



Megatrends in the Midlands

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Megatrends are large-scale trends that affect individuals, communities, wider society and the environment. They can have significant consequences and scarring effects on different places, sections of the population and the economy. If the Midlands is to strengthen its collective approach to support sustainable, inclusive growth, then understanding the four key megatrends and their implications for the region is vital.

1. Technology and digitization includes the rapid advancement of new technologies like generative AI and maturing uses of older technology such as teleconferencing.

3. Rising geopolitical tensions explores how attitudes to trade and production may be changing in a more uncertain world.

2. Climate Change and net zero considers how a changing climate and our policy response to it will impact how we produce food and the energy to heat our homes and workplaces.

4. Demographic trends looks at how concurrent trends of ageing populations, changing migration patterns and rising long-term sickness will impact the region.

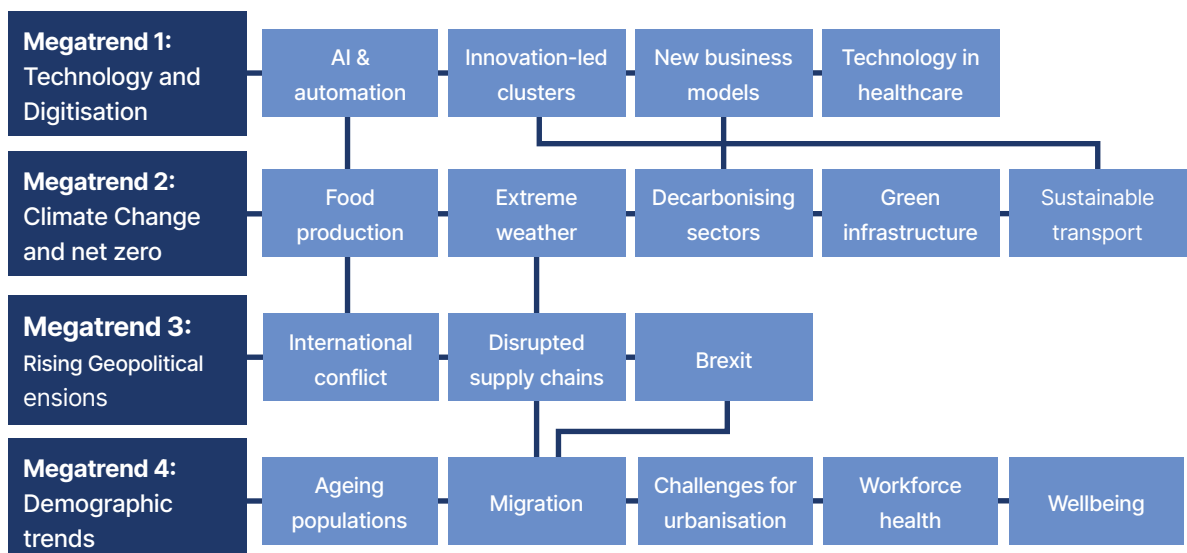


Figure 1: The four identified megatrends and their interrelationships

Megatrend 1: Technology and digitization

New technology and digitization is reshaping industries with greater automation, connectivity, and data-driven decision-making. Innovations like generative AI, such as Chat GPT, are emerging, while trends like remote working are maturing. What might this mean for the Midlands economy?

Artificial Intelligence (AI) and automation are rapidly evolving and impacting various sectors, including key Midlands sectors such as transportation, manufacturing, healthcare and education. The distribution of the impact of AI depends on characteristics such as education, occupation and industry. As such, some parts of the region face a slightly higher risk of job displacement than others. But it is not all bad news: AI offers opportunities for increased productivity and innovation.

AI could influence other megatrends by enhancing healthcare, optimising transportation, increasing productivity, personalising education, promoting efficient resource management and enabling data-driven decision-making. It could also be the key to address challenges posed by other megatrends, including climate change, demographic trends, and public health.

Policy interventions for AI must ensure no groups are left behind. Policy needs to focus on workforce education and training, planning for AI disruption, fostering collaboration, and increasing public awareness.

High-technology sectors in the Midlands include the Space Cluster, the Gaming Cluster and wider creative industries and many

others. All take advantage of rapid advances in technology.

Agri-tech is a Midlands hotspot, with a strong cluster attracting investment. Advancements in this sector will be of increasing importance as climate change and geopolitical tensions threaten the stability of food production.

Health and medical technology (MedTech) will be a key sector for the Midlands as the region has the highest number of Medtech companies of any in the UK. Innovations in telehealth, telemedicine, and AI chatbots are transforming healthcare practices. Demand for healthcare is anticipated to keep growing, reflecting changing demographic trends.

New business models are being created from concerns about sustainability, driving consumer preferences towards greener products, creating opportunities for businesses to adopt more sustainable models.

