. However, 124 of the firms had “died” or failed, and 87 had exited.

Failures

The majority (62%) of failed firms were in the energy sector, and were also offering hardware or engaged in manufacturing (70%). On average there were 48 months between a firm’s last raise before failure and the year with the most failed firms was 2023.

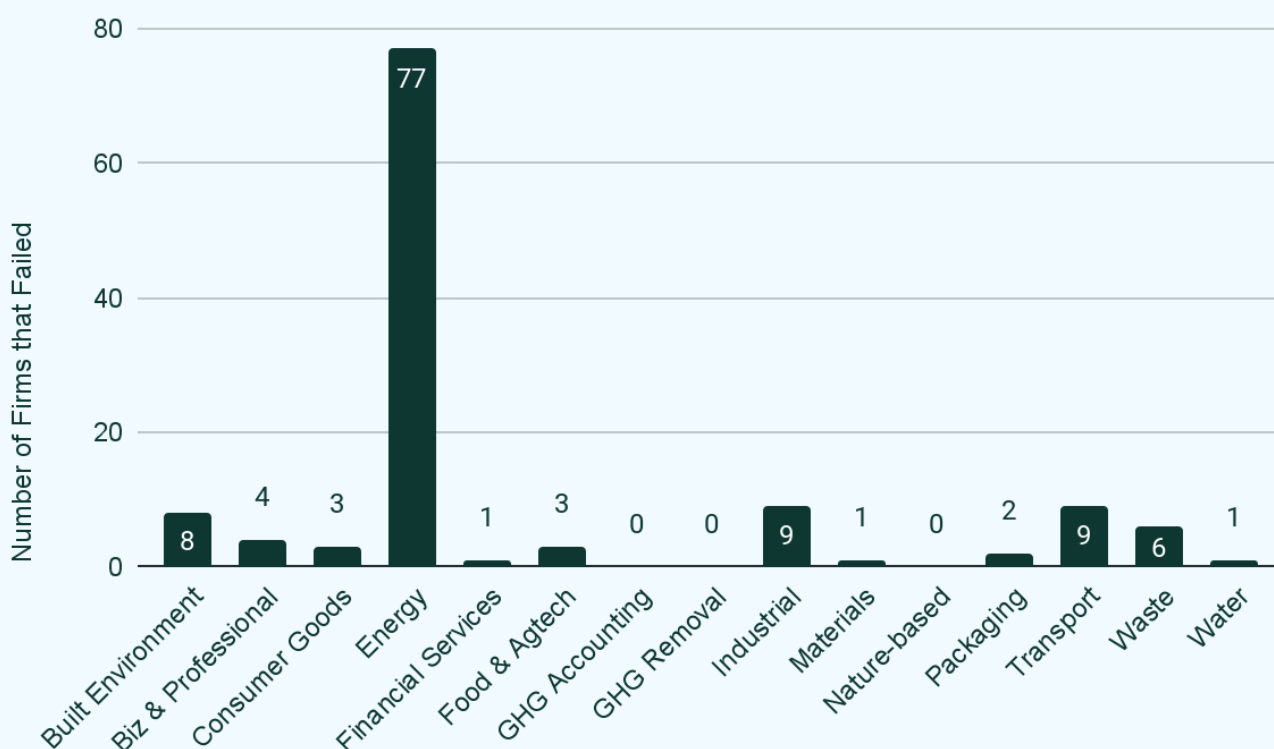


Figure 30, Failed firms by sector

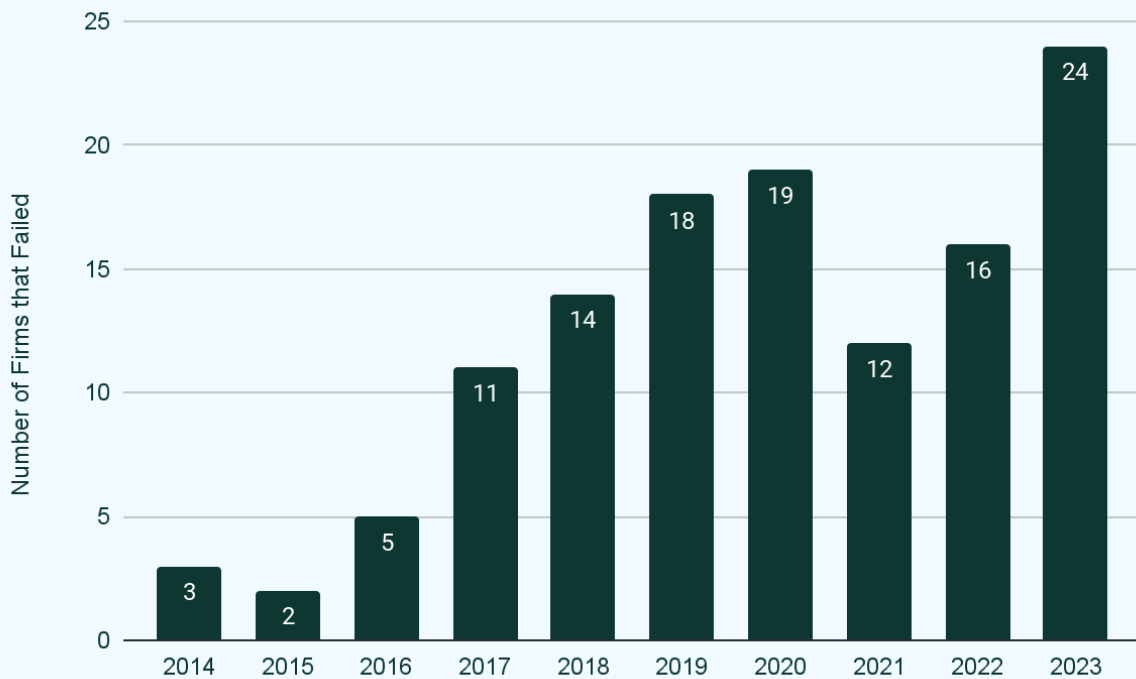


Figure 31, Failed firms by year of failure

Exits

87 Index firms have exited, with the vast majority (87%) having being acquired. The average acquisition value was £22.5m, and the average IPO valuation was £12.5m. Just under 40% of all exits were in the energy sector, and just over 20% in the transport sector. Exits peaked in 2021, when 18 Index firms exited, and have dropped since back to 2019 levels.

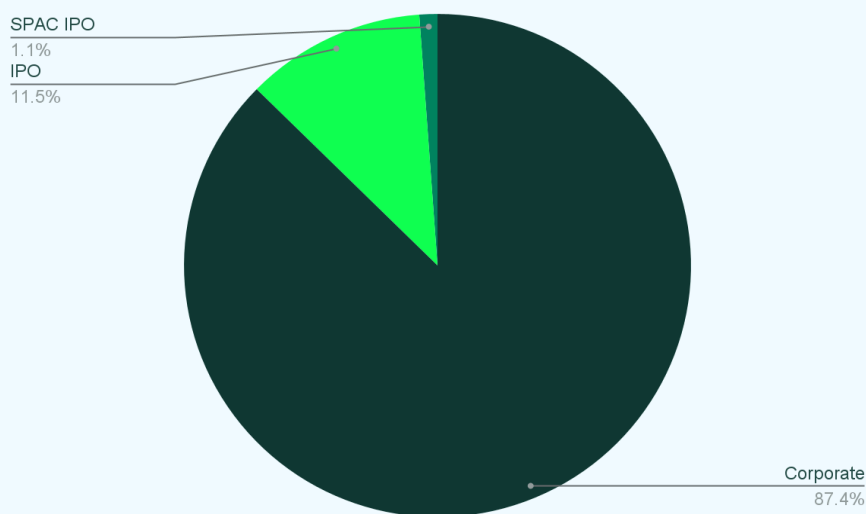


Figure 32, Exit source

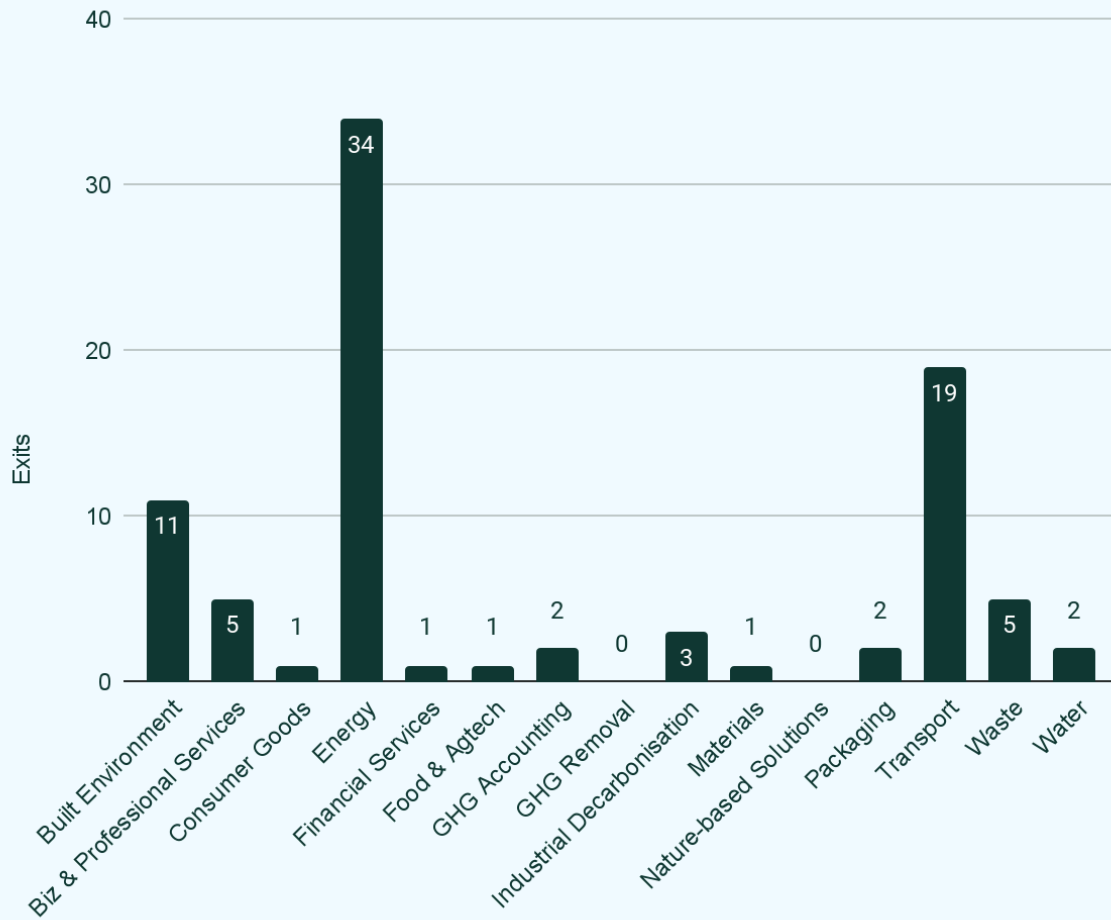


Figure 33, Exits by sector

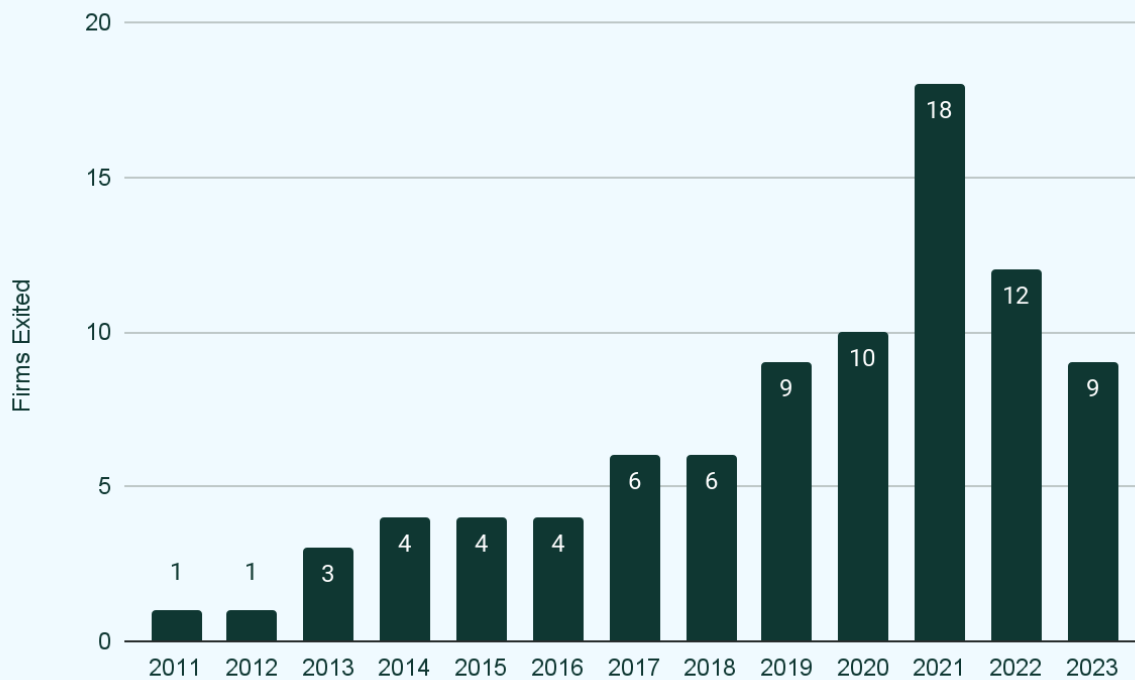


Figure 34, Exits by year

The Valley of Death

A healthy and efficient venture capital market should ensure that only the best firms secure sufficient funding to scale. To this end, it is inevitable, and indeed healthy, that the majority of firms in a startup ecosystem are at the earlier stage of development, to then be whittled down by competition. This “funnel” ensures a constant supply of new ideas and capital into early stage innovation. The pattern in Figure 28 could, to some degree, reflect this natural process. However, the cliff edge between firms in their Series A funding stage and Series B is dramatic.

We contend that this reflects a well established challenge facing ClimateTechs, the late-stage valley of death.

As firms grow from developing a prototype or proof of concept towards a commercially viable, mass-produced product, their capital needs scale dramatically, particularly if they are engaged in building hardware or manufacturing. This is often termed the “first-of-a-kind” (FOAK) funding challenge. The need to scale capital in this way is why it is to be expected that the majority of capital will be raised at the later stages, as demonstrated in Figure 35.

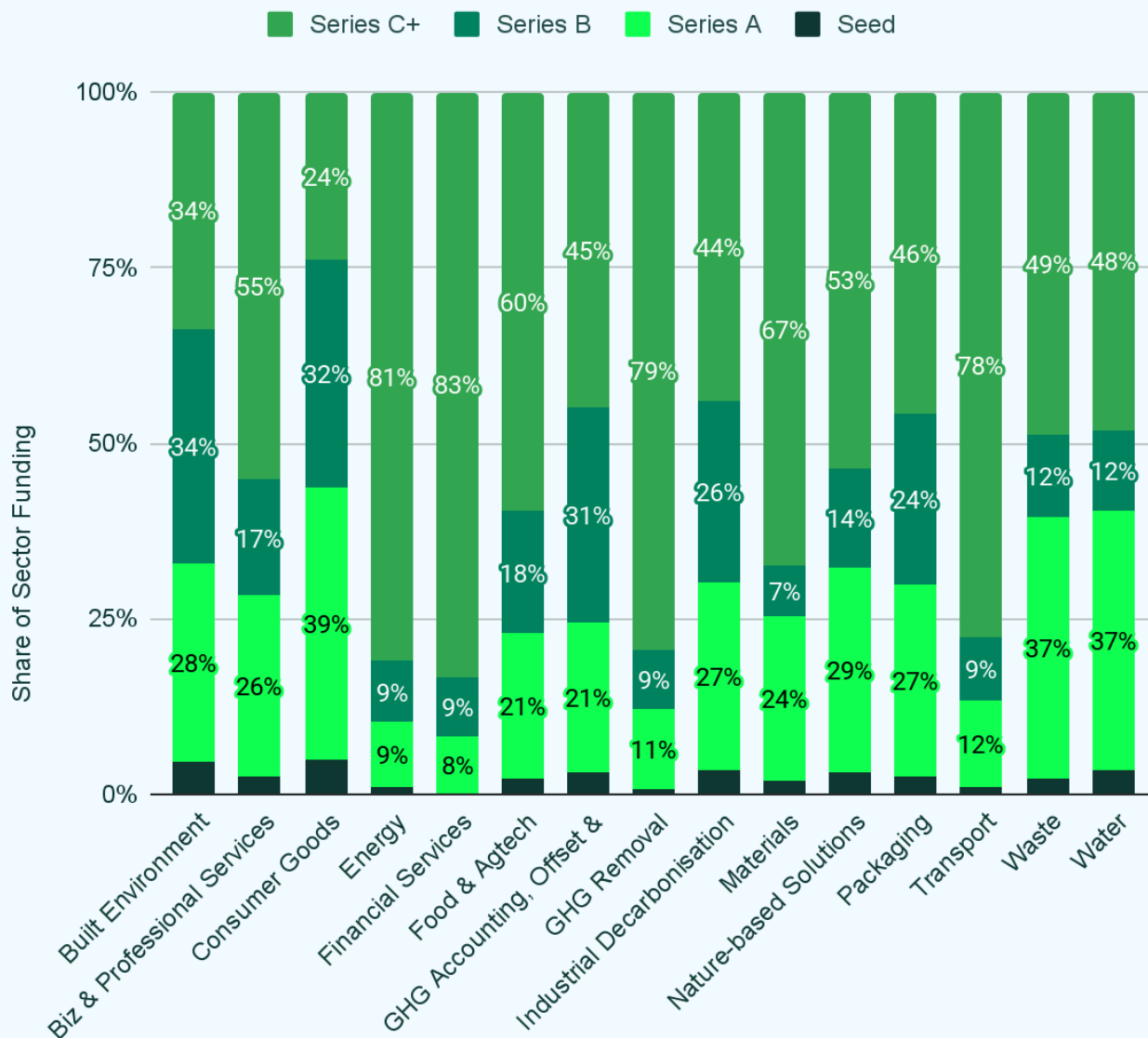


Figure 35, Fund share per sector, split into fundraising stage

However, the data demonstrates that there is a disproportionately low share of capital available between Series A and Series B, representing the £12m-£24m ticket size, for almost every sector. This is shown in absolute terms in Figure 35, but Figure 36 illustrates that the rate of firms that progress to raise their next fundraising round drops off steeply at Series A. Whilst 76% of firms progress from Seed to Series A, less than a third progress on to Series B. Meanwhile over half of firms that have raised their Series B progress on to Series C and beyond.

