MEGATRENDS
IN THE MIDLANDS

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Megatrends in the Midlands

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Summary

Megatrends have become a hot topic in recent years with policymakers at national, regional and local levels seeking to understand how economy and society will be impacted and how they can prepare. Just two years have passed since we last considered the impact of megatrends in the Midlands and already these trends have started to unfold, and some initial sparks of change have become more mature.

This report identifies four key megatrends: Rising Geopolitical Tensions, Technology and Digitization, Climate Change and Net Zero and Demographic Trends. These four trends encapsulate a high-level view of the global megatrends. In practice they contain many different moving parts which are interlinked with one another - in some cases exacerbating, and in others mitigating, their effects.

This report seeks to understand what these megatrends are, and how they might unfold to come together to define 'a new age'. We consider how industry and policy makers at the national, regional and local level can act to seize the opportunities and mitigate the threats for the region.
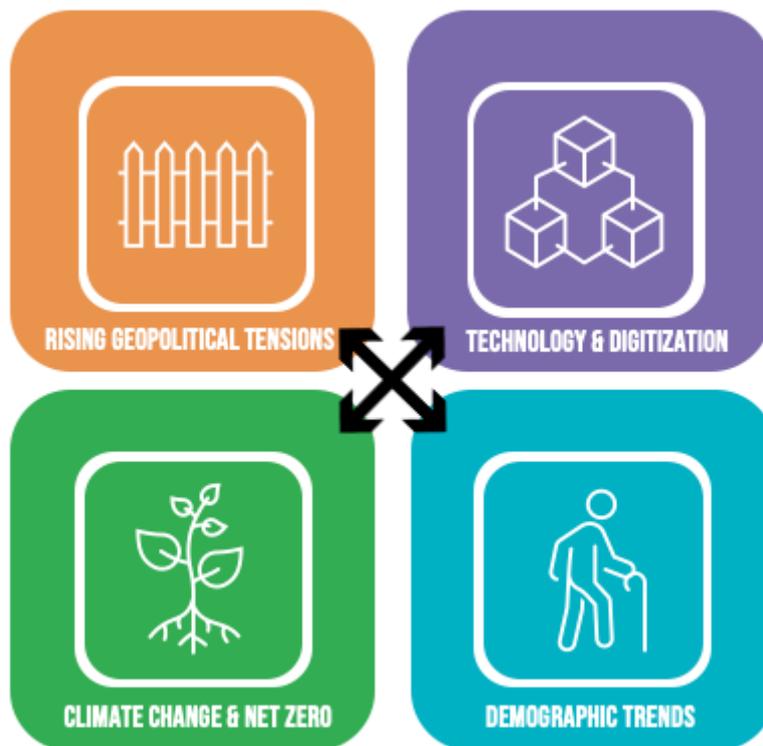
Introduction

Megatrends are large scale trends that could have significant economic consequences and scarring effects for population sub-groups and places because of impacts on human, social, physical and natural capital. Understanding 'megatrends' and their implications for the Midlands economy is crucial for informing a collective approach across the region to the main strategic drivers identified in the Midlands Engine Business Plan as essential for the Midlands economy to thrive:

- **Increasing productivity –** unlocking inclusive economic growth, enhanced business competitiveness, private sector investment and local job creation.

- **Innovating across sectors** – understanding and tackling barriers to support businesses to access finance, skills development and collaborative opportunities.

- **Building infrastructure for growth** – supporting strong business cases for investment and innovation in critical transport technologies and digital systems.

- **Increasing investment & internationalisation** – building a reliable evidence base for our region to present the region's cumulative strengths and inform decision-making.

The concept of megatrends has gained increased attention in recent years with reports by PwC and the European Commission amongst others. There is considerable overlap in terms of what is included as a megatrend generally with 4 to 6 megatrends identified. In this report we focus on four megatrends which we feel are the most important for the Midlands region. When compared with other reports notable exceptions are issues of 'social instability', 'polarization' and challenges for democracy. While we recognise these issues they tend to fall into national rather than regional policy remits and therefore are not covered in detail in this report.

A WMREDI 2021 report set out the megatrends that are buffeting the UK economy and changing the nature of the issues we face and the solutions to them. The report focused on urban centres and was shaped largely by new trends emerging because of the Covid-19 pandemic. Since 2021, there have been further major shifts in the macroeconomic environment. Some trends that had tentatively emerged during the pandemic, such as remote working, can be viewed with more maturity now the immediacy of the pandemic has passed. Russia's invasion of Ukraine in 2022 and increasing tensions between major powers have further exposed the vulnerability of global supply chains revealed during the pandemic.

This report highlights four megatrends and eighteen impact areas shown in **Figure 0.1.** Megatrend 1 *Technology and Digitization* refers to the rapid advancement of new technologies like generative AI and maturing applications and cultural acceptance of older technology such as teleconferencing. Megatrend 2 *Climate Change and Net-Zero* considers how a changing climate and our policy response to it will impact how we produce food, decarbonize our sectors, and build and temperature control our homes and workplaces. Megatrend 3 *Rising Geopolitical Tensions* considers how attitudes to trade and production may be changing in a world of greater uncertainty. Megatrend 4 *Demographic Trends* considers how concurrent trends of ageing populations, changing migration patterns and rising long-term sickness will have consequences for the region.

Figure 0.1 – Diagram showing the four identified megatrends and their interrelationships.
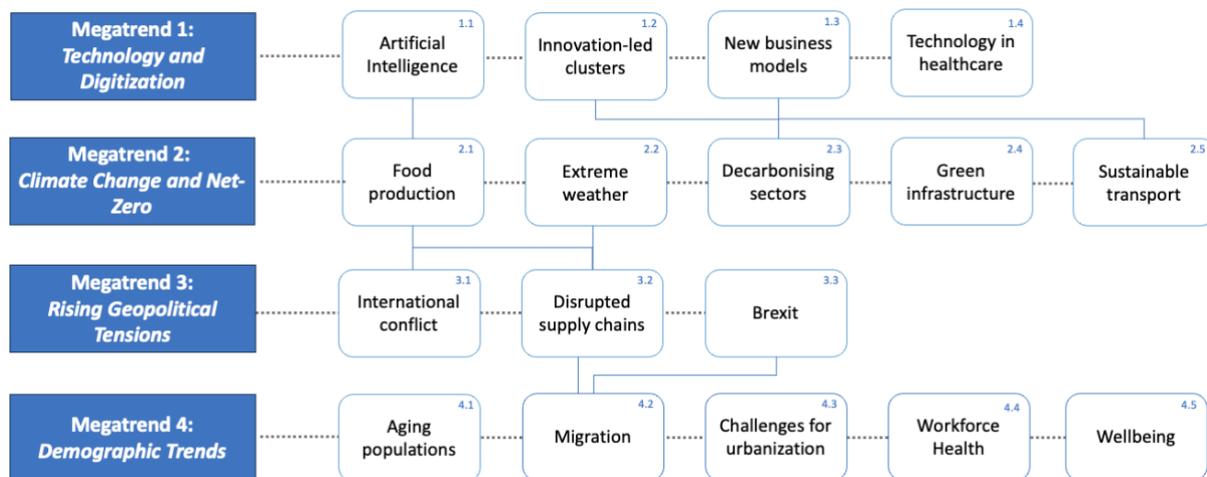
These megatrends are highly interrelated. For example, *Technology* can help provide solutions to *Climate Change and Net-Zero*. Climate Change and Net Zero will exacerbate *Rising Geopolitical Tensions* (e.g. international conflict) and *Demographic Trends* (e.g. migration).

The purpose of this report is to take a long view and understand how these trends are likely to impact the Midlands economy, including the main opportunities and risks, to strengthen the region's collective approach to support the sustainable, inclusive growth of the Midlands. Recommendations are made in relation to how policymakers and industry can mitigate the risks and seize the opportunities posed by the megatrends outlined. The findings are based on desk research on existing megatrends research at a global, national and regional level.

1 Megatrend 1: New Technologies and Digitization

The *New Technologies and Digitization* megatrend is characterized by a relentless evolution towards greater automation, connectivity, and data-driven decision-making across industries. It's changing how businesses operate and transforming the way people live and work. New advancements like generative AI (e.g. Chat GPT) have emerged and some once embryonic trends (e.g. remote working) have started to mature. This section provides some context to the megatrend and considers how it might impact the Midlands economy.

1.1   Artificial Intelligence and Automation

In recent years we have seen fast-paced innovations in Artificial Intelligence (AI), with generative AI such as ChatGPT garnering mainstream attention. Chat GTP, DALL.E, and Lensa are some of the first examples of creative AI which can mimic human creative processes, creating novel outputs based on the data and knowledge used to train their algorithms. Whilst for many the use of AI might appear to be a new phenomenon, it has been commonplace for some time, being included in process es as diverse as word processing spell checkers, personalised adverts (e.g. Netflix), facial recognition, smart home devices (e.g. Alexa), traffic updates, etc.

The impact of AI on different sectors of the economy is still unfolding but a number of sectors are likely to be drastically changed, notably transportation, manufacturing, healthcare, education, legal and customer services. We can also expect wider impacts on society including, for example, job displacement (structural labour market change) and more opportunities for data breaches as the involvement of personal data increases as AI evolves. Opportunities for the economy include increased productivity and innovation, but it is crucial that potential benefits are readily available to all businesses and consumers across the Midlands region.

A report by the ONS studied the risk of job displacement through automation. The report finds that risk is influenced by several interrelated factors such as education level, sector of employment, occupation and place of work. **Figure 1.1** shows that in terms of broad occupational categories higher skilled groups tend to be less at risk, with managers, directors and senior officials on average 32% at risk of automation compared to elementary occupations that have an average risk of 62%. **Table 1.1** shows the risk of automation by place of work for six areas in the Midlands compared to the average across all English regions. The Midlands is found to have a slightly higher risk than the English average (47.9 compared to 46.1) and has six of the top 10 (out of 354) most at risk local authorities in England. Other areas within the Midlands are found to be at comparatively low risk, especially Lincoln and North Kesteven.

Figure 1.1. Occupations with the highest risk of automation (two-digit SOCs 2010)

Source: ONS

Table 1.1 Risk of automation by place of work (England 2017)*

Place of work	Probability of automation (%)	Rank of 354 places of work in England (1=highest chance of automation)
Higher risk LAs in the Midlands Engine		
Tamworth	56.0	1
Rutland	55.7	2
South Holland	54.9	3
Boston	54.3	7
Newark and Sherwood	53.4	8
Mansfield	53.0	10
Lower risk LAs in the Midlands Engine		
Worcester	42.1	299
Derby	41.8	301
North Kesteven	41.6	305
Lincoln	40.4	322
Midlands Engine Average	**47.9**	
England Average	**46.1**	

Source: ONS

While AI is likely to disrupt some industries and job roles, the potential benefits of AI are significant and multifaceted. AI may offset some of the challenges posed by other megatrends such as climate change, net-zero transition, demographic trends and the future of public health. **Table 1.2** details the potential benefits of increasing AI use and how it could help address other megatrends.

Table 1.2. How Artificial Intelligence could influence other Megatrends.

Benefit Category	Description	Impact on Megatrends
Enhanced Healthcare	Early detection and personalized treatment	The increasing use of AI to support various aspects of healthcare is increasing the capacity, efficiency and quality of care. Increasing capacity is important in a time of skills and labour shortages which are likely to become more pronounced in time (see section 5). Innovation in healthcare is a key area where the Midlands can seek to exploit its competitive advantage in the area, building on the presence of the *MedTech* cluster (see section 7.1).
Smarter Transportation	Optimized traffic flow and public transit	Logistics and transport planning is an area that AI can support, from freight management to modal shift and public transport improvements. The latter is a key part of the UK Government's Plan for Transport see *Sustainable Transport* (section 3.3).
Increased Productivity	Streamlined processes and economic growth	The ability to automate even complex tasks allows firms to see huge growth in GVA per hour worked. This would have the effect of increasing labour productivity which is important in times of falling labour supply. There are links here to *Innovation-led clusters* (section 1.2) and *Demographic Trends* (section 4).
Personalized Education	Tailored learning experiences	UNESCO has recognised the role that AI could play in education and reskilling. Tailored learning experiences are likely to be used increasingly to support traditional education providers. Links to *Demographic Trends* and *Migration* (sections 5.1 and 5.2)
Efficient Resource Management	Sustainable practices	AI can help organise supply chains, forecast demand and reduce waste. The World Wildlife Fund has recognised its potential role in reducing food waste. This Links to *Food production* (section 2.1) and *net-zero* (sections 3.1 and 3.2)
Enhanced Customer Service	Chatbots can provide 24/7 support at a reduced cost	Increasing the use of chatbots in sectors like retail will reduce the demand for labour in low productivity occupations. This helps address the future concern of falling labour supply see section *Demographic Trends* (5.1)
Data-driven Decision Making	Informed policymaking and planning	Simplifying sources of data and generating more bespoke analysis are key areas AI can help support data-driven policy and decision making. This has cross-cutting benefits across all megatrends making economic intelligence more accessible.
Accelerated Research	Scientific and technological advancements	New AI powered programmes are rapidly being produced to provide tools that are accelerating scientific research. This has consequences across all megatrends but notably *MedTech* (see 7.1) but also *Net-zero* (section 3) and *Innovation-led clusters* (see 1.2)
Precision Agriculture	Increased yields and sustainable farming	One emerging application of AI is in precision agriculture. AI is increasingly being utilized for disease detection, phenotyping, and quality assessment across the five most produced grains in the world. There is the potential here for AI to help mitigate some of the risks posed to *Food production and Climateflation* (see section 2.1)

Sources: ([1](#), [2](#), [3](#), [4](#), [5](#), [6](#), [7](#), [8](#))

To help the Midlands realise the benefits of AI and manage the risks there are a series of policy interventions that can be employed:

1. **Skills Agenda:** The workforce should be educated and trained to prepare in fields most at risk of AI disruption. Affected fields will need support in preparing for falling labour demand and targeted reskilling programmes should be prepared in collaboration with government, industry and education institutions. Furthermore, legislation should be considered to increase worker protection from oncoming disruption.
2. **Legislation and planning:** Strategy and planning for AI disruption is critical to minimizing risks (job losses) and maximizing benefits (productivity gains). This may include investing in technological infrastructure such as high-speed internet and improving digital literacy to ensure greater inclusion. Relatedly, a regulatory framework for accountability and fairness should be considered (this is needed at the national scale).
3. **Collaboration:** For the Midlands to succeed in encouraging innovation through AI driven entrepreneurship in Midlands digital clusters, fostering collaboration between government, academia, and industry is key.
4. **Public Awareness:** Public awareness about AI has rapidly increased over the past year with nearly 75% of the population able to provide a partial explanation of the concept. However, AI use in day-to-day activities remains low with just 5% reporting using AI regularly and 50% reporting not using AI at all. Public outreach about AI and its potential uses will increase digital literacy and engagement.

1.2   Innovation-led clusters

Innovation-led clusters are clusters of economic activity that have clear links between industry, universities, and R&D institutions that actively collaborate to develop new innovations. A report by the Midlands Engine highlights 6 'super clusters', 14 'new economy clusters' and 10 'established clusters' within the region. This section focuses on three clusters with potential for innovation-led growth: the Midlands Space Cluster; the creative industries and gaming cluster; and Agri-tech. These clusters have the potential to contribute to the Midlands' GVA. The Midlands' growing health and medication technology cluster is considered separately in **section 1.3**.

1.2.1   Space cluster

One such sector that is rapidly growing and sits closely in partnership with the advanced manufacturing and automotive clusters in the Midlands, is the Space Cluster. As of 2018 the Space cluster in the West Midlands had around 74 businesses and employed 1,170 people. GDP of regional end-user sectors reliant upon data and services was estimated at £22.51bn. Most of these businesses (72%) were linked with space manufacturing activities, whilst 20% were in space applications and 8% in ancillary services. This is reflective of the region's strengths in advanced manufacturing. There is great potential to develop this sector going forward especially as the Midlands can build on its already strong manufacturing base, helping manufacturing businesses pivot to diversifying their product base to manufacture for the space sector alongside aerospace and automotive. Satellite Applications Catapult – a company that supports organisations harness the power of satellite-based services - has also joined to help develop the cluster in the Midlands, with the development of the Space Park Leicester driving growth and providing a focus for the space sector in the East Midlands. The Midlands Innovation Space group has been awarded £6.5m to help drive the Midlands space industry and grow the cluster. Given the new race to space from different countries, it is an opportune time to increase support for this sector and help businesses in the manufacturing sector see the opportunity that the space sector offers.

