

BRIEFING

FUTUREPROOFING GROWTH THROUGH THE MODERN INDUSTRIAL STRATEGY

MAY 2025

>> Introduction

At a time of global uncertainty, it is imperative that the industrial strategy puts the UK on a resilient growth trajectory aligned with net zero and environmental targets. The importance of achieving low-carbon growth, and the opportunities presented by the net zero transition, are recognised by both businesses and the UK government. While the primary objective of the government's upcoming industrial strategy is delivering growth, its other stated objective — to contribute towards net zero — should not be seen as secondary, but as a driver for resilient and sustainable growth.

Reducing greenhouse gas emissions and restoring nature are global challenges; with this scale of transformation comes huge opportunity. In 2023-24, the UK's net zero economy grew by 10.1% and jobs in the sector generated 38% more economic value than the UK average, highlighting the sector's immense potential.¹ This complements findings by Oxford Economics and the Tony Blair Institute that the green economy has the potential to grow from 0.8% of GDP today to 6% by 2050.² Tackling climate change and supporting nature recovery are also fundamental to creating a resilient and competitive economy in the long term. Businesses are already taking action, but they need the right policy landscape to accelerate progress. **The industrial strategy must futureproof growth, placing sustainability at the heart of all high-growth sectors and the wider economy.** Failing to account for sustainability in a modern industrial strategy would be short-sighted and create risks including stranded assets, costly retrofits and challenges for the low-carbon energy system.

>> Looking ahead to the Modern Industrial Strategy

A cross-sectoral industrial strategy with decarbonisation at its heart must set out a long-term vision for the UK's green industrial growth. It must also create a policy environment which enables businesses to invest, grow and create high quality jobs. The government should identify which value chains are a priority for growth, considering regional opportunities and the potential to contribute to the UK's decarbonisation ambitions. The industrial strategy must then be tailored to the UK's strengths and opportunities.

Businesses will be looking to the government's growth mission and industrial strategy for a clear vision for the UK's future low-carbon economy and a wider enabling environment for sustainable growth. Evidence shows that net zero can be a significant driver of growth for the UK and the for sectors identified in *Invest 2035*: advanced manufacturing, clean energy industries, creative industries, defence, digital and technologies, financial services, life sciences, professional and business services. Acting decisively now will drive economic growth, boost energy security and productivity, and deliver jobs for a just transition across the country. Throughout this briefing, growth opportunities directly aligned with the delivery of net zero and environmental targets are described for each sector, with case studies.

The government must also ensure that UK economic growth is futureproofed. Policy and regulatory frameworks are needed to incentivise and support growth which embeds environmental sustainability. The government has a critical opportunity to create a coherent and genuinely joined-up policy package to put the UK economy on the right footing for resilient, environmentally sustainable and low-carbon growth. Businesses need clarity and incentives to ensure that investments embed sustainability and growth is as energy and resource efficient as possible.

>> AN OVERVIEW OF NET ZERO GROWTH OPPORTUNITIES FOR THE MODERN INDUSTRIAL STRATEGY



Advanced manufacturing has a critical role to play in underpinning key supply chains for the clean energy transition, while increasing energy and resource efficiency. Just looking at offshore wind, UK manufacturing has strengths in particular components (e.g. blades) and decarbonising foundation industries, such as cement, has the potential to supply growing UK and international demand.



Financial services have a critical role in facilitating the net zero transition through underwriting, lending capital and investing in low-carbon technologies and sectors. Low-carbon financial services in the UK are estimated to generate an export opportunity of £7.5 billion per year in 2030, rising to £17 billion per year in 2050.³



Clean energy industries. Global demand for clean energy continues to accelerate, with close to \$2 trillion invested in clean energy projects annually. The UK is well positioned to capture opportunities, such as in floating offshore wind where the global pipeline stands at 244GW.



Digital and technologies are core to the future operation of the low-carbon energy system and the improvement of circularity, energy and resource efficiency across the economy. The market for Artificial Intelligence (AI) in the energy sector is valued at \$13 billion.⁴



Creative industries develop solutions with co-benefits for the net zero economy. For example, the UK's immersive technologies sector is growing at a rate of 11.2% per year and is developing technologies which could provide alternatives to carbon-intensive travel.⁵



Life sciences can contribute innovative alternatives to animal proteins, fossil-based feedstocks for industrial processes, and crops that are resistant to climate change. The global bioeconomy is estimated to be worth over £3 trillion.⁶



Defence benefits from sustainable technologies with greater agility, resilience and competitive capability. UK defence's ambitions, such as the RAF's 2040 net zero target, can provide a pull to accelerate the development and commercialisation of sustainable aviation fuel, hydrogen and battery technology.



Professional and business services support their clients on the journey to net zero and environmental sustainability. UK global leadership, such as in decarbonising the energy system, creates a huge opportunity to develop skills and expertise for export.



Advanced manufacturing

Net zero growth opportunities

Advanced manufacturing has the potential to increase energy efficiency, reduce material use, and increase circularity across supply chains. Advanced manufacturing can also play a role in clean energy supply chains, contributing to strengthening UK supply chain security and maximising benefits of the Clean Power mission. For example, the UK has existing strengths that can be applied to the development and manufacturing of advanced composites for offshore wind turbines.⁷ The government also has significant ambitions to build new infrastructure and housing, sufficient to create demand certainty for nascent low-carbon manufacturing and materials to grow.

