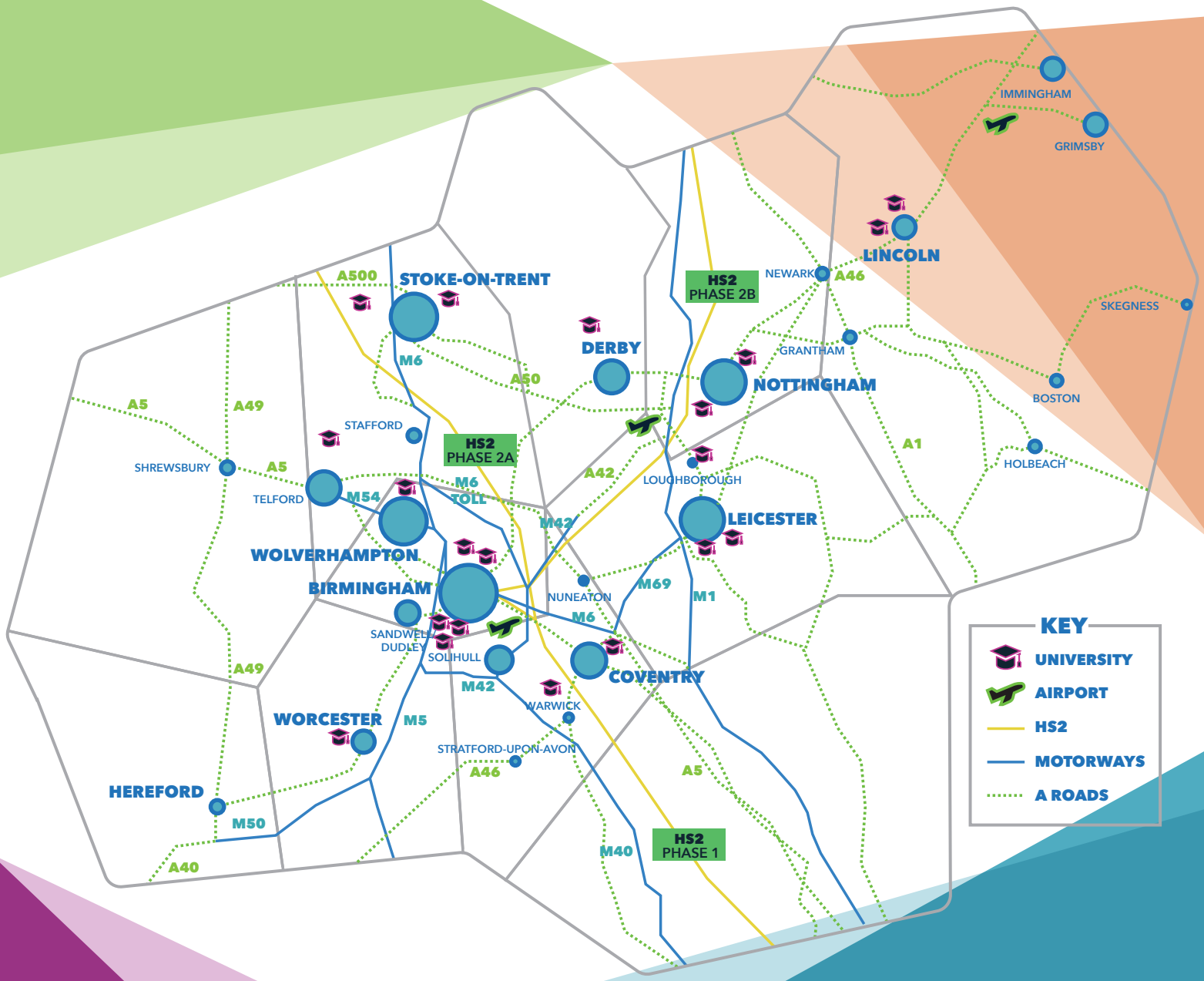
MIDLANDS ENGINE

MIDLANDS ENGINE
INDEPENDENT ECONOMIC REVIEW

A FINAL REPORT TO THE MIDLANDS ENGINE PARTNERSHIP

FEBRUARY 2020



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The Midlands Engine would like to thank the many stakeholders and businesses across the region who provided valuable insight and who supported this project throughout the duration of the IER process.

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The Independent Economic Review process was overseen by a Midlands Engine Economic Observatory Project Board, comprising members from the Midlands Engine, representatives from the Ministry of Housing, Communities & Local Government and Department for Business, Energy & Industrial Strategy, Midlands Connect and Greater Lincolnshire Local Enterprise Partnership (on behalf of all nine Midlands Engine LEPs). Feedback on interim outputs was also provided by the Midlands Engine Operating Board.

Midlands Engine Economic Observatory, delivered by:

FOREWORD

The Midlands Engine Partnership brings together partners across the Midlands to promote and grow the Midlands Economy. We established the Midlands Engine Economic Observatory (The Observatory) in 2018 to provide essential research capacity and grow contemporary insights into the functioning of our economy.