1.2.2   Gaming

Another cluster which has grown rapidly in recent years is gaming, which involves the production of video games. The gaming sector in the UK is the [6th largest in the world](#), with the Midlands playing a vital role. The West Midlands has over 130 gaming companies and produces 25% of all UK gaming output, with gaming and the wider creative sector a priority in both the West Midlands Industrial Strategy and the West Midlands Plan for Growth Leamington Spa in particular has a long history in gaming, with [Codemasters](#) and [Blitz](#) playing key anchoring roles for other gaming activity in the area since the 1980s. The industry is supported by a wider creative sector, including gaming, TV and film (focused in Birmingham). The West Midlands creative cluster generates around [£4bn in GVA per year](#) and has around 9,975 creative enterprises, supporting around 48,800 jobs. The East Midlands is also an important centre for gaming with 120 gaming companies and a strong history in games development. Core Design, based in Derby, developed the original Tomb Raider in 1996, an iconic action-adventure video game series that is well-known across the globe. Nottingham is also home to several large gaming studios, including The Multiplayer Group; Sumo Digital; Lockwood Publishing and Dambuster Studios.

[Academics in the sector](#) recommend that one way to secure growth is through securing and leveraging global events, which will allow businesses within the region and sector to demonstrate talents, products, networks and increase visibility on the world stage.

1.2.3   Agri-tech

Agri-tech, short for agricultural technology, refers to the use of technology and innovation to enhance various aspects of agriculture and farming practices. This can include the application of digital tools, sensors, data analytics, automation, and biotechnology to optimize crop production, improve resource management, increase efficiency, and address challenges faced by the agricultural industry. Agri-tech aims to make farming more sustainable, productive, and resilient while minimizing environmental impacts.

The Midlands has an emerging competitive advantage in [the sector](#) with 20% of Agri-tech companies in the UK found in the Midlands Cluster. 31% of UK investment into 'Agri-tech High Growth Companies' was in the cluster. The cluster is also attracting 23% of the UK's total FDI in the sector. The locations of the cluster are spread across the region from Greater Lincolnshire's Food Valley to The Warwick Crop Centre.

1.3   Health and Medical Technology (Medtech) sector

The Midlands has the [highest number of medical technology (MedTech) companies](#) of any region in the UK. Another sector which has rapidly grown in recent years is the Health and Medical Technology (MedTech) sector. There are several new innovations in the MedTech sector which have been accelerated due to the Covid-19 pandemic. Telehealth and telemedicine have [become normalized](#) as medical practices sought to reduce in-person contact during lockdown restrictions. There has been a rise in [virtual healthcare across](#) different medical disciplines which offers opportunities for greater and more convenient engagement with healthcare. AI chatbots perhaps best known for their use in customer services have been found to be [useful for therapy](#).

The Midlands is one of the key clusters of Medtech in the UK:

> *"MedTech turnover for the Midlands reached £3 billion in 2019. The region has significant strength in clinical trials infrastructure and expertise. The Institute of Translational Medicine (ITM) and the Birmingham Centre for Clinical Trials (BCCT)*

are experts in the design and running of medical device trials, and high accrual rates." HM Government

The Midlands has the highest number of MedTech businesses of any region in the UK, on average pumping £1.6bn into the UK economy annually. The Midlands has a tremendous opportunity to support the growth of the MedTech cluster through continued R&D and connectivity between innovation-led clusters. BioCity in Nottingham, East Midlands is the UK's largest life science incubation company, delivering specialist workspace for growing life science businesses. Its services include shared services and training, access to high-end equipment, and business advice. In the West Midlands, funding has been recently secured for Health and MedTech, offering significant opportunities to support growing businesses within the region. The West Midlands Combined Authority (WMCA) has included health and MedTech within its Growth Plan, with the growing emphasis on wellbeing and support from both national and local government building momentum behind this. To keep up this momentum local policy makers need to work closely with academia, businesses and health bodies to gain a greater understanding of how the cluster can be supported to grow. However, there are new challenges that must be managed to ensure that quality of care and access to care are not reduced to groups without the prerequisite digital skills to engage with virtual healthcare. The region has the responsibility to ensure unintended consequences are monitored and managed.

1.4   New business models

1.4.1   Sustainable goods and processes

Increasing concerns about sustainability are driving many consumers to adopt simpler and less consumerist values. A survey in the UK found that 1 in 3 consumers shopped for second hand products online in the last 6 months. Additionally, a survey by Deloitte found that 53% of UK consumers were going to repair or fix items rather than replace them with a new equivalent item, with the global market in personal goods repair and maintenance expected to grow at 8.4% between 2021 and 2026. Deloitte found that consumers are willing to pay higher prices for more sustainable goods even during difficult financial times, with on average 4 in 10 globally in 2022 of countries surveyed buying green. Consumers' demand for sustainability is growing at pace and will likely rapidly increase as Generation Z gains financial sovereignty and increasingly becomes more powerful as consumers. As consumers become more aware and concerned with where their goods come from, businesses across the Midlands will need to address sustainability concerns within their business models. If businesses fail to evidence how they are actively pursuing greater sustainability it is likely they will quickly lose market share to greener products.

A new cluster of activity exists across the Midlands towards achieving a more circular economy. A circular economy is about redefining growth away from the existing linear take-make-waste process.

1.4.2   Remote and hybrid working

Following the Covid-19 pandemic, ways of working have changed dramatically, with remote and hybrid working playing a much larger role in the lives of some workers. When surveyed in January 2023, 44% of adults in Great Britain reported that they were home or hybrid working, with 16% reporting working only from home and 28% reporting hybrid working. This trend seems set to remain as 47% of workers prefer a hybrid working approach. 78% of employers offer hybrid working, with young firms more likely to embrace remote working than established firms. However, the extent to which work remains remote is in flux. Some major employers such as Amazon have

imposed a hard hybrid approach in which three days in the office is mandatory. This is twice as many days in the office as workers want according to those surveyed. Another high profile example of the changing nature of remote working is Zoom which has ended fully remote working for some staff.

The benefits and costs of remote work are being intensively researched. Studies have found remote work to [improve](#) both productivity and work-life balance. Other studies have found remote work to [damage](#) productivity. There are also established benefits to [proximity](#) that cannot be gained remotely such as human capital development as workers share knowledge and expertise which is particularly important for junior workers. Remote working can lead to decentralization of populations, reduced commuting and congestion, changing real estate demands, a decline in the number of urban businesses, possible urban revitalization, and shifts in infrastructure investments.

Remote working enables workers to live further away from their employer's workplace base. Remote and flexible working also offers employers a larger workforce pool as the geographical area for recruitment becomes more extensive. Research by [Arup](#) found that commuter areas in city-regions around the globe have expanded, as new working patterns enable people to travel greater distances to work less often. One main impact of reduced travel will be reductions in congestion as fewer people drive to work. This will likely have a positive impact on people's health and well-being. Lower congestion will also lead to lower pollution, improving air quality in cities and surrounding commuter areas. Hybrid working is more economical for many commuters as less travelling will reduce spend on transportation. However, hybrid working could lead to larger [polycentric](#)city-regions which could pose issues for urban sprawl without clear planning control. This has impacts on the levelling up agenda as the link between where workers live and work is weakened. High skilled workers will have more opportunities to relocate to areas with cheaper housing and/ or more attractive environments, so raising the salience of place attractiveness in residential location decisions. This may lead to productivity uplifts in potentially low productivity areas. With the rise of hybrid/remote working there has also been a 'race for space'. Demand for housing has changed. Employees working from home now need space for a home office, creating demand for larger properties. In some instances, this leads to house prices increasing at faster rates in more rural areas compared to cities. It also leads to large increases in building work on existing properties as offices and other work spaces are added.

The way businesses utilise office space will change. Demand for office spaces will likely reduce (a trend already [evident in Birmingham](#)). Workspaces are likely to move away from the traditional project-based spaces to more task-based spaces, with more spaces designed for collaborative working, meetings, conferences, lectures or for the use of special technologies such as VR. In the long run, this will likely reduce costs for businesses. Increased remote working could also lead to some businesses leaving city centres. The [Centre for Economic Policy Research](#) found that there is a doughnut effect taking place in the UK, with employees spending less time in central business districts and more time in residential suburbs. Economic activity is increasingly shifting from within city centres to commuter or outlying areas. This could greatly improve the economy of local authorities surrounding cities and help with levelling up. This is leading to a concerted effort from local authorities to encourage more local investment and activity. However, much like cities, these areas will face competition from online retailers. To fully benefit from hybrid workers in the local area, towns and high streets will have to consider how to entice home workers out of their homes. Hence the implications of these trends will be felt differentially across local areas in the Midlands.

Offering hybrid working will also lead to an expansion of what was previously localised labour markets for businesses. This represents an opportunity for many businesses struggling to find skills within their immediate locale but also means that some local residents (particularly those with poor skills) will be overlooked, so presenting challenges for inclusivity.

2   Megatrend 2: Climate Change and Net-Zero

Climate Change and the policy response to it *Net-Zero* are having increasing impacts on the way the global economy functions and how we live our lives. Rising global temperatures are affecting how resilient our cities are to natural disasters such as flooding and extreme heat. This is increasing volatility in the global supply chain, straining agricultural systems, and increasing prices. It also affects how we use our built environment. This section considers some of the main ways this megatrend will unfold in our region.

2.1   Food Production and "Climateflation"

Climate change negatively affects crop yields through rising temperatures, changing precipitation patterns, increased prevalence of pests and diseases, altered growing seasons, reduced water availability, elevated CO2 levels, extreme weather events, and soil degradation. By 2050, population growth will mean that 50% more food will be needed worldwide, by which point it is estimated that crop yields could be down 30%. The effects of climate change induced crop failures are already being felt in the UK. For example, in early 2023 the UK saw basic salad items missing from supermarket shelves in part due to unseasonable weather in Spain during the salad growing season. India has banned rice exports due to the impact of extreme weather on harvests. These trends are expected to continue to threaten crop yields and lead to unexpected food shortages. Less predictable crop yields are impacting the global food system and leading to significant cost losses for producers. The challenges facing agriculture are anticipated to continue to drive up food prices in the long-term in a phenomenon referred to as 'Climateflation'. The European Central Bank (ECB) estimated that heatwaves in summer 2022 added 0.3% to overall inflation. By 2035 it is predicted that this could be 0.5% and by 2060 1%, contributing to around half of the ECB's targets for inflation.

The emphasis on Improving crop-yields and insulating the economy from unstable food production will lead the Agri-tech sector to be of growing importance. This is a potential opportunity for the Midlands with Agri-tech identified as one of the Midlands 'New Economy Clusters' (see **section 1.2.4**).

2.2   Extreme weather

2.2.1   Heat stress and air-conditioning

As global temperatures rise the UK is seeing more very hot days. Data from NASA and the US NOAA finds that London is experiencing ten times as many hot days as it did in the 1950s. These hot days tend to be more intense in cities with some highly localized hot spots even at the neighbourhood level (see heat map). This trend is expected to continue and as such UK households and businesses will be increasingly affected by heat stress. There are many consequences to rising heat stress: it negatively impacts health and productivity, leads to a significant increase in demand for air-conditioning, and may lead to changes in how we build our cities and homes.

Heat stress is leading to more enquiries into heat related illnesses on the NHS. Lancet Countdown estimates that heat related deaths in the UK could reach 7,000 annually by the 2050s. Heat also has a detrimental impact on productivity. Research at Loughborough University shows that productivity drops 76% when temperatures reach 40 degrees Celsius. While 40 degrees is at the extreme end productivity falls uniformly as temperatures rise. The impacts affect those who work outside, as well as those in un-airconditioned offices and industrial buildings, and has led some unions to call for a 'too hot to work bill'.

Presently the UK's built environment is not designed for increasing temperatures with newbuild properties focused on retaining rather than dissipating heat. As a result, the Ministry for Housing Communities and Local Government produced a report looking into the phenomenon of overheating in newly built properties. The increasing heat being felt in new homes is leading to a surge in demand for air-conditioning units. The most recent government data suggests that 5% of UK homes have air-conditioning and with rising temperatures demand for cooling is likely to keep increasing. This poses problems for net-zero targets. In June 2023, a coal power station was fired up to cope with the level of electricity demand for cooling, ending a 47 day streak of a renewably powered grid.

Figure 2.1 shows the average daily demand for energy in megawatts for the UK during 2023. The figure shows that when temperatures reach 30 degrees Celsius energy demand hits the same level as when temperatures fall to zero degrees in the winter.

Figure 2.1 – Average daily demand for energy in the UK 2023 (MW)
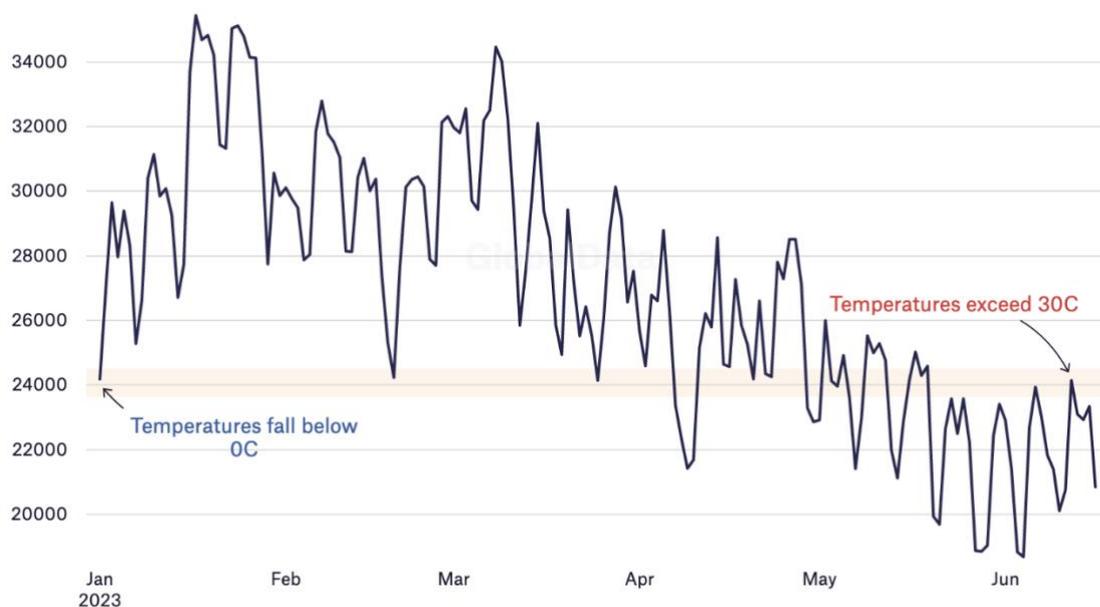

Chart: Nour Ghantous/Energy Monitor • Source: National Grid UK ESO

Source: Energy monitor

The consequences of rising heat stress present challenges and opportunities for the Midlands. The trend for increasing warm days seems likely to damage productivity, notably in manufacturing sectors that tend to work in unairconditioned commercial units prone to overheating. However, the changing future of energy demand presents an opportunity for energy technology projects like Tyesley Energy Park to continue to contribute to energy innovations.

2.2.2   Flooding

By the 2050s the number of people living in areas of significant flood risk in the UK is projected to be between 2.6-3.3 million. The East Midlands has the third highest number of properties at risk of flooding in England, with over 200,000 properties and over 400,000 people living in flood risk areas. In the West Midlands, Birmingham is at greatest risk of flood damage in the UK after London, with areas most at risk from flooding falling within some of the most deprived areas in the region. The average cost of flood damage to a home in the West Midlands is £30,000 whilst for a business it is

£82,000. Furthermore, due to a sudden increase in insurance claims, flooding events can lead to large rises in insurance premiums for both households and businesses.

Flooding also impacts local businesses through its disruption to supply chains and loss of production time. This is pertinent to the Midlands which has a high presence of industrial and manufacturing sites. Flooding of industrial sites also creates pollution problems, exacerbating the impacts on health and nature. Flooding also impacts agricultural productivity, causing the predicted loss of £20 million in agriculture in the West Midlands for a single flood event. In 2007, flooding in the East Midlands destroyed 1.3 million hectares of agricultural land. Flooding shortens growing seasons, reducing soil fertility and productivity and causing local and regional economic losses.

Flooding also impacts traffic infrastructure, with a single event costing the West Midlands between £30-80 million in disruptions. Flooding increases stress on public transport services, especially true for the East Midlands rail service, which is at greatest risk of all railway networks in the UK due to being at risk from not only groundwater flooding but also coastal flooding.