Many businesses have their own net zero commitments and will be interested in procuring lower-carbon alternatives from their manufacturing supply chains, creating a significant market opportunity.⁸ Innovative materials and processes can help reduce embodied carbon and environmental impacts, from low-carbon cement to batteries which reduce demand for critical minerals. However, innovative products may initially come at a cost premium or carry risks that businesses are not yet ready to absorb. The industrial strategy can help support a level playing field and growth opportunities for lower carbon manufactured products, and address specific bottlenecks to their development and adoption. For example, standards based on composition rather than performance may not be appropriate for material innovation and could limit uptake, especially where insurance requires compliance with specific standards.

Policy requirements to futureproof sustainable growth

Industry, including manufacturing, accounted for 12% of UK greenhouse gas emissions in 2022.⁹ As the advanced manufacturing sector grows, it will be essential to ensure decarbonisation is incorporated, with fuel switching away from fossil fuel energy sources, resource and energy efficiency, and access to the finance needed for decarbonisation. The following additional steps will be important.

- » **Addressing uncertainty around decarbonisation pathways, infrastructure and costs:** Manufacturing sites currently face uncertainty regarding decarbonisation pathways. To move away from fossil fuels, sites will need to electrify, switch to green hydrogen and carbon capture and storage or develop new solutions where technology does not already exist. Electrification is currently commercially unattractive due to high industrial electricity costs. Access to the grid is also a challenge, with recent modelling from UKERC highlighting that industrial access to distribution networks will become significantly constrained from 2030 without further investment.¹⁰ The availability and cost of hydrogen, especially outside industrial clusters, is also

uncertain. As a result, businesses investing in new facilities are still installing fossil fuel-based processes, despite the risks of future retrofit requirements.

- » **Levelling the playing field for low-carbon manufacturing:** Low-carbon products must be protected from competition with high-carbon equivalents. It will be crucial to ensure the UK's upcoming Carbon Border Adjustment Mechanism (CBAM) is introduced and operates effectively.
- » **Increasing digital technology adoption:** Another significant trend unfolding alongside the transition to a net zero economy is digitalisation. In the manufacturing sector, digitalisation offers an opportunity to increase sustainability and efficiency. The Made Smarter programme has successfully enabled SMEs to adopt new digital technologies, with 97% of companies reporting benefits such as improved production, planning efficiency and reduced costs.¹¹ An industrial strategy incentivising digitalisation or supporting better networks and connections between the manufacturing and digital sectors can kickstart adoption of digital technologies with wider sustainability benefits.
- » **Supporting the circular economy:** Solutions are not available for all advanced manufacturing. For example, additive manufacturing is beneficial from a sustainability perspective with reduced use of materials but introduces complexities for recycling and re-use, which need to be addressed.¹² Without policy and regulatory frameworks, as well as access to recycling infrastructure, to incentivise action, the uptake of circular practices remains low.

CASE STUDY

Ultra-low carbon cement¹³

Material Evolution is an innovative start-up that has developed a low-carbon cement replacement, made from industrial by-products and with emissions up to 85% lower compared to traditional cement. Material Evolution's first-of-a-kind ultra-low carbon cement production facility in Wrexham produced its first batch of cement in October 2024, just eight months after construction on the site began. Construction of the new facility was partly funded through a £15 million Series A funding round, completed in 2023. The factory can produce 120,000 tonnes of MevoCem a year. Full global scaling of this novel product would help decarbonise over 4 billion tonnes of cement product a year, while repurposing industrial waste, reducing landfill burden and minimising environmental harm. Demand drivers and standards fit for low-carbon products would further support growth of innovative cement businesses.

CASE STUDY

Siemens Gamesa's offshore wind blade factory in Hull¹⁴

In 2016, Siemens Gamesa opened an offshore wind turbine manufacturing facility in Hull, the largest in the UK. The facility has produced almost 2,500 blades, supporting 16 offshore wind projects in both UK and international waters. The UK windfarms are some of the largest in the world, including Hornsea One and Two, Moray West and Sofia. Work will start this summer on blades for East Anglia Three.

In 2023, Siemens Gamesa expanded the factory to more than double the size of the manufacturing facilities. To date, together with ABP, over £500 million has been invested in the offshore wind blade factory and Green Port Hull. When establishing the facility, Siemens Gamesa set a target of 90 percent of the jobs created being taken by people living within 30 miles of the site. They achieved this target by working closely with the City Council and local educational institutions, establishing an ecosystem that has ensured that this remains true for the 1,400 staff working there.

Providing the clean energy sector with certainty of future demand, such as through the Contracts for Difference auction rounds, will help increase the confidence of supply chain companies like Siemens Energy - and their wind power business Siemens Gamesa - to invest in projects in the UK, creating good-quality local jobs.





Clean energy industries

Net zero growth opportunities

Global demand for clean energy continues to accelerate and is creating substantial opportunities for growth, with close to \$2 trillion invested in clean energy projects annually – double the investment in new fossil fuel supply.¹⁵ In the UK, the government's Clean Power mission sets a clear direction of travel to galvanise the sector, increase investment and therefore accelerate the deployment of clean energy technologies.