The Independent Economic Review is the most significant output of the Observatory since its inception. The review is an extensive investigation of the Midlands economy, at a depth and scale not seen before.

The review was completed prior to the Covid-19 outbreak. Despite the significant changes in context since the completion of the work, we did want it to be made available for our partners to use. Many of the findings will still hold true as we emerge out of the period of economic turbulence caused by the pandemic. Nonetheless, some things will have changed and we will be working with Observatory partners to provide updated findings to this review, during and after the Covid-19 crisis. We will keep all partners informed of this work.

Despite the current economic uncertainty this review remains a foundational piece of work that helps us to understand the drivers, opportunities and barriers facing our economy. It provides our partnership with clear and specific evidence on which to base economic growth interventions in the Midlands. Just as importantly, it provides an evidence base for our ongoing dialogue with Government.

We know the Midlands has a dynamic economy, with enormous assets in its business-base and across our many academic institutions. The review shines a light on these strengths and shows what huge potential we have to build on. However, it also highlights the nature of some of the stubborn barriers to closing the gap in economic prosperity for the Midlands with the rest of the UK, and most acutely with London and the South East.

It highlights key drivers of productivity that we need to improve including transport and connectivity, skills, innovation and enterprise, availability of business finance and trading with the world, post-Brexit. Some of these barriers have been acknowledged previously, the review re-affirms the size of the task at hand, and provides a greater insight into what we need to do next.

The review has already been used in our briefings with Government, and it is therefore no coincidence that the body of evidence produced supports the growing policy agenda of 'levelling up' ambitions across the UK.

The completion of this research is just the first step in the value the Observatory will add. I look forward to working with all partners committed to furthering our efforts together, to grow the economy and prosperity of the Midlands Engine.

SIR JOHN PEACE
CHAIRMAN, MIDLANDS ENGINE

EXECUTIVE SUMMARY

Aims and approach

1. SQW and Cambridge Econometrics (CE), in collaboration with City-REDI at the University of Birmingham, Nottingham Trent University and the Black Country Consortium, were commissioned by the Midlands Engine (ME) to develop the first ever Independent Economic Review (IER) for the Midlands region. This exercise formed part of the wider Midlands Engine Economic Observatory (MEEO) research programme, which was designed to provide an accessible and coherent source of evidence on the Midlands economy as a whole.

2. The primary focus of the IER was on productivity. The research has sought to better understand the key factors driving productivity performance across the Midlands, identifying commonalities and economic linkages across the region. It investigated where a genuinely pan-Midlands approach could potentially add most value in terms of addressing strategic challenges and enabling growth opportunities. The research explored what might be required to improve the Midlands' productivity performance over the next 10 years. As well as strengthening the evidence base and influencing policy, the IER has been designed to stimulate debate and discussion.

3. The IER was developed through two main phases of research:

- First, a review of existing evidence was produced in spring/summer 2019, drawing on data and literature gathered by the Observatory team and through a wider call for evidence across ME stakeholders. Responses to the call for evidence were received from around 40 organisations. In total, c.250 documents were collected, filtered and prioritised,[1] and more than 150 were reviewed in detail.

- Second, deep dive research was undertaken in late summer/early autumn 2019 to fill some of the gaps identified in the existing evidence base. This included interviews with over 50 businesses/business representative organisations across the Midlands, academic research into the rationale for intervention at a pan-Midlands scale, and a granular analysis of trade flow data. At the same time, Local Area Profiles were developed by CityREDI in collaboration with each LEP, future growth projections and scenarios were developed by Cambridge Econometrics, and an assessment of the potential impact of Brexit on sectors in the Midlands was conducted, alongside an analysis of public spending in the Midlands over recent years.

Context

4. Geographically, the Midlands lies at the heart of the UK, stretching from the Golden Triangle and Western Gateway in the south up to the Northern Powerhouse, giving it an inherent comparative advantage through its linkages with the wider UK economy. With a population of 10.6m people, 816,000 businesses, 5.3m jobs and an annual economic output of more than £233bn (2017), it forms a significant part of the national economy and therefore, its long-term economic success matters to us all.

5. Historically, the Midlands was at the vanguard of science and industrial innovation. Back in 1771, when Richard Arkwright built the world's first water-powered cotton mill at Cromford, he pioneered a new technology that would drive the industrial revolution and transform production, first in the UK, and then around the world. Shropshire is home to Ironbridge Gorge, which has a legitimate claim to be the "birthplace of the industrial revolution".