There are, however, opportunities in the region for growth and investment in flood management projects and flood defence technology. Existing examples include UK Flood Barriers in Worcestershire developing innovative flood barrier technology that is exported globally, providing regional economic opportunity. In the East Midlands, the Greater Lincolnshire Local Enterprise Partnership's (GLLEP) Water Management for Growth Plan supports the creation of 5,440 jobs through 11 water management and flood resilience projects funded by £20.5m of Growth Funds. Other relevant schemes include the Nottingham Trent Left Bank Flood Alleviation Scheme and the Tenbury Wells Flood Risk Management Scheme.


2.3   Net-Zero and the Energy Transition

The Midlands is a region that due to its sectoral composition is highly energy intensive. Energy use and productivity are heavily correlated and therefore, the region is exposed to changes in energy costs and supply. A move towards net zero and the ''energy transition'' is the response of government and industry to climate change. The UK has committed to become a net-zero economy by 2050. As it currently stands, we are 12 years away from the ban on the sale of new petrol and diesel vehicles – a key industry in the region (West Midlands) and two years away from the ban on installing gas boilers in newly built houses. Improvement in energy efficiency, decarbonisation of supply chains and the establishment of ''green'' technologies such as heat pumps and electric vehicles are likely to have significant implications for the regional economy.

2.3.1   Decarbonising sectors

The automotive industry is an important part of the national economy with a turnover of nearly £80 billion, GVA of £15.3 billion and making up 12% of all UK exports. The automotive sector is one of the Midlands' key areas of competitive advantage and of significant economic importance to the region. 35% of all automotive manufacturing employment in the UK can be found in the West Midlands where 40% of all vehicles exported from the UK are made. The East Midlands also has a strong heritage in automotive, with the global brands of Toyota and Rolls Royce having large manufacturing plants in Derbyshire.

In 2020 the automotive sector faced multiple concurrent shocks that affected both the demand and supply sides of the sector. Research by City-REDI found that in 2020 a 25% fall in new car registrations had severe consequences for the Midlands due to the high degree of interconnectivity in the supply chain. **Figure 2.2.** shows the impact of this shock on employment (full-time equivalent: FTE) in the UK showing the outsized impact on the Midlands economy.

Figure 2.2. The 2020 shock in the UK automotive sector's impact on FTE
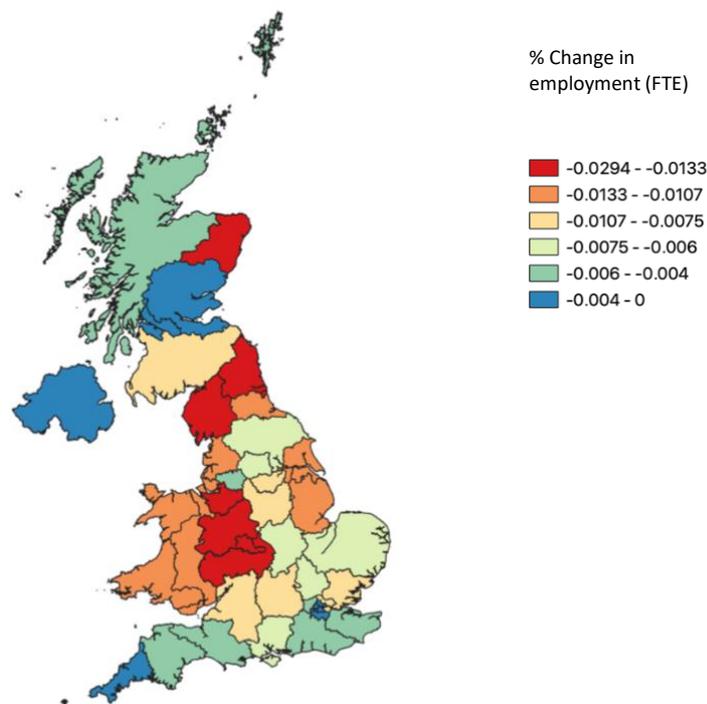
Source: City-REDI

Looking forward to 2030, the sector is facing a transformational change away from fossil fuel vehicle production to electric vehicles (EVs). While significant portions of the supply chain can remain similar, including autobody construction, fabricated and basic metals, upholstery and plastics, the drivetrain of vehicles will change substantially. The complexity of an internal combustion engine necessitates a large number of specialised parts (sometimes over 2,000 parts) to be combined from an often locally networked supply chain. These parts are often maintenance intensive and require frequent servicing. The electric vehicle drivetrain is greatly simplified with sometimes as few as 20 parts. This will mean a much greater emphasis on battery production through so-called gigafactories.

Jaguar Land Rover announced in July 2023 that a £4 billion gigafactory is to be constructed in Somerset which will create 4,000 jobs throughout the supply chain. This is an interesting case study as these new jobs will likely require quite different skills and be located outside the Midlands. However, Prof David Bailey expert in the automotive sector disagrees:

> " ...Somerset battery production will help anchor EV assembly jobs here at Solihull
> and e-drive assembly at i54 [A Technology Business Park in Stafford]. The
> alternative was Spain, which may well have seen more car assembly shifting to
> the EU also." (David Bailey, Twitter, 28 July 2023)

A joint industry government report found that the **ceramics industry** contributes £0.5 billion to UK exports, has £2 billion in annual sales and employs 20,000 people directly. The sector is an area of international competitiveness for the UK but ceramics alongside seven other identified energy-intensive industrial sectors are significant contributors to CO_2 emissions:

"The emissions savings in the industrial sector will be predominately achieved by the eight industrial sectors that currently emit approximately two thirds of industrial carbon emissions: cement, ceramics, chemicals, food & drink, glass, iron & steel, oil refining, and pulp & paper." [Department for Business, Energy & Industrial Strategy, 2017](#)

Decarbonizing the ceramics industry [presents unique challenges](#) due to energy-intensive high-temperature processes, diverse product types, and carbon-intensive raw materials. Transitioning to greener practices while maintaining product quality is complex. Balancing economic viability with upfront costs, retrofitting existing facilities, and ensuring material properties add to the challenge. Global supply chains, market expectations, and the need for research and innovation further complicate the process. Despite these complexities, decarbonization is crucial for reducing the industry's environmental impact, requiring technological innovation, policy support, and collaborative efforts. A [UK Government report](#) recommends that a Decarbonisation Leadership Group be formed to guide the ceramic sector's decarbonization strategy and policy framework.

The Midlands has internationally important clusters in the ceramics industry in Stoke-on-Trent and Staffordshire. The advanced ceramics sector has important overlaps with other innovation led-clusters such as the Space Sector (**see section 1.2.1**), the automotive sector (with ceramics increasingly used in battery technology needed for the transition to EVs) and the MedTech sector (**see section 1.3**) with ceramics used in health interventions from artificial hips to dentistry. The region is well placed to tackle decarbonising in the ceramics sector due to the presence of R&D centres in ceramics, in alternative energy technologies (**see section 3.2.3**) and materials technology specialists such as Lucideon. R&D and novel innovations such as [seawater's potential to power ceramic production](#) will have a role in decarbonising the sector but will also advance investment and jobs in the region. A report by the Midlands Engine finds that the sector has the potential to deliver £0.9 billion in GVA and 17,250 jobs by 2030.

2.4   Green Infrastructure

Greening energy infrastructure is critical to reducing carbon emissions, mitigating climate change, and promoting a more sustainable future. In many cases, the energy transition means moving away from traditional ways of heating our homes and fuelling transport through fossil fuels such as oil, diesel, petrol and natural gas towards cleaner alternatives such as solar and Hydrogen. The scale of the transition is vast, but there are questions about whether our infrastructure is upgrading quickly enough to meet this new level of demand.

2.4.1   Heating our homes

In the UK, most households are heated by gas boilers [(74.2% in Birmingham).](#) Significant efforts are being made towards more low-carbon sources such as biomass boilers and air and ground source heat pumps. The UK Government is incentivising the switch from traditional fossil fuel sources to low-carbon sources with the Boiler Upgrade Scheme. The scheme covers England and Wales and offers up to £6,000 off the cost of switching household heating systems. The scheme runs until 2028, by which time the government aims to have 600,000 heat pump installations per year. However, critics argue that efforts to support the switch do not go far enough and the government is likely to miss this target. Comparing the adoption of heat pumps in the UK versus the rest of Europe, we can see that the [UK is significantly behind o](#)ther comparable countries.

"Decarbonising the residential sector is one of the crucial steps for the Midlands Engine to reach its targets of net zero economy by 2041. The Midlands will need to install 200,000 heat pumps per year by 2040, requiring nearly 30,000 trained heat pump installers. Through retrofitting, it is expected that the residential sector in the region would save £290million in energy bills, 1.75 MtCO2e in GHG emissions and generate £3.4 billion in GVA." – Midlands Engine, 2022

Heat systems are not only the responsibility of individual households to switch but also new housebuilders and local governments. In 2019, the UK government announced the Future Homes Standard consultation which when introduced in 2025 will require that all new-builds will have 75-80% lower emissions than under current regulations. In 2023, one of the UK's largest housebuilders announced that all new homes will come with heat pumps and underfloor heating as standard to reduce their carbon footprint.

In some densely populated areas, centralised heat networks are a viable and more efficient solution that involves connecting buildings to a much larger communal network of underground heating and cooling pipes. The UK Government has launched a scheme to rollout heat networks which are seen as 'vital to achieving net zero'. There are some examples of centralised heat network developments across the country (The Bristol Heat Network is particularly developed). Birmingham has also been developing its own heat network which aims to cut the city's CO_2 emissions by 60% by 2027. There are plans to introduce others throughout the region.

2.4.2 Greening the Grid: Electrification of vehicles and infrastructure

The efforts to boost EV ownership over the last few years have had increasing success. Data from the Society of Motor Manufacturers and Traders (SMMT) suggest that EV sales made up over 17% of new car sales in 2022, surpassing the number of diesel vehicles for the first time. These numbers are expected to rise substantially as the ICE vehicle ban starts to move closer to implementation. However, one key restraint is expanding electric vehicle car infrastructure. Reports suggest that there are not enough electric vehicle charging points to satisfy future demand. DfT figures show that across the UK there are 60 publicly available EV chargers per 100,000 of the population versus 44 in the 65 Local Authorities of the Midlands Engine. How these charging points are distributed varies significantly with areas of London like Westminster with 1071 per/100k population compared to 14 in Walsall. Within the Midlands, there is considerable variation across the region, with Birmingham having 41, Dudley 61, Solihull 67, and Coventry 356 charging points per/100,000. In 2022, Coventry was declared the 'UK's most electric car-friendly city'. With the city already home to the UK Battery Industrialisation Centre, this supports Coventry's ambitions to be at the centre of the electric vehicle revolution. **Figure 2.3** provides a more complete picture of the national distribution.

Figure 2.3. Electric vehicle chargers per 100,000 of the population by local authority.
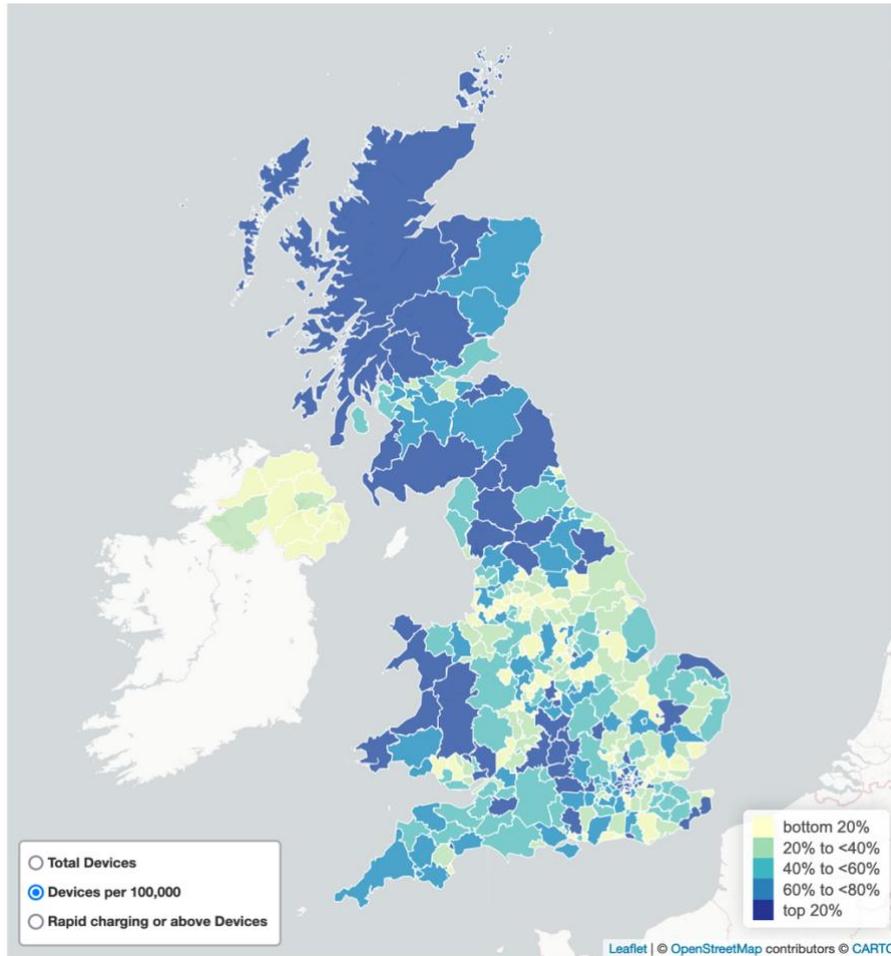
Source: DFT

With the increasing demand for electric vehicles, there is a commensurate increasing demand for electric vehicle charging points. However, there are practical barriers that are slowing down this process, particularly outside London. The process of greening the grid involves substantially upgrading the grid's capacity to deal with the increasing demand for renewable energy. Renewable energy developers in the UK are facing delays of up to 13 years to connect their green energy projects to the country's electricity grid. This backlog is slowing the progress of projects including wind farms, solar arrays, housing developments, and battery installations. The backlog is expected to worsen as demand for electricity rises. EV charging point installers must first ensure there is grid capacity before investing in new installations. However, there are regional differences in how easy it is to access information about spare grid capacity. The Midlands must ensure that there is a system for providing up-to-date substation capacity data to expedite infrastructure development.

Smart energy systems such as smart meters are another key facet of the energy transition. Smart energy systems promote energy efficiency and enable informed consumption. They can achieve this through real-time monitoring of use and dynamic pricing and are increasingly part of renewable and battery backup home systems. The benefits also help address the challenges facing the grid by reducing peak loads and enhancing energy resilience.

2.4.3   Research and Development

Investing in research to improve renewable energy technologies' efficiency, affordability, and scalability is essential. The Midlands has an advantage in R&D in the energy sector with flagship centres such as Tyseley Energy Park (TEP) located in Tyseley Energy Enterprise District (TEED) and the Birmingham Green Energy and Innovation Quarter. TEP is a collaborative effort involving industry, academics, and local government, focused on generating low and zero-carbon energy and fuels from waste. It produces eco-friendly transport fuels and drives innovation in clean technology. TEP also supports SMEs in the low-carbon sector through incubation, networking and mentoring activities and helps start-ups develop energy technologies such as fuel cells, smart grids, heating/cooling decarbonisation, and critical materials recycling.

The role of Hydrogen in energy is a maturing field and the [strategies](#) for the use of Hydrogen have evolved. Hydrogen has applications in energy storage, power generation, fertilisers and other commercial applications. The Midlands Engine Hydrogen Technology Valley and supporting strategy has a key role to play in R&D for the energy transition whilst delivering high-value jobs for the region.

2.5   Sustainable transport

A sustainable transport system is a network of transportation methods and infrastructure designed to minimize environmental impact, reduce carbon emissions, and promote social equity. They are increasingly important due to their potential to combat climate change, improve air quality, and enhance overall urban liveability while ensuring long-term resource conservation. The importance of sustainable transport is emphasized in policy at the national and regional level in the UK Government's Decarbonizing Transport Plan. An indirect impact of sustainable transport is the positive physical and mental health impacts, reducing pressure on the NHS.

The West Midlands currently engages with sustainable transport as part of wider aims to be net zero by [2041](#), by promoting active transport, increasing and decarbonising public transport, and implementing low emission zones. In the East Midlands, the focus is on enhancing cycling infrastructure, electrification of public transport and creating safer roads.