In a competitive global environment, the government must recognise the scale of opportunity for UK suppliers and leverage the industrial strategy to support the growth of UK foundation industries and manufacturing across the regions. Without an industrial strategy to help harness potential for growth, the UK may miss out on key opportunities and put wider decarbonisation ambitions at risk. Despite the UK's success deploying offshore wind, the country has missed out on £30 billion between 2008 and 2022 due to its failure to develop wind power supply chain manufacturing.¹⁶ The new Clean Industry Bonus is a good example of 'investment conditionality' as it offers additional funding for offshore wind projects through the Contracts for Difference scheme if they prioritise investment in deprived areas (such as industrial communities) or support clean energy supply chains.¹⁷

The UK has clear innovation, geographic and geological strengths in novel clean energy technologies, such as floating offshore wind and carbon capture, utilisation and storage (CCUS). With a ten-year outlook, the industrial strategy should also look beyond the 2030 Clean Power target and build the clean energy supply chains that will have important roles to play in the 2030s and 2040s. The UK has an opportunity to gain first mover advantage or to be a fast follower in a highly competitive and innovative environment. For example, despite being a nascent technology, the pipeline for floating offshore wind projects stands at 244GW globally.¹⁸ The UK is currently viewed as a leader in Europe. However, competition is increasing, with other countries including Norway, France and Japan ramping up efforts and investment.

The industrial strategy can also help alleviate risks and ensure the UK can remain on-track with decarbonisation ambitions. We asked Aldersgate Group members in May 2024 what they thought the implications of success and failure were for a UK industrial strategy.¹⁹ The implications of failure were stark: the UK cannot decarbonise its energy system without an industrial strategy. Global supply chains will continue to have a key role and, in some cases, may be more time or cost-effective in meeting targets, but supply chain risks and constraints must also be anticipated and mitigated. A study by Baringa for the UK government has identified key bottlenecks affecting offshore wind in particular.²⁰ Beyond supply chain capacity constraints, clean energy supply chains are in some cases highly concentrated in one or a small number of countries, introducing

security of supply risks in the event of trade disruption.²¹ By supporting the development of UK supply chains, the industrial strategy can help increase future energy security and resilience to supply chain shocks.

Policy requirements to futureproof sustainable growth

Clean energy technologies are core to the transition to a low-carbon economy. While clean energy technologies do not produce carbon emissions during their operations, environmental impacts occur across their whole lifecycle, including raw material extraction, manufacturing, maintenance and end-of-life dismantling or decommissioning.²² The industrial strategy must incentivise sustainable practices across the lifecycle of clean energy technologies to enable environmentally sustainable growth. The newly announced Clean Industry Bonus is a welcome development and a positive first step.²³ The following additional steps will be important:

- » **Increasing circularity and the security of supply for critical minerals:** Increasing circularity and regulation for a level playing field have been highlighted as key solutions to increase the sustainability of the end-of-life of offshore wind.²⁴ Similarly, clean energy technologies rely on critical minerals, some which are scarce or for which mining produces significant environmental impacts. Developing technologies with reduced use of critical minerals or alternative materials and improving mining practices will contribute to minimising environmental impact. The government should also recognise that placing the UK on the front foot, embedding sustainable practices and developing innovative solutions, can contribute to more efficient supply chains, novel products and services with export potential and a competitive advantage.
- » **Supporting nature recovery:** Renewable energy infrastructure presents opportunities for environmental improvement. Research has shown that solar farms, when well-managed, can actively support biodiversity, including birds and other wildlife.^{25,26} As understanding of impacts of offshore windfarms increases, innovation is creating new opportunities to address the negative impacts of offshore wind and improve their environmental sustainability.²⁷ Support and a level playing field that encourage good practice and effective innovative solutions will be crucial to delivering nature positive developments where possible.
- » **Maximising opportunities through collaboration:** Advanced manufacturing and digital technologies are an example of two sectors with shared opportunities for the clean energy sector and net zero-aligned growth. The government should ensure that collaboration is incentivised.

Access to clean power is a draw for wider investment. A survey of business leaders carried out between December and February highlighted that more than half plan to relocate their operations within five years for better access to renewable energy²⁸

CASE STUDY

Ports and the clean energy transition²⁹

ABP owns 21 ports, supporting 119,000 jobs and contributing £7.5 billion to the economy every year. ABP is planning to invest £2 billion in decarbonisation of operations and commercial infrastructure projects, driven by increasing customer demand for more sustainable supply chain solutions. As part of these efforts, ABP has installed 29MW of wind and solar power, generating approximately 19% of total energy consumption, and is aiming to add another 40MW of wind and solar along with energy storage in 2025. ABP has become one of the largest corporate producers of solar energy in the UK.

Ports are also key infrastructure for the clean power transition. One example is Green Port Hull, a £310 million joint investment between ABP and Siemens Gamesa, creating a renewable energy hub with world-class offshore wind turbine blade manufacturing, assembly and servicing facilities. The facility is set to double in size as development in the North Sea accelerates. Another example is Port Talbot, identified for its scale and capacity to deliver floating offshore wind, which would create thousands of jobs in the region.