6. Since then, the Midlands has become synonymous with globally significant firms and industries operating at the leading edge of advanced technology development and adoption. For example, Toyota and Jaguar Land Rover in automotive, Alliance Medical in medtech, Mondelez in confectionery, Experian in business services, Bombardier and its predecessors in rail engineering, QinetiQ in defence, Rolls-Royce in aerospace, and HSBC in fintech with its new UK HQ in central Birmingham, plus many other household names such as Siemens, 2 Sisters Food Group, Worcester-Bosch, Boots, 3M, Capgemini UK, the Morgan Motor Company, JCB, Young's Seafood and Everards amongst hundreds of others.

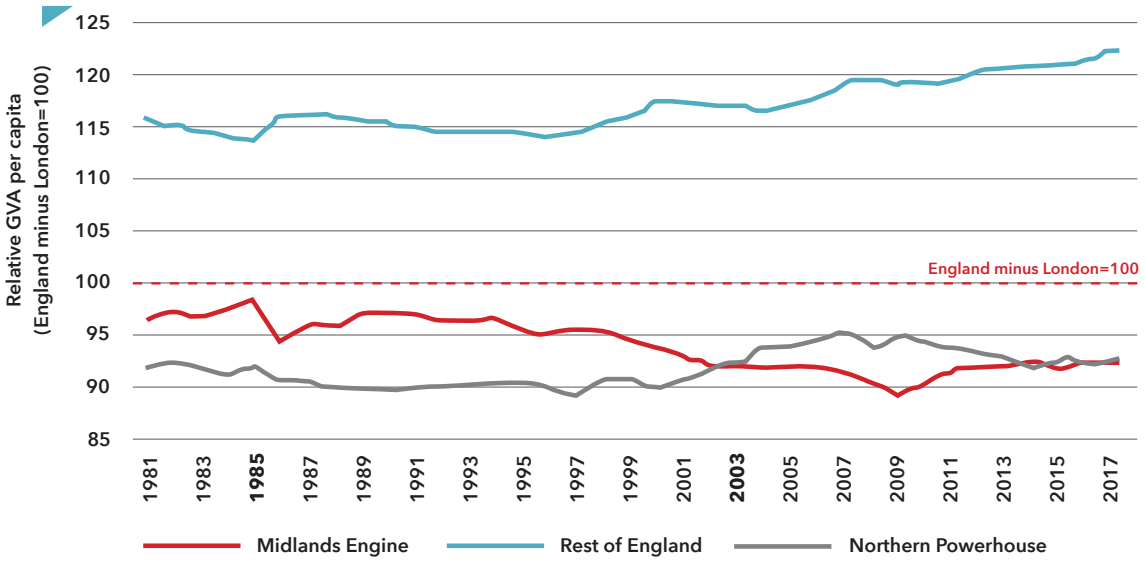
7. However, despite the breadth of the Midlands' business base, its profile globally is arguably most commonly associated with manufacturing excellence – particularly within the automotive sector, which remains a beacon of strength today as Midlands based firms embrace the exciting opportunities presented by industrial digitisation, autonomous vehicles and electrification.

8. This pioneering work has been supported by the growth of centres of learning, scientific research and innovation, as well as technology test-beds that are amongst the very best in the world. It also has a strong and vibrant cultural scene that forms part of an impressive wider quality of life offer, combining urban "buzz" with Areas of Outstanding Natural Beauty and UNESCO World Heritage sites.

9. The Midlands' diverse economy has huge potential, but the region faces a number of challenges including a need to improve its productivity performance and respond effectively to the so-called 'Grand Challenges' of AI and data, an ageing society, clean growth, and the future of mobility. This Independent Economic Review - and the substantial evidence base that underpins it - is designed to support policy-makers, investors and wider stakeholders as they progress the Midlands Engine's important growth agenda – for the benefit of the Midlands' residents and the rest of the UK.

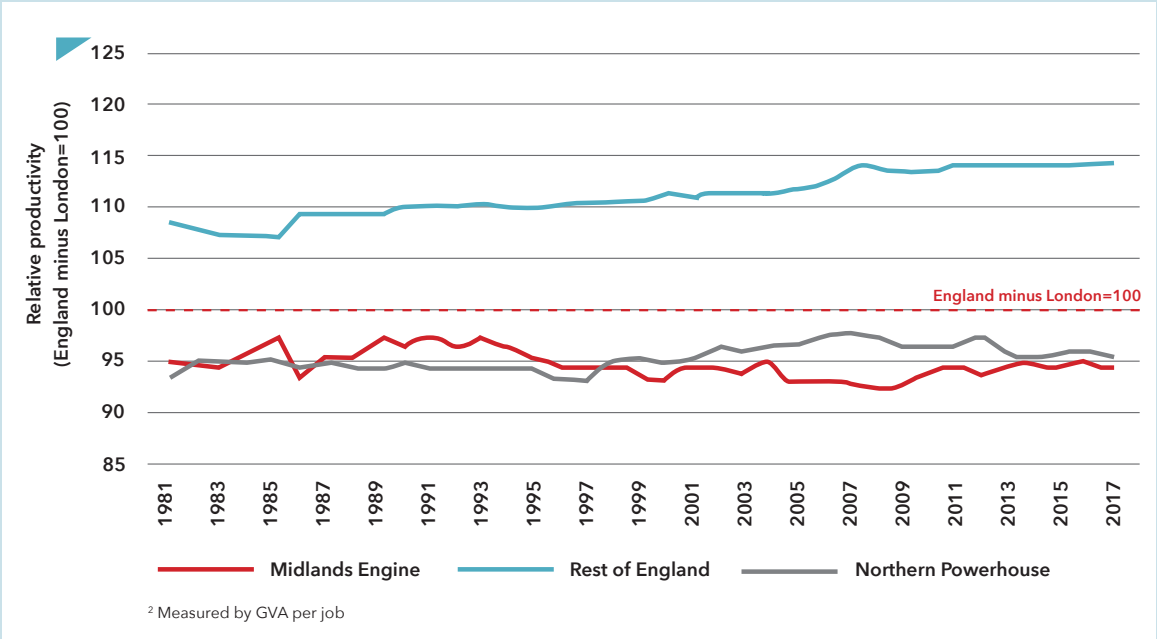
Economic performance and the key factors driving productivity and growth