2.5.1   Active transport and micro mobility

Since 2020, cycling in the West Midlands has increased by 63%, supported by extensive 342 miles cycling network. The development of the West Midlands Cycle Hire in 2021 encourages citizens to cycle more and supports local jobs and businesses through boosts to the region's bike manufacturing and dock production. In the East Midlands, cross-boundary cycle routes are being delivered in housing to employment routes in partnership between Nottingham City Council and Derbyshire, Nottinghamshire and Leicestershire County Councils. Despite this, commuter journeys by walking and cycling in the Midlands are low compared to the rest of the UK. Two major barriers to cycling are safety and theft, as well as a lack of storage infrastructure at railway stations.

Micro-mobility, like bicycles and electric scooters, supports sustainable transport by reducing carbon emissions, filling last-mile gaps, using space efficiently, promoting physical health, being affordable, requiring minimal infrastructure, and reducing congestion and noise pollution. Integrating micro-mobility into urban planning can create more sustainable and active transportation options. The Midlands have had a leading role in rolling out micro mobility solutions such as through special permissions to allow e-scooter hire schemes in Coventry and Birmingham.

Micro-mobility faces challenges related to safety, inadequate infrastructure, haphazard parking, and unequal accessibility. The rapid growth of micro mobility schemes has outpaced regulations, leading to enforcement and liability issues. Vandalism, user behaviour problems, and environmental concerns also arise. It is important to note that micro-mobility is best for short urban trips, and addressing these criticisms requires careful planning and effective regulations.

2.5.2   Public transport and low emissions zones

An increase of public transport use by 27% by 2041 is expected in the West Midlands, with wider net-zero plans seeing the implementation of 300 zero-emission buses, alongside phasing out the sale of non-zero-emission buses. 100 hydrogen-cell buses have already been trialled in Coventry, which is set to be the UK's first all-electric bus city by 2025 (see also **section 3.2.3** on R&D and hydrogen). The East Midlands Hydrogen Innovation Zone aims to produce and utilise hydrogen for buses, supported by a £1 million investment in Nottingham. The implementation of hydrogen buses is boosted by the Zero-emission Bus Regional Areas fund (ZEBRA), promoting cleaner and greener bus transport, and the Bus Service Improvement Plan (BSIP), seeing £88 million in a passenger incentive programme to increase bus travel. The Future Transport Zone programme also sets out to understand peoples' transport behaviours, highlighting areas in the Midlands where bus travel is highest as a starting point for targeting decarbonisation works.

Network Rail is aiming for all railways to be decarbonised by 2050, with plans to remove all diesel trains by 2040. A £1.5m investment from the Midlands Engine Investment fund has been granted to Vivarail, a Midlands company specialising in electric and battery powered train systems. Infrastructure upgrades are necessary to increase rail use and hold additional passenger capacity, suggesting job creation for public transport operators.

Low Emission Zones (LEZ) have many benefits, such as combating climate change through reduced greenhouse gases and reducing air pollutants such as NO_2 and PM2.5, the main causes of asthma and lung function complaints. The LEZ in Birmingham has seen a 13% reduction in NO_2 and a 50% decrease in high polluting vehicles entering the city since 2021. However, in the context of the current cost of living crisis and with inflation remaining high, the economic burden of the switch to lower-polluting vehicles could create further socioeconomic inequalities. The implementation of future LEZs in Midlands will likely depend on the existing public transport infrastructure and the availability and affordability of low-emission vehicles and should be utilised in conjunction with other sustainable transport policies.

3   Megatrend 3: Rising Geopolitical Tensions

Rising Geopolitical Tensions pose significant challenges to international diplomacy and cooperation, raising concerns about the potential for conflicts and disruptions to the global order. Russia's invasion of Ukraine has caused massive disruption to food and energy supply and costs in Europe, and it has also had significant consequences for how countries consider their key industries. Further tensions between China and Taiwan have led to a rise in 'semiconductor nationalism' and increasing protectionism. This section considers how these tensions and other major shifts in policy like Brexit are unfolding and continue to disrupt our supply chains.

3.1   Global rising tensions and the invasion of Ukraine

Global tensions are rising. This is a result of several factors, including the invasion of Ukraine, climate change driving displacement and over-population, and changing economic power at the global scale. The World Economic Forum (WEF) has made geoeconomic confrontation its 3rd biggest risk over the next 2 years and the 9th biggest over the next 10 years (the majority of risks over the 10 years relate to climate change). The WEF is forecasting that economic warfare is increasingly expected to become the new norm with increasing clashes between global powers and state interventions in markets over the next two years. Economic policies are expected to be utilised as a defence mechanism, to develop self-sufficiency and autonomy from rival powers, though economic policies will increasingly be deployed offensively to constrain the economies of others. For instance, the US and China have been in a continually growing trade war for the last few years, with the countries regularly using tariffs as a defence.

Intensive geoeconomic weaponization is expected to highlight security vulnerabilities posed by trade, financial and technological interdependence between globally integrated economies, risking an escalating cycle of distrust and decoupling. This could lead to longer-term rises in inefficient production and prices. Already we have seen the impact of geoeconomic tactics through the invasion of Ukraine. The invasion of Ukraine has led to economic sanctions taking place against Russia. This spurred a significant increase in prices as the supply of input goods, such as wheat, cooking oil, gas and oil, declined and helped trigger the current cost of living crisis. The WEF also warned that 'geo-technological warfare' is a possibility where governments use new technology on a more destructive scale.

In response to increased global geopolitical tensions and the invasion of Ukraine, many countries are looking to de-globalisation and are favouring regionalisation motivated by security and supply concerns. This is particularly pertinent for essential goods such as food and energy. The concern internationally is that regionalisation could lead to higher production costs, thereby driving inflation and a decline in living standards in the long run. Regionalisation (or deglobalisation) is being seen in essential markets such as energy. One of the largest impacts of the invasion in Ukraine has been on global energy markets, following the subsequent embargos placed on Russian produced oil and gas. This has led to a global re-evaluation of energy sovereignty and dependency on foreign states for energy. One of the steps taken by some countries is to re-shore energy production. Most countries have expedited already agreed green policies. For instance, France accelerated a policy for all large parking lots to install solar panels on their roofs within three to five years, which should generate 11 gigawatts of power per year, equivalent to ten nuclear plants. The USA has introduced the Inflation Reduction Act which includes tax credits for energy efficiency purchases, making it cheaper for consumers to purchase goods such as heat pumps or solar panels. The evidence suggests that the invasion of Ukraine has provided increased impetus to the green transition in Europe and the USA. This is largely because countries can have sovereignty over the production of this energy and mitigate control by hostile foreign actors.

This renewed drive globally towards a green transition will mean an increase in demand for renewable and sustainable goods, particularly with increasingly progressive policies towards greener economies. 2023 was a record year for the sale of electric vehicle (EV) cars, with 10 million being sold worldwide, expected to increase by 35% in 2023 according to the International Energy Agency. This presents an opportunity for the Midlands, which has a strong automotive sector, uniquely placed to help drive the transition towards green transport. The Midlands could use the resurgence of the drive towards greener economies to grow the EV production sector (see **section 2.4.2**) and help ensure the just transition of their automotive sector.

3.2   Brexit: on-going impact

The post-Brexit trading agreement with the EU - the 'Trade and Co-operation Agreement' (TCA) - is forecasted by the Office for Budget Responsibility (OBR) to reduce productivity in the UK by 4% relative to remaining within the EU. This largely reflects the view that the increase in non-tariff barriers on UK-EU trade will act as an impediment to the exploitation of comparative advantage, as reductions in the availability of skilled workers, increased red tape and customs checks, weigh down on trade and comparative advantage. Already 44% of businesses surveyed by the British Chambers of Commerce are reporting difficulties obtaining visas for staff.

Alongside this, the OBR forecasts that trade with the EU is expected to fall by 15% in the long run, than if the UK had remained. Aston University found that UK exports fell by an average of 22.9% in the first 15 months of the TCA, alongside a 42% fall in the variety of UK exports to the EU. In the long run, the expectation is that not only will exports to the EU be lower than would have been the case had the UK remained in the EU, but the variety of goods available will also fall. This matches findings from the Institute for Government (IFG) that show that UK businesses have struggled to import goods from the EU for several reasons, including additional paperwork, changes in transportation costs and customs duties or levies. Additionally, a survey by the British Chambers of Commerce found that 56% of businesses have reported struggling to adapt to new trading rules.

Already Brexit has had a significant impact on the UK economy and the long run living standards of UK households. Following the Brexit referendum sterling depreciated significantly, as seen in **Figure 3.1**. This devalued the pound in relation to other currencies and raised the cost of imports for the UK, increasing costs for households and businesses. The Resolution Foundation found that the depreciation of sterling following the Brexit referendum led to a 2.9% increase in inflation, effectively leading to an increase in the cost of living for households by £870 per year. The rise in the cost of goods was largely concentrated in goods with high import shares, such as food, clothing and footwear, raising the cost of consumption for households in the UK across all income levels. The depreciation of sterling also reduced wages in sectors exposed to imports, as firms that were dependent on imports depressed wages to reduce costs and retain profit. This will have greatly impacted sectors across the Midlands, including manufacturing, automotive sector and food production that are highly dependent on import inputs for production.

Following the referendum business investment also flatlined, as seen in **Figure 3.2**. This loss of investment cost the equivalent of 1.3% of UK gross domestic product (GDP), or around £1,000 per household.

Figure 3.1 *Depreciation of sterling following the Brexit referendum*

Sterling's depreciation

Effective exchange rate index (Jan 2016 = 100)
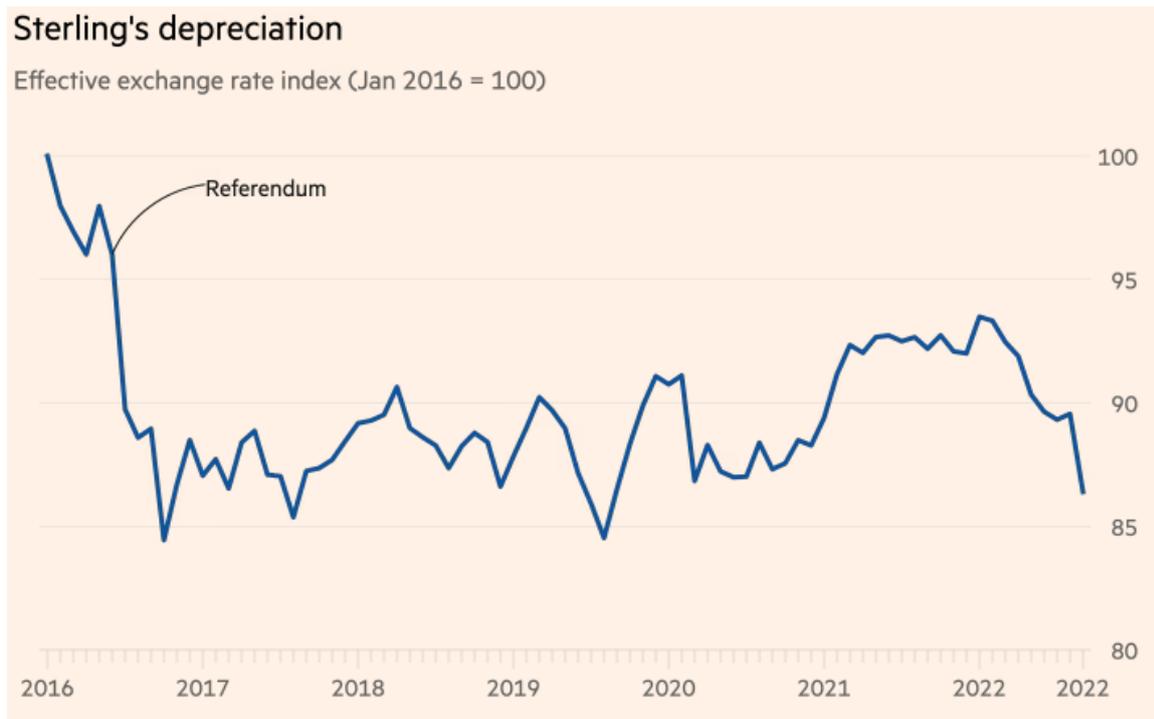
Source: Financial Times, 2022

Figure 3.2 UK Business Investment Index

Business investment index, real value rebased, Q2 2016=100

— Actual — Q2 2009- Q2 2016 trend

Source: Financial Times, 2023

3.3 Disrupted supply-chains

Rising global tensions and Brexit have exposed the vulnerability of global supply chains, leading to many countries assessing their supply chains. This has also been impacted by the Covid-19 pandemic and its aftermath which also caused significant restructuring to global supply and value chains. **Table 3.1** details 10 of the main sources of supply chain disruption and details the extent to which they are transitory or represent a new normal.

Table 3.1 Transitory or the new normal? Analysis of the different aspects of supply-chain disruption

Issue	Causes	Transitory or new normal?
Global shipping disruption	The pandemic led to widespread port closures, reduced shipping capacity, and labour shortages at ports and logistics centres. These disruptions caused delays in the movement of goods, increased shipping costs, and created container shortages.	**Transitory** with caveats. Shipping container costs are almost back to pre-pandemic levels. The Ukraine War, however, is causing shipping disruption with agricultural exports.
Transportation Challenges:	Travel restrictions and reduced passenger flights affected air cargo capacity, leading to challenges in transporting goods by air. Ground transportation was also affected by lockdowns and restrictions.	**Transitory**. Air UN department ICAO predicts air traffic will be back to pre-pandemic levels later in 2023.
Production Delays	Many manufacturing facilities around the world had to shut down or operate with reduced capacity to comply with lockdown measures and ensure the safety of workers. This resulted in production delays and impacted the availability of various products.	**Transitory**. Manufacturing facilities have reopened since the pandemic and with reducing requirements for pandemic hygiene controls.
Raw Material Shortages	The pandemic disrupted the availability of raw materials, particularly when they were sourced from countries heavily impacted by the virus, causing further delays in production and manufacturing.	**Transitory**. The spike in raw materials costs during the pandemic has subsided (see timber prices for example).
Shortages of Essential Goods	The sudden surge in demand for certain essential goods, such as personal protective equipment (PPE), medical supplies, and certain food items, led to shortages as supply chains struggled to cope with the increased demand.	**Transitory**. Essential goods such as PPE were an issue in the acute, early phases of the pandemic and have since subsided.
Supply Chain Complexity:	The pandemic exposed vulnerabilities in complex global supply chains that rely heavily on just-in-time production and sourcing from multiple countries. Many companies started to reassess and reconfigure their supply chains to enhance resilience.	**New normal**. The combination of the pandemic and geopolitical tensions (see section 4.2) has led to a move towards a rise in economic nationalism and reshoring. The risks the pandemic exposed have reduced firms' reliance on just-in-time systems. Despite this, price sensitive consumers are likely to keep reshoring efforts muted.
Labour Shortages	Labour shortages due to illness, social distancing measures, and travel restrictions affected various industries, such as agriculture and food processing, leading to disruptions in the production and distribution of goods.	**New normal**. Labour shortages continue to be a structural issue in some sectors related to macro issues such as Brexit. (see section 4.3). This latest economic crisis remains unusual in that the labour market has remained tight.
Shift in Consumer Behaviour:	Changes in consumer behaviour, such as increased online shopping and a focus on health and sustainability, impacted supply chain demands.	**New normal**. Online shopping increased considerably during the pandemic and while it remains high it is falling.

Trade Policy Changes and Brexit:	The pandemic prompted some countries to reassess their trade policies and adopt protectionist measures, such as export restrictions on critical medical supplies, leading to further disruptions in the flow of goods.	**New normal**. This relates to issues of supply chain complexity and reshoring. (see sections 4.2 and 4.3).

Sources: (1, 2, 3, 4, 5, 6)

It is essential to recognize that supply chain disruptions have been dynamic and varied across industries and regions. The mix of sectors in the Midlands means that some sectors are likely to be impacted more than others in the future.

- **Staff shortages** – In November 2022, 13.3% of businesses reported experiencing skills shortages. The breakdown of these skills shortages varies significantly by sector with 35% of Accommodation and Food Services, 21% of Construction, and 19% of Human Health and Social Work businesses experiencing skills shortages. These shortages remain above pre-pandemic levels. Some causes of which are covered in **section 4.**
- **Decoupling –** Global supply chains are 'decoupling' becoming shorter and more local (continental rather than global). Protectionist policies and reshoring – some sectors of strategic importance are more likely to be protected by the government (e.g. steel) than was previously the case. See **section 4**.
- **Rearranging supply-chains –** The technology shift underway in the automotive sector (see **section 2.3**) is likely to have significant implications for jobs in the region. Shifts related to the vulnerability observed in global supply chains have also upset long-standing norms such as just-in-time manufacturing.
- **Brexit and shifting international flows**– Trade, much like water, seeks the path of least resistance. Brexit and other geopolitical tensions will have ongoing impacts on some supply chains which affect some regions more than others. See **section 3.2**.