CASE STUDY

First-of-a-kind hydrogen trial for cement production³⁰

Cemex are partnering with HiiROC, a UK hydrogen start-up, to trial a new hydrogen-process for cement production in Rugby. HiiROC was founded in 2019, with facilities in Hull and Europe, and has raised over £40 million from investors.

The novel process has the potential to significantly reduce Cemex's fuel-related greenhouse gas emissions. Cemex's investment is driven by ambitions to reduce emissions, while maintaining high production efficiency and supporting the technologies of the future in a traditional foundational industry. Cemex has also developed

lower-carbon cement products, such as its Vertua range of products, ensuring they stay ahead in a market that increasingly values environmental performance. Policy support and enablers for industrial decarbonisation of dispersed sites and market demand for low-carbon products, alongside skills development and circular infrastructure investment, would help drive broader industry transformation.



Creative industries

Net zero growth opportunities

The creative industries are a highly dynamic and innovative sector in the UK. They can play a key role in developing and commercialising solutions with co-benefits for the net zero economy, and contribute to the public discussion and engagement around sustainability. For example, the UK's immersive technologies sector is growing at a rate of 11.2% per year and is developing technologies which could provide alternatives to carbon-intensive travel.³¹ Design, from new products and services to buildings and architecture, is also already playing an important role for the environment, with 66% of designers reporting they are addressing environmental issues through their work despite significant barriers.³²

Policy requirements to futureproof sustainable growth

The creative industries are a diverse sector with a range of requirements for sustainable growth. The Creative Industries Policy & Evidence Centre have set out the path to net zero and highlighted existing gaps where further research and innovative solutions are needed.³³ The following additional steps will be important:

- » **Incentivising resource efficiency and circularity from the outset:** 80% of the environmental impact of products or services is estimated to be determined at the design stage, highlighting the crucial role designers can play.³⁴ Incentives, novel business models or a regulatory level playing field would all contribute to a more supportive business environment to increase resource efficiency.
- » **Progressing the decarbonisation of sectors that the creative industries are dependent on:** The creative industries are reliant on the decarbonisation of other sectors, such as digital technologies, power and transport sectors. In some cases, the creative industries have specific needs. For example, the film and festivals industries rely on access to low-carbon grid power, temporary and mobile power, low-carbon fuels, electric vehicle charging infrastructure, and related logistics solutions for temporary sites.

» **Supporting demand for low carbon products and services:**

Demand from customers alone is unlikely to be sufficient to drive the net zero transition of the sector. Policy and regulatory frameworks that enable access to low-carbon technology, alongside public engagement, will be important to identify where 'green' creative products and services can provide a competitive advantage to remove barriers and support the sector's transition more broadly.

CASE STUDY

Increasing the sustainability of film and television production³⁵

Bridgerton Season 3 was a huge success, ranking number 10 in Netflix's all-time most-watched English-language series in June 2024 with over 90 million views in the few weeks after its release. Bridgerton Season 3 was also one of several Netflix UK productions, including *Damsel*, *The Diplomat*, *The Union*, *Back in Action* and others, that incorporated innovative clean energy technologies. This included mobile batteries, green hydrogen units and solar panels to power the production, hybrid and electric vehicles, and more sustainable food options on set. Access to low-carbon and electrified energy and transport solutions for temporary uses, such as film sets, must be enabled as these sectors decarbonise at scale.





Defence

Net zero growth opportunities

The 2021 *Integrated Review of security, development, and foreign policy* (updated 2023) recognised climate change as a geostrategic issue.³⁶ Climate change will affect defence with changes in threats, operating conditions, and increased need for humanitarian assistance and peacekeeping operations.³⁷ UK defence is viewed as a global leader on reaching net zero, with specified contributions from the sector towards the UK's overarching net zero target.³⁸ This translates into a wider net zero related growth opportunity for the defence sector as demand increases for solutions.

Sustainable technologies can support UK defence's competitive advantage, with greater agility, resilience and capability.³⁹ UK defence can play a crucial role developing and adopting low-carbon products and services, creating the market pull to help scale and commercialise innovative low-carbon solutions. For example, the Defence Aviation Net Zero Strategy highlights the opportunity to accelerate the development and route to market for sustainable aviation fuel, hydrogen and battery technology as part of progress towards the Royal Air Force's (RAF) ambitious 2040 net zero target.^{40,41}

Policy requirements to futureproof sustainable growth

The defence sector will need to decarbonise its operations, estates and supply chains. This includes requirements for access to clean energy and low-carbon land, maritime and air transport. For example, the decarbonisation of defence aviation is linked to the decarbonisation of the wider aviation sector,⁴² requiring the development of supply chains for sustainable aviation fuels within the constraints of available biomass, aircraft engines able to operate efficiently with sustainable aviation fuel or other low-carbon technologies, and carbon capture technologies in the case of unavoidable residual emissions. The following additional steps will be important:

- » **Leveraging procurement to drive decarbonisation:** As a procurer, the defence sector should seek to apply good practice and learn from existing examples and successes in other sectors, such as the NHS, to increase sustainability and circularity across suppliers.⁴³ The value of sustainability is not always well understood or incorporated in decisions. Increasing the understanding of costs and implications of climate change for resilience and defence operations will be invaluable to support the defence community to evolve processes and adopt low-carbon solutions. Where appropriate, new standards for low-carbon products and services, and procurement guidance, will help incentivise and embed good practice.