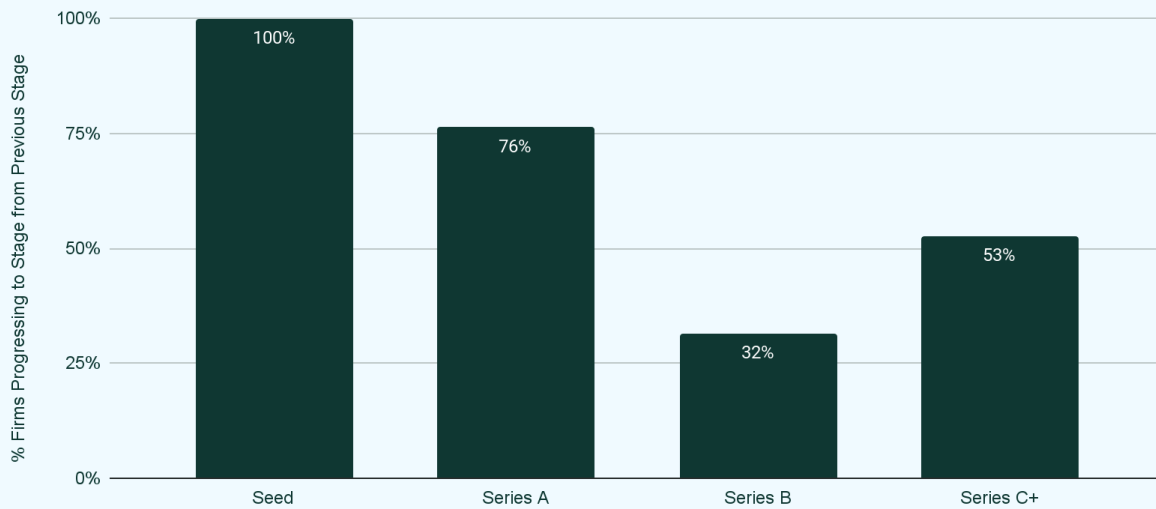


Figure 36, Share of firms that progress to named funding round

Moreover, analysis in Figure 37 of over more than a decade up to 2023 shows that this is a sustained pattern over time when looking at the size of rounds in each year: the share of funds at the latest stages has increased to around or over 60% since 2019 as the ecosystem has matured, but Series B funding peaked in 2016 and has always been smaller than the funding raised at Series A and C+. In 2017, more funds were raised by firms at their Seed stage than by firms at their Series B.

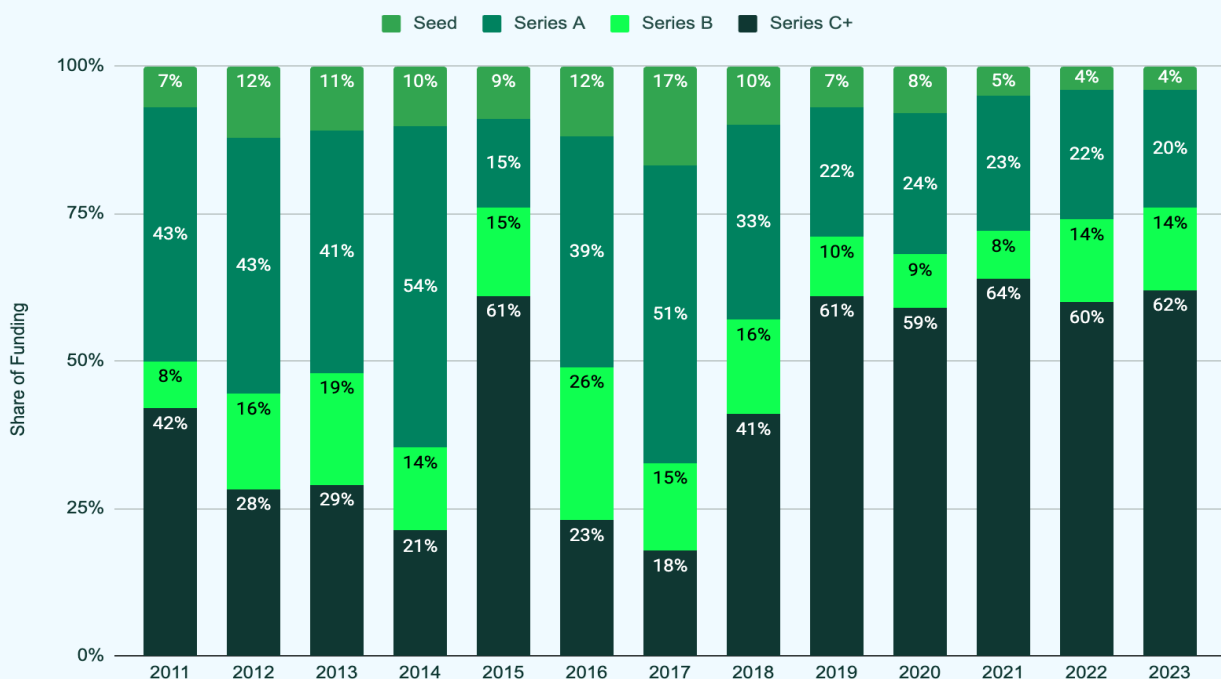


Figure 37, Share of funding by stage per year, 2011-2023

Lessons for Policymakers

The firms in this Index have not been created in a vacuum, and their experiences speak to the effective role of Government, in partnership with the private sector, in cultivating innovation, particularly where markets are dominated by entrenched incumbents, are nascent, or are completely new. But what lessons should policymakers take from this first Index?

Lesson One: Celebrate success

The ClimateTech Index demonstrates that ClimateTechs are a national asset. Across every sector of the economy, founders have successfully started and are scaling innovative businesses that create jobs and growth, whilst simultaneously increasing environmental sustainability, reducing GHG emissions and building a more resilient world.

The energy sector dominates the number of firms in the Index, the funds raised and jobs created, but it is not zero-sum - the success of the energy sector has not necessarily come at the expense of others, and its success should be emulated rather than eroded. As a region, London is the most valuable and populous ClimateTech hub, but this is to some degree inevitable given its size, available talent and role as a global hub for business - policymakers should focus on leveraging its strengths whilst also levelling up opportunity across the UK. Funding is also less concentrated in the capital when it comes to ClimateTech than in other sectors, and there are five “unicorn regions” with a combined value of over £1bn.

Climate innovation is happening everywhere, and policymakers should celebrate this.

Lesson Two: Consistent support is key

The reasons for the different rates of growth across the different sectors within ClimateTech are multiple, but the role of Government policy cannot be ignored. Both the energy and transport sectors have experienced relatively stable policy direction over the last two decades which has enabled VC investment to flood into startups. Meanwhile, the built environment has not had this same consistency. On the one hand, it is the role of innovators to navigate this uncertainty, prove value to the market, and compete. On the other hand, the Government can accelerate this market building process through good, thoughtful, and outcomes-based regulation, and support for ClimateTech innovation as a whole.

Ensuring that regulation is not a systemic blocker to scaling innovative technologies is foundational, and doesn't have to cost a lot. In our previous report we covered opportunities for regulatory refresh across the economy that would unlock the next stage of ClimateTech growth, from reforming autonomous agricultural robotics regulation, to ensuring building standards are open to new build materials, there is low hanging fruit out there.¹⁴

¹⁴ <https://startupcoalition.io/news/unlocking-climate-innovation/>

Lesson Three: The valley of death is real

Startup Coalition has heard many tales about the challenges facing scaling firms as they move from prototype to commercialisation, but the data in this Index validates this. There is a dearth of Series B capital across every sector and region of the UK and this “valley of death” is stunting growth.

The late-stage valley of death is complex, and experienced differently across sectors and regions. For instance, the capital required to scale the use of artificial intelligence in waste sorting facilities will be different to the capital required to produce a first-of-a-kind Small Modular Nuclear Reactor. Nonetheless, there are steps that policymakers can take to ease the transition to commercialisation across the economy.

Later this year Startup Coalition plans to outline specific support that this and future Governments can provide to bridge this gap, but one possible solution could look like emulating the Department of Energy’s Office of Clean Energy Demonstrations, which explicitly takes on FOAK risk and currently has \$25bn in energy assets under management. Secondly, enabling more patient capital to invest in startups is also crucial to filling funding gaps - the UK Government’s Mansion House Reforms to pensions is a crucial part of this. Finally, there is a role for the Government to play in supporting ClimateTechs to export more efficiently - we would like to see more opportunities for scaling firms to be part of trade missions, with ClimateTech viewed as part of trade strategy too.

We do a remarkable job in this country of cultivating invention and innovation at the early stages of technology readiness; it’s time we nailed the late stages to take the firms in the ClimateTech Index to the next level.

Annex A

Sector deep dive

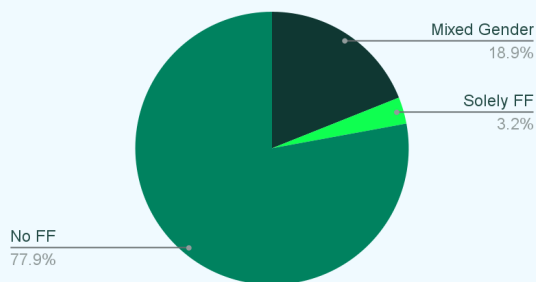
Built Environment

The built environment sector includes startups engaged in the production of novel and sustainable building materials, the building of sustainable homes, or the use of data to empower residents and building owners to use energy in their buildings more efficiently. This sector also includes startups who enable the production of renewable energy within the domestic built environment.

Number of Firms	92
Total Raised	£689m
2023 Value	£878m
Total Grant Funding Received	£51m
2023 Employees	2,509

One fifth of startups in the Index in the built environment were founded by a solely female or mixed gender team, and a quarter attended an accelerator. Startups in the built environment also represent 13% of those employed by firms in the Index outside of London.

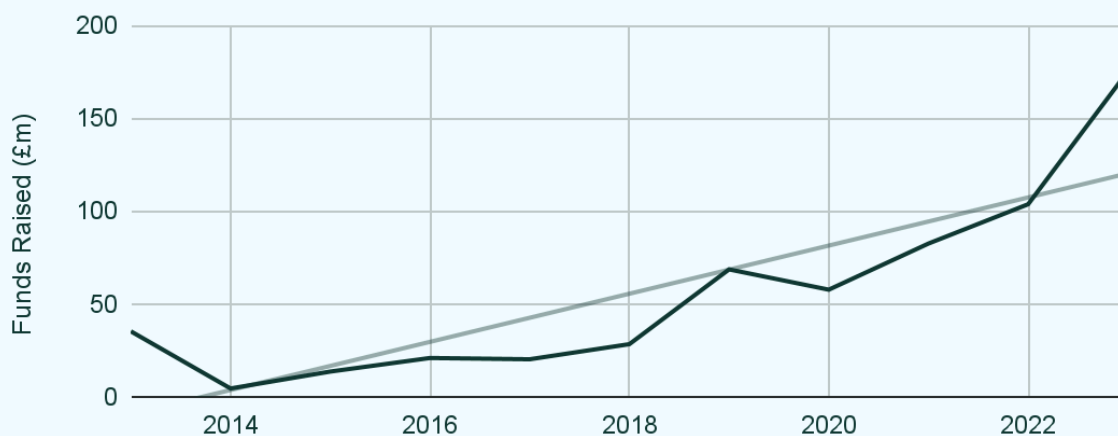
Share of Founders by Gender



Though the built environment saw the second highest exit rate (12% of firms), as outlined above, they receive less investment and grant funding than other sectors.

Despite the average funds secured by built environment startups increasing by 47% annually over the last ten years, the average funds raised per startup in the sector is 31% lower than the Index average. Built environment startups also receive 43% less grant funding than the Index average.

Built Environment Annual Raise - 10 Year Trend



Profile: AirEx



AirEx is a construction tech company with the mission to tackle fuel poverty and climate change. They develop and manufacture smart home solutions that help reduce heat demand in buildings - their first flagship product is the world's first smart air brick that uses IoT-enabled sensors to selectively regulate airflow in residential homes.

Founder Agnes Czako had previously been working in the energy efficiency industry for 12 years, having led the delivery of tens of thousands of fuel poverty assessments - which made her acutely aware of the pressing challenges that vulnerable householders face: having to choose between paying their fuel bills or buying food. This first hand experience inspired her to come up with a cost effective, easy to install retrofit solution - this is how AirEx was born.

It is clear that innovation is needed to ensure we are able to meet the UK's next zero targets - in an old-fashioned industry like the construction/retrofit sector, the need for innovation is more important than ever before. The UK regulatory landscape for retrofit needs to be more supportive of innovators, who often come from the SME / startup / scaleup world with limited resources. Supporting them is pivotal in our efforts to reduce carbon emission and alleviate the cost of living crisis.

Agnes said: "we need a new way of thinking about retrofit, new products, new tools - we need innovation. Regulators and those responsible for auditing compliance have been historically risk-averse, usually by design and legislation, but it can often lead to a culture clash when innovators and regulators meet. We have been delighted to work with Startup Coalition to bridge this gap and highlight the importance of our work in paving the way for a more sustainable future."

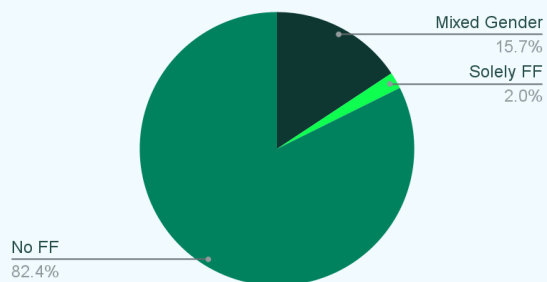
Business & Professional Services

The business and professional services sector includes firms involved in a diverse range of activities, from sustainability consultancy and circular economy service providers, to hiring for ClimateTech jobs. These are firms that support business and individuals to make climate conscious choices across the economy. This sector excludes firms enabling quantification of GHG or other environmental impacts, as this is captured in the GHG accounting, offset and verification sector.

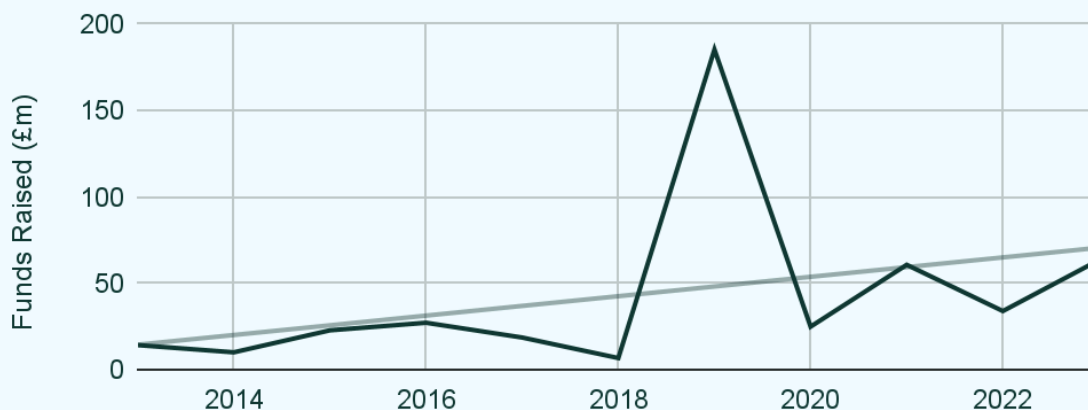
Number of Firms	51
Total Raised	£493m
2023 Value	£510m
Total Grant Funding Received	£12m
2023 Employees	1,092

The sector received relatively less funding compared to other sectors in the Index, with the average funds raised for business and professional services firms 10% lower than the Index average. Meanwhile the average grants received within the sector was 75% lower than the Index average. Interestingly, 41% of the funds raised by firms in this sector were debt based, constituting 16% of all debt funding secured by firms in the Index. This is despite firms developing hardware and engaged in manufacturing only making up 18% of firms within business and professional services, a tiny 1.5% of total firms engaged in these activities across the Index.

Share of Founders by Gender



Biz & Professional Services Annual Raise - 10 Year Trend



Annual funding for the sector has increased fourfold since 2010, with a notable mega-raise in 2019 by Ark Data Centres.

Profile: HIVED

HIVED HIVED is building the first modern and sustainable parcel delivery network for the mass market. With a 100% electric fleet, they deliver for some of the largest international retailers, cutting down on carbon emissions from the transport sector and offering customers a better delivery experience all round.

Living in London for the past several years, and as someone who orders online herself, founder Murvah Iqbal watched the ecommerce boom happen in real time before her eyes, yet it felt impossible to have a positive delivery experience - everything about the industry felt out of date in comparison to the likes of Uber, Deliveroo, etc. That's where the idea for HIVED started, and so during the pandemic Murvah and co-founder Mathias started delivering our first parcels on our bikes. It's been an exponential growth journey ever since.

As they operate an entirely electric fleet, HIVED is deeply invested in the UK's move towards better EV infrastructure. There is a lot of opportunity for collaboration between the public and private sectors to move the needle forward and make the UK a leading country on charging infrastructure and sustainable transport. They are also conscious of current government conversation on extended producer responsibility for packaging, which takes a closer look at packaging waste and reporting and has quite wide implications for the ecommerce world. They are building out our circular packaging product line for launch next year, and expect this kind of policy to support the drive towards circularity.