4   Megatrend 4: Demographic Trends

The *Demographic Trends* megatrend refers to ageing populations, migration dynamics, increasing urbanization and the consequences for health and housing. The 2021 Census provides new information on how demographic trends are unfolding. Population ageing remains a key issue, with impacts experienced unevenly across the Midlands. International migration flows are also impacting the size and structure of the Midlands' population. These flows are largely shaped by immigration policy which is determined at the national level. However, geopolitical events also play a role. Policy levers regarding demography are determined at a national rather than regional scale, although planning policy has implications for the spatial distribution of the population in the Midlands.

4.1   Demographic trends: Ageing population

The ageing of the population is a long-term trend. Historically, it has been driven by two main factors: improvements in life expectancy (which are now stalling in the UK) and a decrease in fertility (as people have fewer children). Ageing is a global phenomenon, with the share of older people projected to increase in all parts of the world. In 2015, 12.3% of the global population was aged 60 years and over. This proportion is expected to rise to 16.4% in 2030 and 21.3% in 2050. Countries in Europe and North America are projected to remain amongst those having the oldest populations, with the UK population ageing less rapidly than some other countries in Europe. China and much of South America are projected to see rapid ageing in the medium- and long-term (see **Figure 4.1**).

Figure 4.1: Global population aged 60 years and over
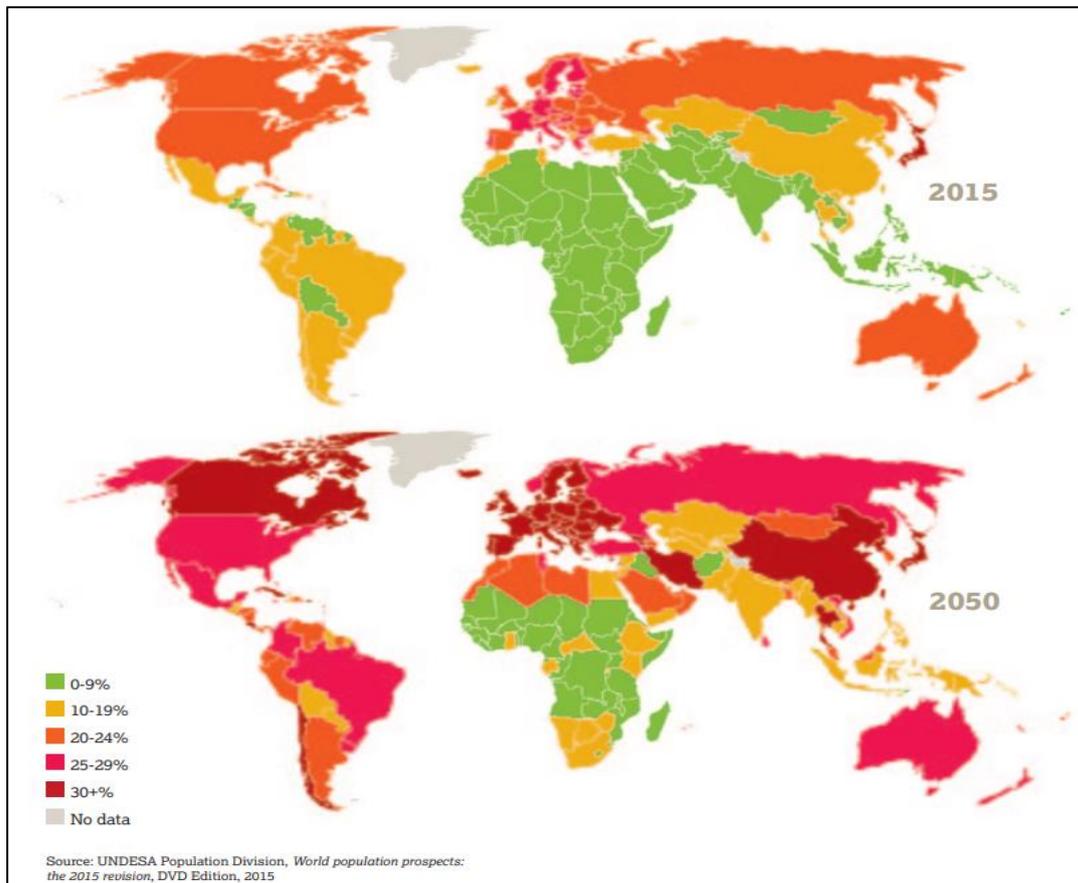
Source: Global AgeWatch Index, 2015, HelpAge International

Although we know a good deal about the size and age profile of the population, it is important to keep in mind that population projections are subject to uncertainty. Interim 2020-based population projections indicate that the UK's population will increase by 3.2% by 2030 (from 2020), with a predicted net 2.2 million people migrating to the UK over the next ten years being the major driver of projected population change. Notably, the rate of population growth projected is slower than in previous rounds of projections from the ONS due to assumptions about fertility and mortality improvements being revised downwards.

Over the medium- to long-term growth is projected to be particularly pronounced in the population aged 85 years and over. 4.3% of the UK population is projected to be in this age group by 2045, compared with 2.5% in 2020.

Sub-national population projections from 2018 (which do not account for the impact of the Covid-19 pandemic) highlight the East Midlands as having the highest projected population growth (7.0%) between 2018 and 2028, with projected growth in the West Midlands (6.1%) also exceeding the England average (5.0%). In the East Midlands net migration within the UK and net international migration are the two largest components driving population change. In the West Midlands net international migration is the largest component of change, followed by natural change (i.e. the difference between live births and deaths).

There are marked intra-regional variations in the percentage of the population aged over 65. **Figure 4.2** shows a projected increase in this age group in all local authority areas between 2023 and 2024,

with the highest projected proportion (37.8%) in East Lindsey in 2043, up from 31.1% in 2023, and the lowest proportions in Leicester (15.6% in 2043, up from 12.8% in 2023) and Birmingham (15.7% in 2043, up from 13.3% in 2023). The heat map also displays the tendency (in the Midlands and across the UK) for older people to comprise higher proportions of the population in rural and coastal areas than in urban areas. It is in these areas that the challenges of an ageing population – in relation to housing, healthcare, service provision, etc., as discussed briefly below - are greatest.

Figure 4.2. Heat map of people aged 65 years and over
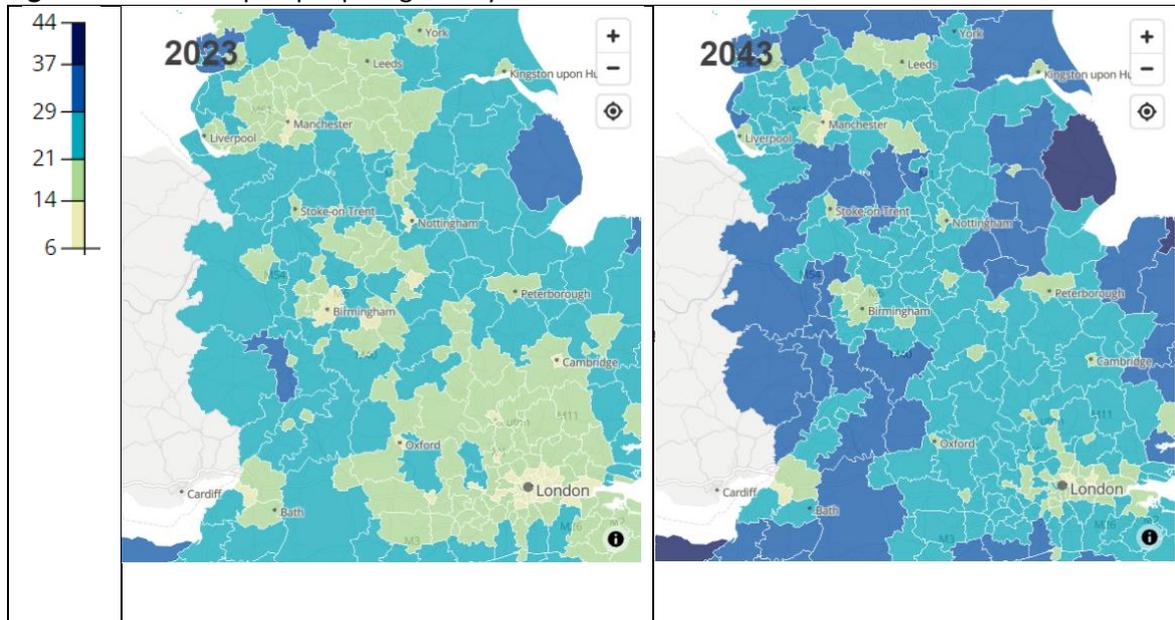
Source: ONS

Ageing has multiple economic and social impacts. It has implications for the size and composition of the workforce, types of goods and services required, pensions, housing (where older people are more likely to under-occupy their homes than younger people), health and care requirements (which increase with age) and well-being. Whereas people of working age tend to contribute more in taxes than they consume in terms of public expenditure, this reverses later in life, especially in the oldest age groups. However, some people in the older age groups (especially younger retired) are active volunteers and informal carers – including providing time, monetary and emotional support for grandchildren, so helping people who are in work and so aiding other generations.

There are significant inequalities within the cohort of older people, reflecting deprivation and other factors. Prior to the Covid-19 pandemic – which tended to exacerbate existing socio-spatial inequalities – healthy life expectancy at age 65 across the Midlands ranged from 7.1 years for males and 7.2 years for females in Stoke-on-Trent to 16.1 years for males and females in Rutland. It is in the most deprived areas that concerns from the Centre for Ageing Better about an increase in pensioner poverty and poor health are likely to be starkest.

4.2   International migration flows

Immigration is a key economic and social issue. It has fuelled economic growth and prosperity, changed the demographic composition of the UK and shaped much of the political agenda. It is likely to continue to do so.

Public opinion on migration matters. A survey conducted in 2023 identified the existence of 'cake-ism' - coming from the phrase "to have your cake and eat it too" - because of a desire for increased

immigration of high-skilled workers in shortage jobs alongside wanting to see a decrease in immigrants overall. The survey results showed that the public is split in relation to whether immigration is a good or a bad thing for Britain: a third see it as 'bad' or 'very bad', a third as 'good' or 'very good', and a third as neither bad nor good. While just over half (52%) thought immigration should be reduced, this represents a softening of attitudes to immigration since 2011 when 69% of survey respondents suggested there should be a reduction in immigration.

In most countries of the global North recent contemporary debate has been prompted by the use of immigration to address labour and skill shortages. An [overview of immigration to the UK](#) shows that in the years after World War II the Commonwealth was a key source of labour for the UK. More recently – until Brexit – the European Union (EU) was a key supplier of international migrants to the UK. From 2021 post-Brexit immigration policy in the UK has ended the free movement of EU citizens to the UK. EU net migration decreased sharply in 2016 (the year of the UK referendum on EU exit) and thereafter remained low.

Under the current UK immigration policy, there is equal treatment of EU and non-EU citizens under a [Points-Based System](#) that favours immigration of high- and medium-skilled workers. This has meant that employers can no longer rely on international migrants as a source of labour in the way that some did previously. In turn, this has implications for [employers' business models and behaviour regarding workforce training](#).

While UK immigration policies shape the quantity and composition of flows, so do immigration policies elsewhere. This is because immigration policies in alternative destination countries influence the relative attractiveness of the UK. Here the UK is competing for the most highly sought global talent with most other developed countries' skill-based [selective migration policies](#). The [cost of visa fees in the UK is considerably higher](#) than in several competing destinations.

But it is not just economic factors or immigration regimes that shape migration flows in the UK and internationally. Geopolitical events play an important role. For example, in 2022 international immigration to the UK was at record levels. Two of the factors were [arrivals through humanitarian routes from Ukraine and Hong Kong](#). An increase in non-EU international students coming to the UK was a further factor, with the [ONS citing delayed travel and increased demand following the Covid-19 pandemic and also the introduction of a new Graduate Visa route](#). Over the longer-term, climate change may play an increasingly important role in international migration flows.

International immigration has an [uneven geographical impact](#). At a regional scale, 40.6% of London's population in 2021 was born outside the UK, compared with 15.2% in the West Midlands and 13.7% in the East Midlands. The 2021 Census of Population data shows that people born outside the UK comprised 41.1% of the population in Leicester, 27.9% in Coventry and 26.7% in Birmingham. At the opposite end, the shares were 2.6% in the Staffordshire Moorlands, 3.1% in North East Derbyshire and 3.3% in South Staffordshire. Change matters too, especially in relation to concerns about service provision. The largest percentage point increases in people born outside the UK in the intercensal period from 2011 to 2021 were in Boston (8.5%) and Sandwell (7.7%).

4.3   Challenges for Urbanisation

The ways in which we live and work are changing. Up until the Covid-19 pandemic, there was a strong movement towards city living and working. However, the pandemic has changed how we view our cities. This section considers what this might mean for the Midlands, with particular foci on what hybrid and remote working means for central business districts and cities more generally, as well as the availability and affordability of housing.

4.3.1   Changing urban fabric

Remote working and increased use of online retail have changed the character of our cities and how we interact with them. Whilst national high street retail footfall is rising again it has not yet reached pre-pandemic levels, likely partially dampened by the current cost-of-living crisis, as well as changing working patterns. City centres are [no longer a place of necessity](#) to work or shop; rather they are becoming a place of choice, bringing both opportunities and challenges.

A key risk for cities in the medium term is the growing trend of empty offices and falling commercial property values. One proposed solution is to convert offices into flats. In July 2023, Michael Gove, Secretary of State for Levelling Up, Housing and Communities announced a relaxation of planning laws to allow more retail and office spaces to be converted into residential spaces. However, this poses a significant risk given that the UK is amid a building safety crisis which has highlighted such conversions as often poor quality. In the long-term with rising temperatures there is also a [risk of overheating](#) associated with these types of conversions.

There is an opportunity to seize the changing demand of inhabitants towards a more experience-based city centre, which provides an attractive mix of leisure, culture and retail and is focused on memorable events that elicit sensory responses through multi-dimensional innovation and design. For instance, it has been [found that landlords](#) are now encouraging retail tenants to create in store experiences, with examples such as perfume shops running perfume making classes.

Alongside an increase in experience-based and mixed-use spaces in city centres, there has also been a reduction in major chain brands in UK high streets in favour of a greater online presence or the collapse of major high street chains. The likely implications of this will be a switch in dominance in city centres, away from chain-based stores towards potentially more independent stores that would give both landlords and local authorities greater influence over high streets. A more localised experience would also likely mean more adaptable and responsive high streets and would support the growth in preference of customers for independent retail and hospitality that supports sustainability and community. The future for high streets however is still yet to be known.

There is also growing pressure on urban areas as the rate of population growth [outstrips that](#) in rural areas, with rural populations increasing by 5.2% between 2011 and 2019, compared to 6.2% in urban areas. This has caused issues with planning and social cohesion. [Tactical Urbanism](#), or DIY urbanism as it is also commonly known, is an approach to neighbourhood building and activation using short-term, low-cost and scalable interventions and policies, for which neighbourhood building and activation is a growing trend as a solution to this. Examples of tactical urbanism include policies such as low traffic neighbourhoods, to reduce motor vehicle traffic in residential streets and guerrilla gardening, wherein disused urban space is unofficially planted to create green spaces. The advantage of policies such as these is that they are agile and low cost, particularly when working in partnership with local groups and communities. They also build social cohesion that will be particularly important in coming years, given local councils might be facing [further funding cuts](#), as central government tries to reduce debt in the medium term following the pandemic.

Alongside tactical urbanism, another growing trend is [mass participation](#) in the development of cities. Cities are evolving to be human-centred and designed by and for citizens, bringing together citizens, social innovators, community organisations, businesses and academia. Through mass participation, supported by open data and technology, and with [local government acting as a platform](#), cities can use citizens as a sensor, leading to greater innovation, better utilisation of resources and an increased sense of ownership and pride in place. This can be achieved through policies allowing citizens to submit ideas on how to improve city liveability, as was done in the initiative '[Leuven, Co-create](#)'. Mass participation could be tested in the Midlands by inviting citizens

to vote on initiatives within urban spaces, for instance votes on brownfield sites, art installations, and green spaces etc. This could be done via online votes on local authority websites.