- » **Progressing the decarbonisation of other sectors on which the defence industries depend:** The role the defence sector can play in developing decarbonisation solutions has dependencies on the decarbonisation of the energy sector, aerospace and maritime transport sector, as well as manufacturing. It will be important to ensure the decarbonisation of key sectors meets specific operational demands of the defence sector.

CASE STUDY

Energy efficiency initiatives at Portsmouth Naval Base⁴⁴

Over the past decade, BAE Systems has implemented a suite of sustainability initiatives aimed at reducing the energy consumption and carbon emissions of Portsmouth Naval Base. Measures include the installation of 500KW of photovoltaic roofing, 3MWh battery storage, and 13.5MW combined heat and power generation. As a result, the Naval Base's energy usage has halved, reducing carbon emissions by 65% and delivering £6 million in cost savings. Digital technologies played a central role. BAE Systems integrated three-dimensional geospatial models of the dockyard, providing powerful visualisation tools and easy access to information and analytics dashboards.





Digital and technologies

Net zero growth opportunities

Digital technologies and digitalisation are core to the future operation of the low-carbon energy system and the improvement of circularity, energy and resource efficiency across the economy, including manufacturing.^{45,46,47} The market for Artificial Intelligence (AI) in the energy sector is valued at \$13 billion, with applications in supply and demand forecasting, grid management and predictive maintenance.⁴⁸ By bringing a greater understanding of emissions and maximising energy efficiency, AI could help mitigate 5-10% of global greenhouse gas emission by 2030.⁴⁹

Digital solutions also contribute to reducing material use and environmental impacts. Sending a standard letter has a carbon footprint between 34% and up 600% higher than sending an email (depending on the size and attachments in the email).⁵⁰ Digitalisation also has a key role to play in increasing the energy and resource efficiency, as well as productivity, of manufacturing, logistics and other sectors.^{51,52} For example, programmable controls utilising dynamic energy pricing for households and smart building management systems can optimise energy efficiency in buildings, reducing costs and supporting the competitiveness of the real estate sector.

Policy requirements to futureproof sustainable growth

The development and adoption of digital technologies is increasing demand for energy and water to power and cool data centres and provide computing power. This has implications for planning the future clean energy grid in the UK, with uncertainty in the scale of additional electricity demand from the sector.⁵³ In Ireland, 20% of electricity is used by data centres, with demand expected to continue to rise.⁵⁴ The following additional steps will be important:

- » **Incentivising resource efficient growth:** It will be essential to encourage and incentivise efficiency as the sector grows to minimise electricity and water use as much as possible, including with standards and reporting. The Royal Academy of Engineering and the International Energy Agency have respectively made relevant recommendations to government.^{55,56}
- » **Maximising opportunities through collaboration:** Beyond efficiency, the sector can play an active role in the transition to a low-carbon energy system.⁵⁷ For example, waste heat from data centres can be used in district heating networks. Data centres often have batteries or back-up power sources to ensure continuous operation, which could play a role for flexibility in the grid. In Switzerland, STACK, a digital infrastructure company, has committed to providing additional power to the Swiss grid with its emergency generators in periods of possible energy shortages.⁵⁸ Digitalisation can also help increase sustainability of operations in other sectors and accelerate training to address

skills gaps. The government should ensure that these sectors are well networked, and that collaboration is incentivised.

- » **Supporting private investment in clean energy development and nature-based solutions:** Companies in the sector have committed to decarbonising their operations and are investing in clean energy technologies, through Power Purchase Agreements (PPAs) or for on-site generation.⁵⁹ Nature-based solutions also present opportunities for the sector that also benefit the environment. For example, Pure Data Centres are building a 7,400 square meter vertical garden at their site in Brent Cross to reduce solar gain, with wider potential for air filtering and local biodiversity benefits.⁶⁰ Guidance for the procurement of clean energy and nature-based solutions can support good practice and increased deployment.

CASE STUDY

Reducing energy consumption through digital software⁶¹

AVEVA, the British multinational information technology company, is helping companies reduce their energy consumption through advanced digital solutions.

One example is German consumer goods leader, Henkel, which is deploying AVEVA's software to obtain real time visibility over the energy consumption of their global operations. Using machine learning, Henkel has been able to reduce the energy intensity of their processes, resulting in a reduction of over 16 per cent in their energy use in the past few years – equivalent to the combined daily energy use of Amsterdam and Vienna.

Similarly, a leading tyre manufacturer has implemented AVEVA PI System to centralise monitoring over the energy consumption of its different plants. The software provides the manufacturer with visibility of the energy used by over 30,000 individual pieces of equipment, training a machine-learning algorithm to detect inconsistent values and maximise data quality to eliminate noise. This has enabled engineers to focus on strategic decision-making rather than labour-intensive monitoring, resulting in a reduction of energy consumption from 3 to 16% depending on the factory.