Murvah said, "Transport will be the biggest source of new greenhouse gas emissions until 2050 and parcel delivery is expected to double within the next ten years. We need to redesign our networks and infrastructure to respond to climate change and evolving consumer expectations, which is what HIVED is all about: creating a parcel delivery that people love and rely on whilst doing right by the planet."

Consumer Goods

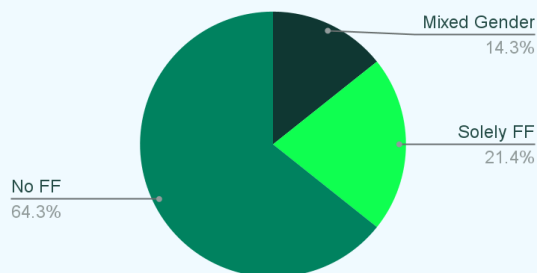
The consumer goods sector includes startups who make, distribute, sell, or contribute to the decarbonisation of sustainable consumer goods.

35% of firms in consumer goods have a mixed founder team and one in five are solely female founded, the highest proportion in a sector by a long way, however the sector is the third lowest funded of all sectors. Firms within the consumer goods sector have an average raise of £1.8m, half the average raised by a firm in the Index.

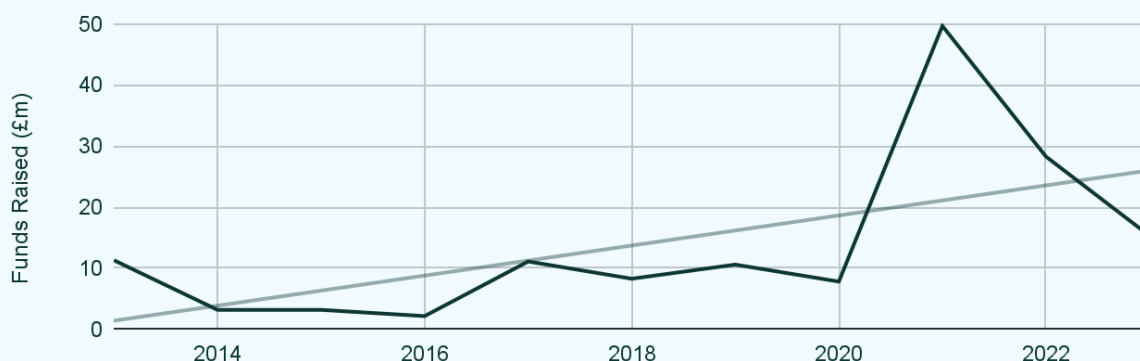
Funds raised by firms in the sector have increased in recent years relative to ten years ago, but annual fundraising has decreased over the most recent two years in the dataset after a seaweed-based textiles startup Pangaia's big raise in 2021.

Number of Firms	28
Total Raised	£162m
2023 Value	£455m
Total Grant Funding Received	£9m
2023 Employees	575

Share of Founders by Gender



Consumer Goods Annual Raise - 10 Year Trend



Energy

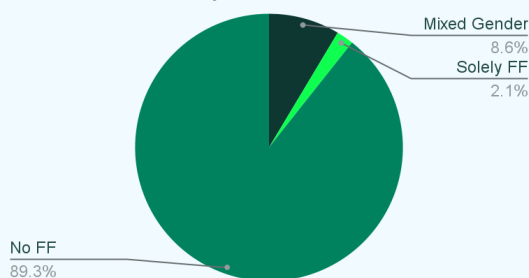
The energy sector includes startups involved in the supply chain, distribution or direct generation of low-GHG energy or the required grid network to do this optimally. This sector also includes firms who use data to increase the efficiency of energy usage or distribution, outside of the domestic built environment.

The energy sector is the most populous, highest funded, most valuable, and employs the most people of any sector in the Index. On average, a firm in the energy sector has a median value that is 12% higher than the Index average, and has received 25% more in grant funding than the average firm in the Index. The sector also employs 28% more people on average than the average firm in the Index.

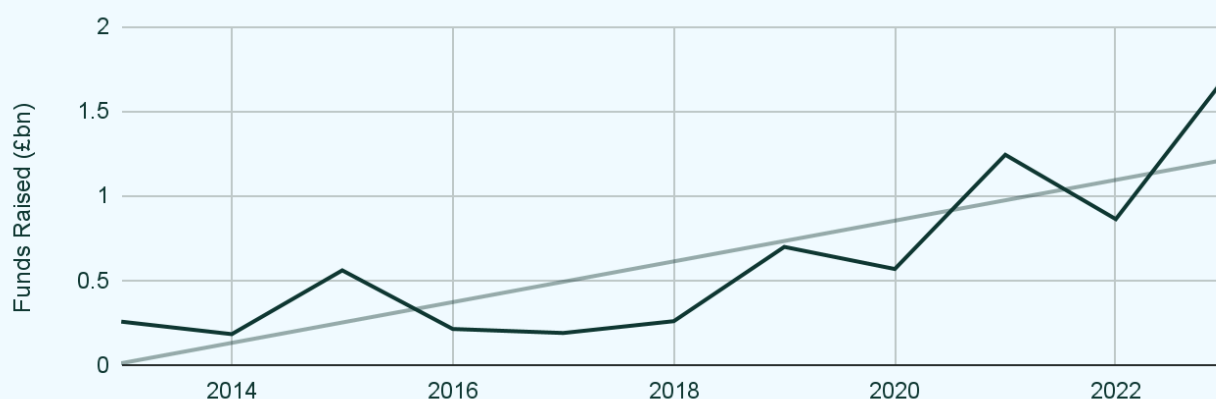
There are low rates of female founders in the energy sector, with only 11% of firms having a mixed gender founding team, and only 2% of firms were founded by a solely female team. 46% of firms in the sector are developing hardware, and 72% are engaged in some form of hardware or manufacturing (including energy generation and fuel production), which aligns with 62% of all debt financing secured by firms in the Index going into the energy sector.

Number of Firms	338
Total Raised	£7.4bn
2023 Value	£13.7bn
Total Grant Funding Received	£405m
2023 Employees	8,947

Share of Founders by Gender



Energy Annual Raise - 10 Year Trend



As well as being consistently the best funded sector within the Index, the overarching trend of increasing fund raised has continued since 2016. While annual funds raised by firms in the sector increased by an average of 48% annually over the last ten years, funding has increased significantly between 2016 and 2023, peaking at over £1.7bn in the most recent year in the sample.

Profile: Enoda



Enoda is delivering a platform of advanced technologies which increase the capacity of the distribution grid. It does this by increasing the number of low carbon technologies and distributed generation that are able to connect without the need for major grid upgrades. Our technology also allows the grid itself to be used as a source of system stability, vital in an increasingly unpredictable, intermittent energy system.

Enoda was founded to deliver sustainable prosperity for everyone by resolving the energy trilemma and enabling secure, affordable, clean energy. Enoda is commercialising a technology that has had a decade of development, utilising the fundamental physics of the grid to provide a stable system that allows for total decarbonisation of electricity.

Enoda's message to government and regulators is that policy and regulation should be truly technology agnostic. This will allow the innovations that will fundamentally deliver the energy transition, to participate in the markets and develop commercially. This means that regulation should be defined functionally, with an emphasis on the role of actors in the system and the benefits they deliver to the grid.

Profile: Bboxx



Bboxx is a transformative startup addressing energy poverty in Africa through its data-driven super platform. They provide sustainable, affordable solutions for clean energy, clean cooking, smartphones, e-mobility, and financial products. By connecting millions to these essential services, they aim to unlock individual and collective potential, driving sustainable economic activity and fostering inclusive growth.

The decision to start Bboxx was inspired by CEO Mansoor Hamayun's shock at a 2008 advertisement stating that 1.6 billion people lacked electricity. Witnessing the persistent global energy gap and the disparity in electrification rates despite progress, Bboxx was founded in 2010. Their mission is to address this significant challenge driven by the vision to transform lives and unlock potential through accessible and reliable energy.

Bboxx's policy priorities for the UK Government include advocating for increased investment in developing countries. Recognizing the critical role of capital flow in bridging the gap towards achieving NET 0, we emphasise the need for policies that facilitate and encourage such investments. By unlocking capital for projects like Bboxx, we aim to accelerate progress in providing sustainable energy solutions, contributing to global efforts for a more environmentally conscious future.

Bboxx CCO, Amaury Fastenakels said "the heart of Bboxx beats with a mission – transforming lives in Africa by addressing energy poverty through our data-driven super platform. Inspired by the global energy gap, we're not just providing solutions; we're unlocking potential, driving sustainable growth, and advocating for policy changes to ensure a brighter, greener future for all."

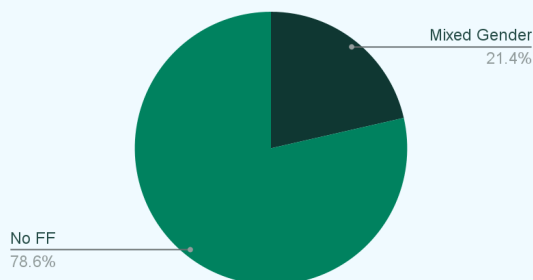
Financial Services

This sector includes Fintechs and other startups engaged in the provision of direct-to-consumer financial services engaged with the financing of the low-carbon economy, or enabling sustainable consumer choices.

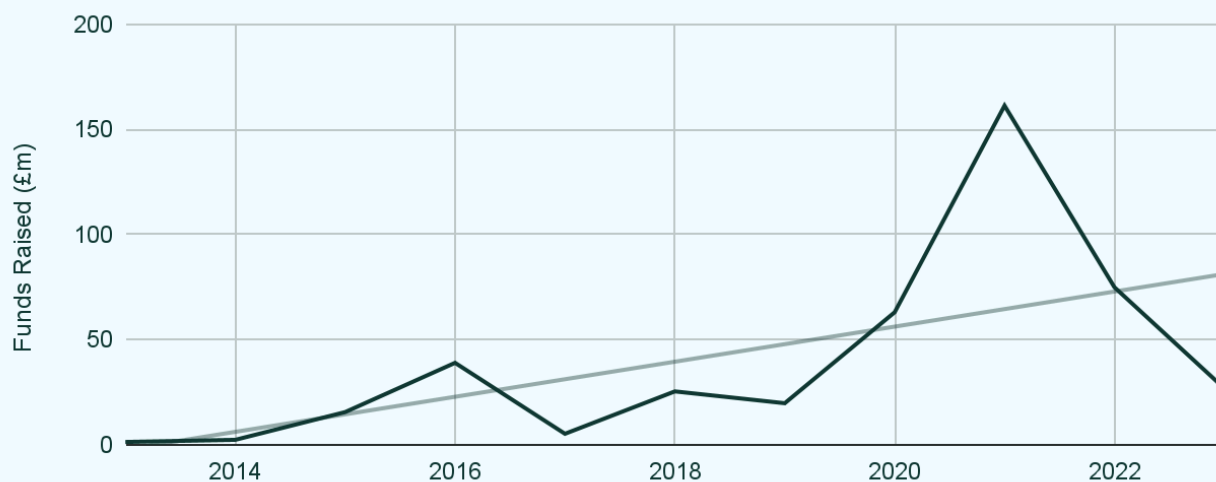
The sector is dominated by Blackpool-based Fintech Tandem, which constituted over 80% of the total funds raised in the sector and accounted for the big year in 2021 when it raised £150m. The financial service sector received the lowest grants received in any sector, with the average startup within the sector receiving only £117k.

Number of Firms	14
Total Raised	£434m
2023 Value	£490m
Total Grant Funding Received	£2m
2023 Employees	466

Share of Founders by Gender



Financial Services Annual Raise - 10 Year Trend



Owing to the relatively few firms in the sector, the ten year trend reflected the fortunes of these firms, and outside of Tandem’s 2021 raise, funding has remained under £75m annually in every year of the sample.

Food & Agtech

The food and agtech sector consists of startups that produce sustainable food directly, or improve the sustainability of food production. This includes both novel technologies and production methods, and startups providing technology for adoption by conventional farmers and agricultural producers.

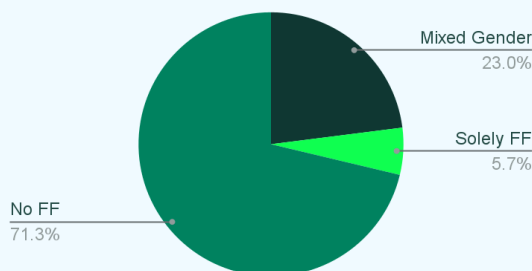
On average, the funds raised by food and agtech firms were 21% more than funds raised by the average firm, but the value of an average food and agtech firm is 23% lower than the Index average, and grant funding secured is 22% lower than the average firm. This is remarkable because the sector has a very high proportion of firms engaged in hardware or manufacturing (including agricultural production).

Across the Index, hardware and manufacturing firms received 86% of the total grant funding for firms in the Index, but hardware and manufacturing firms within the food and agtech sector only secured 4% of grants funding that went to firms of this type.

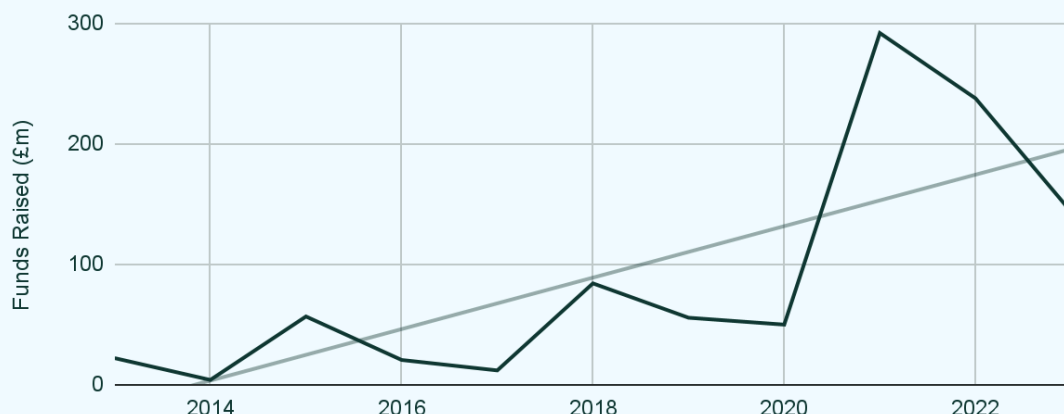
29% of firms in the sector have at least one female founder and 32% attended an accelerator of some sort.

Number of Firms	87
Total Raised	£990m
2023 Value	£1.7bn
Total Grant Funding Received	£65m
2023 Employees	1,545

Share of Founders by Gender



Food & Agtech Annual Raise - 10 Year Trend



Annual fundraising has increased in the food and agtech sector over the last ten years, peaking at just under £300m in 2021 after big raises by Intelligent Growth Solutions, Enough, and Olio. Funding has nearly halved in the two years since this peak, but was still the third best funded sector after energy and transport in 2023.

Profile: Hoxton Farms



Hoxton Farms grows real animal fat - without the animals - to make meat alternatives that look, cook and taste like the real thing.

Co-founders Ed Steele and Max Jamilly have known each other since nursery school. Ed's background is in mathematical modelling and AI, whereas Max spent his career in synthetic biology. They wanted to use this unique blend of skills to make a difference in the food space. They chose to focus on food not only because we are both foodies and avid home cooks, but also because of its huge impact on every single individual's day-to-day life.

They recognised that the traditional meat industry is broken and has an extraordinarily high environmental impact. Demand for meat alternatives has soared over the last ten years, but they're just not good enough. In fact, 90% of plant-based consumers also eat meat, but poor taste is the primary factor preventing repeat purchases. Consumers need mouthwatering options and the secret to developing them is fat – which gives meat its flavour. That's where they saw the opportunity to change the meat industry, growing cultivated fat combining our synthetic biology and mathematical optimisation skills to give us a unique advantage in optimising every step of the process.

Hoxton Farms has three priorities for the Government:

- Fund the Food Standards Agency so they can develop clearer, streamlined and more collaborative regulatory processes for cell-cultivated novel foods.
- Preserve and increase R&D tax credits that foster innovative research so the UK can become a world leader in climate and food tech.
- Communicate with the public and policymakers to inform them about the importance of meat alternatives in ensuring future food security and reducing climate impact.

Ed said, “at Hoxton Farms we make it easy for consumers to make sustainable food choices that reduce their climate impact. We do this by growing cultivated fat – the missing ingredient that makes meat alternatives taste like the real thing.”

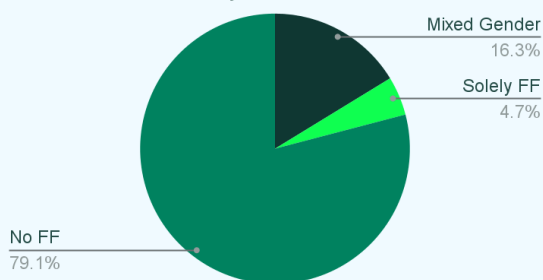
GHG Accounting, Offset & Verification

This is a specialist sector that enables the quantification of environmental impacts including GHGs. This includes startups providing direct to consumer products, those enabling the accurate quantification of impacts through technology, and those engaged in providing the infrastructure for the functioning of the voluntary carbon market, including purchasing of carbon credits.