Remote and hybrid working has become more prevalent post-pandemic. It offers benefits such as improved work-life balance and reduced congestion but also poses challenges for inclusivity and urban planning.

In summary, the New Technologies and Digitization megatrend presents significant opportunities for the region to become a world leader in key sectors and offset some of the challenges presented by the other interrelated megatrends. Policymakers and businesses need to adapt to maximize the benefits and address potential disruptions.

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Place of work	Proportion of jobs at risk of automation (%)	Rank of 354 places of work in England (1=highest chance of automation)
Higher exposure local authorities 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 exposure local authorities 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	

Megatrend 2: Climate change & 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 the Midlands.

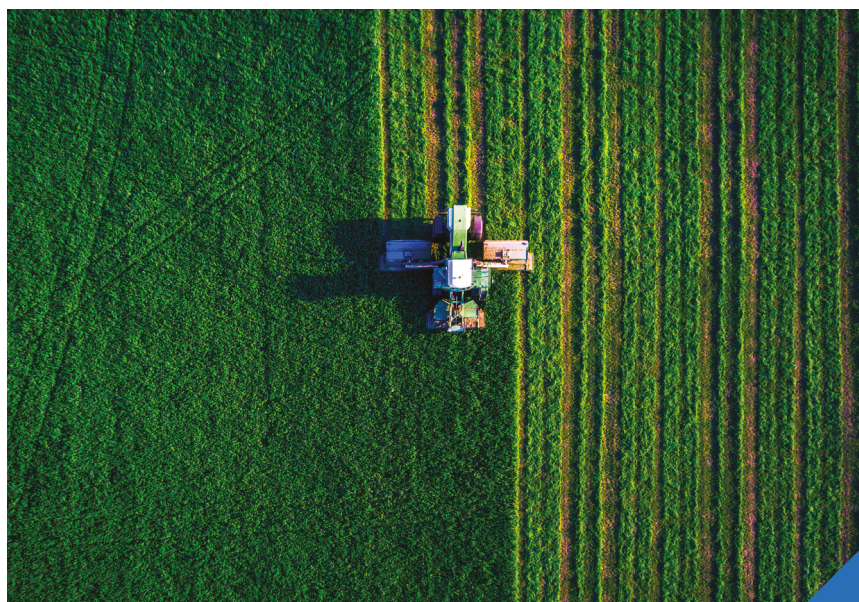
Food production and crop yields are being negatively affected by rising temperatures, altered growing seasons, reduced water availability, higher CO2 levels and extreme weather events. By 2050, 50% more food will be needed to feed the growing global population, but crop yields could decrease by 30%. Climate-induced crop failures are already affecting food supply chains and causing unexpected shortages. Unpredictable crop yields are leading to increased food prices, known as “Climateflation.”

Extreme weather is known to affect health and productivity. Rising global temperatures are leading to more hot days in the UK with the associated heat stress leading to increased demand for air-conditioning, impacting energy usage. Flooding is also having a major impact in the Midlands. 200,000 properties (400,000 people) in the East Midlands are in flood risk areas – the **third highest** number of properties at risk of flooding in England. Birmingham is at greatest risk of flood damage in the UK after London and the areas most at risk from flooding fall within some of the most deprived areas in the region.

Decarbonising sectors is crucial for the UK to become a net zero economy by 2050, with significant changes required in the energy sector. The automotive industry in the Midlands faces a shift from fossil fuel to electric vehicles, impacting supply chains and jobs. Energy-intensive industries like ceramics need to decarbonize to reduce CO2 emissions.

Green infrastructure in the Midlands needs to be upgraded to meet the growing demand for renewable energy. Smart energy systems and smart meters play a role in enhancing energy efficiency. The Midlands is a leader in energy innovation with significant investments in hydrogen, smart meters and super-fast charging.

Research and development centres across the Midlands are focused on generating low and zero-carbon energy and fuels from waste. Hydrogen technology is a key focus for R&D in the energy transition.



Sustainable transport is essential for reducing emissions and promoting a healthier environment. Efforts include promoting cycling, micro-mobility solutions like e-scooters, and enhancing public transport. Low emission zones aim to reduce air pollution but may pose economic challenges for some.

In summary, climate change and the transition to a net zero economy is reshaping various sectors in the Midlands, from agriculture to energy production and transportation. These changes bring both challenges and opportunities for the region, with a need for innovation, infrastructure upgrades, and sustainable practices to mitigate climate-related impacts and achieve climate goals.

1.3 million hectares of agricultural land were destroyed by flooding in the East Midlands in 2007.

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The World Economic Forum (WEF) has made geoeconomic confrontation its 3rd biggest risk over the next 2 years.

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 the cost and supply of European food and energy, with 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.

