

Cambridge

Investing in Climate Innovation

An aerial photograph showing a dense urban cityscape on the left and a lush green forest on the right. The two areas meet at a circular opening in the center, where a bright light source is visible, creating a glowing effect. The text 'Science. Solutions. Scale.' is overlaid on this central opening.

Science.
Solutions.
Scale.

Why Cambridge. Why Now.

Growth in the UK is increasingly driven by regions that can convert innovation into scalable businesses and real-world deployment.

Across energy, manufacturing, transport, construction and food systems, the transition to a low carbon, climate-resilient economy is creating rapidly expanding markets for new technologies, infrastructure and business models. Advances in AI, software and data are accelerating this shift.

Capturing this opportunity depends on ecosystems that can move ideas quickly from discovery to commercialisation and scale.

Cambridge is operating at this interface: translating world-leading science into deployable technologies, high-growth ventures and investable opportunities.



The Cambridge ingredients

A globally recognised and world-leading ecosystem for science, solutions and scale, anchored by the University of Cambridge and a wider network of partners, with proven delivery.

Cambridge: a globally leading innovation ecosystem

5,000+
knowledge-intensive companies

\$2.3 billion
raised in 2024

\$17.7
value created for every \$1 invested

300+ patents per 100,000 residents
126 Nobel Prize winners

Research, translation and scale-up capacity

A rapidly scaling climate innovation pipeline from science to scalable ventures across key sectors

240+
climate-focused companies

13
climate innovation infrastructure sites

£7 million+ invested in climate/sustainability spinouts

16+ climate and sustainability ventures spun out in the past five years

26 climate-tech spinouts created in 2024
£500 m+ combined value of sustainability-focused spinouts
New infrastructure including the **Ray Dolby Centre** and **IonQ Quantum Innovation Centre**

Breakthrough innovation examples

5-minute EV charging (Nyobolt) accelerating electrification

AI and advanced materials (CuspAI) transforming high-emitting sectors

AI-driven decarbonisation in cement and materials (Carbon Re)

Plant-based materials replacing billions of single-use plastics (Xampla)

Ecosystem enablers and delivery partners

Global technology and engineering leaders (eg Arm, Cambridge Consultants) supporting product development and commercialisation

Legal, advisory and investment partners enabling company formation and scale-up

Public sector and delivery partners supporting pilots, procurement and large-scale deployment



Why invest in Cambridge?

Cambridge combines scientific excellence, investment momentum and a proven pathway to scale.

A deep, science-led pipeline of opportunities embedded in an ecosystem designed to move ideas rapidly from discovery to deployment.

A delivery-ready, place-based platform aligned with UK Industrial Strategy priorities and the transformation of key sectors.

“The strength of Cambridge lies in its ability to translate cutting-edge science into scalable solutions, supported by a collaborative ecosystem spanning research, industry and investment.”

Sophie Vaud

Sophie Vaud, Chief Technology Officer, Colorifix

“What sets Cambridge apart is the combination of world-class climate science, a sophisticated investment ecosystem, and unparalleled access to industry.”

Neil Cameron

Investor, Investment Director
Emerald Ventures

“Being part of the Cambridge ecosystem allows us to move faster from ideas to impact. The talent, connections and research data make it possible to scale solutions across complex supply chains in ways that have never been done before.”

Dr Spencer Brennan

Founder and CEO
Neutreeno



From science to scale: an integrated system

Cambridge's strength lies in the connections between these elements, enabling companies to become investable and scalable.

The ecosystem supports multiple investment pathways, from early-stage science ventures to growth capital and strategic partnerships.



Cambridge's investable innovation sectors

Cambridge translates world-leading science into investable companies and scalable solutions across sectors central to the UK's growth and net zero transition.

Each sector demonstrates a clear pathway from discovery to deployment, supported by capital, partnerships and real-world application.



Built environment

Transforming how buildings and infrastructure are designed, constructed and operated to enable low carbon, high-performance systems.



Energy systems

Enabling the transition to resilient, zero carbon energy systems through advances in generation, storage and optimisation.



Food, land and agriculture

Delivering sustainable, productive land use and food systems through innovation in biology, data and agricultural practices.



Manufacturing and materials

Decarbonising industrial production through advances in materials, processes and circular manufacturing systems.



Transport

Accelerating the shift to zero carbon mobility across aviation, electrification and energy-efficient transport systems.