Number of Firms	43
Total Raised	£364m
2023 Value	£673m
Total Grant Funding Received	£6m
2023 Employees	841

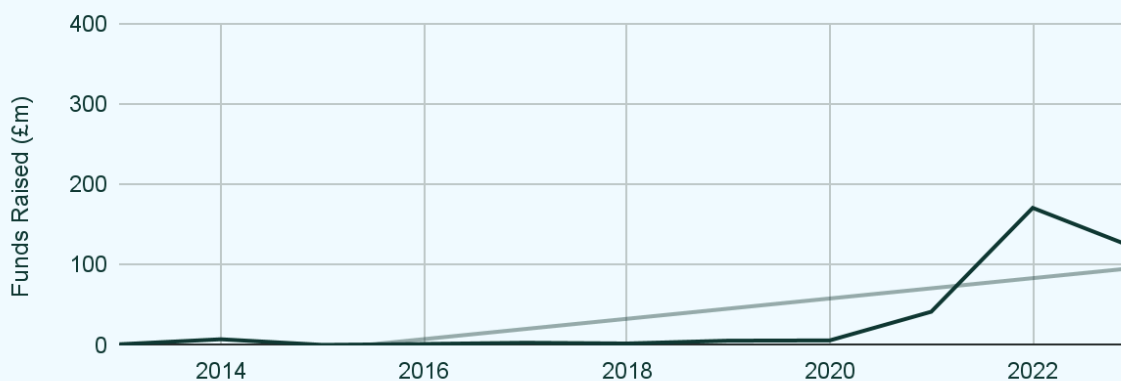
One in five firms in this sector included a mixed gender founding team and all of the firms in the sector were engaged in producing either software, services, or both. Firms in the sector received one of the lowest average grant funding levels at £144k, 85% lower than the Index average.

Share of Founders by Gender



This is one of the most nascent sectors in the Index, with 92% of the funds raised by firms in the sector coming between 2021 and 2023.

GHG Accounting Annual Raise - 10 Year Trend



Profile: Abatable



Abatable is an intelligence and procurement platform for the voluntary carbon market (VCM) enabling organisations to harness the power of the VCM to deliver impact for climate, nature and people.

In early 2021, Valerio Magliulo and Maria Eugenia Filmanovic joined forces to address a key challenge in the voluntary carbon market. Innovative nature-based and engineered solutions existed as a key tool to mitigate climate change, but they were not reaching scale. Companies and investors were struggling to access high-quality projects, and time was running out in the decade of action. Valerio and Maria decided to create a business that would address the challenges faced by market participants in order to unlock greater flows of climate finance. Several months later, Abatable was founded. The company's

mission was to empower all organisations to build a thriving future for climate, nature and people. Today, the Abatable platform offers market intelligence, carbon sourcing, quality analysis, and commercial expertise to organisations across the spectrum of the voluntary carbon market.

Abatable's key policy priority is for the UK government to publicly acknowledge and support the role of high-integrity carbon markets in reaching net zero. More specifically, we would like to see the government endorse the VCMI and ICVCM, define net zero for companies and the role of carbon credits, and develop a carbon market strategy which outlines the roadmap of how the UK intends to use Article 6 and carbon credits in general.

Valerio said, "ClimateTech is growing rapidly within the voluntary carbon market, providing the data infrastructure and access that is needed for the market to scale. At Abatable, we've built a platform that pulls together the expertise of our team and partners, and uses innovative tech to target and address key challenges. We're now seeing the platform unlock greater flows of finance and empower bold action from participants across the market."

Profile: Sylvera



Sylvera is a data provider on a mission to incentivize investment into real climate action. We provide data, insights, and ratings to help organisations invest in carbon credits and ensure those investments are driving net zero progress.

Co-Founder Allistair previously founded a wind energy company and worked in venture capital. From these experiences, he spent a lot of time researching and talking to climate-forward businesses and saw all of these net zero commitments made and a clear consensus emerging that reducing emissions matters. However, there were no real tools to track and measure the impact of climate actions and investments. Allistair then met his co-founder Sam Gill, a corporate lawyer working on structuring carbon credit deals, which proved tricky due to a lack of transparency in the space. Together, they created Sylvera to help the world's largest businesses and governments confidently invest in, benchmark, deliver, and report real climate impact, because we're simply running out of time.

Sylvera wants to see a world where every carbon credit retired has a rating attached to it, meaning the investor did their part to ensure they invested in real climate impact. We're far off from that end state but there are plenty of opportunities for governments to pave the way and implement regulation that promotes an efficient carbon market that drives critical funding to the areas in need of it most for the net zero transition. The UK specifically has a huge opportunity to lead the way and set the global agenda for policy in this space. Sylvera believes the UK government should:

- Set clear guidelines for what constitutes a high quality carbon credit, building on industry initiatives, such as the Integrity Council for the Voluntary Carbon Markets, and ensure that additional quality safeguards, such as the use of carbon ratings, are required.
- Encourage businesses to invest in high quality carbon credits, and provide legal safeguards for businesses that do so in good faith to help avoid spurious greenwashing allegations.
- Allow the use of high quality carbon credits as part of compliance with the UK's Emissions Trading System.
- Commit to increasing the UK's international climate ambition, including through the purchasing of high-quality carbon credits under Article 6 of the Paris Agreement.

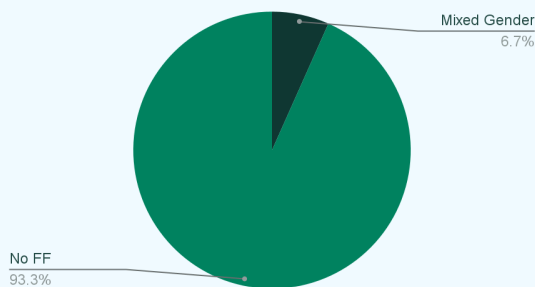
GHG Removal

These startups are engaged in the removal of GHGs from the atmosphere through technology. This includes carbon capture and storage, all forms of engineered removal including, but not limited to, enhanced weathering, biochar, and direct air capture. This sector excludes firms solely engaged in the removal of GHGs from the atmosphere through nature-based solutions.

Number of Firms	15
Total Raised	£351m
2023 Value	£881m
Total Grant Funding Received	£29m
2023 Employees	421

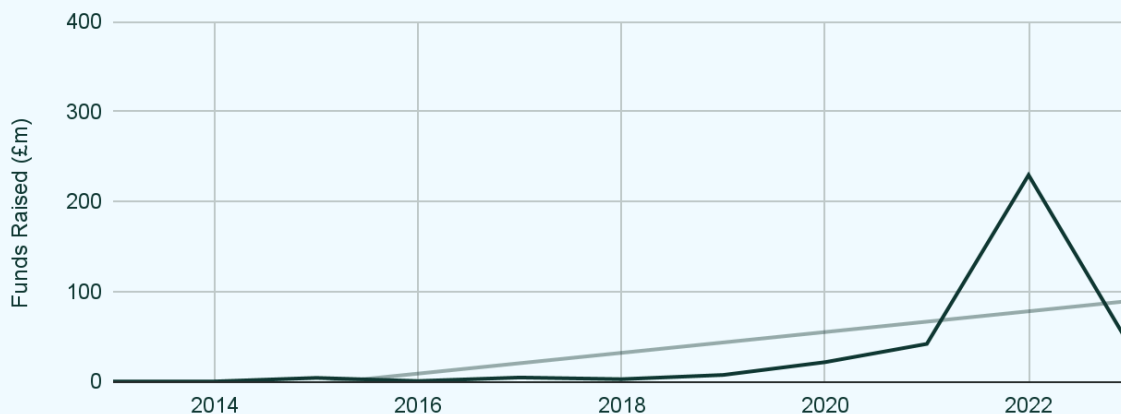
Whilst this is a very nascent sector within the Index, with 95% of the funds raised by firms in the sector coming between 2020 and 2023, it has the highest average raise of any sector (£9.3m), the highest average value per firm of any sector (£19.6m), and the highest average grants raised of any sector (£2m). Indeed, firms in the GHG removal sector received double the average grant funding than the Index average as a whole.

Share of Founders by Gender




All of the firms in this sector are engaged in hardware or manufacturing, which includes carbon sequestration activities, and all of the GHG removal firms in the Index were active at the end of 2023.

GHG Removal Annual Raise - 10 Year Trend



Profile: Levidian

 **LEVIDIAN**[®] Levidian decarbonises hard-to-abate industries. This is done through proprietary technology which captures carbon from gas before combustion. The carbon is captured in the form of graphene - a super material that decarbonises products from batteries to concrete. The remaining gas is hydrogen which is a clean power source.

Graphene has the potential to accelerate the decarbonisation of hard-to-abate industries, but since its discovery in 2004, its market has been fraught with issues around consistency and scale. Levidian emerged from ground-breaking research at the University of Cambridge with a mission to change this - making graphene in a highly scalable, highly consistent and carbon negative way to drive rapid adoption and decarbonisation.

Levidian wants the government to redouble its efforts on R&D as a priority. The UK is still behind the US, Japan and Germany in this critical area, which has a major impact on the development and scaling of homegrown climate technologies. To address this, they want to see the government go further on the following:

- A new R&D strategy that underpins partnerships between firms, higher education institutions, and Government and takes the UK's spending on this critical area to the G7 average by 2030.
- Annual national R&D conference bringing together capital markets, higher education institutions, and businesses.
- Commitment to permanent expensing from all parties – enabling increased private sector research spending.
- A holistic advanced materials industrial strategy - to give industry a firm steer and open the pathway to regulatory change supporting innovative material testing and adoption. Critical to the piece is a government prepared to act as a customer, to drive those early conversions from concept to reality, and encourage that flow of finance that is so critical if we're to take advantage of the opportunity on offer.

Levidian CEO John Hartley said: "Britain is a hub of climate tech innovation and we're delighted to be recognised as one of the leaders in this field. Climate technology is the next wave of industrial growth and job creation in the UK, but to fully capitalise on this opportunity, the government must implement policies that support the scale-up and commercialisation of climate tech and invest more in R&D. We called on the Chancellor to redouble the UK's efforts on R&D in our response to the Spring Budget, and we look forward to working with other climate tech leaders and the Start-Up Coalition to help bring about these critical changes."

Industrial Decarbonisation

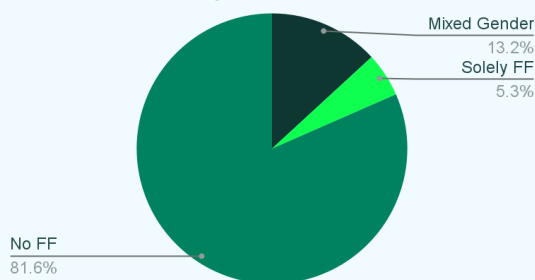
Industrial decarbonisation startups use hardware, software, services, or a combination of all three to increase the sustainability of the processes underpinning the production of raw materials in the economy, including concrete, steel, mining, and chemicals.

This sector has a disproportionately high number of university spinouts, at nearly a third of all firms within the sector. Firms in the sector have also seen a significant increase in grant funding since the introduction of the Net Zero Innovation Portfolio, with the value of grants secured doubling between 2020 and 2023.

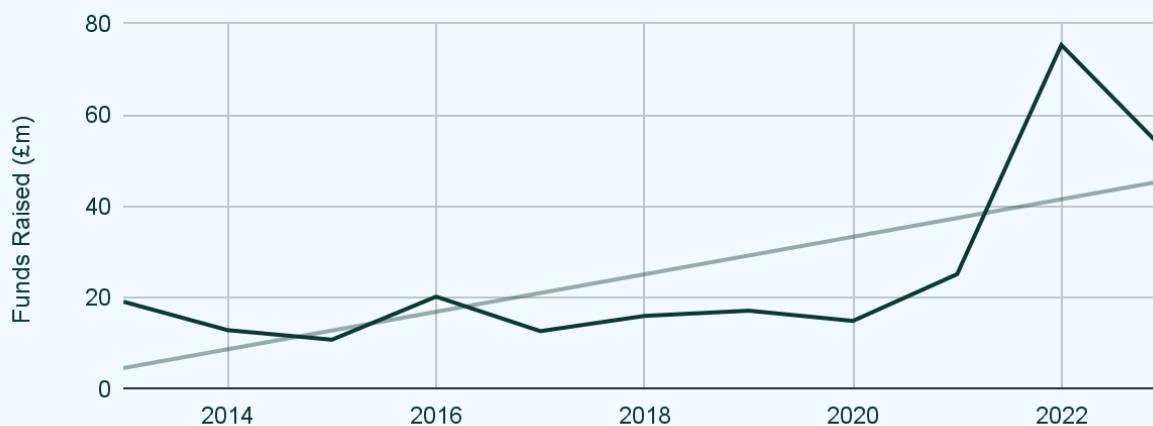
Whilst the sector has seen a 250% increase in annual funds raised between 2020 and 2023, firms within the Industrial Decarbonisation sector are disproportionately likely to fail: nearly one in four firms in the sector have failed, double the average across the Index.

Number of Firms	38
Total Raised	£326m
2023 Value	£656m
Total Grant Funding Received	£60m
2023 Employees	416

Share of Founders by Gender



Industrial Decarbonisation Annual Raise - 10 Year Trend



Profile: Carbon Re

Carbon^{Re} Carbon Re is an AI for materials company on a mission to reduce carbon emissions by gigatonnes every year through the use of AI technology. A joint spin-out of Cambridge University and UCL, it is focusing on decarbonizing cement and other foundational materials (such as steel and glass) which are responsible for more than 20% of global emissions.

Co-founders, Aidan, Buffy, Dan and Sherif founded the company to have a direct impact on carbon emissions on a gigatonne scale and make meaningful change to the climate emergency. They identified

cement as one of the world's largest emitters, responsible for up to 8% of global greenhouse gas emissions, and one of the hardest-to-abate industries as a great place to start. By addressing this challenge with AI, Carbon Re's technical solution embodies two of the necessary characteristics needed to accelerate industrial decarbonization; speed and scalability.

Carbon Re's first product, Delta Zero Cement uses machine learning to optimise fuel use and quality in cement production. With continued development, Delta Zero Cement has the capability to reduce fuel-derived carbon emissions from cement production by up to 10%. The company is developing Delta Zero as a family of AI products that will enable rapid development and deployment of new low-carbon industrial processes, designs and materials.

Carbon Re's policy priority for the Government is to update the definitions of the Best Available Techniques methodology used by industrial producers to reduce pollution. It should include software solutions for process optimization. The government needs to encourage investment in proven technology above more speculative ones. For example, CCUS, tree planting or blockchain solutions have a small place in the overall mix of solutions, but we have to focus on removing carbon at the point it is produced, and now. The focus must be on energy and process. The industrial measures outlined in the Net Zero Strategy concentrate on long-term, more capital-intensive solutions like CCUS and shifting to alternative fuels - incentivising solutions with real, immediate results should be considered. The UK government should further incentivise industrial processes to decarbonise through their procurement programmes.

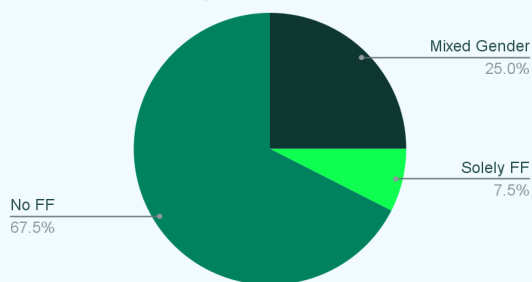
Materials

Startups in the materials sector directly produce, or are involved in the supply chain of, sustainable materials outside of raw materials captured in the Industrial Decarbonisation sector, including plastics. This includes, but is not limited to, the use of novel ingredients as sustainable alternatives, including plant-based materials, and those using novel techniques to manufacture conventional materials more sustainably.

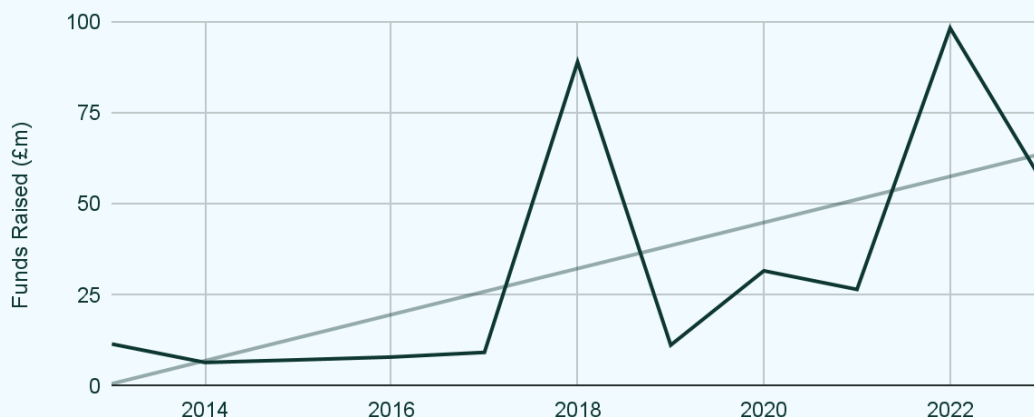
Firms in this sector are disproportionately university spinouts (30%), have attended an accelerator (40%) and were founded by a mixed-gender founding team (33%).

Number of Firms	40
Total Raised	£388m
2023 Value	£714m
Total Grant Funding Received	£37m
2023 Employees	520

Share of Founders by Gender



Materials Annual Raise - 10 Year Trend



Whilst funding in the sector has increased over the last ten years, annual funding is very erratic, and was boosted by two boom years in 2018, when GenPhoenix raised £70m, and in 2022, when 17 firms in the sector raised over £1m.

Nature-based Solutions

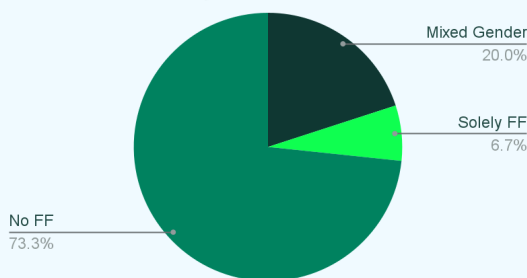
Nature-based solutions startups are primarily engaged in increasing and conserving biodiversity and the natural world, directly or indirectly through software and building infrastructure for nature financing.

Over a quarter of firms in the sector feature at least one female founder on the founding team, double the Index average.