Another growing trend in urbanisation is green and blue urban spaces. Following the Covid-19 pandemic many green spaces become unreachable to those living in highly urbanised areas, driving a growing trend to bring green spaces back into city centres, particularly given the associated health benefits. People have become more aware of our impact on the environment and climate change, and as a result, people want to see more green and blue urban spaces, which protect biodiversity and reduce pollution. Furthermore, green and blue spaces can protect urbanised areas in the UK from issues such as flooding, which urban areas are at high risk of due to the lack of vegetation and non-porous building materials which prevent water drainage.

4.3.2   Housing affordability crisis

An ongoing trend related to demography and urbanisation is the increasingly dysfunctional housing market in developed economies. Accommodation costs make up a significant proportion of household incomes and in the UK (like other countries) across all tenure types housing is becoming less affordable. Households are spending a greater share of their incomes on housing, and it is changing the dynamics of family life. People are living with their parents for longer, they are leveraging themselves more severely and home ownership rates are falling, especially amongst the youngest age groups. The consequences of falling homeownership are concerning when viewed alongside an ageing population and the importance of reduced housing costs in retirement when relying on less income. The trend of increased housing costs has important sub-regional differences. It is important that the housing supply is expanded where housing demand is increasing otherwise it could add to further price rises, gentrification and act as a drag on the local economy.

Since the early 2000s home ownership levels have been falling, especially amongst the younger age groups (**Figure 4.3**).

Figure 4.3. UK Home ownership rate by age band 1996-2016
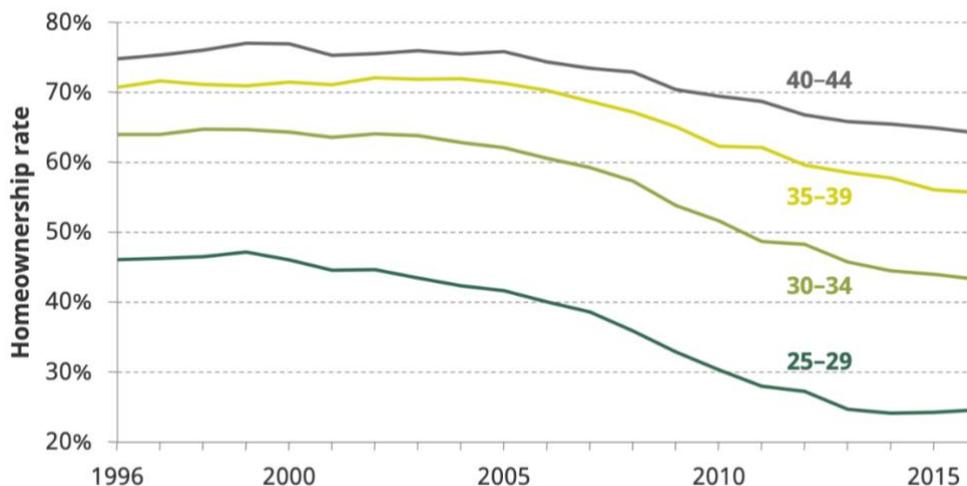

Source: Authors' calculations using the Labour Force Survey 1996 to 2016.

Source: IFS

Across all tenure types we are seeing housing becoming less affordable. Rent prices have been rising quickly. **Figure 4.4** shows that private housing rental prices have started to increase rapidly from mid-2020.

Figure 4.4 - Experimental Index of Private Housing Rental Prices - Annual percentage change by countries and regions 2012 to 2023.
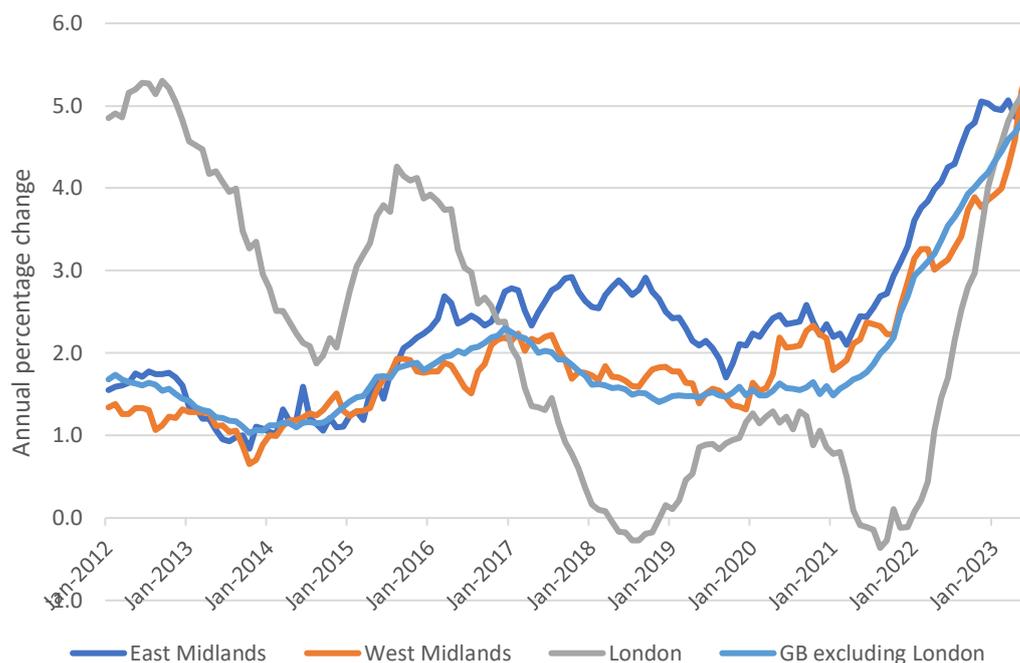
Source: ONS

House prices have increased rapidly throughout the region (see **Table 4.1**) with some areas seeing rises of over 180% in the last 10 years, the average change across the Midlands Engine is 156%. Despite this, the average change is still lower than for the UK (164% Excluding London).

Table 4.1. House price changes in the Midlands between 2012 and 2022

| Local authority name	Average House Price 2012*	Average House Price 2022*	Percentage change [1]
Leicester	120,000	226,995	189%
North West Leicestershire	138,500	257,500	186%
North Northamptonshire	135,000	250,000	185%
Gedling	127,000	230,000	181%
Nottingham	99,500	180,000	181%
Blaby	152,500	275,000	180%
Oadby and Wigston	144,500	260,000	180%
Sandwell	110,000	195,000	177%
Coventry	122,500	217,000	177%
West Northamptonshire	163,000	285,000	175%
Broxtowe	133,000	232,000	174%
South Holland	135,000	235,000	174%
Birmingham	128,000	221,000	173%
Midlands Engine Average	156,136	243,794	156%
UK excl. London Average			164%
London Average			181%

*Year ending December

Source: ONS HPI (House Price Index table 2a)

1 Please note that percentage change indicates the magnitude of change relative to the original value 56% would mean a decrease, 156% is an increase relative to 100%.

We are now entering a period of higher interest rates which raises concerns yet further with mortgage repayments rising significantly in the region. Data from the ONS Mortgage payments tool shows that typical payments on a five-year fixed mortgage in Birmingham have risen 17% for flats, 27% for terraced properties, 29% for semi-detached properties and 31% for detached properties since May 2018. Alongside the backdrop of decreasing affordability and high levels of demand, we are seeing sluggish house building. **Figure 4.4** shows house building by region between 2010 and 2022. The government is expected to fail to meet its target of building 300,000 new homes per year, the number required to start to close the supply shortfall. The trends observed in housing are further exacerbating inequality between groups in society.

**Figure 4.4**. House completions by region and year 2010-2022
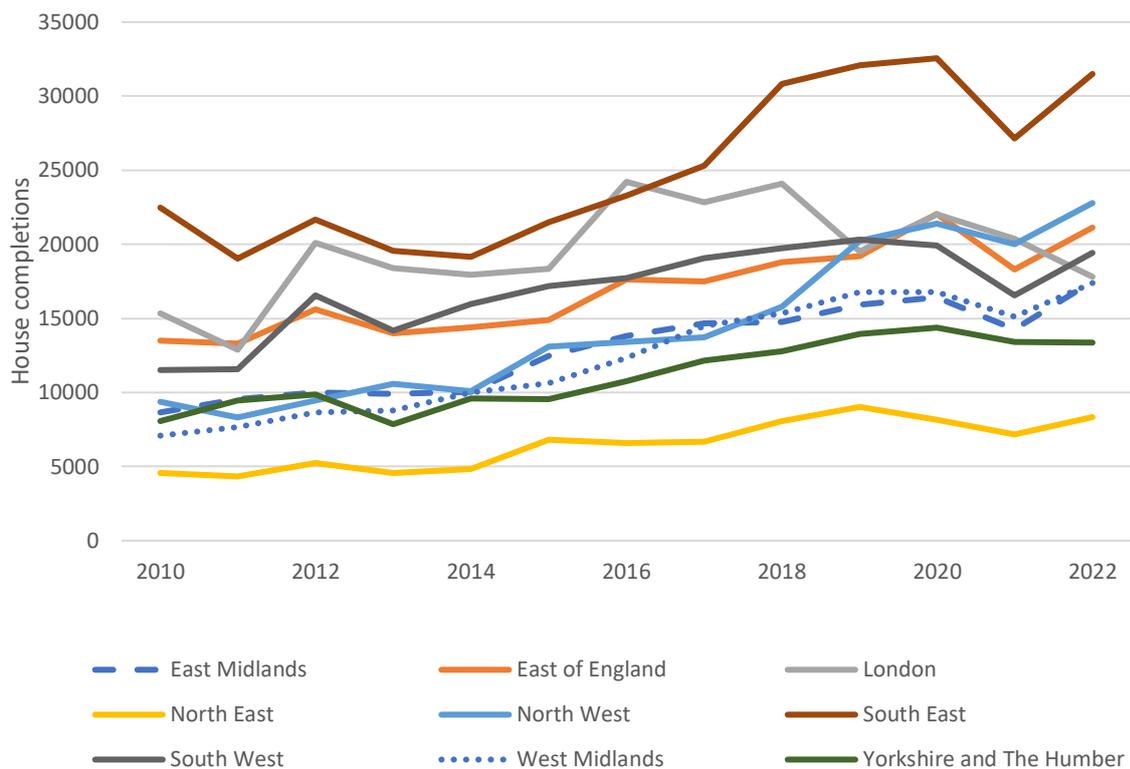
Source: ONS

4.4   Workforce Health

In 2022 the ONS reported that 2.5 million people are out of the labour force due to long-term sickness, a rise of 500,000 since 2019 (see **Figure 4.5**). There are various explanations for the rise in long-term sickness. Firstly, there is a developing understanding of how long Covid can impact health in the long-term. Secondly, NHS waiting times have been rising with a rapid spike during the pandemic. Thirdly, the impact of an ageing population (as outlined in **section 4.1**) means that on average people are living longer and in older age groups we are more likely to see people with multiple health conditions.

Figure 4.5. The rising number of people falling out of the labour force due to long-term sickness.
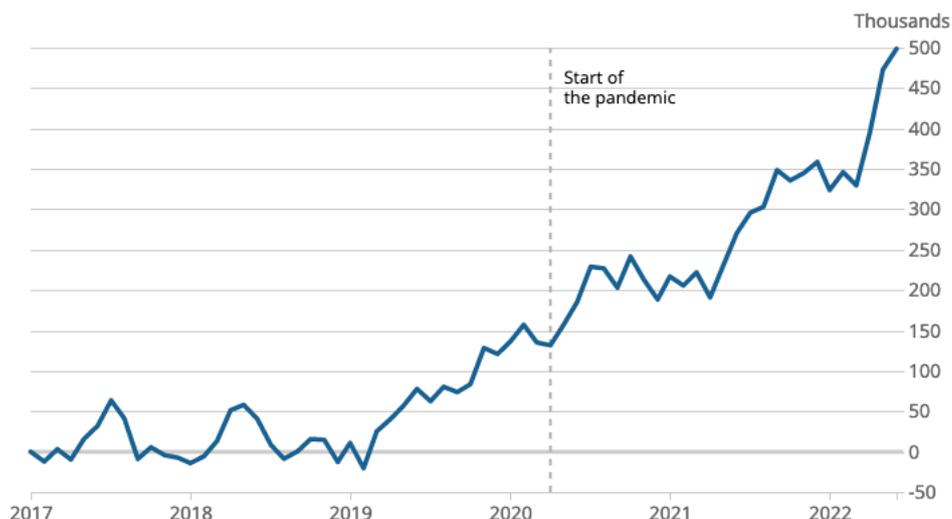
Source: ONS

The issue of long-term sickness has a regional and local component. There has long been a gap in healthy life expectancy within regions with some areas of the Midlands characterised by shorter lives and living for more years in ill health. The UK Government has recognised this, leading to one of the 12 levelling up missions setting out an ambition to see the gap narrowed:

> "A narrowing in healthy life expectancy between the UK areas where it is highest
> and lowest, with the overall average healthy life expectancy rising by five years by
> 2035." - HM Government (2022)

Long-term sickness is one of the biggest drivers of economic inactivity (the proportion of people not working or looking for work) and has been rising even before the pandemic. While this trend is a global one, the UK appears to be particularly affected:

> "Rising economic inactivity occurred across all G7 countries after lockdown
> restrictions were introduced. However, this has largely reversed in all countries
> except the UK, where it has continued to rise." UK Parliament, 2023

The macro issue of skills shortages in the UK labour market makes understanding and reversing the trend of rising economic inactivity a key one for policymakers. Part of the explanation of why the UK has been hit so badly is due to people over 50 leaving the workforce. Two factors that are contributing to this phenomenon include: first, an ageing population (see **section 4.1**), which is leading to a growth in the number of over-50sm, and; second, the impact of Covid-19 coinciding with a particularly large cohort of older people. Before the pandemic employment rates among over-50s were increasing, partly influenced by the rising pension age. However, Covid-19 disproportionately impacted the health of older workers.

To reverse the trend of over 50s leaving the workforce it is important to recognise the different barriers the cohort face in returning to work. Skills deficits are an issue. There are also difficulties in job search and age discrimination. In addition, health issues are an important factor but these are highly influenced by the type of occupation. Pathways to support the return of over 50s to the workforce must seek to break down these barriers. Flexible and part-time working aids older workers' employment to fit around caring responsibilities or to manage health conditions. Other effective initiatives include personalized support, recognizing existing skills, and addressing health challenges.

Importantly, the need for employers to enable more people with health conditions to enter/ remain in work remains a key issue across all age groups. This highlights the need for action on the demand side to promote 'good work' practices.
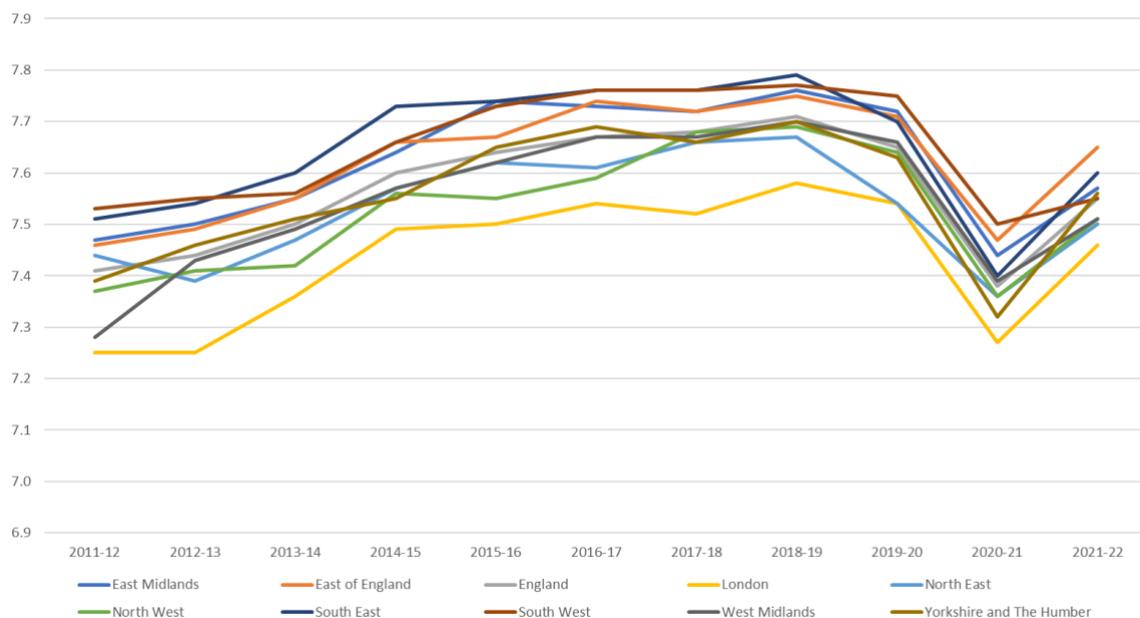
4.5   Wellbeing

Many of the trends discussed here pose threats to future wellbeing. Climate change, health crises, inequality, technological disruption, political instability, air quality and housing all feed into broader public health. Well-being is becoming a more important indicator of the health of people within an economy, with mental health being increasingly valued as important as physical health. The government has also made wellbeing one of its levelling up targets:

"By 2030, well-being will have improved in every area of the UK, with the gap between top performing and other areas closing." – HM Government 2022

Currently, wellbeing in the UK is measured based on four indicators: life satisfaction, worthwhileness, happiness and anxiety, with the main indicator being life satisfaction. **Figure 4.6** shows life satisfaction over time by region and country.