10. GVA per capita is a broad measure of economic prosperity. In 2017, GVA per capita in the Midlands was nearly £22,000, which represents 92% of the England minus London average. **If this gap in GVA per capita with the England minus London average was closed, the Midlands economy would generate an extra £20bn each year.** However, if we compare the Midlands with the rest of England (including London), GVA per capita is only 76% of the benchmark. This gives a GVA gap of £76bn.



Source: Cambridge Econometrics calculations, ONS

11. **Productivity[2] is the key factor explaining the GVA per capita gap in the Midlands.** Productivity performance compared to the national average improved slightly post-recession, but has remained relatively static since 2013. **By 2017, productivity in the Midlands was 94% of the England minus London average (or 82% if we compare to the rest of England).** The employment rate also contributes to the GVA per capita gap, but to a lesser degree: in 2017, the Midlands' employment rate was 97% of the England minus London average. The two other drivers of the GVA gap – jobs per worker and working age population – are broadly in line with the England minus London benchmark, and therefore do not explain the gap.

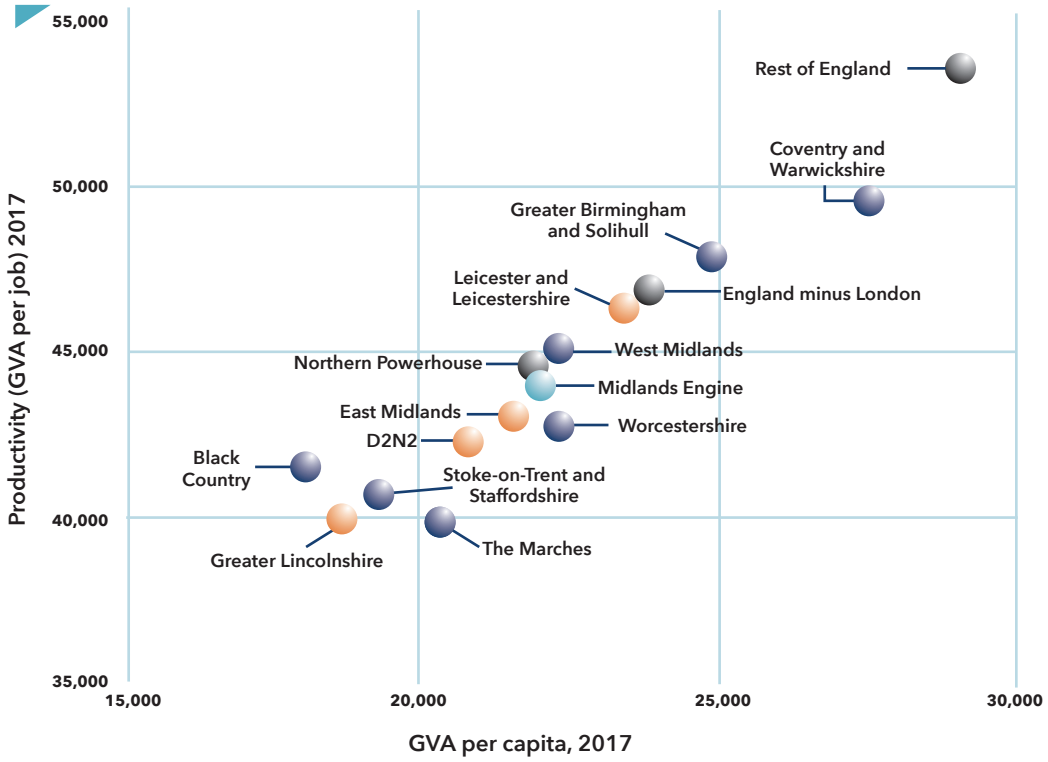