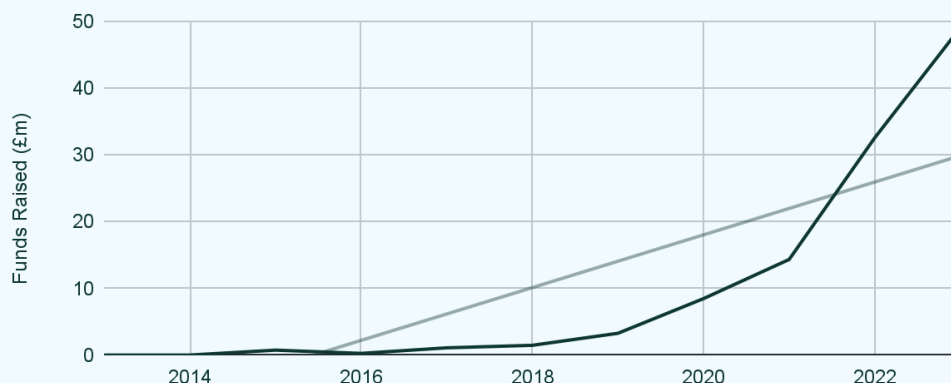
One of the most nascent sectors in the Index, nature-based solutions startups have seen their annual funds raised double every year for the last five years, and all Index firms in the sector were active at the end of 2023.

Number of Firms	15
Total Raised	£111m
2023 Value	£262m
Total Grant Funding Received	£6m
2023 Employees	370

Share of Founders by Gender



Nature Based Solutions Annual Raise - 10 Year Trend



Profile: Treeconomy



Treeconomy is a Carbon Removal and nature restoration business. They build and deploy very high resolution remote sensing & AI programmes to better quantify and track carbon removed and stored in restoring ecosystems, like afforestation, rewilding landscapes & mangrove sites. They solve the problem of inaccurate and uncertain carbon calculations, allowing buyers to transact more confidently & project developers to sell at higher prices.

Realising that scaling carbon removal is a capital allocation problem. There is enough money but there are a lot of willing investors sitting on the sidelines trying to finance carbon removal (especially nature-based) who can't find the right structure to invest into. Treeconomy could see a way to solve

multiple problems by bringing accurate data & information to buyers, sellers & investors. It looks like, and still is, a no-brainer.

Domestically, Treeconomy believes the UK Government should clear up the ability to stack Biodiversity Net Gain & carbon payments on the same land. There is uncertainty that is holding back action. Internationally, engagement and leadership on Article 6 of the Paris Agreement and related policies regarding trading and claims for carbon credits across geographic borders. It is a solvable problem that needs attention, and the UK as a major financial centre would benefit from clear and sensible policies.

Packaging

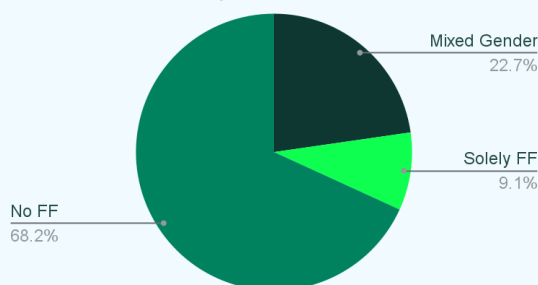
Packaging startups design and manufacture materials primarily used for packaging of goods. This includes those engaged in reducing the environmental impacts of conventional packaging, and those engaged in manufacturing, designing or engineering packaging using sustainable novel materials.

The average raise for an Index startup in the packaging sector is 25% higher than the Index average, at over £4.5m, although this does not correspond to a higher average valuation than the average Index firm.

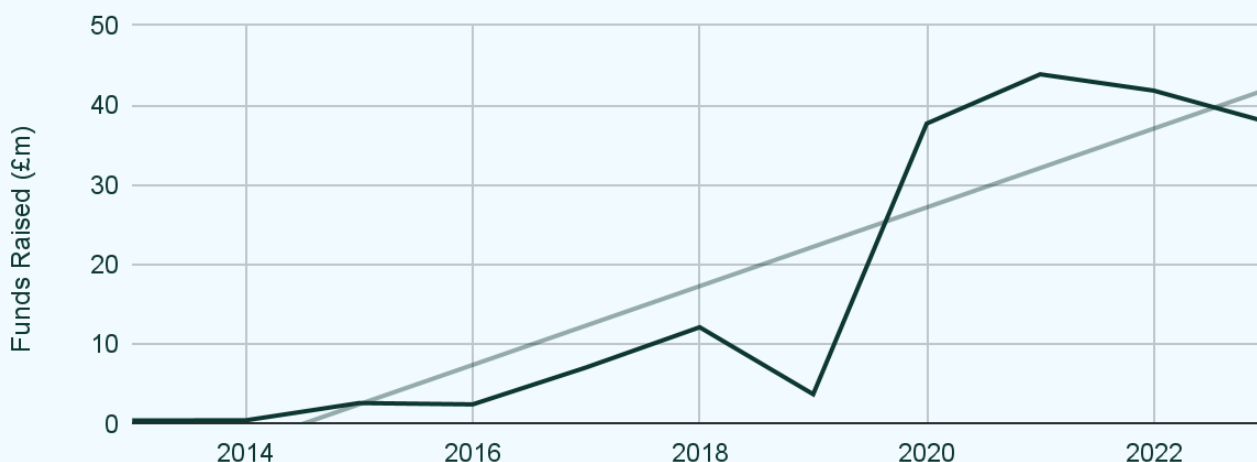
Nearly a third (32%) of startups in the packaging sector had at least one female founder.

Number of Firms	22
Total Raised	£200m
2023 Value	£467m
Total Grant Funding Received	£15m
2023 Employees	325

Share of Founders by Gender



Packaging Annual Raise - 10 Year Trend



From a standing start in 2013, funding in the packaging sector gradually increased until a huge rise in 2020. Funding has remained around £40m per year in the three years since.

Profile: Notpla



Notpla pioneers the use of natural materials, such as seaweed and plants, to create sustainable packaging solutions that replace plastic. Having demonstrated the effectiveness of their innovative solutions at scale, Notpla was awarded the 2022 Earthshot Prize in the 'Build a Waste-Free World' category.

Notpla was founded with the aim of developing an innovative solution to address the global plastic crisis. Every year, over 141 million tonnes of plastic packaging is produced, and unfortunately, one-third of it ends up leaking from collection systems and polluting the environment. Drawing inspiration from nature's elegant designs, they strive to create packaging that, just like a banana peel, can seamlessly integrate into the natural cycle of decomposition.

Notpla has two policy priorities for the UK government that can help reduce plastic waste and promote sustainable solutions. First, they support legislation that bans or taxes single-use plastics and plastic packaging, which are major sources of marine litter and greenhouse gas emissions. Second, they support incentives that encourage businesses to adopt sustainable and plastic-free alternatives, such as exemptions or credits for using plastic-free substitutes in existing policies such as Extended Producer Responsibility (EPR) Programs.

Co-Founder Pierre Paslier said, "At Notpla, our mission is to make packaging disappear. We believe policy and legislation have an important role to play in accelerating the transition towards eliminating plastic waste. Regulations that prevent plastic pollution and incentivise the adoption of sustainable materials, will be key to achieving this goal. We want to lead this revolution and show that, by harnessing nature, we can create packaging solutions that leave no trace behind."

Transport

The transport sector includes firms engaged in reducing the environmental impact of the mobility of goods and people through reengineering the conventional transport sector, or the creation of novel ways of transport. This includes firms manufacturing hardware and vehicles, as well as those using software or providing services.

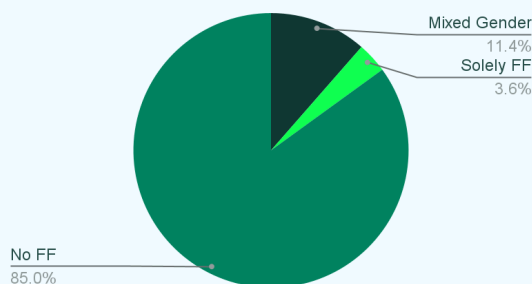
Transport was the second best funded and valuable sector in the Index after energy, with 18% of all funds raised and 24% of all grant funding secured in the Index going into the sector.

Half of all transport sector firms were engaged in producing hardware, making up nearly 21% of all hardware firms in the Index. Despite this, transport firms only accounted for around 6% of total debt funding.

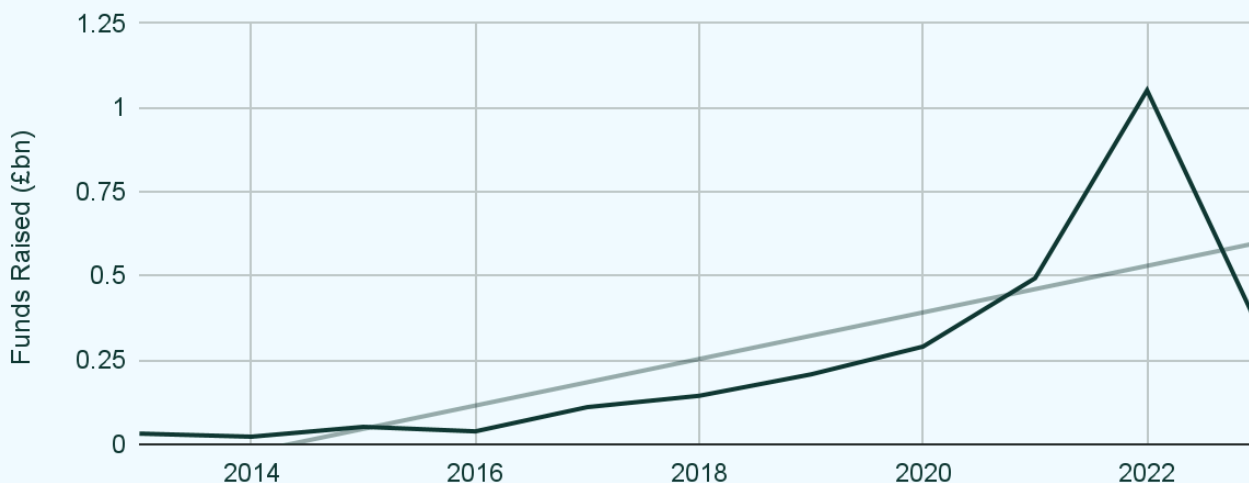
The transport sector saw 22% of all exits, and only 7% of failure.

Number of Firms	140
Total Raised	£2.9bn
2023 Value	£4.1bn
Total Grant Funding Received	£228m
2023 Employees	3,920

Share of Founders by Gender



Transport Annual Raise - 10 Year Trend



Over the last decade, funding for transport firms has increased significantly, with a boom year in 2022 after Volta Trucks and Gridserve both raised over £200m. Funding has returned to below £400m in 2023, but this is still a ten-fold increase on 2013 levels.

Profile: Magway

MAGWAY Magway combines the benefits of both industrial conveyors and trucks, extending automation to move bulk materials between points sustainably and efficiently. Magway's patented solution uses less than 80% of the energy to move the same mass of goods initially within construction, mining and port environments.

Magway was founded out of a realisation that the 'hard to decarbonise' and often demonised industries of mining and construction are central to achieving the green transition that is vital to the future of our planet. We need new technology driven solutions to decarbonise, electrify and automate their operations.

The UK has a strong tradition of creating new technologies but often loses out when it comes to benefitting from their commercialisation. In order to successfully achieve a vibrant knowledge based economy, Magway believes that the Government needs to double down on initiatives that support funding, startups and job creation including; R&D tax credits, EIS/SEIS, Entrepreneur Relief, Grants, and SME Government procurement framework.

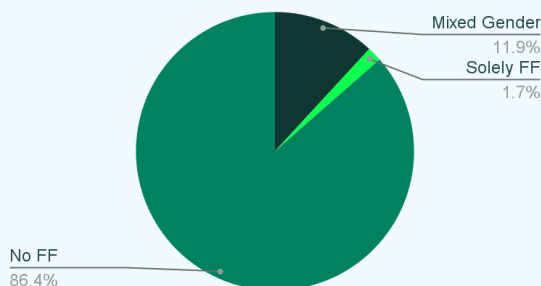
Waste

Startups in the waste sector are engaged in the decarbonisation of waste processes and products, through redesigning or reengineering conventional waste, recycling and disposal processes, the utilisation of waste products, or the avoidance of waste in the first place.

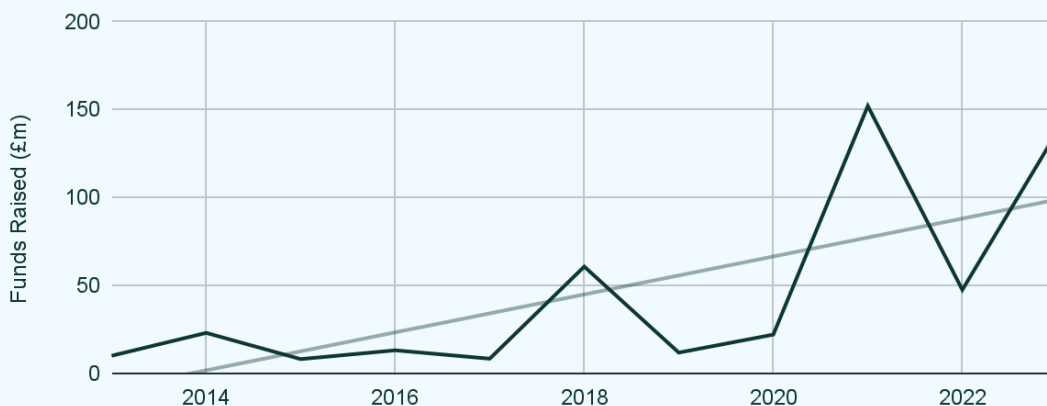
The average funds raised for startups in the waste sector was 11% higher than the Index average at £4m and the average valuation of waste sector startups varied even more, at 26% higher than the average Index firm at £13.2m. Waste sector startups in the Index also employed the most average employees per firm of any sector at 44, 45% higher than the Index average.

Number of Firms	59
Total Raised	£561m
2023 Value	£763m
Total Grant Funding Received	£30m
2023 Employees	2,130

Share of Founders by Gender



Waste Annual Raise - 10 Year Trend



Funding for the waste sector was largely flat until 2018 and has since risen off the back of big fundraising years in 2018, 2021 and 2023, and in particular the fundraising rounds of Recycling Lives, Plastic Energy and Safi.

Profile: Greyparrot



Greyparrot provides an AI waste analytics platform known as Greyparrot Analyzer. They install Analyzer Units above conveyor belts in recycling facilities, which use cameras to capture images of our customers' waste objects. Recyclers have historically been able to track just 1% of their material, and computer vision unlocks data on the remaining 99%. In 2023 alone we tracked 800+ waste objects a second through 100 Analyzer units deployed across 14 countries. This is bridging the waste data gap and embedding waste intelligence as

the driving force for innovation in the waste ecosystem. That data isn't restricted to their platform. They aim to become the 'brain' powering the entire waste ecosystem, and have taken a 'hardware and software-agnostic' approach.

Greyparrot's founders wanted to use their two decades of AI computer vision experience to make a positive impact on the planet. They quickly found that the waste and recycling sector was heavily under digitised and needed a way to track materials in greater detail and at scale. This would help to optimise processes and avoid sending valuable resources to landfills and incineration. Greyparrot is on a mission to significantly improve recycling rates and decrease the environmental impact of waste using data and automation.

Above all, Greyparrot wants clarity and action from the Government. More specifically, concrete progress on major policies like extended producer responsibility (EPR), waste's inclusion in the Emissions Trading Scheme (ETS) and digital waste tracking. Enforcing each (and the majority of the government's Resources and Waste Strategy) will require a data collection effort that could cost the sector tens of millions without the help of intelligent automation.

Mikela Druckman, CEO and Co-Founder of Greyparrot, said "waste intelligence serves as the catalyst for innovation in the waste ecosystem. Greyparrot unlocks a level of insight into our waste that has never been experienced before, and it's fuelling our ability to recover and reuse more material."

Water

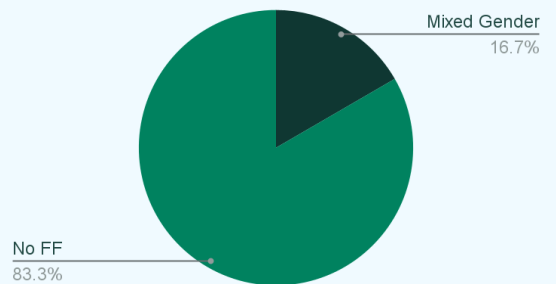
Water sector startups are engaged in the use of services, software and hardware to increase the efficiency and conservation of freshwater resources, the processing and cleaning of wastewater.

Startups in this sector received 16% below the Index average investment (£3m), had a below average valuation (£6.5m) and received 61% less than the average Index firm in grant funding (£379k). On average, water sector startups also employed the fewest employees (11).

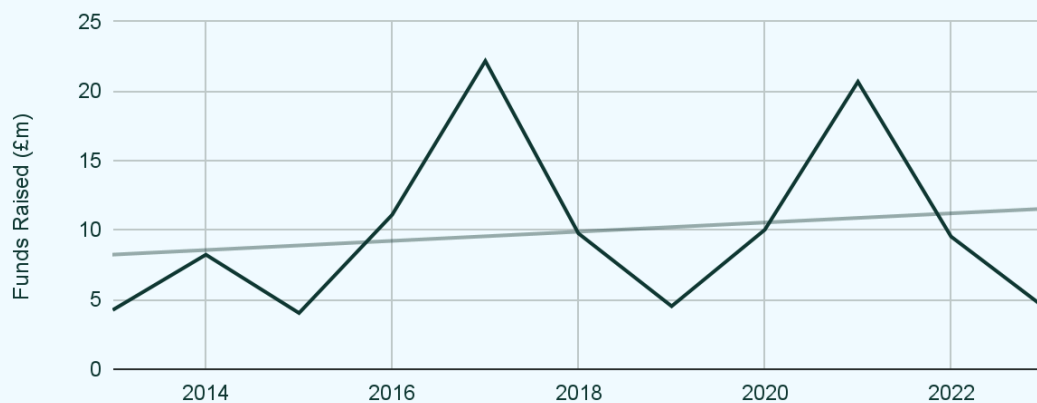
Fundraising in the water sector has been highly erratic over the last ten years, bolstered by two big years in 2017 and 2021 for Hydro Industries.