Financial services

Net zero growth opportunities

The transition to net zero will require significant mobilisation and reallocation of capital, with McKinsey estimating that capital spending on physical assets of energy and land use needs to increase to \$9.2 trillion annually.⁶² The investment needed for the 2030 Clean Power mission alone is estimated to be around £40 billion per year for the next six years.⁶³

The financial services industry has a critical role in facilitating the net zero transition through insurance, lending capital and investing in low-carbon technologies and sectors. For example, green bonds, sustainability-linked loans and insurance incentives, such as lower premiums for resilient net zero buildings, could further enhance the financial competitiveness of eco-friendly projects in the real estate sector. The financial sector is also well placed to capitalise on the opportunities. UK low-carbon financial services are estimated to generate an export opportunity of £7.5 billion per year in 2030, rising to £17 billion per year in 2050.⁶⁴

On average, between Q1 2021 and Q4 2024, energy efficient commercial property assets in the UK reported total returns of 16.2%, considerably stronger than the 11.2% for energy inefficient assets. The relative performance of efficient and inefficient assets varied by building use type.⁶⁵

Business opportunities also exist in nature markets including carbon markets, payments for ecosystem services and environmental credit markets.⁶⁶ These markets are valued at \$98 billion annually, and growing.⁶⁷ They have significant potential to help achieve nature-positive outcomes and generate returns for businesses and investors. However, the market needs more demand drivers and better infrastructure and integrity in order to scale, with standards and assurance to provide investor confidence. These markets also need further support to develop robustly, including through the work of the British Standards Institution, Green Finance Institute, expertise across the nature and finance sectors and existing work such as the Nature Markets Framework.⁶⁸ Robust reporting regimes will support demand for nature credits. The Land Use Framework can help provide certainty with analysis to identify what land is appropriate for which use, ensuring that nature markets are developed in symbiosis with other land uses such as food production.

Policy requirements to futureproof sustainable growth

Climate change and nature loss pose systemic risks to the financial services industry which will need to be mitigated. Four in five investors are worried about climate-related risks to their portfolios, with 46% avoiding investing in an asset due to its exposure to such risks.⁶⁹ The Green Finance Institute has found that the deterioration of the UK's natural environment could lead to 6-12% GDP loss, equivalent to £150-300 billion.⁷⁰ The shift away from a carbon-based economy also introduces the risk of stranding a large number of assets, particularly in the oil and gas sector. The following additional steps will be important:

- » **Continuing the development of robust regulatory frameworks:** A first-in-class sustainable finance regulatory framework is needed to enable the UK to be a global green finance centre. Delivering the government's proposed sustainable finance package, including mandatory transition plans, the endorsement of the International Sustainability Standards Board's standards, and ESG rating provider regulation, will all help to improve the availability, comparability, and transparency of climate and nature-related information. This will help financial institutions to integrate climate and nature into their financial decision making.⁷¹ The financial regulators could also play a more active role to address risks and facilitate the transition.
- » **Improving the coordination of public financial institutions to crowd-in private finance into growth sectors:** The UK's ecosystem of public investment institutions, including the National Wealth Fund (NWF), have an important role to play in crowding-in private capital to drive sustainable growth across the UK. As highlighted by the NWF Taskforce, a review of the government-owned development finance institutions is needed, with the objective of simplification, building economies of scale and reducing friction for private investors.⁷²
- » **Supporting the pipeline of skills:** The demand for green skills is quickly outpacing supply and is expected to accelerate further still given the scale of green investment needed in the UK and globally.⁷³ The UK government and regulators can further support the financial services sector to upskill and reskill domestic workers by providing further clarity on the skills that will be needed to capitalise on future trends. An example to learn from is Singapore where the central bank worked with the Institute of Banking and Finance Singapore to identify 12 technical skills and competences.⁷⁴ This provided a strong sense of direction and informed business investment in skills and training.

CASE STUDY

Plymouth City Council Habitat Banking Vehicle⁷⁵

Finance Earth partnered with Plymouth City Council to establish Ocean City Nature (OCN), the UK's first local authority-owned Habitat Banking Vehicle, designed to channel investment into the city's green spaces and natural assets. As part of this work, Finance Earth facilitated a £500,000 loan from the Council to establish a citywide habitat bank that will supply Biodiversity Net Gain (BNG) units to local developments.

Over a 30-year period, the Habitat Banking Vehicle is projected to generate approximately £5.3 million from biodiversity unit sales, with revenue reinvested in conservation and the ongoing stewardship of nature-rich green infrastructure, supporting local jobs and community wellbeing. The habitat bank's pilot sites will restore over 100 hectares of wildlife habitat, contributing to Plymouth's mission to become a carbon neutral city by 2030. Finance Earth is working to replicate the OCN model with eight other local authorities, developing a scalable blueprint for place-based nature recovery that delivers investable returns.

CASE STUDY

The Legal & General Climate Action Fund

Companies which are underperforming on the energy transition may miss out on the opportunities created by it, and are at risk of financial loss if they do not address their trajectory. This provides an investment opportunity in global equities, where Legal & General analysis indicates there is a value case for them to accelerate their transition. The L&G Climate Action Fund, which currently stands at \$33.3 million, aims to capture these opportunities. The fund builds on existing internal research and modelling capabilities within L&G and uses the investment stewardship function, harnessing engagement with the purpose of unlocking long-term shareholder value and a positive climate impact. Decision useful, comparable data and disclosures on climate and nature, alongside a supportive policy landscape, are needed to enable investment decisions. The ISSB standards are seen as a step in the right direction.