[2] Measured by GVA per job

Source: Cambridge Econometrics calculations, ONS

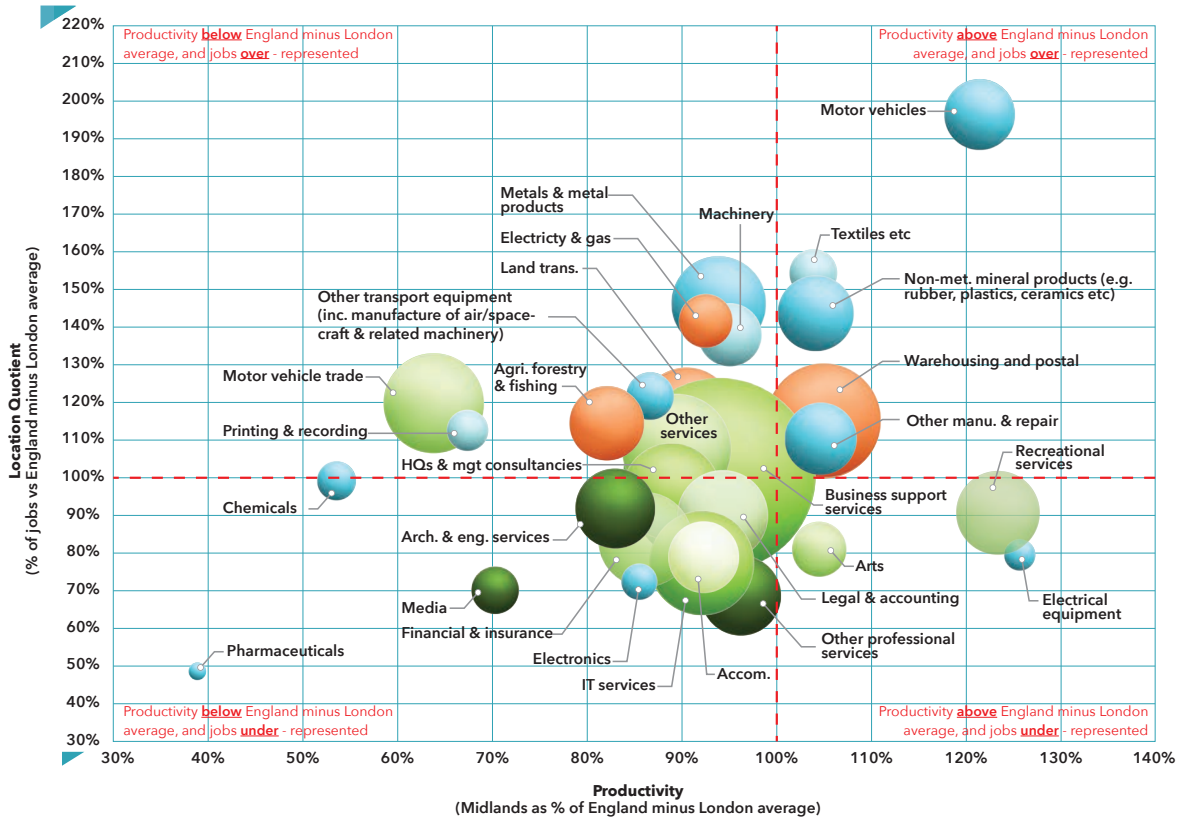
12. **These figures mask variable productivity *within* the Midlands.** Three LEP areas (Coventry and Warwickshire, Greater Birmingham and Solihull, and Leicester and Leicestershire) have higher productivity than the Midlands average and have done so for the last two decades. Productivity is lower in other parts of the Midlands, and the gap has progressively widened in some areas over the last twenty years.

Source: Cambridge Econometrics



13. Over time, shifts in the sectoral structure have influenced productivity in the Midlands, with too few jobs in higher productivity sectors. However, **productivity performance *within* sectors** (driven by tasks, functions, specialisation and markets) **is much more important in explaining the region's productivity gap.** As illustrated below, the performance of the motor vehicles sector excels in the Midlands. However, only 10% of jobs in the region are in sectors where productivity in that sector is above the England minus London average. Productivity is relatively low within some of the region's priority sectors that are in/affiliated to its key strengths, as well as many of the region's business-to-business services.