Number of Firms	18
Total Raised	£133m
2023 Value	£179m
Total Grant Funding Received	£7m
2023 Employees	160

Share of Founders by Gender



Water Annual Raise - 10 Year Trend



Annex B

Regions deep dive

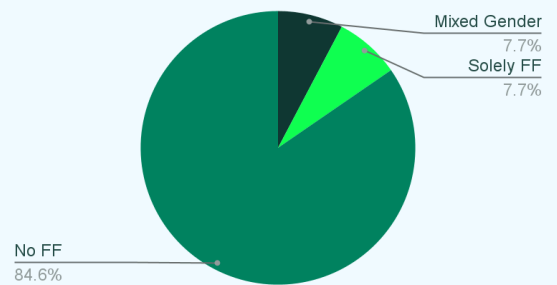
Northern Ireland

Regional Highlights: Northern Ireland is home to the smallest constituency of firms within the Index, with only 13 firms. Belfast is home to the three most funded startups based in the region: waste firm **RiverRidge** has raised £9.5m, GHG removal firm **Nuada** has raised £9.3m, and Business & Professional Services startup **LUMENSTREAM** has raised £5.4m.

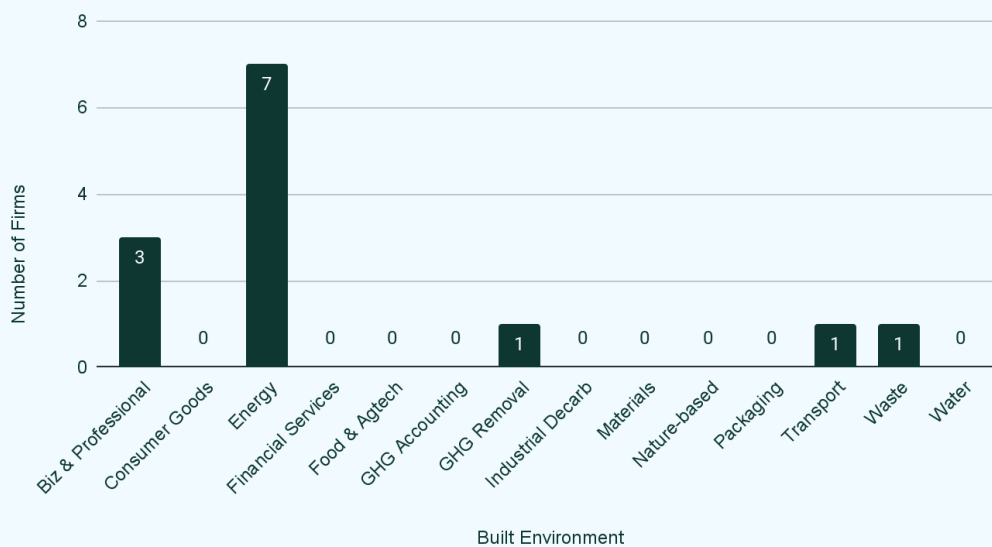
Number of Firms	13
Total Raised	£40m
2023 Value	£114m
Total Grant Funding Received	£20m
2023 Employees	142

The average funds raised by Index firms based in Northern Ireland was 66% lower than the funds raised by the average Index firm (£1.3m) and the average valuation was 62% lower (£4m). However, the average Northern Ireland based Index firm has received 60% more grant funding on average than the average Index firm (£1.5m).

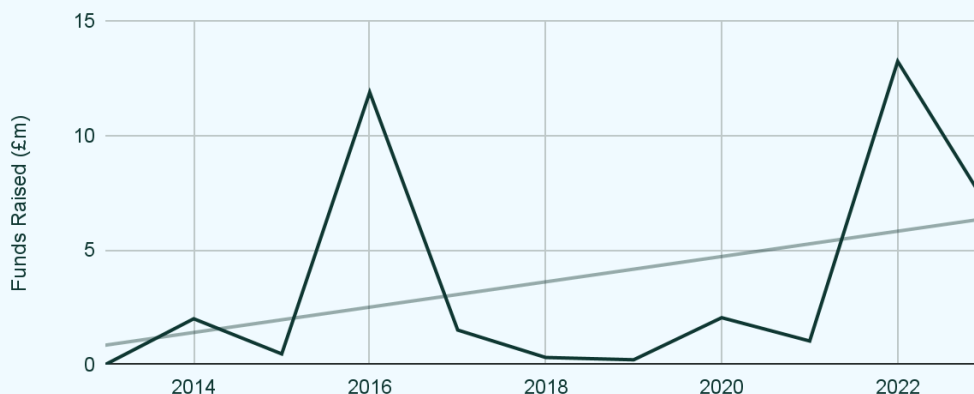
Share of Founders by Gender



Count of Firms by Sector



N Ireland Annual Raise - 10 Year Trend



Scotland

Regional Highlights: Aberdeen headquartered **Agrivert** raised £107m in debt financing to be the most funded Index firm based in Scotland. The next two highest funded firms were food and agtech startups: plant-based food firm **Enough** raised £91m, meanwhile vertical farm infrastructure scaleup **Intelligent Growth Solutions** raised £66m.

Whilst Scottish firms are on average 27% less valuable than the Index average, they received significantly more grant funding on average (78%) than other firms (£1.7m per firm).

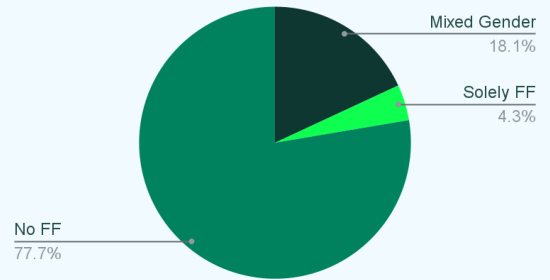
Scotland is also a Unicorn region, valued at £1.8bn.

Overall, Scottish firms make up 9% of the Index and received 17% of all grant funding. Firms in the region included 12% of all mixed-gender founding teams. Scotland is also a hotbed for renewable energy innovation, with 44% of all marine energy startups based in the region, and a third of all wind energy startups based there.

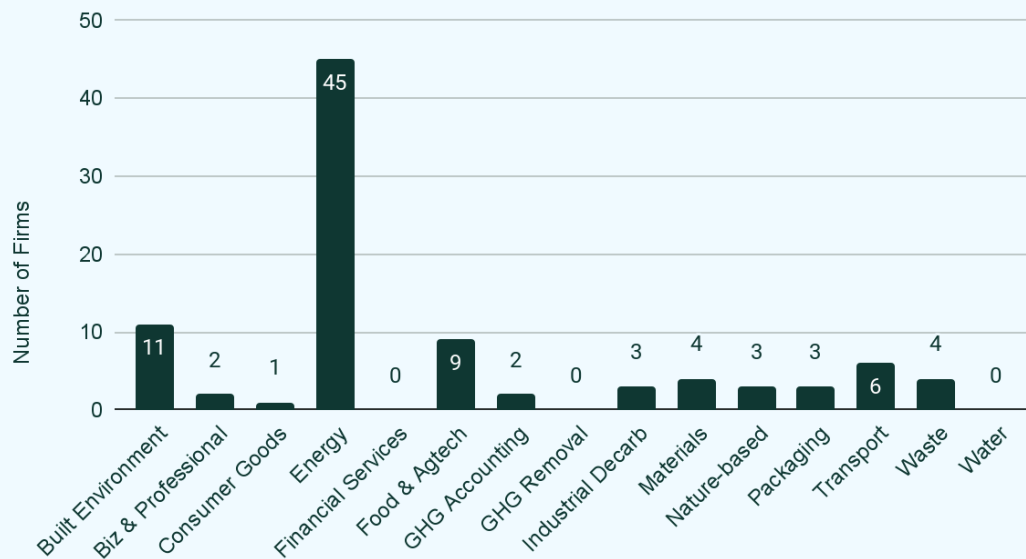
Scotland-based Index firms are disproportionately likely to fail. 19% of all Scottish firms in the Index have failed, making up nearly 15% of all failed firms.

Number of Firms	94
Total Raised	£1.1bn
2023 Value	£1.8bn
Total Grant Funding Received	£160m
2023 Employees	1,347

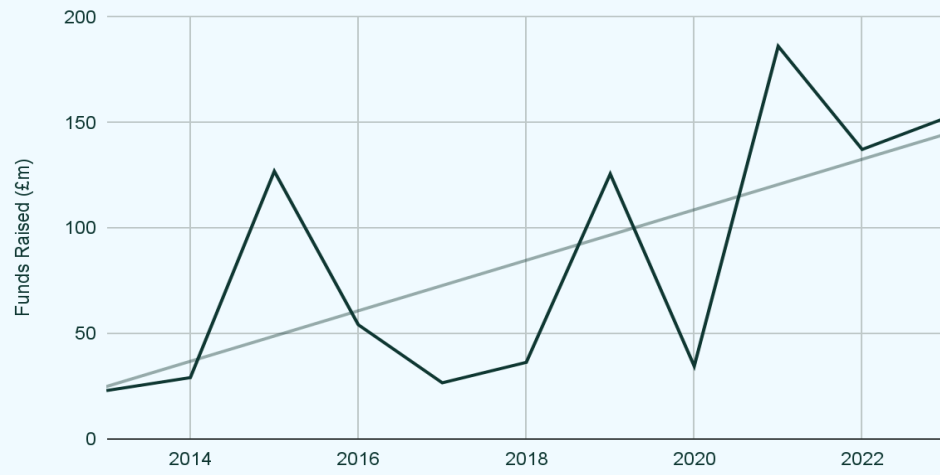
Share of Founders by Gender



Count of Firms by Sector



Scotland Annual Raise - 10 Year Trend



Wales

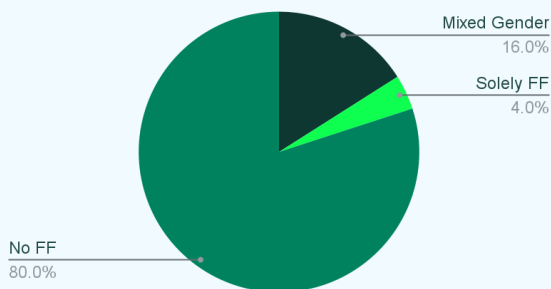
Regional Highlights: Wales constitutes the second smallest regional ecosystem in the Index, but is home to ten firms in the energy sector including Swansea University wind energy spinout **Crossflow Energy**, which has raised £21m, and wave energy startup **Marine Power Systems**, which has raised £12m. Completing the top three is **Sero**, a build environment firm which has raised £12m.

Firms in the Index based in Wales on average raise 31% less funds than the Index average, and are 26% less valuable. However, they raise nearly double (£1.9m) the average grant funding and employ 11% more people per firm.

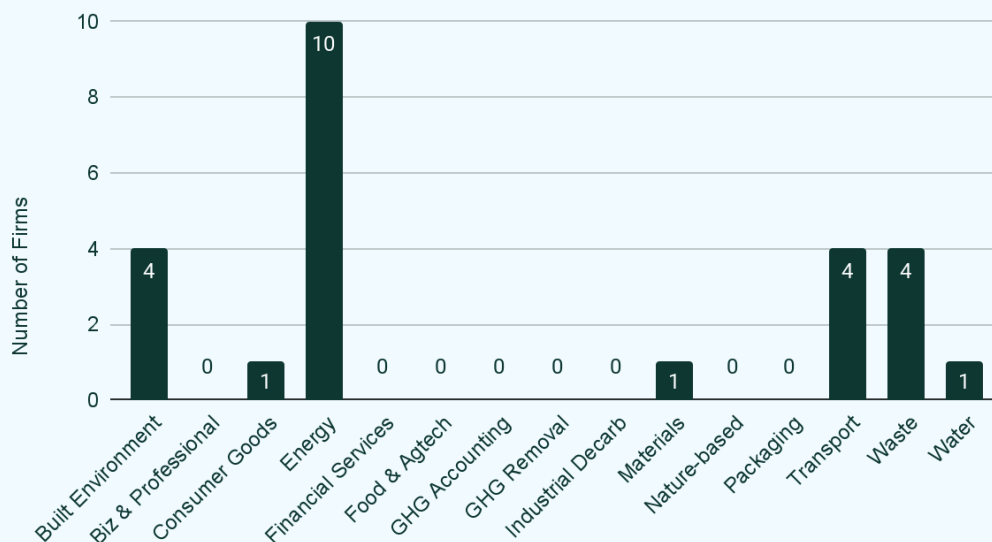
In recent years there has been a steady increase in funds raised by Welsh firms in the Index: between 2021 and 2022 the annual funds raised increased by 63%, and this increased again by 84% between 2022 and 2023.

Number of Firms	25
Total Raised	£124m
2023 Value	£317m
Total Grant Funding Received	£47m
2023 Employees	648

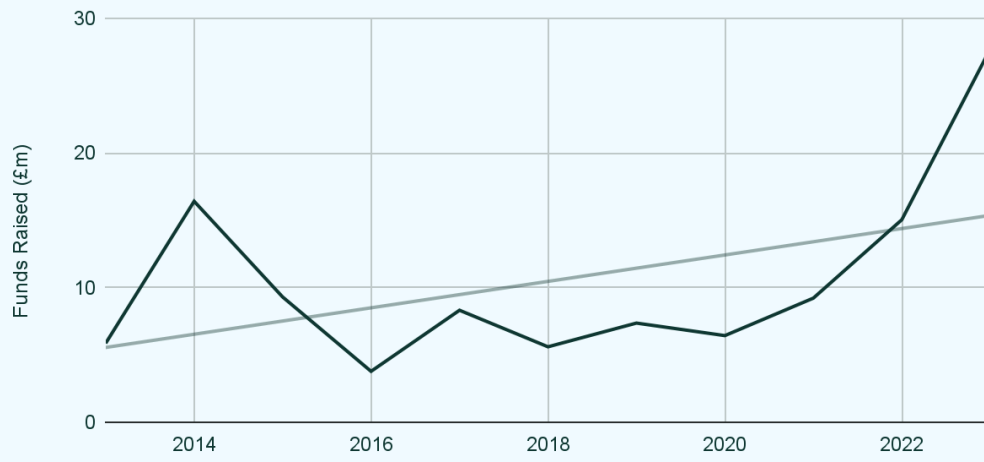
Share of Founders by Gender



Count of Firms by Sector



Wales Annual Raise - 10 Year Trend



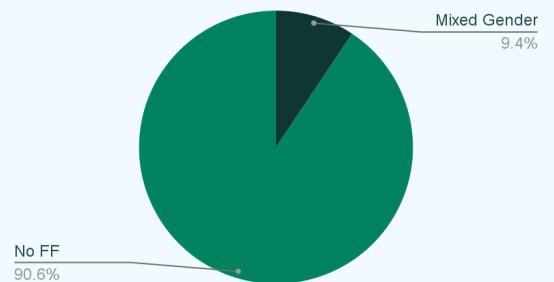
East Midlands

Regional Highlights: Loughborough University spinout **Intelligent Energy** raised £137m prior to exiting via a £55m IPO in 2014. Lincolnshire-based **MyEnergi** has raised £62m. Nottingham founded **Worn Again** has raised £44m to date.

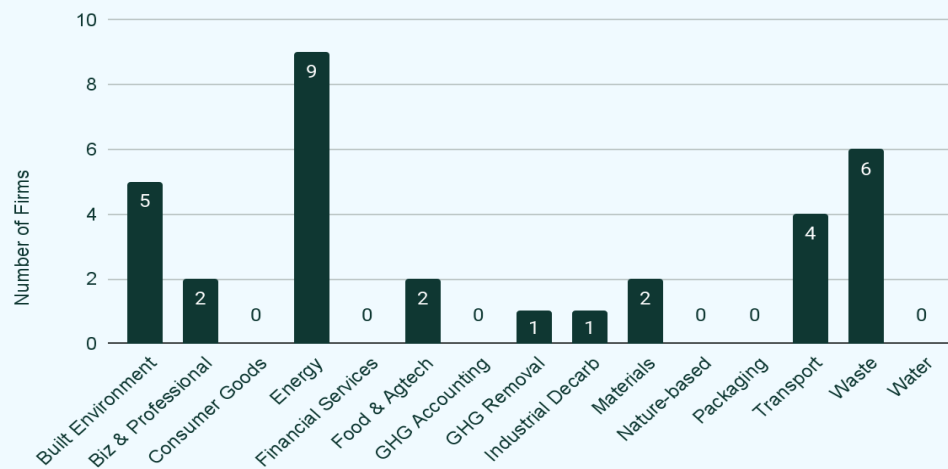
Startups in the region have a slightly higher exit rate than the Index wide average of 16%, constituting 6% of all exits. However, the firm also has a slightly higher failure rate than average, with 19% of firms in the region that featured in the Index having failed to date. The sector has also seen a rapid increase in fundraising in recent years, with the annual raise more than doubling between 2021 and 2022 and then 2022 and 2023.