Geoeconomic confrontation is a major risk to global economic stability, with economic warfare becoming more common. The World Economic Forum (WEF) has made geoeconomic confrontation its 3rd biggest risk over the next two years and the 9th biggest over the next ten years (the majority of risks over the ten years relate to climate change). Economic policies are being used defensively and offensively by countries, leading to trade conflicts like the ongoing U.S.-China trade war.

The invasion of Ukraine in February 2022 has disrupted global supply chains, causing economic sanctions and supply shortages, especially in food and energy sectors. This has led to a focus on regionalisation, where countries seek to ensure their essential goods are produced domestically to enhance security. However, regionalisation may result in higher production costs, inflation, and declining living standards.

Brexit has also had a significant impact on the UK, with the Trade and Co-operation Agreement expected to reduce productivity and trade with the EU. Sterling's depreciation following the Brexit referendum has increased the cost of imports, leading to higher living costs. Business investment has also suffered.

The vulnerability of global supply chains has been highlighted by rising tensions and Brexit, as well as the COVID-19 pandemic. Various disruptions, including global shipping issues, transportation challenges, production delays, raw material shortages, and labour shortages, have occurred. While some of these disruptions are transitory, others are becoming the new normal.

The pandemic and geopolitical tensions have encouraged companies to reconfigure their supply chains for greater resilience. Labour shortages and changes in consumer behaviour, such as increased online shopping and sustainability concerns, have become ongoing challenges. Additionally, trade policy changes and protectionist measures have disrupted the flow of goods.

In summary, rising geopolitical tensions, Brexit, and supply chain disruptions are reshaping the global economic landscape, leading to a focus on regionalisation, resilience, and a reassessment of trade policies. These developments have implications for various sectors and regions, with some industries experiencing ongoing challenges like skills shortages and protectionist policies.



Megatrend 4: Demographic trends

Ageing populations, migration, increasing urbanisation and the consequences for health and housing are all part of the emerging demographic picture. The 2021 Census provides new information on how these trends are unfolding and enables predications for the implications across various aspects of society, including the economy, healthcare, housing and urban planning.

Population ageing is a long-term global trend driven mainly by increased life expectancy and people having fewer children. In 2015, 12.3% of the global population was aged 60 and over, projected to rise to 16.4% in 2030 and 21.3% in 2050. The UK's population is ageing, with a notable growth in those aged 85 and over.

International migration patterns have a significant role in the UK's economic growth and demographic makeup. Public opinion on immigration varies, with some favouring high-skilled immigration but others wanting overall immigration levels to decrease. Brexit has led to changes in immigration policy, favouring high- and medium-skilled workers. Geopolitical events, such as humanitarian immigration from Ukraine and Hong Kong, impact migration flows. Climate change is expected to influence future international migration patterns.

Challenges for urbanisation are linked to remote working and online retail. How people view cities is changing, with city centres more of a choice than a necessity, bringing challenges linked to empty offices and falling commercial property values. There is a shift towards experience-based city centres and a rise in independent stores. Responses to urban issues include trends like tactical urbanism and citizen participation, while green and blue urban spaces are gaining importance for wellbeing and sustainability.

Housing affordability is a growing issue in the UK. Rent prices are rising, and house prices have increased significantly, impacting home ownership rates. Rising interest rates further exacerbate mortgage repayments. The housing crisis in the Midlands is varied with differences in demand and supply by

area, tenure and housing type. The solution to the crisis will require significant supply increases with nuance to understand what types of housing are most needed where. Failure to address housing issues will have significant consequences as the demographic trends observed unfold.

Workforce health has been impacted by a rise in long-term sickness, partly due to long COVID and NHS waiting times. Over-50s leaving the workforce pose challenges, including skills deficits, job search difficulties, age discrimination and health issues. Employers need to support people with health conditions to remain in or re-enter the workforce.

Wellbeing is a growing focus in socio-economic development, with mental health gaining recognised as being equally as important as physical health. The UK government has set well-being targets as part of the levelling up agenda. Life satisfaction varies by region, with pandemic-related factors affecting well-being. Young people face rising mental health issues, exacerbated by the pandemic. There is growing consumer interest in wellness, with technology playing a role in supporting well-being.

In summary, these trends and challenges have significant implications for various aspects of society, including the economy, healthcare, housing, and urban planning.



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Megatrends implications for policy

The four identified megatrends present significant risks and opportunities to the economy of the UK as a whole. How these megatrends will unfold in the Midlands specifically depends on the factors that make the region and its local areas different from others – its competitive advantages and structural vulnerabilities.