CASE STUDY

Oxygen Conservation invests in land to protect and restore natural capital

In 2023, using a £20.55 million loan facility from Triodos Bank UK, Oxygen Conservation acquired two estates in Scotland – Blackburn and Hartsgath, and Invergeldie – covering 23,000 acres. Oxygen Conservation works to protect and improve natural assets, including species reintroduction, landscape connectivity, regenerative agriculture, woodland creation, renewable energy generation, sustainable housing, and eco-tourism and carbon sequestration through woodland and peatland restoration.

At the time the deal was completed in April 2023, this was believed to be the largest conservation-focused commercial debt package in the UK to date. The transaction demonstrated the commercial viability and investable qualities of nature-based projects, proving that nature can deliver a commercial project return beyond the obvious environmental gains.

The transaction utilises the ecosystem unit capital repayment model bespoke to Triodos, dedicating a set amount of each carbon credit sale to capital repayment. Triodos offered a flexible arrangement that would trigger repayments based on the sale of carbon credits, including Pending Issuance Units and verified Woodland and Peatland Carbon Units. Triodos also has the option of varying the amount repaid per credit across the 25-year timeframe, on an annual basis.

**Life sciences****Net zero growth opportunities**

The UK has significant existing strengths and potential for the bioeconomy, with world leading R&D and businesses. With increasing global food demand and the need for alternatives to fossil-based processes, renewable biological resources present an opportunity for innovative products and services. For example, engineering biology can develop alternatives to animal proteins, crops that are more resistant to climate change, or replacements to fossil fuel feedstocks for industrial processes.^{76,77} The scale of opportunity is significant with the global bioeconomy estimated to be worth over £3 trillion.⁷⁸

The NHS also has an ambitious 2045 net zero target, creating a strong demand signal for low-carbon solutions. Medicines, including their manufacturing, transport and use, represent 25% of the NHS' greenhouse

gas emissions. Medicine manufacturing represented £35.1 billion of turnover in the UK in 2021. The UK is well-positioned to be a leader in sustainable medicines, with the potential to create 116,000 new jobs and be on the front foot to meet increasing demand for sustainability globally.^{79,80}

Policy requirements to futureproof sustainable growth

The life sciences sector has significant environmental impacts, from energy and water use to reliance on single use plastics and fossil fuels-based feedstock.⁸¹ In the case of medicines, 50-80% of emissions are related to raw materials and processing, with other emissions related to packaging and transport.⁸²

The life sciences sector is also highly dependent on nature. Between 1981 and 2019, over 1,800 drugs produced or derived from natural products received regulatory approval.⁸³ However, nature loss and degradation threaten the discovery of new natural products.⁸⁴ When species go extinct, the possibility of new drugs is lost forever. The following additional steps will be important:

- » **Incentivising energy and resource efficiency:** Process and circularity improvements can have a significant impact on reducing emissions, while providing cost savings. For example, McKinsey found that 30% and 11% of emissions could be addressed this way for pharmaceuticals and medtech, respectively.⁸⁵ Incentives or support for uptake of such measures where barriers may persist, such as high capital costs, would accelerate progress.
- » **Supporting access to low-carbon energy and carbon capture and storage:** Alternative fuels such as biogas, and carbon capture and storage are necessary to decarbonise the life sciences sector. Clarity on policy frameworks and infrastructure will be crucial for businesses to invest in alternative fuels and processes.
- » **Taking action to prevent loss of biodiversity:** The government is currently reviewing the Environmental Improvement Plan and has a commitment to reversing the decline in nature by 2030. However, nature is not bound by jurisdiction and borders; global supply chains and their impacts must be considered as part of the UK's environmental policy, alongside international collaboration. The Cali Fund was agreed at Biodiversity COP16 and will provide a mechanism to share the benefits of digital genetic information and reinvest into biodiversity.⁸⁶ It will be crucial to ensure this global fund operates effectively and contributes to protecting biodiversity globally.

CASE STUDY

Low-carbon fertiliser⁸⁷

Nestlé have undertaken an innovative pilot to evaluate the performance of a new low-carbon fertiliser made from cocoa shells. The trial is being conducted in partnership with Cargill, Fera Science Ltd and CCM Technologies and involves re-using waste streams from Nestlé's confectionery factory in York. This project will assess the fertiliser's impact on crop production and soil health, and if successful presents an opportunity to reduce greenhouse gas emissions and the carbon footprint of UK wheat production.

**Professional and business services****Net zero growth opportunities**

The transition to net zero creates significant opportunities for professional services, supporting clients on their journey to net zero. Corporate reporting and compliance, as well as businesses increasing their own action, is driving demand for specific expertise and services.⁸⁸

Placing decarbonisation at the heart of the professional services sector can support the decarbonisation of the wider economy. Professional services have a key role to play in knowledge sharing, upskilling and advice, and offering services which embed best practice for the climate and nature, such as integrating climate into contracts or support for structuring innovation green finance products, as well as assurance and auditing to ensure integrity and trust.⁸⁹ This, however, relies on professional service firms being at the forefront of best practice and upskilling their workforce accordingly.