Number of Firms	32
Total Raised	£417m
2023 Value	£517m
Total Grant Funding Received	£35m
2023 Employees	668

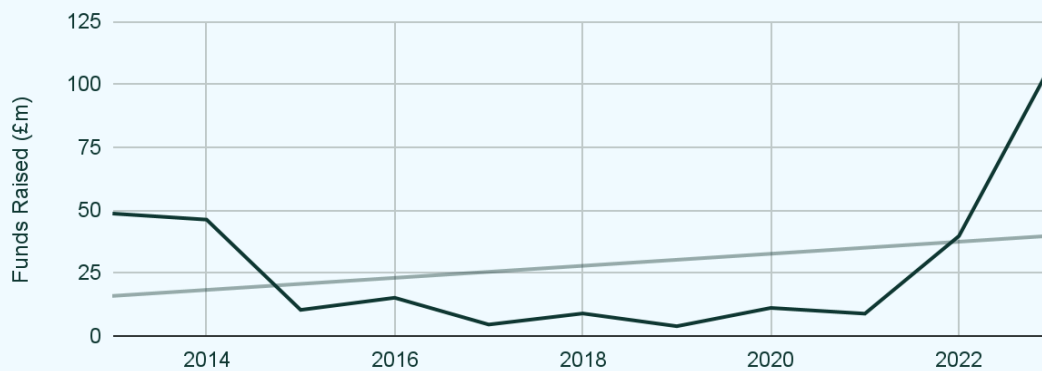
Share of Founders by Gender



Count of Firms by Sector



E Midlands Annual Raise - 10 Year Trend



East of England

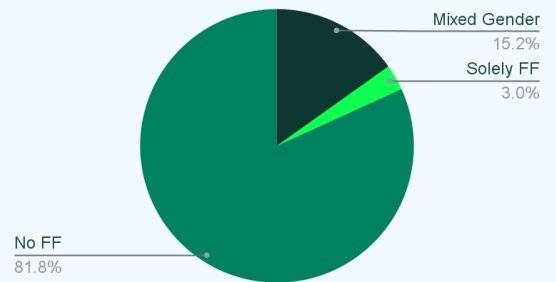
Regional Highlights: Bedford-based **Tamar Energy** raised £168m prior to exiting via corporate acquisition in 2018. Materials startup **GenPhoenix**, based in Peterborough, has raised £122m. Tilbury headquartered transport scaleup **Tevva** raised £111m.

The East of England is home to Cambridge University, the joint-highest source of university spinouts in the Index, meaning the region contributes 14% of all spinouts. The East of England also saw a lower than average failure rate of 8%.

Whilst the East of England has already raised the third highest total funds (£1.4bn) and being one of five Unicorn regions, it has seen a rapid rise in annual funds raised in recent years, increasing by over 25% between 2021 and 2022, and again between 2022 and 2023.

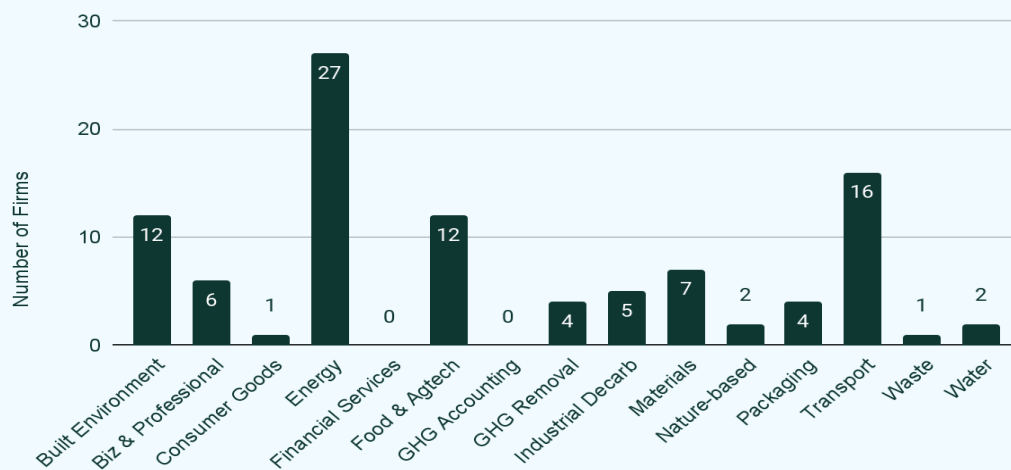
Number of Firms	99
Total Raised	£1.4bn
2023 Value	£2.8bn
Total Grant Funding Received	£93m
2023 Employees	2,087

Share of Founders by Gender

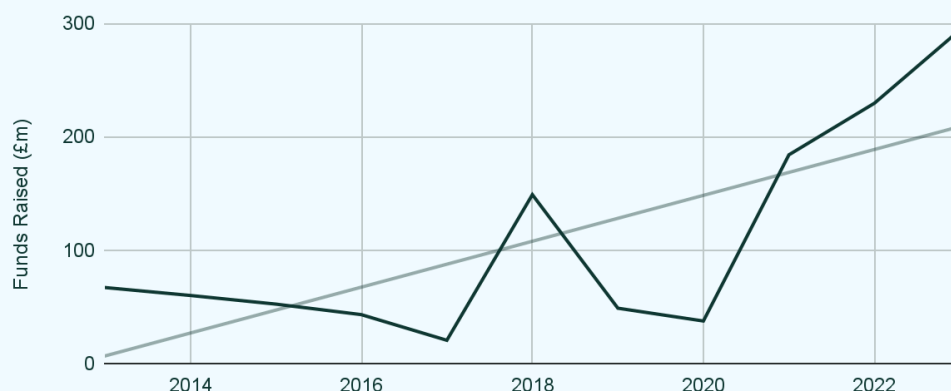


The East of England is a Unicorn Region, valued at £2.8bn.

Count of Firms by Sector



East of England Annual Raise - 10 Year Trend



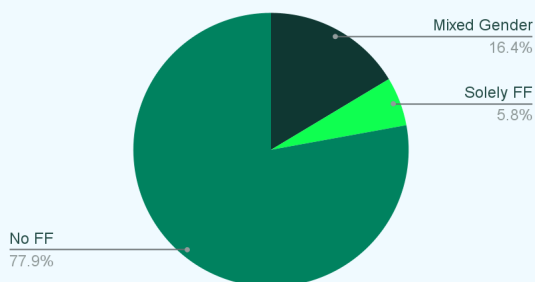
London

Regional highlights: the Capital is one of the global hubs for climate innovation and the centre of ClimateTech innovation in the UK. It is home to four of the top ten best funded ClimateTech firms in the Index. **Octopus Group** is the highest funded firm in the entire Index, with £1.2bn raised to date. **Zenobē's** big 2023 raise elevated it to the second placed spot having raised a total of 518m. Transport firm **Arrival** completes the top three, having raised £396m prior to exiting via SPAC IP in 2021.

Number of Firms	330
Total Raised	£6.9bn
2023 Value	£12.7bn
Total Grant Funding Received	£192m
2023 Employees	8,961

London-based firms in the Index have raised 44% of the total funds raised, and they constitute nearly half of the whole value of the Index. This share is less than data covering sectors across the whole economy: Dealroom data suggests that in 2023, two thirds of total VC investment in the UK went to London-based startups.¹⁵

Share of Founders by Gender

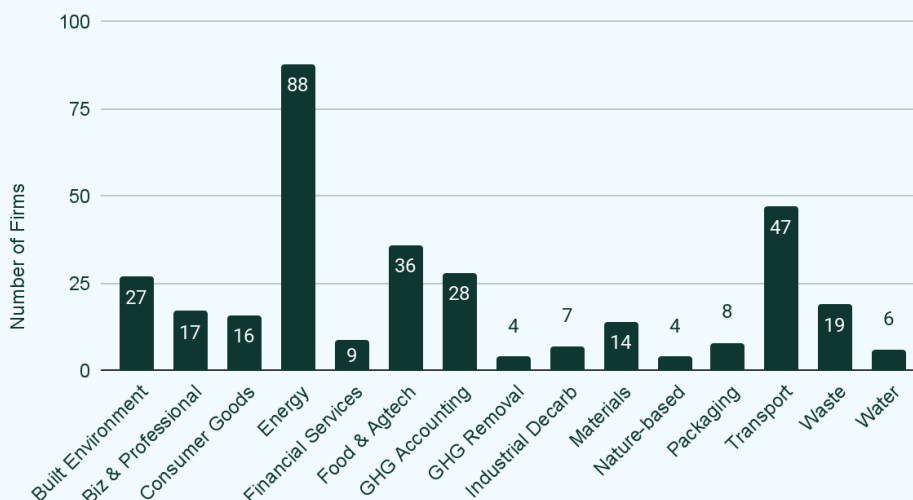


London firms in the Index employ 37% of all jobs employed by firms in the Index in 2023. Startups in London also represent the largest share of any region for mixed-gender founding teams (42%) and solely female founded teams (50%).

London is the most valuable Unicorn Region in the Index, at £12.7bn.

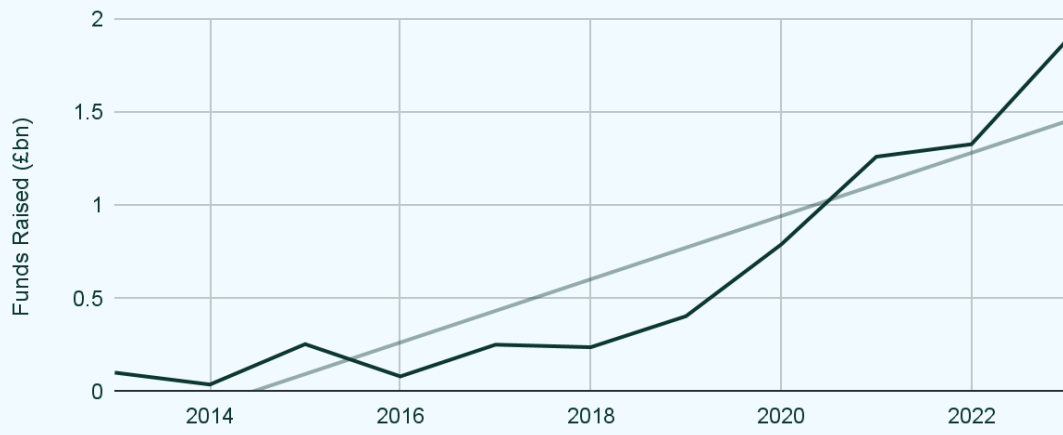
Index firms based in London are also less likely to fail on average - only 7% of firms based in London fail compared to an average of 16% outside of London 16%.

Count of Firms by Sector



¹⁵ <https://dealroom.co/blog/uk-startup-ecosystems-on-the-rise-outside-london>

London Annual Raise - 10 Year Trend

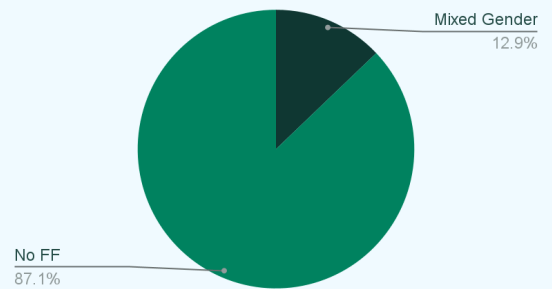


North East England

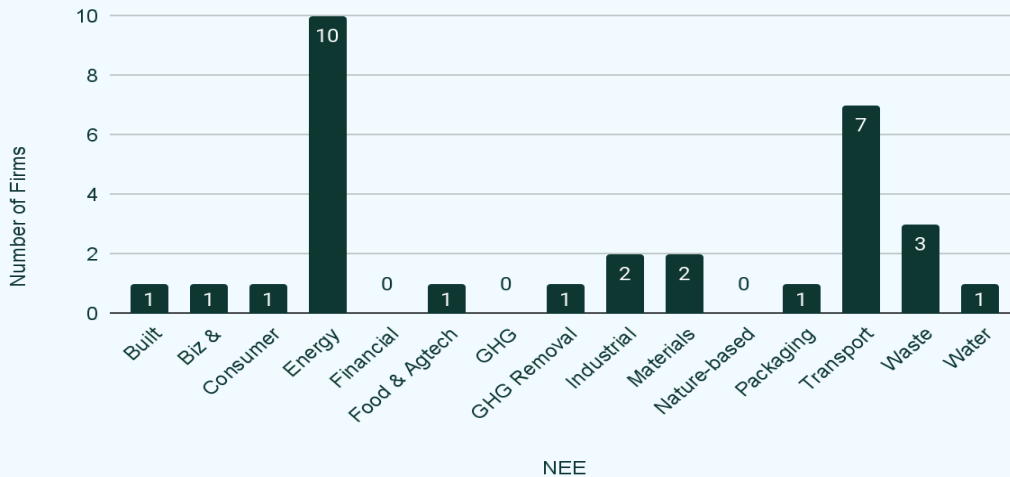
Regional Highlights: **Advanced Electric Machines**, based in Washington, Tyne and Wear, raised £31m. Meanwhile Newcastle-based **Future Transport Systems** raised £28m. County Durham headquartered **Power Roll** raised £26m. Startups in the North East of England received 46% more grant funding per firm on average (£1.4m) than the average across the Index. This region also saw an above average proportion of firms exit, with six of the 31 firms based there having exited to date. The same number had failed.

Number of Firms	31
Total Raised	£230m
2023 Value	£276m
Total Grant Funding Received	£43m
2023 Employees	333

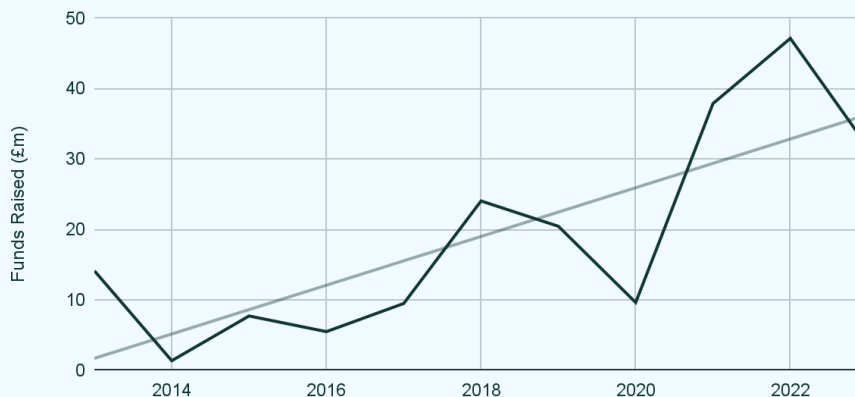
Share of Founders by Gender



Count of Firms by Sector



NE England Annual Raise - 10 Year Trend



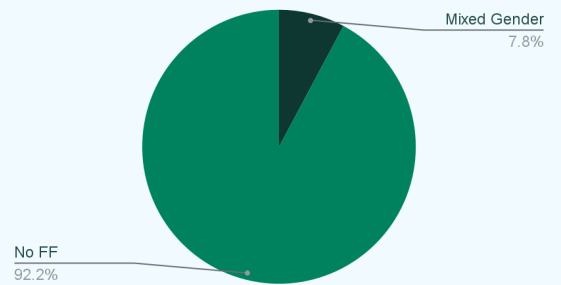
North West England

Regional Highlights: Blackpool-based Fintech bank **Tandem** was the third highest funded firm in the Index and the most funded in North West England, having raised £362m. Waste firm **Recycling Lives** employs over 250 people and has raised £50m, and Imperial College London spinout **Econic Technologies** has raised £40m.

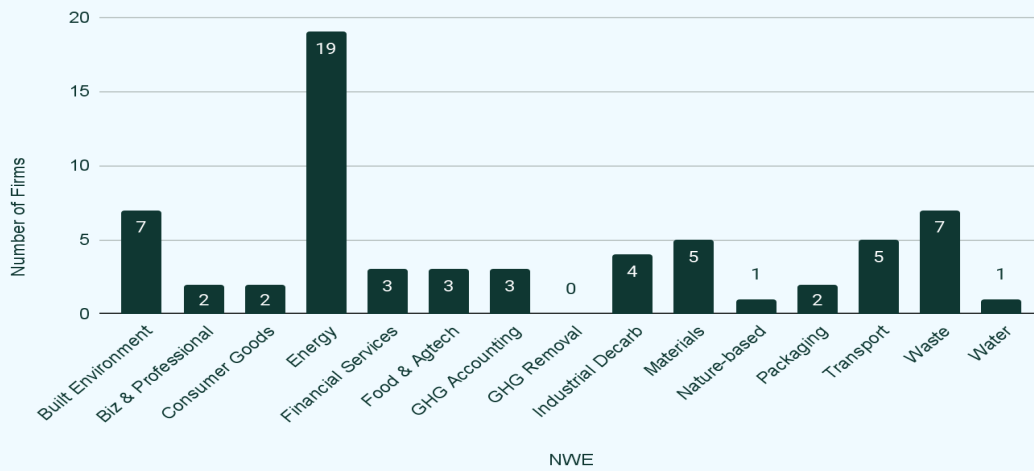
Number of Firms	64
Total Raised	£780m
2023 Value	£919m
Total Grant Funding Received	£26m
2023 Employees	2,832

Index startups in the North West employ on average more people (58) than firms across the Index (average of 31), but have received 10% below the average funds received (£3.2m), are valued 12% below average firm valuation (£9.2m), and received 48% the average grants received (£401k).

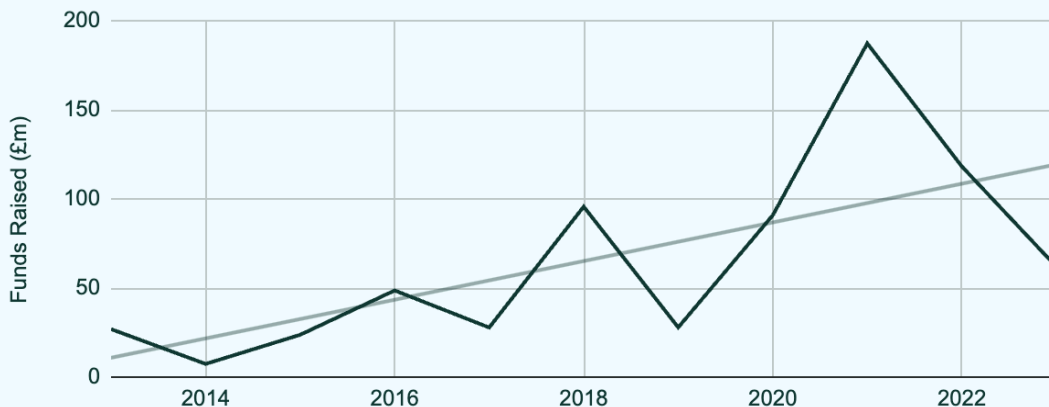
Share of Founders by Gender



Count of Firms by Sector



NW England Annual Raise - 10 Year Trend



South East England

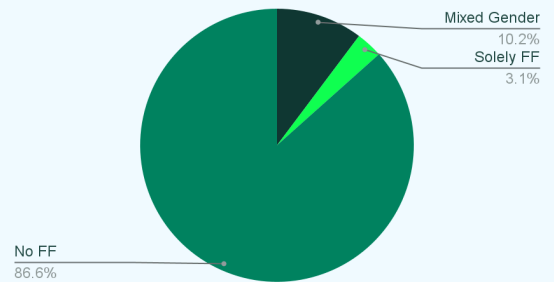
Regional Highlights: the most funded firm based in the South East of England was electric HGV manufacturer **Volta Trucks**, which went into administration in 2023 having previously raised £289m. Battery tech firm **Nexeon** raised £224m, meanwhile Iver-based **Gridserve** raised £210m.