Competitive advantages of the Midlands Engine economy	Structural vulnerabilities of the Midlands Engine economy
<p>Geographical location and transport</p> <p>The Midlands benefits from strong transport links with motorways, international airports, fast links to London and is the beneficiary of major infrastructure investments such as HS2.</p> <p>Advanced manufacturing hub</p> <p>The Midlands is home to major manufacturing centres across industries. Notable industries include, automotive, ceramics, aerospace and aviation.</p> <p>Engineering and innovation-led clusters</p> <p>The Midlands has a tradition of engineering excellence and innovation. It hosts leading universities and research institutions that contribute to advancements in financial services, technology, creative sectors and engineering.</p> <p>Diversity</p> <p>The region has a diverse and relatively young population – although there are large differences in population composition within the region.</p> <p>Green innovation</p> <p>Across the region there are areas of expertise in alternative energies and electrification such as wind innovation in Lincolnshire and Tyseley Energy Park in the West Midlands.</p>	<p>Dependence on manufacturing</p> <p>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.</p> <p>Reputation</p> <p>The national reputation of the Midlands could be better. Internationally the image has been impacted positively by the successful 2022 Commonwealth Games but negatively by the Birmingham City Council financial crisis.</p> <p>Infrastructure constraints</p> <p>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.</p> <p>Energy intensive industries and environmental impact</p> <p>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.</p> <p>Exposure to global supply chain risks</p> <p>The Midlands' economy is integrated into global supply chains, making it susceptible to disruptions, as demonstrated during events like the COVID-19 pandemic.</p>



Understanding the likely direction of these megatrends and looking at how the region compares to the national picture can pave the way for joined-up national, regional and local policy to successfully minimize the threats and seize the opportunities.

	National policy	Regional policy	Local policy
Technology & digitization	<p>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.</p> <p>The skills agenda Skills development is a lever available to national government that can powerfully impact the readiness of the workforce for new technologies.</p>	<p>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.</p> <p>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.</p>	<p>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.</p> <p>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.</p>
Climate change & net zero	<p>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.</p> <p>Tax incentives Offer tax incentives and credits to businesses that invest in clean technologies, renewable energy, and sustainable practices.</p>	<p>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.</p>	<p>Environmental conservation Implement local environmental conservation efforts, such as tree planting, wildlife protection, and sustainable land use practices. Additionally, Small scale investments such as, pedestrianisation, cycle infrastructure and natural flood defences when aggregated make a significant difference to combating climate impacts.</p>
Geopolitical tensions	<p>Trade and export promotion National governments can negotiate trade agreements and export promotion strategies to facilitate the export of green technologies and products.</p>	<p>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.</p>	<p>Cultural initiatives Support cultural initiatives and events that celebrate diversity, promote local arts and traditions, and attract tourism.</p> <p>Community resilience Develop community resilience plans that address the unique challenges and opportunities presented by demographic changes and climate change impacts.</p>
Demographic trends	<p>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.</p> <p>Labour market policies Implement policies that address labour market challenges, such as skills training, labour market flexibility, and support for displaced workers.</p>	<p>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.</p> <p>Housing policies Increasing supply of housing in a nuanced way will help address intergenerational wealth inequality and rising housing demand.</p>	<p>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.</p>

Preparing the region for a 'New Age'

Taken together, the four megatrends define a 'new age' which 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 varying 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 lead to automation, new ways of working and industrial restructuring. This presents significant opportunities for the region to take advantage of its young, diverse population (at least in most of the major cities) and with emergent new economy clusters. In the long-term the region may expect to see productivity rise, a reduction of low-quality jobs, and new innovations in health and energy that may help mitigate some issues of climate change and demographic trends.

Policy should be prepared that the transition will be uneven and that there are risks that some will be left behind and some may lose jobs. Therefore, monitoring against impacts, raising public awareness and targeted reskilling campaigns are likely to become more important.

Rising global tensions may cause specific disruptions to the region including protectionism, changing trade flows and price volatility for industries like manufacturing, raw materials and energy.

While foreign policy is dealt with at the national scale, it is important to promote a clear narrative about the strengths of the region to attract foreign investment and talent.

Climate change and net zero will expose people in the Midlands to more frequent extreme weather events such as flooding and heat stress. The physical infrastructure of the Midlands must adapt to these risks to prepare industry and households otherwise risk falling living standards and productivity. The net-zero transition can mean significant opportunities for the region to expand its emergent green technology clusters which are found throughout the region.

For policy it is important that universities and research establishments in the region capitalise on, and extend, their existing strengths. This may entail skills upgrading within the existing workforce as well as reskilling for new jobs. It is also the responsibility at the regional level to ensure infrastructure is built with to be futureproofed against the changing climate.

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. Though the region does benefit from being slightly younger and more diverse than the national average it also has a lower skilled workforce and the population profile varies considerably between local areas.

Policy at the regional level needs to prepare for the 'new age' solutions across a range of societal issues. Regions must focus on improving healthy lifespans, where local interventions have a key role to play.