Figure 4.6 Life Satisfaction by ITL region

Source: ONS, Personal well-being estimates by local authority, 2022

As seen in **Figure 4.6**, life satisfaction was rising nationally pre-pandemic, though dipped significantly during the pandemic. This is unsurprising given the pandemic impeded every part of our lives, leaving many of us socially isolated, thus impacting our life satisfaction. Between 2019/20 and 2020/21, the East Midlands saw the fourth largest fall in life satisfaction (-3.6%), just above the England average of -3.5%, which the West Midlands matched. In 2021/22 life satisfaction remained lower than the 2019/20 level likely in part due to lingering lockdown restrictions and a deteriorating economy as inflation began to rise in late 2021.

Previous research illustrates how wellbeing is becoming a generational issue with a rise in mental health issues among the young. The latest (2022) national mental health survey of young people

aged 7 to 24 years found around 1 in 5 had a probable mental health disorder, compared to 1 in 9 in 2017. This has largely been associated with the disruption that the pandemic caused in terms of social isolation and loss of school routine, and then the subsequent readjusting to life post-lockdown, during a key time of social adaption and learning for young people. Austerity measures in the build-up to the pandemic left mental health services ill-equipped to deal with the ensuing rapid need, leaving many young people struggling to find support. Recently, there have been announcements that the UK is facing austerity 2.0 and this will place even greater pressure on services, particularly child mental health services which have already faced the brunt of austerity cuts. Greater funding needs to be provided to the NHS and local authorities to deal with the mental health crisis amongst children, particularly given the current cost-of-living crisis, which has seen millions of children driven into – or even further into – poverty over the last two years. Without additional funding and provision, it could lead to a prolonged mental health crisis. This will impact people's ability to work and potentially increase economic inactivity due to long term illness.

The NHS developed a health and wellbeing framework in 2022 which is aimed at providing health leaders and employers with a toolkit to understand what wellbeing means to the NHS. Wales has a much more comprehensive strategy for wellbeing in the form of the 'Well-being of Future Generations (Wales) Act 2015'. This is a legally binding common purpose - hinged on seven wellbeing goals - for the national government, local government, local health boards and other public bodies that specifies how public bodies must work together to improve wellbeing in Wales. Alongside this, public bodies must annually update the government and citizens on their progress to meet objectives under the Wellbeing Act, to demonstrate transparency and accountability. There is scope elsewhere for greater integration of well-being into strategic planning going forward to ensure that policy makers are considering this in the outputs they produce.

A concern with well-being or wellness is also growing amongst consumers, with more than ever before searching pro-actively for ways to improve their lifestyle and wellness. Consumers are approaching wellbeing through a much more sophisticated lens than has been the case historically, encompassing not just fitness and nutrition but also physical and mental health. McKinsey estimates that the global wellness market is now worth $1.5 trillion, with an annual growth of between 5 to 10%. Whilst the market slumped in the UK following pandemic lockdowns, consumers have been wanting to take back control of their health after feeling a loss of control during the pandemic. Technology is increasingly used by people to support their progress toward improved well-being in the UK, including the use of health tracking apps, social media platform fitness influencers, virtual GP appointments and smartwatches. In the future this is expected to grow with new products coming to market, for example, smart tattoos that use sensors to monitor health. Though with the growing demand, the market is becoming oversaturated with competing products and services, and businesses in the region will have to carve out their unique selling point to diversify themselves, particularly considering MedTech is easily transferable to a global market.

Megatrends: implications for policy

This report has outlined how the four identified global megatrends are likely to affect the Midlands Engine economy through a range of impact areas. This section focuses on the particular characteristics of the Midlands Engine economy, the unique vulnerabilities and competitive advantages of the region in the context of the megatrends identified and the implications for policy as shown in **Figure 5.1.**

Figure 5.1 The impact and mitigation of megatrends in the Midlands Engine
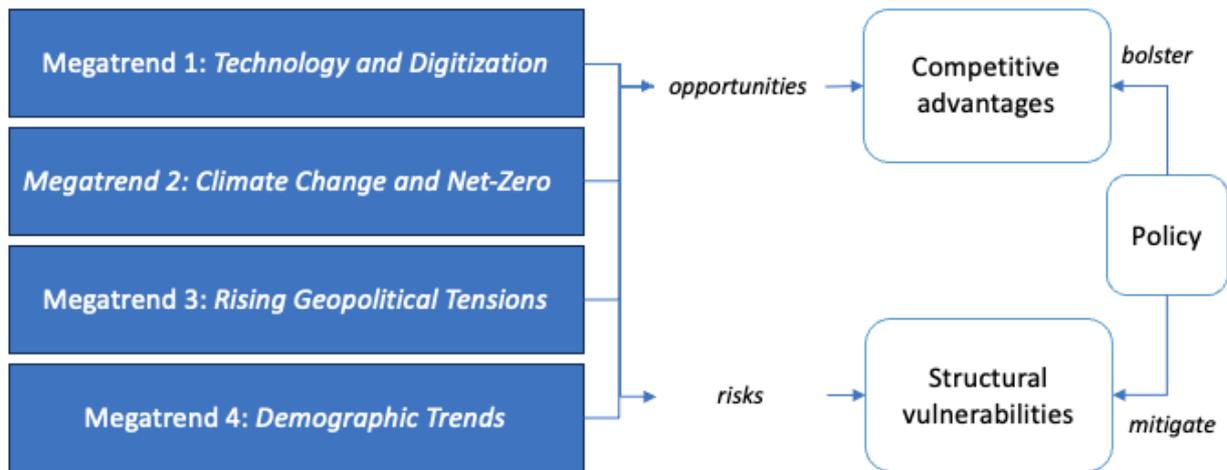

Table 5.1 details these competitive advantages and structural vulnerabilities of the Midlands Engine economy. **Tables 5.2 to 5.5** set out how each of the four megatrends interact with these characteristics of the economy to give rise to threats and opportunities. **Table 5.6** brings out how policy at the national, regional, and local levels can help mitigate against these risks and seize these opportunities. These tables are high level and are not exhaustive the intention is to give some practical framing to what these megatrends could mean for the region and to start a discussion about policy at various scales can act together, proactively to address these challenges.

Table 5.1. The competitive advantages and structural vulnerabilities of the Midlands economy in the face of global megatrends

Competitive Advantages of the Midlands Engine Economy	Structural Vulnerabilities of the Midlands Engine Economy
Geographical Location and transport links: The Midlands benefits from strong transport links with motorways, international airports, and fast links to London and is the beneficiary of major infrastructure investments such as HS2. **Trade and Export**: The region's geographical location and links make the region an attractive place for regional and international exporting industries. **Advanced Manufacturing Hub:** The Midlands is home to major manufacturing centres across industries. Notable industries include automotive, ceramics, aerospace and aviation. **Engineering and Innovation-led clusters**: The Midlands has a tradition of engineering excellence and innovation. It hosts leading universities and research institutions that contribute to advancements in technology and engineering. **Cultural and Creative Industries**: Clusters of high-end film & TV, video games and design activity. **Financial & Business Services**: Birmingham especially hosts internationally significant financial and business services. **Diversity**: The region is diverse, with strengths in various sectors, reducing its vulnerability to economic fluctuations in any single industry. **Centre for Education and Research**: The region has numerous internationally significant higher and further education institutions. **Skilled Workforce**: The region benefits from a skilled and adaptable workforce, thanks in part to its strong educational institutions and vocational training programmes. **Green Innovation:** The region is a leader in energy innovation with examples including a large windfarm in Lincolnshire, to Tyseley Energy Park and its innovations in hydrogen. **Housing Affordability:** Comparatively to other areas of London, the Greater South East and other core cities like Bristol, Edinburgh and Manchester, cities in the Midlands have relatively better housing affordability.	**Dependence on Manufacturing**: While manufacturing is a strength, it can also be a weakness when the sector faces downturns or disruptions. Overdependence on manufacturing can make the economy vulnerable to global economic fluctuations. **Infrastructure Constraints**: Despite improvements, some parts of the Midlands still face infrastructure constraints, such as a lack of EV charge points, congested roads and limited public transportation options. This can affect the ease of doing business and access to talent. **Environmental Impact**: Some industries in the Midlands, particularly heavy manufacturing, can have a significant environmental impact. This poses challenges in meeting environmental sustainability goals and adapting to changing environmental regulations. **Global Supply Chain Risks**: The Midlands' economy is integrated into global supply chains, making it susceptible to disruptions, as demonstrated during events like the Covid-19 pandemic. **Inequalities**: The Midlands exhibits economic, education and health disparities. **Skills Shortages**: While the Midlands has a skilled workforce, there may be gaps in certain industries or regions. Ensuring that the workforce has the right skills for emerging industries and technologies is an ongoing challenge. **Low Skilled Workforce**: The region has a greater than average proportion of the population with low skills. **Housing Affordability**: Despite being listed as an advantage, in some areas of the Midlands, housing affordability can be a challenge, particularly for young professionals and low-income residents. High housing costs can affect the region's attractiveness to talent. **Rural-Urban Divide**: There can be a divide between urban and rural areas in the Midlands, with urban centres enjoying more economic opportunities and amenities. **Transportation Costs**: While the Midlands has good transportation links, the cost of transportation, especially for businesses, can be a challenge, particularly for those located far from major ports or airports. **Reputation:** The region has a poor image and historically is an underperformer in terms of international profile

Table 5.2 – The Impact of Megatrend 1: *Technology and Digitization*

Threats arising from Megatrend 1: *Technology and Digitization*	Minimizing the threats and finding the opportunities of *Technology and Digitization*
Automation and Job Displacement: Automation and the adoption of advanced technologies, such as artificial intelligence and robotics, can lead to job displacement in certain industries. This can affect workers in manufacturing and other sectors traditionally strong in the Midlands. **Widening Inequality**: Technological change can affect sub-groups and places differently. The result may be widening inequalities in terms of employability and inclusion. **Skills Gap**: Rapid technological advancements can create a skills gap, where the existing workforce may not have the necessary skills to work with emerging technologies. This can hinder the region's ability to compete in high-tech industries. **Economic Disruption**: Emerging technologies can disrupt traditional business models and industries. For example, the rise of e-commerce can impact traditional retail businesses in the Midlands, leading to job losses. **Digital Divide**: Not all areas within the Midlands may have equal access to digital infrastructure and high-speed internet. The digital divide can limit economic opportunities for areas with limited connectivity. **Data Privacy and Security**: As businesses increasingly rely on data, concerns about data privacy and security become more significant. Cybersecurity threats can disrupt business operations and erode consumer trust. **Economic Concentration**: Technological changes can lead to economic concentration in certain urban areas where tech companies and start-ups thrive. This can lead to regional disparities within the Midlands. **Global Competition**: The adoption of technology has made it easier for businesses to operate globally. While this can open up new markets, it also increases competition from international firms, which can be a challenge for local businesses. **Innovation Funding**: Access to funding for research and development is essential for technological innovation. A lack of funding can hinder the ability of businesses in the Midlands to stay competitive.	**Digital Transformation**: The adoption of digital technologies can improve the efficiency and competitiveness of businesses across various sectors in the Midlands. This includes using data analytics, cloud computing, and automation to streamline operations and enhance decision-making. **Tech Innovation Hubs**: The Midlands can establish and support technology innovation hubs and start-up ecosystems. These hubs can attract tech companies, entrepreneurs, and investors, fostering innovation and creating job opportunities. **Skilled Workforce**: Investing in digital education and training programmes can help develop a highly skilled workforce capable of working with emerging technologies; upskilling the workforce as technology disrupts the labour market is important. This can make the Midlands an attractive location for tech companies seeking talent. **New Business Models**: Technological advancements enable the creation of new business models. The Midlands can seize opportunities in areas like e-commerce and online services to diversify the economy. **Advanced Manufacturing**: Leveraging Industry 4.0 technologies, such as IoT, 3D printing, and smart manufacturing, can enhance the competitiveness of the Midlands' manufacturing sector. **Clean Energy and Sustainability**: The Midlands can capitalize on the growing demand for clean energy and sustainable technologies. Investments in renewable energy, electric vehicle manufacturing, and green infrastructure can create jobs and promote environmental sustainability. **MedTech and Life Sciences**: The region's strong presence in healthcare and life sciences can be harnessed for growth in the MedTech and wider digital healthcare sector. **Global Connectivity:** The Midlands' central location and strong transportation links can be leveraged to facilitate global trade and connectivity. The region can serve as a logistics and distribution hub for both domestic and international markets. **Improving Productivity:** Automation can improve worker productivity and reduce the need for low paid work in undesirable jobs. **Fintech, Financial and Business Services:** Birmingham, in particular, can position itself as a fintech hub, attracting investment and start-ups in financial technology. This can diversify the economy and create jobs in the financial sector.

Table 5.3 – The impact of Megatrend 2: *Climate Change and Net-Zero*

Threats arising from **Megatrend 2: Climate Change and Net-Zero**	Minimizing the threats and finding the opportunities of **Megatrend 2: Climate Change and Net-Zero**
Extreme Weather Events: Climate change can lead to an increase in extreme weather events such as flooding, storms, and heatwaves. These events can disrupt transportation networks, damage infrastructure, and disrupt manufacturing and supply chains.	**Clean Energy Innovation**: The Midlands can invest in renewable energy sources such as wind, solar, and hydrogen. Wind farms, in particular, have the potential to generate significant clean energy, creating jobs in construction, maintenance, and operation.
Manufacturing and Infrastructure Vulnerability: Manufacturing industries, particularly those in the automotive and aerospace sectors, may be vulnerable to extreme weather events and flooding. Damage to manufacturing facilities and infrastructure can lead to production delays and increased costs.	**Green Infrastructure**: Developing green infrastructure projects, such as sustainable urban planning, green spaces, and flood management systems, can make the region more resilient to climate change while creating jobs and enhancing the quality of life for residents.
Exposure to Energy Cost Fluctuations: Climate change and efforts to mitigate it can lead to increased energy costs. The Midlands is home to energy intensive industries such as manufacturing and engineering making the region especially exposed to fluctuations in energy prices.	**Energy Efficiency**: Retrofitting buildings and industries for energy efficiency can reduce energy consumption and lower greenhouse gas emissions. This presents opportunities for energy service companies, contractors, and manufacturers of energy-efficient technologies.
Supply Chain Disruptions: Climate-related disruptions to global supply chains can affect businesses in the Midlands that rely on imported components and materials. Disruptions can lead to delays and increased costs for businesses.	**Electric Vehicles (EVs) and Charging Infrastructure**: As the demand for electric vehicles grows, there are opportunities in manufacturing EV components, batteries, and charging infrastructure. The Midlands can become a hub for EV production and innovation.
Agricultural and Food Supply: Climate change can impact agriculture in the Midlands, affecting the availability and cost of food products. This can have downstream effects on the region's food and beverage industry.	**Sustainable Agriculture**: Encouraging sustainable agricultural practices, such as precision farming and organic agriculture, can promote food security and environmental conservation. It can also create jobs in the agricultural sector.
Infrastructure Strain: The region's infrastructure, including roads and railways, may face increased strain due to changing weather patterns and the need for adaptation measures. This can lead to maintenance and repair costs.	**Green Finance and Investment**: The region can become a centre for green finance and investment, attracting funds for sustainable projects and businesses involved in renewable energy, sustainable infrastructure, and climate resilience.
Healthcare Costs: Climate change can have health implications, including increased heat-related illnesses and the spread of certain diseases. Rising healthcare costs can impact both individuals and businesses.	**Research and Innovation**: Midlands universities and research institutions can lead in climate-related research, innovation, and technology development. This can attract research funding and foster collaboration with businesses.
Insurance Costs: Increased climate-related risks can lead to higher insurance premiums for businesses, which can add to operating costs.	**Skills Development:** The transition to a low-carbon economy requires a skilled workforce. The Midlands can invest in training and education programmes to develop a workforce equipped with the skills needed for green jobs.
Regulatory Changes: To mitigate climate change, governments may introduce new regulations and standards, which could impact businesses in terms of compliance costs and operational changes.	**Resilience and Disaster Management**: Investing in climate resilience measures and disaster management can help protect communities and businesses from the impacts of climate change, while also creating jobs in disaster response and recovery.