Built environment

The challenge

The built environment is central to economic productivity, quality of life and the transition to net zero. Construction alone contributes around £120 billion to UK GDP, accounting for approximately 6–7 per cent of the economy, while buildings and infrastructure shape long-term investment and resource use. At the same time, the built environment is responsible for around 25 per cent of the UK's greenhouse gas emissions, making its transformation critical to achieving climate targets. Rising demand for housing, infrastructure renewal and climate resilience is driving innovation in materials, construction processes and system design. This is reinforced regionally, with sectors underpinning the transformation of the built environment, including advanced manufacturing, materials and clean technology, identified as priorities within the Cambridgeshire and Peterborough Local Growth Plan.

The solution

Cambridge addresses this gap by enabling solutions to prove performance, secure procurement and scale. It combines world-leading research in materials and building performance with digital innovation in AI, modelling and digital twins, supported by venture creation, capital and real-world testbeds through close industry and delivery partnerships. This shortens the path from prototype to deployment, enabling de-risked, evidence-based solutions with clear pathways to procurement and scale.

£120bn contribution to UK GDP from construction

Successful Cambridge companies include:



*(Cambridge Electric Cement)
Low carbon cement deployed at industrial scale*

Cambridge Electric Cement is a University of Cambridge spinout developing a process to produce low carbon cement from recycled demolition waste. Emerging from Cambridge's research and venture ecosystem, the company has secured early-stage investment and progressed through full-supply-chain industrial demonstration, working with partners including Balfour Beatty, Tarmac and CELSA. The technology has moved rapidly from lab-scale discovery through the £6.5 million 'Cement 2 Zero' programme to industrial-scale trials, with plans for deployment in real-world construction projects. This progression demonstrates how Cambridge connects scientific discovery, venture creation, capital and industry partnerships to accelerate commercialisation and adoption.



Unlocking efficiency and value from existing infrastructure

xWatts is a Cambridge-based software company developing optimisation and control solutions to improve energy performance in commercial buildings and industrial facilities. Its platform uses real-time data and advanced algorithms to optimise energy use across complex estates, reducing emissions and operating costs. Deployments have demonstrated energy reductions of over 25 per cent, with some achieving up to 40 per cent savings, alongside significant cost benefits. Operating within a global real estate energy market worth over £500 billion, xWatts is scaling a software-led model deployable across asset portfolios without major capital investment, enabling rapid, financially attractive infrastructure optimisation.



Transforming cooling and heating through next-generation materials

Barocal is a Cambridge spinout developing solid-state cooling technology based on barocaloric materials, offering a low carbon alternative to conventional refrigeration and heat pump systems. Cooling and heating account for around 40 per cent of global energy consumption, with current technologies relying on high-emission refrigerants. Barocal's approach enables systems that are 2–3 times more energy efficient, eliminating harmful gases while improving performance. Emerging from over a decade of research, the company is progressing towards commercial applications across air conditioning, refrigeration and heat pumps, demonstrating how Cambridge translates materials science into scalable, high-impact energy solutions.

Cambridge brings together leading capabilities in infrastructure performance, sensing and system integration, including work led by the Cambridge Centre for Smart Infrastructure and Construction and the UKCRIC National Research Facility for Infrastructure Sensing, enabling real-time monitoring, validation and optimisation of built environment systems at scale.

Energy systems

The challenge

Energy systems are central to economic growth, energy security and the transition to net zero. The UK energy sector and its supply chain support an estimated £264 billion in economic activity, reflecting its critical role across the wider economy. The transition to low carbon, decentralised energy is accelerating, driven by electrification, digitalisation and rising demand. However, innovation in generation, storage and system integration continues to stall at demonstration stage, constrained by grid capacity, fragmented markets and uncertainty over performance at scale. This creates a major opportunity for solutions that can integrate reliably into infrastructure and deliver repeatable deployment at system level. This is reinforced regionally, with energy and clean technology identified as priority growth sectors within the Cambridgeshire and Peterborough Local Growth Plan.

The solution

Cambridge addresses this gap by enabling energy innovations to prove performance, integrate into complex systems and scale. It combines world-leading research in energy technologies with digital innovation in AI, modelling and system optimisation, supported by venture creation, capital and real-world testbeds through close industry and policy partnerships. This shortens the path from prototype to deployment, enabling de-risked, evidence-based solutions with clear pathways to integration and scale.