South East England was the second best funded region within the Index, with 16% of all funding heading to startups in the region, and the average startup here receiving 9% more funding than the average Index firm. Firms here also benefited from 16% of all grant funding, with the average South East England startup securing 29% more in grant funding than the Index average.

The region is home to a quarter of all spinouts in the Index, including joint highest contributor, Oxford University. It is also home to five of the nine firms in the Index specialising in reducing the environmental impact of the aviation sector.

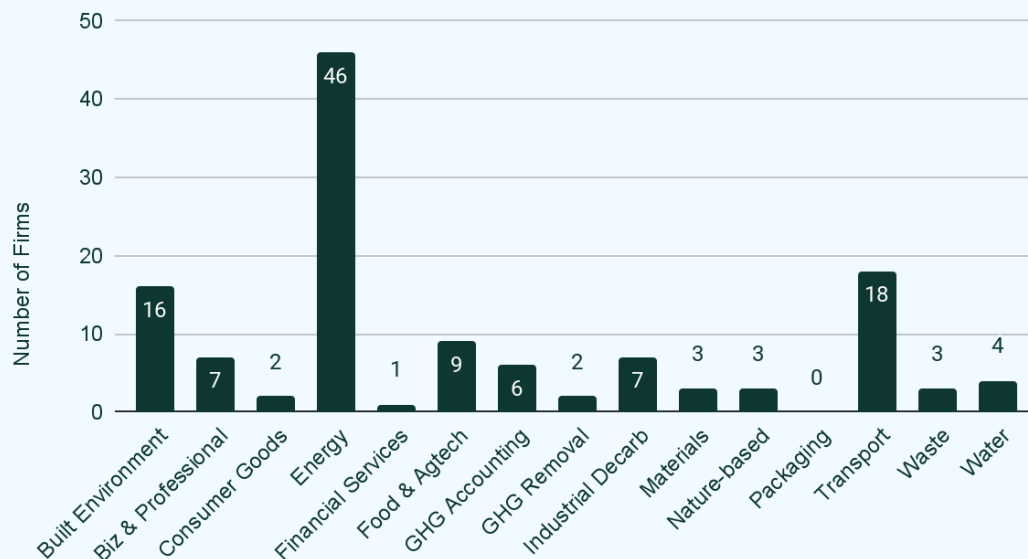
Number of Firms	127
Total Raised	£2.4bn
2023 Value	£3.3bn
Total Grant Funding Received	£157m
2023 Employees	2,698

Share of Founders by Gender

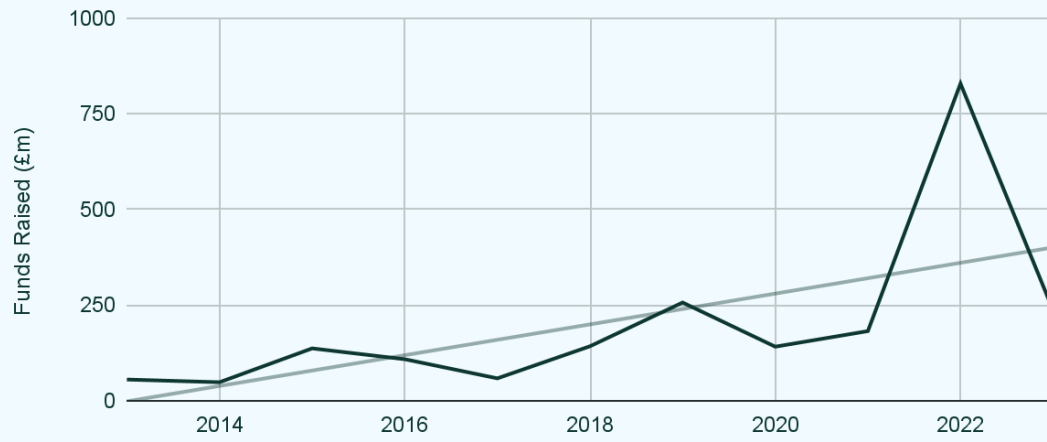


South East England is a Unicorn Region, valued at £3.3bn.

Count of Firms by Sector



SE England Annual Raise - 10 Year Trend



South West England

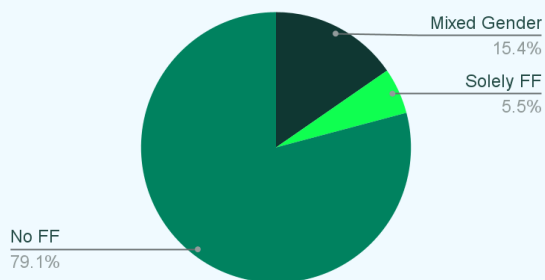
Regional Highlights: the South West of England is home to the fifth most populous ClimateTech constituency in the Index, with retail energy provider **Ovo Group** the best funded, at £259m. Bristol-based **Vertical Aerospace** raised £158m before exiting via corporate acquisition in 2021. Meanwhile, Corsham headquartered sustainable data centre management firm **Ark Data Centres** raised £150m.

Number of Firms	91
Total Raised	£1.1bn
2023 Value	£2.4bn
Total Grant Funding Received	£105m
2023 Employees	2,466

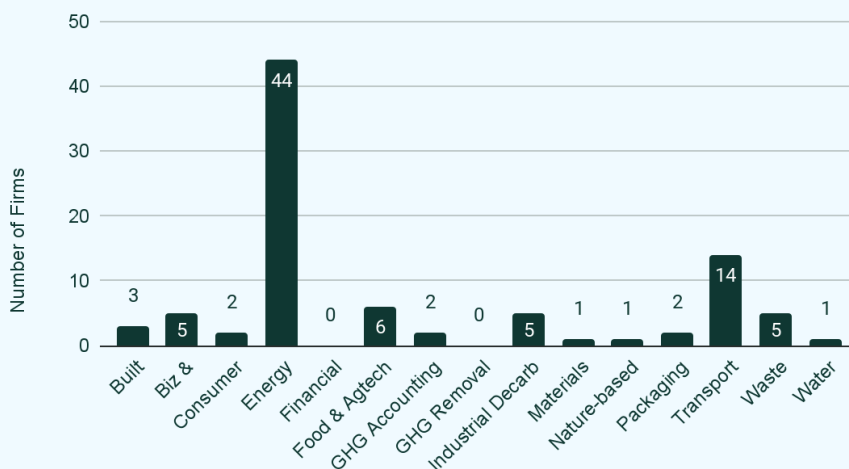
South West England is a Regional Unicorn, valued at £2.4bn.

11% of all mixed-gender founding teams are based in the South West, alongside 14% of all solely female founded firms. 68% of firms are engaged in hardware development or manufacturing, 8% more than the industry average. The average firm also employs 18% more people (36) than the Index average.

Share of Founders by Gender

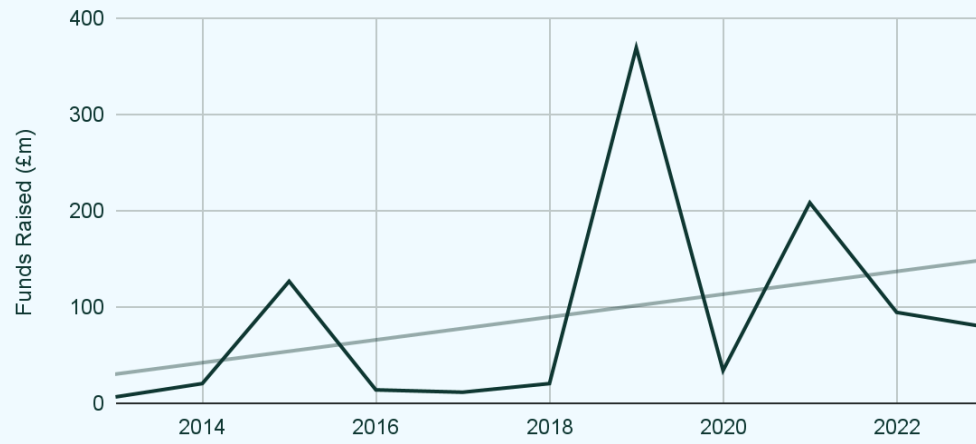


Count of Firms by Sector



While firms in the South West received nearly a quarter of all debt financing secured by the Index, on average they raise less than a third less cash than the average firm in the Index and are 17% less valuable.

SW England Annual Raise - 10 Year Trend



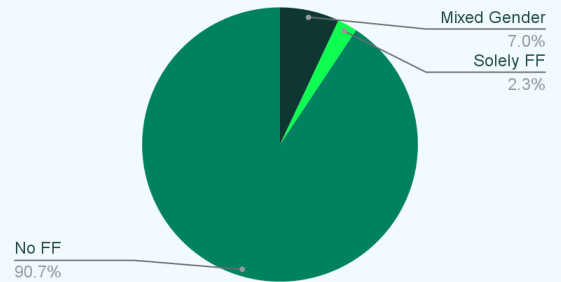
West Midlands

Regional Highlights: the highest funded firm in the West Midlands is Warwick-based EV services firm **Onto**, which has raised £83m, followed by **Eider Vertical Farming** with £50m. Stoke-on-Trent headquartered **Birmingham Bio Power** raised £48m before the company was dissolved in 2023.

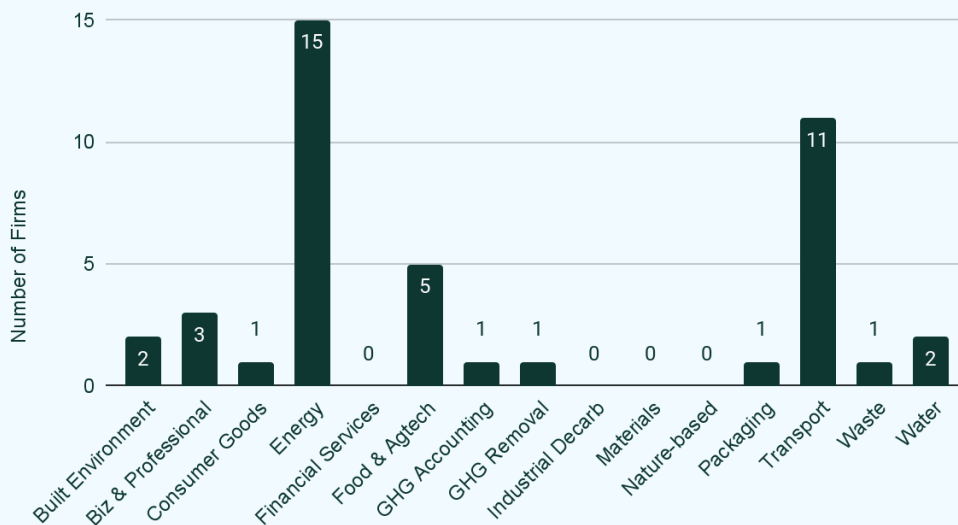
Startups in the West Midlands raised 4% of the Index total, however outperformed the Index average for funds raised per firm (£3.9m) by 7%, and value (£12m) by 15%. The region also employs over 1,000 people. No firms based in the West Midlands in the Index have yet exited. One in four firms based in the region attended an accelerator.

Number of Firms	43
Total Raised	£444m
2023 Value	£735m
Total Grant Funding Received	£38m
2023 Employees	1,017

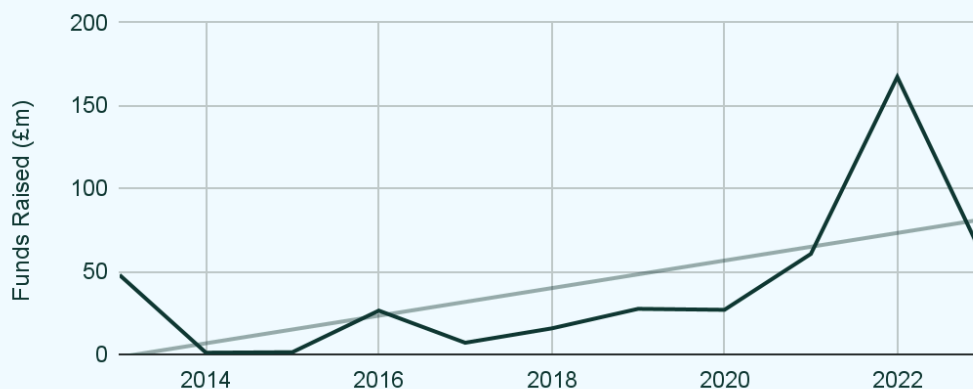
Share of Founders by Gender



Count of Firms by Sector



W Midlands



Yorkshire & The Humber

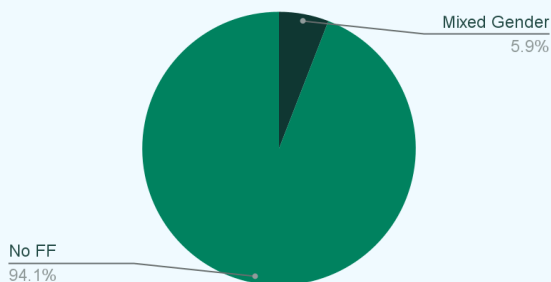
Regional Highlights: renewable energy services scaleup **Able UK** was the most funded firm in the Index based in Yorkshire and the Humber, having raised £339m and employing over 100 people. Rotherham headquartered server cooling startup **Iceotope** was the second best funded, with £58m. Hull-based hydrogen firm **HiiROC** completed the top three with a total raise of £28m.

Number of Firms	51
Total Raised	£657m
2023 Value	£673m
Total Grant Funding Received	£45m
2023 Employees	1,028

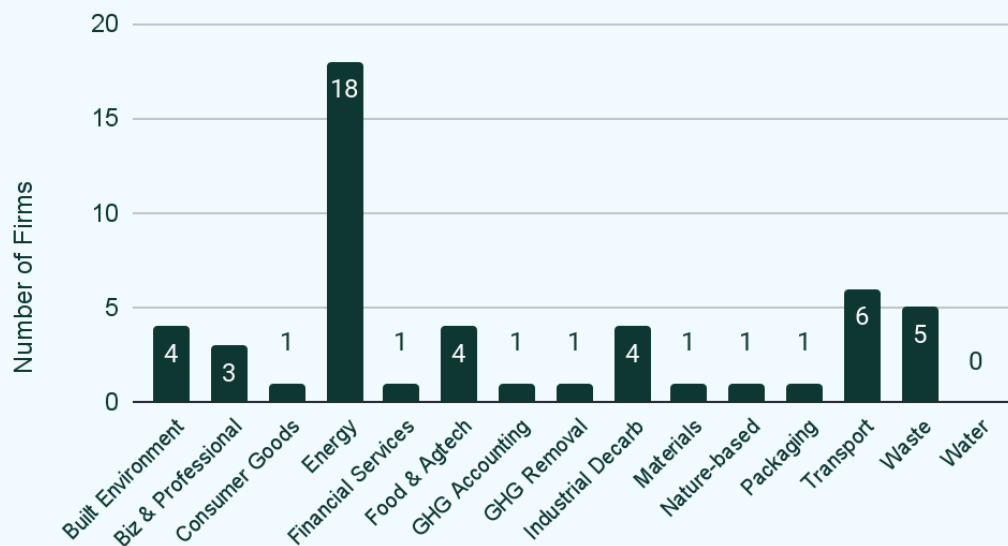
Yorkshire and the Humber is home to 7% of all university spinouts in the Index, including four from the University of Sheffield, however not a single firm in the Index based in the region has a solely female founder team, and only three firms have a mixed-gender founding team.

Despite startups in the region receiving 28% less funding than the average Index firm, Yorkshire and the Humber has seen a disproportionate number of exits - 8% of all exits in the Index were from firms based here.

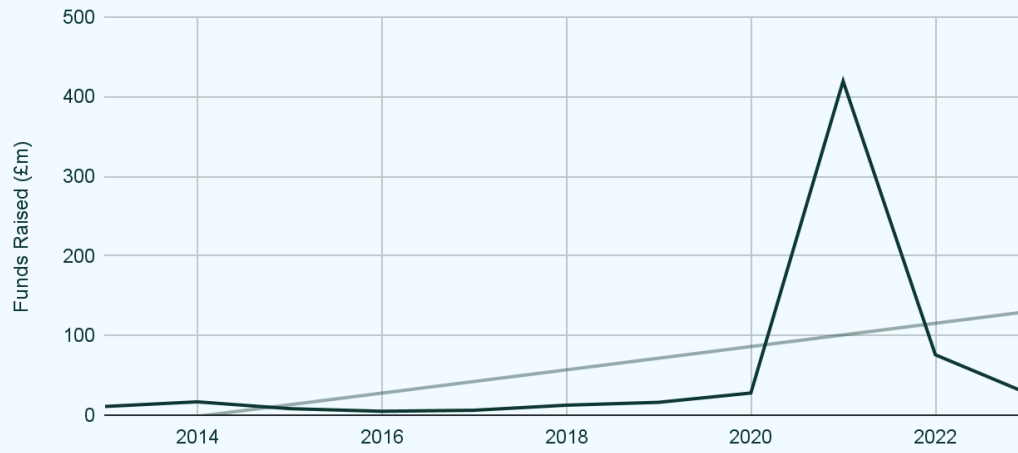
Share of Founders by Gender



Count of Firms by Sector



Yorkshire & The Humber Annual Raise - 10 Year Trend



Annual fundraising has remained largely flat, with the only exception being 2021, when Able UK raised £335m in debt financing.



STARTUP
C*ALITION