Policy requirements to futureproof sustainable growth

Professional service firms do not directly contribute substantially to the UK's greenhouse gas emissions and environmental impact but can have an impact through the advice they provide clients. The following additional steps will be important:

- » **Supporting demand for low-carbon services:** A 'green' premium can introduce barriers and dampen demand for sustainable solutions. It will be crucial that professional services firms offering services which incorporate sustainability are not placed at a competitive disadvantage. This relies on robust frameworks and certainty for the decarbonisation of the wider economy.

- » **Nurturing skills and expertise with UK leadership on net zero:** Professional services develop skills and best practice through their work. Firms, often with international footprints, draw on expertise globally to meet customer demand. Where the UK leads on net zero, such as the decarbonisation of the energy system, businesses in the professional services sector develop expertise, experience and solutions that can be exported to other countries. With ambitious decarbonisation and environmental ambitions, the government can use support first mover advantage for global competitiveness of the sector.

CASE STUDY

Increasing demand for environmental and sustainability expertise⁹⁰

WSP is one of the world's leading science-based consulting firms with around 9,500 staff in the UK and Ireland. Advising on and delivering the transition to a net zero, resilient and future ready economy is a key part of WSP's 2025-27 growth plan. WSP's environmental business grew its global market share from 8.4% to 10.5% between 2022 and 2024 and the business recruited 1,200 in 2024. WSP's growth is further exemplified by its appointment in 2024 as one of National Grid's key industry partners to deliver the Great Grid Upgrade – a crucial part of the government's ambition for Clean Power 2030.

CASE STUDY

Passivhaus and net zero driving business growth⁹¹

The Passivhaus Trust anticipates that 10% of UK construction will be built to Passivhaus standard or equivalent by 2030. At the moment, Willmott Dixon is the leading contractor for the delivery of non-domestic Passivhaus projects in England and Wales. In 2024, this represented a staggering 59% market share of Passivhaus-certified non-domestic projects over 1000m² in England and Wales.

Willmott Dixon has nearly £1 billion of net zero and Passivhaus projects on its order book – a 450% increase since 2020. More than half of projects on site are already implementing solutions to make them net zero carbon in operation, and three quarters are evaluating options to reduce embodied carbon. Willmott Dixon's market-leading Energy Synergy™ process is making sure buildings perform as designed. Used on 14 projects since 2020, 60% report no performance gap after 12 months of monitoring.

» Putting in place the enablers for sustainable growth:

What a joined-up and supportive policy environment means in practice

The Modern Industrial Strategy should prioritise low-carbon and nature positive growth opportunities across sectors, with many opportunities available to grasp across the sectors. By taking a whole-value chain approach, the government can identify the targeted interventions needed to accelerate growth and increase business confidence to invest. For example, measures could include an increase in the security of raw materials supply, support for the development of the wider supply chain, or the mitigation of challenges like skills shortages.

Alongside targeted support to unlock growth, the policy frameworks created through the Modern Industrial Strategy should incentivise and reward nature-positive practices and efficient use of energy and resources to futureproof sustainable growth. Public support and finance, including the National Wealth Fund, should recognise long-term low-carbon benefits where investments initially come at a 'green' premium and help futureproof new investments. The Clean Industry Bonus is a welcome positive step forward, making additional support available for sustainable manufacturing. Such tools, introducing incentives or conditionality for sustainability, should be considered more widely by the government.

Beyond the Modern Industrial Strategy, environmentally sustainable growth requires an aligned and enabling policy and regulatory environment. With a number of strategies and policies in development, the government is an opportune position to offer businesses an enabling environment. This includes:

- » **Strategic direction with the Missions, Carbon Budget Delivery Plans and sector strategies:** The growth sectors must have clarity on the decarbonisation pathways available to them and how policy and regulatory frameworks will evolve to support net zero.
- » **Access to clean energy and infrastructure:** Understanding what infrastructure will be available when, where and at what cost is crucial to inform investment in industrial sites and their decarbonisation. Next steps must include decisive action to ensure the sectors in the Modern Industrial Strategy are powered with clean energy. The Infrastructure Strategy, Clean Power Action Plan, Strategic Spatial Energy Plan, connections queue and review of electricity market arrangements are flagship policies that must factor in the growth of sectors in planning and decision-making.

- » **Clarity on the role of businesses to support nature:** The revised Environmental Improvement Plan, supported by nature-positive pathways for the growth sectors, can help drive ambition and business engagement with nature recovery.
- » **Support for circularity:** The upcoming Circular Economy Strategy must consider the growth sectors, especially as such a large proportion of environmental impact is introduced at the design stage of new products and services. Regulation is needed to incentivise ambition and support innovation. Public support to develop new business models and investment in recycling infrastructure will also be needed to increase uptake of circular economy practices.
- » **Demand drivers:** Demand for low-carbon products and services is nascent and does not always provide sufficient pull to bring products to market and reduce costs. The public sector is a significant procurer, and the NHS and the armed forces must be leveraged to pull innovative net zero and nature friendly products and services to market. The government must also catalyse growth by ensuring that relevant opportunities from the new infrastructure and housebuilding are leveraged to signal demand for low-carbon products in the advanced manufacturing and clean energy sectors.



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