£264bn economic activity supported by the UK energy sector

Successful Cambridge companies include:



Unlocking ultra-fast charging and high-performance energy storage

Nyobolt is a Cambridge spinout developing high-power batteries enabling ultra-fast charging and longer operational life. The company has raised \$60 million at a \$1 billion valuation, with revenues growing five times year-on-year, reflecting strong commercial traction. Its technology delivers ultra-fast charging, up to ten times longer cycle life, and six times higher energy capacity in deployed systems, enabling continuous 24/7 operation in robotics, data centres and industrial applications. By combining materials science, engineering and system integration, Nyobolt demonstrates how Cambridge translates research into scalable energy storage solutions with clear commercial value and global market potential.



Advancing next-generation battery materials for resilient energy systems

Echion Technologies is a Cambridge spinout developing niobium-based battery materials that enable ultra-fast charging and long-life performance. Its technology allows batteries to charge in under ten minutes and deliver over 10,000 cycles, significantly improving lifetime performance and utilisation. The company has raised £29 million in growth funding and is scaling manufacturing to ~2,000 tonnes per year, supporting deployment across heavy-duty transport and industrial systems. By improving charging speed, durability and system reliability, Echion strengthens energy-system resilience, demonstrating how Cambridge translates materials innovation into scalable infrastructure-level energy solutions.



Transforming supply-chain decarbonisation through AI

Neutreeno is a Cambridge-based deep tech company developing an advanced platform to eliminate emissions across complex industrial supply chains. Emerging from engineering and climate science research, its system combines proprietary process networks and optimisation algorithms to target emissions at source, particularly in Scope 3 activities.

Recent deployments have delivered over €1.5 million in annual cost savings for industrial partners, demonstrating the commercial value of data-driven decarbonisation. Supported by Cambridge's research, venture and investment ecosystem, Neutreeno is progressing from early commercialisation towards scalable deployment, demonstrating how digital solutions can enable system-level emissions reductions across global industries.

Food, land and agriculture



The challenge

Food, land and agriculture are central to economic resilience, food security and the transition to net zero. The UK agrifood system contributes over £150 billion to the economy and underpins critical infrastructure from supply chains to land use. At the same time, climate impacts, nature loss and resource constraints are driving a structural shift in how food is produced, processed and distributed. Innovation is emerging across biological systems, data and new production models, but adoption remains constrained by fragmented supply chains, misaligned incentives and limited access to finance at scale. This slows the transition from innovation to system-wide deployment. This is reinforced regionally, with agrifood and agritech identified as priority growth sectors within the Cambridgeshire and Peterborough Local Growth Plan.

The solution

Cambridge addresses this challenge by enabling innovations to move from discovery into co-ordinated, system-level deployment. It combines world-leading science in biology and land systems with digital capabilities in AI, data and modelling, supported by venture creation, capital and real-world pilots. By connecting producers, corporates, investors and policymakers, the ecosystem aligns incentives, reduces risk and accelerates adoption. This shortens the path from innovation to scalable, market-ready solutions.

£150bn+ contribution to the UK economy from the agrifood system

Successful Cambridge companies include:



Accelerating the commercialisation of agricultural innovation

Ceres Agri-Tech is a Cambridge Enterprise-led university partnership accelerating the commercialisation of agricultural innovation, linking leading universities, farmers, growers, industry and civic society and investors. Since 2018, the programme has delivered five spinouts including AI-enabled crop monitoring (FruitCast), robotic harvesting (Agaricus Robotics), safe autonomous agri-robot fleet navigation (JabasAI) and biobased materials (Cellexcel). Ceres Agri-Tech has a pipeline of over 50 opportunities across robotics, AI, crop science and data-driven agriculture to improve productivity while reducing environmental impact. It provides sector expertise, translational funding, supported development and commercialisation. By connecting research, finance and industry, Ceres Agri-Tech enables early-stage research to scale to commercially viable technological solutions with global potential – strengthening the UK's agritech pipeline and supporting more sustainable food systems.



Enhancing crop yields through photonic materials

Lambda Agri is a Cambridge-based company developing advanced materials to improve productivity and efficiency in greenhouse agriculture. Its proprietary coatings convert unused ultraviolet light into red wavelengths used in photosynthesis, enabling higher crop yields without additional energy input. Trials have demonstrated yield improvements of around 10 per cent, with the potential to reach up to 20 per cent increases in controlled environments. Supported by over £3.8 million in funding and partnerships with greenhouse manufacturers, the company is progressing towards commercial deployment.