Source: SQW analysis of Cambridge Econometrics data. Note: data for all sectors is available in Annex B. Note: Midlands sectoral productivity performance, scale and concentration relative to the England minus London average shown for sub-sectors where productivity performance is above or below the benchmark only, 2017. Size of bubble represents Midlands jobs in 2017s, ONS



14. The evidence points towards **challenges in starting and growing a business in the Midlands**, with parts of the region having some of England's lowest incidences of High Growth Firms, **and low in-firm productivity.** Our business interviews for the IER corroborated the data and literature, with **many businesses in the Midlands identifying barriers to growth and challenges in raising their productivity.**

15. According to the evidence gathered for the IER, the most important and common factors holding back productivity and growth across the Midlands are: (i) skills; (ii) infrastructure; (iii) access to growth finance; and (iv) barriers to R&D collaboration, commercialisation and knowledge diffusion/technology adoption. Other issues include premises, utilities, digital connectivity, inadequate business support, and more generally, outdated perceptions of the Midlands, which hamper efforts to attract talent and investment. Some of these challenges are explained in more detail directly below:

- **Skills:** The Midlands is home to significant centres of excellence and world class expertise. However, in aggregate, the region has too few people with high level qualifications and too many with no/low level qualifications. School performance is very variable, with low early years outcomes in some parts of the region. Apprenticeship starts fell sharply in 2017/18 (as did national figures) but there are recent signs of improvement. There are reported skills gaps and shortages in occupations that are critical to the Midlands' key sectors (and productivity and growth more generally), such as leadership and management (L&M), and digital/data analytics/ industrial digitisation and STEM skills. The evidence points to challenges in attracting and retaining talent in the region, both for graduates and more experienced talent (which is linked to perceptions/attractiveness of place, difficulties in commuting, a lack of "depth" in the labour market (i.e. the supply of high quality job options), the quality and choice of housing in the 'right' locations, etc.), and some SMEs experiencing difficulties competing for talent with large multinationals in the Midlands.

- **Infrastructure and business environment:** Poor road and rail transport is a major and well-documented issue across the region, especially in terms of East-West travel. The Midlands has suffered from relatively low levels of transport investment over a prolonged period of time. It was reported to the IER team that this is acting as a drag on business performance (e.g. for productivity, the size of potential talent pool, access to clients and collaborators, supply chain operations). International airports are an important asset for the Midlands, although concerns were raised regarding road/rail connectivity to airports and insufficient flights to key growth markets. Digital connectivity is very variable across the Midlands, in both rural and urban areas, and is impacting upon home-working, business activities (e.g. communications with overseas clients, productivity). Insufficient water and electricity supply in some parts of the region is hindering business expansion and/or the ability of firms to operate at maximum capacity. In terms of sites and premises, the provision of attractive and flexible grow-on space, large-scale industrial premises and Grade A office space is limited in some locations due to stubborn and persistent land and property market failures.

- **Finance:** This was raised as a challenge in terms of business investment to grow (and in some cases, having the capacity to secure supply chain opportunities), improve productivity and innovate (especially the second valley of death and pathway to commercialisation). Issues are variable across the Midlands, but on the demand-side, common challenges include a lack of awareness of what finance is available, difficulties navigating the existing offer, L&M skills, investment readiness, and an aversion of external finance. On the supply-side, the existing offer is often perceived as being fragmented, highly competitive, under-resourced and in some instances, unattractive to the entrepreneur commercially.

- **R&D, innovation and technology adoption:** the Midlands is home to nationally significant clusters and major world class assets and "innovation anchors". It has successfully attracted large amounts of FDI in some of the region's high productivity priority sectors. However, R&D activity is variable across the Midlands, and tends to be very concentrated in a small number of highly innovative firms and leading research institutions, contributing to a gap in R&D intensity overall. Moreover, the evidence suggests that some of these high-quality innovation assets are not effectively "joined up", performance in securing public sector innovation funding is variable, and businesses cited difficulties engaging with the research base quickly and efficiently. Diffusion of knowledge/innovation across the wider business base appears to be slow, and there are concerns about absorptive capacity.

16. Concerns were raised regarding competition and the imbalance in governance and leadership (for example, with a Combined Authority in the West, but not the East) across the region, which is perceived by some as hindering progress in terms of economic development and productivity gains. Despite some encouraging signs of progress, a more cohesive strategic agenda, coherent and compelling narrative, and collective identity was seen as being vitally important if the Midlands is to achieve its full potential over the coming years.

Rationale for a pan-Midlands approach

17. A key question posed for the IER was "What functions or activities does it make sense to discharge at the pan-regional level of the Midlands Engine?", taking into account the principles of subsidiarity[3] and additionality[4], as well as pragmatic considerations (e.g. capacity at different scales) and governance issues (i.e. levers/powers available at each level). Based on academic research, business feedback and the LEP-level profiles, the evidence suggests a rationale for pan-Midlands effort in terms of:

    - **Advocacy, identity and promotion,** developing and communicating a coherent, compelling and consistent message/voice – both internally and externally
    - **Genuinely strategic and evidence-based** decision-making, case-making and evaluation
    - **Science and innovation**, including co-ordination between business/research assets, ensuring agendas are joined-up to maximise synergies, prioritisation and making the case for long-term investment
    - **Internationalisation**, including inward investment
    - **Infrastructure**, including transport, digital, utilities and energy, in terms of planning, co-ordination and securing the necessary investment
    - **Business finance**, including money to "oil the wheels" of growth throughout supply chains
    - **Skills** in terms of advocacy (recognising that responsibility for delivery lies elsewhere), for example to help create the conditions to attract/retain young talent and address key shortages/gaps for the Midlands' priority sectors.