Table 5.4 – The Impact of Megatrend 3: *Rising Global Tensions*

Threats arising from **Megatrend 3:** *Rising Global Tensions*	Minimizing the threats and finding the opportunities of *Rising Global Tensions*
Export and Import Disruptions: Increased global tensions can lead to trade disputes, tariffs, and sanctions, which can disrupt the flow of goods and services. **Supply Chain Disruptions**: Global tensions can disrupt global supply chains, affecting Midlands companies that rely on a complex network of suppliers and partners. **Foreign Investment**: Heightened global tensions may make foreign investors more cautious about investing in the UK, including the Midlands. This can affect the flow of foreign direct investment (FDI) into the region. **Currency Volatility**: Global tensions can lead to fluctuations in currency exchange rates. This can affect Midlands businesses that engage in international trade, as it can impact the cost of imports and the competitiveness of exports. **Impact on Key Industries**: Specific industries in the Midlands, such as aerospace and automotive manufacturing, may be particularly vulnerable to global tensions because they rely on international markets for their products. **Energy Costs:** Geopolitical tensions can affect energy markets, leading to fluctuations in energy prices. This can impact businesses in the Midlands, especially those that are energy-intensive or rely on specific energy sources. **Financial Markets**: Global tensions can lead to increased volatility in financial markets. This can have indirect effects on the Midlands economy, particularly if there are disruptions in financial services or if businesses have investments in financial markets. **Transportation Costs:** Increased tensions can lead to disruptions in transportation routes and increased insurance costs for shipping. This can affect the cost of transporting goods to and from the Midlands. **Regulatory Changes**: Geopolitical tensions can lead to changes in trade regulations and export controls. Midlands businesses that engage in international trade may need to adapt to new regulatory environments. **Refugees and Immigration Pressures:** Increasing conflicts will lead to increased numbers of displaced people migrating to places like the UK. **Political Polarization**: Increasing geopolitical tension is leading to a rise in populist politics and protectionism.	**Education and Workforce Development:** Invest in education and workforce development programmes to ensure that the workforce is equipped with the necessary skills for the evolving job market. **Innovation and Economic Diversification:** Promote innovation and diversify the regional economy to create new job opportunities and reduce dependence on specific industries. **Housing Policies:** Develop housing policies that address the changing housing needs of different demographic groups, including affordable housing for young professionals and suitable housing for the elderly. **Talent Retention:** Implement initiatives to retain and attract young talent to the region, including creating a vibrant cultural and economic environment. **Targeted Welfare Support:** Strengthen social safety nets to address income inequality and support vulnerable populations. **Infrastructure Investment**: Invest in infrastructure to accommodate population growth and urbanization, while also considering sustainability and environmental factors. **Defence and Security Industries:** Some parts of the Midlands have a strong presence in the defence and security industries. Rising global tensions may lead to increased demand for defence-related products and services, which can be a positive for these sectors. **Rise in Civic Participation**: A reaction to increasing polarization is already visible in increasing protest across a range of issues from equality, environment, and democracy to immigration policy. The rise in activism is a potential opportunity to see social change but is also a risk to stability.

Table 5.5 – The impact of Megatrend 4: *Demographic trends*

Threats arising from **Megatrend 4:** *Demographic Trends*	Minimizing the threats and finding the opportunities of *Demographic Trends*
Ageing Population: An ageing population can strain healthcare and pension systems, potentially leading to increased public expenditure. This can put pressure on government budgets and potentially lead to reduced funding for other essential services and investments in the region. **Workforce Shrinkage**: As the population ages, there may be a decline in the working-age population. This can lead to labour shortages in certain industries, affecting productivity and economic growth. **Skills Mismatch**: Demographic changes may result in a skills mismatch between the available workforce and the needs of the job market. This can hinder economic competitiveness and innovation, particularly in industries that require specialized skills. **Youth Outmigration**: In some areas of the Midlands, there may be a trend of young people leaving for better job opportunities in larger cities or abroad. This can lead to a loss of talent and reduce the pool of skilled workers in the region. **Income Inequality**: Demographic trends can exacerbate income inequality if certain segments of the population, such as the elderly or youth, are disproportionately affected by economic challenges. Income inequality can have negative social and economic consequences. **Increased Demand for Healthcare**: An ageing population typically requires more healthcare services, which can strain healthcare resources and lead to increased healthcare costs for individuals and the government. **Dependency Ratio**: As the elderly population grows relative to the working-age population, the dependency ratio (the number of dependents relative to the number of working-age people) may increase. This can place a burden on social welfare programmes and pensions. **Housing Demand**: Changes in demographics, including an ageing population or an influx of younger residents, can affect housing demand. Meeting the housing needs of different demographic groups can be a challenge. **Pandemic Threats:** Pandemics are expected to occur more frequently and ageing populations may be more vulnerable to ill health.	**Skilled Workforce**: A diverse and multi-generational workforce can bring a wide range of experiences and perspectives to the labour market. This can enhance innovation across various industries in the Midlands as well as providing links to international markets **Consumer Market**: Changes in demographics, including an increase in the working-age population or a rise in the number of retirees, can create opportunities for businesses. Companies can tailor their products and services to meet the evolving needs and preferences of different demographic groups. **Entrepreneurship**: A diverse population can foster entrepreneurship and innovation. Immigrant communities, for example, often contribute to small business development and cultural entrepreneurship, creating jobs and economic growth. **Ageing Population Services**: An ageing population can create opportunities in the healthcare and eldercare sectors. The Midlands can invest in services and infrastructure to support the elderly population, including healthcare facilities, retirement communities, and home care services. **Healthy Ageing and healthcare planning:** Efforts to improve healthy ageing can mean people live longer, happier and more productive lives with a lower healthcare cost. **Education and Training**: The presence of a diverse and growing population can drive demand for education and training services. This can lead to opportunities for educational institutions and businesses offering skill development programmes. **Housing Development**: Population growth, particularly in urban areas, can create opportunities for the construction and real estate sectors. Meeting the housing needs of a growing population can lead to housing development projects and job creation. **Healthcare and Biotechnology**: The healthcare sector can benefit from demographic changes, as it often experiences increased demand for services as the population ages. Additionally, research in biotechnology and healthcare innovation can thrive in such an environment. **Community Engagement**: Demographic changes provide opportunities for increased community engagement and social cohesion. Community organizations, non-profits, and local governments can tap into the diverse talents of residents to address community challenges. **International Trade and Investment**: Demographic diversity can foster international connections and trade links, attracting foreign investors and businesses seeking to tap into the Midlands' diverse consumer market.

Table 5.6. Megatrends in the Midlands: Policy Implications

	National Policy	*Regional Policy*	*Local Policy*
Technology & Digitization	**Innovation and Research Funding:** At the national level Government can allocate funds for research and innovation, supporting projects related to clean energy, healthcare, and technology development. **The Skills Agenda:** Skills development is a lever available to national government that can powerfully impact the readiness of the workforce for new technologies.	**Cluster Development**: Promote the development of industry clusters and innovation hubs that bring together businesses, research institutions, and start-ups in key sectors like clean energy, manufacturing, and healthcare. **Infrastructure Investment**: Regional bodies can identify key infrastructure projects that support technological change, such as renewable energy installations, digital connectivity (5G) and green building initiatives.	**Small Business Support**: Local Government can offer support to local small businesses through grants, mentoring programmes, and access to resources that help them adapt to technological changes and market shifts. **Urban Planning**: Trends of remote working mean that quality of place is identified as increasingly important for local communities. Sustainable urban planning policies that prioritize public transportation, green spaces, and mixed-use development to reduce emissions and enhance quality of life.
Climate Change & Net-zero	**Environmental Regulations:** National Government policies such as net-zero can set standards for industry and regions to follow. Policy must be consistent and be effectively monitored and enforced. **Tax Incentives:** Offer tax incentives and credits to businesses that invest in clean technologies, renewable energy, and sustainable practices.	**Green Innovation:** The Midlands relative dependence on high energy industries presents an important challenge for policymakers. Regional bodies must advocate and foster innovation in energy technologies such as hydrogen and nuclear to reduce the region's contribution to climate change.	**Environmental Conservation**: Implement local environmental conservation efforts, such as tree planting, wildlife protection, and sustainable land use practices. Additionally, Small scale investments such as, pedestrianization, cycle infrastructure and natural flood defences when aggregated make a significant difference to combating climate impacts.
Geopolitical Tensions	**Trade and Export Promotion:** National governments can negotiate trade agreements and export promotion strategies to facilitate the export of green technologies and products.	**Regional Economic Development**: Rising tensions mean that the supply-chain of the Midlands a manufacturing heavy region is at risk. Regional policy should identify sectors at risk and seek to boost regional resilience through skills development and monitoring of industry stress.	**Cultural Initiatives**: Support cultural initiatives and events that celebrate diversity, promote local arts and traditions, and attract tourism. **Community Resilience**: Develop community resilience plans that address the unique challenges and opportunities presented by demographic changes and climate change impacts.
Demographic Trends	**Preparing for an ageing population:** Develop policies to ensure access to healthcare and social services for an ageing population, including long-term care and eldercare support. **Labour Market Policies:** Implement policies that address labour market challenges, such as skills training, labour market flexibility, and support for displaced workers.	**Lifelong Learning**: Collaborate with regional and local educational institutions to tailor education and training programmes to the needs of the regional workforce and businesses, along with promoting digital skills which are utilised across sectors. **Housing Policies:** Increasing supply of housing in a nuanced way will help address intergenerational wealth inequality and rising housing demand.	**Local Public Health Initiatives**: Invest in public health programmes and services that cater to the healthcare needs of the local population, including ageing residents. This may mean greater use of preventative healthcare, greater focus on loneliness and improving accessibility to local services.

Conclusion: 'A New Age'

The four megatrends identified in this report, when viewed together, define a 'new age' and will affect the lives of people in the Midlands over time. Importantly, within the Midlands, the way that the megatrends interact with each other means that different sub-groups and local areas may be impacted to different extents. This means from a Midlands Engine perspective that region-wide policy priorities need to be sensitive to differences between places. Otherwise, there is an enhanced risk of accentuating intra-regional inequalities.

Technology and Digitization will mean workers are likely to face new pressures – some may lose their jobs as the increasing capability of AI makes some roles obsolete. Some may need to learn new skills to work with AI to become more productive in their work. The nature of work may change with some workers increasingly able to work remotely and taking on roles in growing 'new economy clusters' and taking advantage of opportunities based outside the Midlands opened up by greater global digital connectivity. But remote/ hybrid working is unlikely to be possible for all. At the aggregate level AI may mean that we see falling labour demand in some sectors. Innovations will present new opportunities with new jobs emerging and new technologies improving the quality of work and of life, mitigating the impacts of shifting demographic trends, climate change and aiding the transition to net-zero. From a policy perspective the regulation of AI is a matter to be dealt with at national and international levels. At Midlands Engine and local scales, it is important to continue to monitor the impact of AI and to ensure that the workforce and the wider population have the skills to enable them to mitigate the threats and reap the opportunities that AI and digitization bring. At the local level digitization and AI have the potential to change the functional economic roles of different places within the Midlands Engine's urban and regional system. What does seem clear is that place attractiveness – in its broadest sense – is likely to become relatively more important.

Climate Change and Net-Zero will expose people in the Midlands to increased risks of extreme weather events - including flooding and heat-stress, and possible industry closure and increasing food prices as a result. A key challenge for the Midlands going forward is to ensure that the physical infrastructure is resilient to change. This means both upgrading existing infrastructure, as necessary, and ensuring that resilience is built into new infrastructure. Regulations and targets are set mainly at the national level but there is a role at Midlands Engine scale for awareness raising regarding regulation and compliance, as well as facilitating initiatives to strengthen supply chains and promote reskilling/ upskilling to enable and smooth the transition to Net-zero. The transition will likely mean new jobs and export potential, including in parts of the manufacturing sector, such as new mobility solutions. On the other hand, parts of the Midlands are relatively high energy users. Hence innovations in clean energy solutions represent an opportunity for the Midlands, so it is important that universities and research establishments in the region capitalise on, and extend, their existing strengths. Underpinning the transition is the need to equip the workforce with green skills. This may entail skills upgrading within the existing workforce as well as reskilling for new jobs. The Midlands also has strengths in agri-tech, which are increasingly important in the context of concerns about food supply at global scale and food security nationally, as well as the promotion of sustainable agriculture and nature-based solutions to enhancing biodiversity and environmental quality.

Rising Global Tensions pose existential risks to people in the Midlands but may also cause more specific disruptions and opportunities. Rising tensions may lead to increased protectionism of key industries like manufacturing, energy and raw materials. We have seen some reshoring. We may see greater volatility in prices of key goods such as agriculture and energy. The ongoing impacts of

the UK's exit from the EU seem likely to continue to harm the region's export potential, at least in the shorter-term. This has uneven sectoral impacts. Disruption in supply-chains kick started from Covid-19 and EU exit are easing although geo-political events also have an impact. New opportunities in the defence and security sector are likely. Together, the experience of recent years and ongoing rising global tensions will likely change how key sectors like the automotive sector work with just-in-time modes of working considered too high risk. While foreign policy is dealt with at the national scale, at the Midlands level it is important to promote a clear narrative about the strengths of the region, along with the opportunities that it presents, to attract foreign investment and talent.

Demographic Trends mean much of the world is growing older. The consequences of this shift are numerous and multifaceted – from changes in workforce composition, dependency ratios, demands on the healthcare system, new consumer markets, etc. Though the region does benefit from being slightly younger and more diverse than other parts of the UK it has an ageing population, and it also has a lower skilled workforce. However, the demographic, ethnic and skills profile of local populations vary considerably, so challenges and opportunities vary between areas. An ageing population will also mean a falling labour supply across the board and rising labour demand in low-paid care sectors, albeit technology also has a role to play. This will mean an increasing dependency ratio and more people requiring NHS support for longer. The burden of this could be felt by younger generations through increased taxes, narrowing of the public sector and its responsibilities and falling state pensions. On the other hand, a growing older population also brings capacity for societal contribution and inter-generational support via volunteering. The consequences for younger generations such as Millennials and Gen Z will be further compounded by a lack of wealth to support retirement due to falling home ownership rates. Interconnected issues of Climate Change and Rising Global Tensions may also mean we see greater migration to the UK, and especially to those cities in the Midlands that already have diverse populations, following population movements that initially happen elsewhere in the world. This may risk instability and political polarization but may also present opportunities to address labour supply challenges and bring greater workforce diversity with enhanced innovation potential. At the local level such population inflows raise demands on services but also increase potential labour supply. A further example of interconnected megatrends is provided by potential technological advances which may boost productivity and reduce jobs in some sectors, so relieving pressures on labour supply. Similarly, developments in healthcare and the move to clean growth may lead to the lengthening of the healthy lifespan and so enable longer working lives.

The implications of these trends means that policy at the national, regional and local level must be working together to seize opportunities for the Midlands but also to mitigate threats as they unfold. The shifting of the labour demand and supply in the Midlands, and its constituent local labour markets, must be viewed carefully with a connected, forward-looking strategy between businesses, educational institutions and policy helping to train, reskill and upskill the labour force for the needs of the future. Likewise, national commitments to address climate change must be met with sufficient funding to allow regions and local governments to act on the issues in their region.

While each of the megatrends identified and reviewed above bring associated opportunities and threats to the Midlands, it is the interactions between them that shape specific challenges and openings for businesses, people and places. Given that the Midlands Engine region is diverse, so the implications for sectors, sub-groups and local areas will vary. Yet looking forward, as place attractiveness in its broadest sense becomes more important for businesses and for people, this diversity is one of the strengths of the Midlands. Through monitoring and understanding how megatrends and their interconnections play out in practice, and by working in partnership across different geographical scales and policy domains, the Midlands Engine can help businesses, people

and places in transitioning to the roles that they need to play to support the sustainable, inclusive growth of the Midlands in a 'new age'.

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The Midlands Engine is a coalition of local authorities, local enterprise partnerships, universities and businesses across the region, actively working with government to build a collective identity, to enable us to present the Midlands as a competitive and compelling offer that is attractive at home and overseas.