Scaling next-generation materials from lab to market

Seprify is a University of Cambridge spinout developing high-performance, cellulose-based materials as sustainable alternatives to widely used industrial ingredients. Its technology enables plant-derived particles to replace substances such as titanium dioxide across food, cosmetics and coatings – targeting a global market estimated at around \$16 billion. Originating from advanced materials research, the company has progressed from lab to industrial scale, securing over €22 million in funding and moving into commercial supply with major partners.

Based in the Cambridge ecosystem, Seprify has benefited from close links to world-leading research, translational funding and early-stage investment support through Cambridge Enterprise, accelerating its path from discovery to commercial deployment.

Manufacturing and materials

The challenge

Manufacturing and materials are central to industrial competitiveness, productivity and the transition to net zero. The UK manufacturing sector contributes around £217 billion in output, underpinning national resilience and global competitiveness. At the same time, industrial production remains resource-intensive and emissions-heavy, particularly in hard-to-abate sectors. Innovations in materials, processes and circular production are emerging, but scaling these solutions is constrained by high capital costs, integration challenges and uncertainty over performance at industrial scale. This creates significant opportunity for technologies that reduce cost, improve efficiency and enable large-scale deployment. This is reinforced regionally, with advanced manufacturing and materials identified as priority growth sectors within the Cambridgeshire and Peterborough Local Growth Plan.

The solution

Cambridge addresses this gap by enabling materials and manufacturing innovations to move from lab-scale breakthroughs to scalable, deployable solutions. It combines world-leading research with digital innovation in AI, modelling and process optimisation, supported by venture creation, capital and industrial partnerships. This shortens the path from prototype to manufacturing, enabling de-risked, commercially viable solutions with clear pathways to scale.

£217bn output from the UK manufacturing sector

Successful Cambridge companies include:



Scaling biological dyeing for global manufacturing

Colorifix is a Cambridge-connected biotechnology company transforming textile manufacturing through the world's first entirely biological dyeing process. Its technology replaces conventional chemical dyeing with engineered microbes, delivering up to 77 per cent reduction in water use, 80 per cent fewer chemicals and 53 per cent lower energy consumption compared to standard processes. Backed by over \$49 million in funding and commercial partnerships with major global brands, the company is scaling production across Europe and Asia. Emerging from the Cambridge innovation ecosystem, Colorifix demonstrates how breakthrough science can be translated into commercially viable, globally deployable manufacturing solutions.



Replacing single-use plastics at global scale

Xampla is a University of Cambridge spinout developing plant-based materials to replace the most polluting single-use plastics. Its Morro™ materials are plastic-free, biodegradable and compatible with existing manufacturing systems, enabling rapid industrial adoption. Following a \$14 million Series A investment, Xampla is scaling production to replace more than 10 billion units of single-use plastic across packaging applications over the next five years. The company is already working with major global partners, including Just Eat Takeaway and packaging manufacturers, demonstrating commercial traction and market demand. Embedded in the Cambridge ecosystem, Xampla illustrates how materials innovation can move from research to large-scale market deployment.



Reducing industrial waste through advanced manufacturing

DeepForm is a University of Cambridge spinout developing advanced manufacturing technologies to reduce material waste and emissions in metal forming. Its patented process enables manufacturers to cut material waste by up to 75-80 per cent, with potential CO₂ savings of up to 30 per cent per component, while integrating into existing production lines. The technology has been validated through collaborations with major manufacturers including Jaguar Land Rover and Volvo Group, demonstrating real-world applicability and scalability. Supported by Cambridge investment and innovation networks, DeepForm shows how digital design and process innovation can reduce cost and risk, enabling more efficient, low carbon manufacturing at scale.

Transport

The challenge

Transport and aviation are central to economic connectivity, trade and the transition to net zero, underpinning productivity across the UK economy. The UK's logistics sector alone contributes around £170 billion annually, highlighting the critical role of transport systems in enabling trade, supply chains and economic growth. However, deployment at scale remains constrained by infrastructure requirements, integration challenges and uncertainty over performance across complex systems. This creates significant opportunity for solutions that can demonstrate viability and scale within real-world environments. It is reinforced regionally and nationally, with future mobility, aviation and advanced propulsion identified as priority areas within UK innovation and industrial strategy.