18. In order for these pan-regional activities to be effective, clarity and agreement on the functional division of responsibilities will be essential, setting out how the different governance "tiers" will work together effectively so as to maximise impact.

Looking forward

19. Based on Cambridge Econometrics' "business as usual" projections to 2030, GVA growth in the Midlands (at 1.4% p.a.) is expected to lag slightly behind the national average (of 1.5% p.a. for the UK minus the Midlands) and behind historic trends in the region. In the same projection employment in the Midlands Engine grows by 0.3% p.a. compared to 0.4% p.a. in the rest of the UK. **The result is that productivity in the Midlands is expected to grow at the same rate as the rest of the UK, so the productivity gap will persist.**

20. **In order to fully close the productivity gap** (i.e. match the UK productivity level[5] by 2030), **the Midlands' productivity performance would need to increase at a rate of 2.4% p.a.** (see the "transformational scenario" in the graphic), meaning the region would need to return to (and exceed) productivity growth rates previously seen in the 1980s and 1990s. This is extremely ambitious given how productivity growth has been subdued over the past decade (averaging 0.4% p.a.).

21. The "transformational scenario" has been informed by an analysis of LEP-level growth aspirations and priority sectors (as set out in existing local strategies). However, even if these are successfully delivered through to 2030, further uplift is required across the Midlands as a whole in order to match the UK productivity level by 2030. It should be noted that competitor areas will also be seeking to accelerate their economic growth over the coming years.

[3] i.e. that issues should be dealt with at the most immediate or local level that is consistent with their resolution.
[4] i.e. how working at the pan-regional scale can add most value to activities at finer scales of geographical disaggregation.
[5] UK less the Midlands Engine.

Policy implications

22. Perhaps as expected given the scale and diversity of the Midlands, a wide range of issues have emerged during the course of this IER process. These issues can be grouped under the following six broad themes:

- Investment in the Midlands' **strategic transport network in order to** strengthen economic relationships (in terms of supply chain links, labour market flows and enhanced access to key science and innovation assets) and in turn, unlock increased agglomeration benefits. Improvements to the region's main East – West transport corridors are key to this.
- The creation of a more **integrated and collaborative science and innovation landscape across the Midlands.** There is scope to better connect key assets and, capabilities, and to facilitate stronger networks between different technology areas and across the Midlands' leading clusters and innovation ecosystems. Innovation within the business services sector and the absorptive capacity of the wider business base should be priorities, alongside continued efforts to strengthen and join-up innovation activity within advanced manufacturing and digital tech areas of the economy.
- Partners across the Midlands should support the region to adopt a leadership position when it comes to embracing the **industrial digitisation agenda**. Linked to this, they should explore opportunities for piloting new approaches designed to tackle the region's **skills deficit.**
- Targeted and tailored support should be made available to the Midlands Engine business base (including service-based firms) to raise awareness of the **international business opportunities** in a post BREXIT world.
- The Midlands should leverage the opportunities presented by the Commonwealth Games, City of Culture and other high-profile events to transform **outdated perceptions/image of the Midlands** and create more of a "buzz" about the region. This will help to attract and retain talent in the Midlands, including graduates.
- There should be a strong focus on improving ***within*** **sector/firm productivity levels, business growth and business formation across the Midlands.** A particular emphasis should be placed on creating more technology-rich High Growth Firms.

In our view, the six themes that have emerged from the evidence, provide a useful framework for any future discussions with Government and partners. These themes are particularly important in relation to devolution, imbalances within the region and the "levelling up" agenda. Governance structures may vary in different localities, but all areas need the strategic capabilities and delivery structures necessary to access devolved powers and resources when Government makes these available. Furthermore, a clear division of responsibility between the authorities involved in these governance structures is imperative if strategic planning and delivery is to be effectively coordinated.

1. INTRODUCTION

The Independent Economic Review

1.1 SQW and Cambridge Econometrics (CE), in collaboration with City-REDI at the University of Birmingham, Nottingham Trent University and the Black Country Consortium, were commissioned by the Midlands Engine (ME) to develop the first ever Independent Economic Review (IER) for the Midlands. This exercise formed part of the wider Midlands Engine Economic Observatory research programme, which was designed to provide an accessible and coherent source of evidence on the Midlands economy as a whole. In addition to the IER, the Observatory produces a Quarterly Economic Commentary and wider economic analysis that partners can draw upon when shaping their strategic priorities and making the case for investment in the Midlands.