The solution

Cambridge addresses this challenge by enabling transport innovations to move from research into integrated system deployment. It combines world-leading research in propulsion, energy systems and materials with digital innovation in modelling and optimisation, supported by venture creation, capital and real-world test environments such as the Whittle Laboratory and Aviation Impact Accelerator. This shortens the path from innovation to deployment, enabling de-risked, system-level solutions with clear pathways to scale.

£170bn contribution
from the UK logistics
sector

Successful Cambridge companies include:



Modelling the transition to zero carbon flight

The Aviation Impact Accelerator (AIA), based at the University of Cambridge, is developing integrated tools to enable the transition to zero carbon aviation, one of the most complex decarbonisation challenges globally. Aviation accounts for 2–3 per cent of global emissions and requires co-ordinated transformation across fuels, aircraft, infrastructure and policy. AIA brings together industry, government and academia to model whole-system pathways, enabling decision-makers to evaluate the cost, performance and emissions impact of different transition routes, including sustainable aviation fuels, hydrogen and electrification. Alongside this, emerging ventures such as Neela Biotech are developing carbon-negative aviation fuels, demonstrating how Cambridge translates system-level modelling and research into deployable, low carbon aviation solutions. By providing robust, system-level evidence, AIA supports investment and policy decisions at scale, demonstrating how Cambridge enables complex, infrastructure-led transitions with global relevance.



Powering next-generation electrified transport systems

Cambridge GaN Devices is a University of Cambridge spinout developing high-efficiency power electronics based on gallium nitride (GaN), a critical technology for electrification across transport systems. Its devices reduce energy losses by up to 50 per cent compared to conventional silicon-based systems, enabling smaller, lighter and more efficient power solutions across electric vehicles, charging infrastructure and aerospace applications. Backed by venture investment and scaling commercial partnerships, the company is targeting rapidly growing electrification markets across mobility and industry. Emerging from Cambridge's semiconductor research base, Cambridge GaN Devices demonstrates how deep tech can translate into deployable, infrastructure-critical technologies that unlock the performance and efficiency required for zero carbon transport.



Using AI to unlock lower-cost, higher-efficiency electric propulsion

Monumo is a Cambridge-based company applying artificial intelligence and advanced simulation to optimise electric motor design for transport applications. Electric motors are central to the transition to low carbon mobility, but cost, efficiency and material constraints remain barriers to scale. Monumo's platform generates and tests hundreds of thousands of design iterations in days, enabling rapid optimisation at system level. The company has demonstrated over 11 per cent reductions in motor cost and up to 23 per cent reductions in magnet material use, with potential savings of €50 million per million motors produced, significantly improving the economics of electrification in electric vehicles and wider mobility systems. By combining AI and engineering, Monumo shows how Cambridge enables scalable, software-driven performance gains across transport systems, accelerating the commercial viability of zero carbon mobility.

A platform for testing, proving and scaling **climate innovation**

Cambridge is a place where climate innovations can be rapidly tested, proven and scaled. By combining world-class research with living labs, local authority pilots, corporate partnerships and global networks, the ecosystem enables companies to move quickly from breakthrough to deployment.



The Cambridge climate innovation ecosystem has expanded rapidly in recent years. Today, it includes 240+ climate-focused companies, spanning software, hardware and manufacturing, with strong roots in the city and growing global reach. Together, these ventures reflect a deepening capability to translate research into scalable, commercially viable solutions.

A stronger investment proposition

For investors, this means access to companies with:

- Clear routes to revenue and commercialisation
- Strong customer validation and operational evidence
- Credible pathways to large-scale deployment

How the ecosystem accelerates scale

- Translates world-leading research into real-world performance evidence
- De-risks technologies and business models through pilots and deployment
- Enables progression from pilots to procurement and commercialisation
- Supports replication across sectors, supply chains and markets

Why engage now

- Climate solutions across key systems are reaching commercial maturity
- Demand is growing for deployable, place-based solutions
- Cambridge offers a concentrated pipeline of investable opportunities grounded in world-class science

Cambridge is where climate innovations are developed, validated, and translated into real-world impact.



PAUL BRISTOW
MAYOR OF
CAMBRIDGESHIRE
& PETERBOROUGH