1.2 The IER is intended to be:

- A robust, intelligent and insightful evidence base which can inform decision-making across the Midlands Engine. It seeks to add real value and have a positive influence across the Midlands and beyond.
- An independent and honest analysis of the strengths and weaknesses of the Midlands Engine economy, and its future growth opportunities. This has been informed by both a review of existing evidence at a pan-Midlands level and fresh insight from businesses on the drivers of growth and key economic linkages across the Midlands. Additionally, the Observatory has developed future growth scenarios to help inform long-term strategic thinking across the region.
- Focused on issues of pan-Midlands significance. The primary emphasis of the IER is on "what matters" at the level of the Midlands, in order to inform where a pan-Midlands effort can add most value and maximise beneficial impact.

1.3 It is important to be clear from the outset that the IER is not seeking to duplicate existing evidence or analysis at the local level. It is seeking to build on these local narratives and draw them together to form a clear and up to date pan Midlands Engine picture. Moreover, it is not a strategy, action plan or business plan for the Midlands Engine partnership. Whilst the IER forms part of the evidence base for ongoing strategy refresh work, action planning and business case development across the Midlands in 2020, it is designed to provide robust evidential economic development foundations for the region over the much longer term.

1.4 The original brief for the IER from the Midlands Engine had a **strong focus on understanding and explaining the region's productivity performance.** During an initial scoping phase, the following four research questions were identified for the IER, in discussion with the Observatory's Project Board, the Midlands Engine Operating Board and wider partners:

- **Understanding the factors driving productivity performance across the Midlands.** This includes consideration of the root causes of problems, as well as key strengths to build on, in terms of innovation activity, skills, international trade and inward investment, connectivity and infrastructure, finance, skills, and key characteristics of the business base (e.g. growth ambition, barriers to growth, leadership and management).

- **Exploring the commonalities, synergies, and economic linkages across the Midlands,** to develop a better understanding of the Midlands' functional economic geographies (e.g. in terms of current labour markets, supply and value chains, innovation networks, markets, and transport connectivity etc.).
- **Identifying key pan-Midlands growth opportunities and exploring where a genuinely pan-Midlands approach could potentially add most value** to addressing challenges and enabling growth opportunities, as well as maximising the Midlands' contribution to national productivity growth imperatives.
- **Assessing what is required to improve the Midlands' performance over the next 10 years**, with reference to accelerating productivity growth, and consideration of where the Midlands can gain best returns. This includes providing a consistent set of economic forecasts at Local Enterprise Partnership (LEP) and Midlands geographies[6].

Approach

1.5 Following the scoping work outlined above which was used to define the core research questions, the IER has been developed through two main phases of research.

Phase 1: Review of existing evidence

1.6 In spring/early summer 2019, existing evidence was gathered by the Observatory team and through a wider call for evidence across Midlands stakeholders. The call for evidence was launched via a number of routes, including the Midlands Engine Strategic Programme Group Chairs, the Midlands Engine Business Forum members, existing Midlands LEP and Higher Education Groups, and the Midlands Engine's mailing list (covering 130 individuals, including representatives from LEPs, Combined Authorities, Local Authorities, Central Government, Midlands Connect, and academics)[7]. Responses to the call for evidence were received from around 40 organisations.

1.7 In total, c.250 documents were collected, filtered and prioritised[8]. This included LEP and Midlands-wide evidence, alongside the latest national thinking on productivity from think tanks and academia. Throughout, the focus of the IER team has been on Midlands-wide evidence and sub-regional evidence that was deemed by partners as having a pan-Midlands significance (rather than very localised evidence across the Midlands). Following the initial prioritisation stage, more than 150 documents were reviewed by the SQW-led team against the four IER research questions[9].

1.8 Alongside the literature review, Cambridge Econometrics analysed headline datasets to assess economic performance and trends in the Midlands, benchmarked against the rest of England (including and excluding London) and the Northern Powerhouse geography[10]. This included a decomposition of the Midlands' growth deficit to better understand the main factors driving this gap over recent years. The analysis was undertaken first for the Midlands as a whole, and then at a more granular level for each LEP area across the region. It is important to note that the IER remit did not include an extensive or detailed data baselining exercise. However, the Observatory produces a Quarterly Economic Commentary (QEC), which provides a comprehensive and longitudinal database of key indicators. The QECs have informed the development of this IER.

[6] Local Authority forecasts are also available under a separate arrangement.
[7] Via email, presentations at workshops and the Observatory's website
[8] On the basis of relevance, quality/robustness and timeliness
[9] Using online software for systematic literature review, synthesis and document management developed by UCL.

Phase 2: Deep dive research and complementary workstreams

1.9 The Phase 1 research identified a number of gaps in the existing evidence base. Following discussion with the Observatory Project Board and Midlands Engine Operating Board, it was agreed that the following deep dive research would be undertaken:

- Primary research to gather **business perspectives** on the barriers and opportunities for growth. This involved over 50 in-depth interviews with influential and innovative businesses operating within priority sectors/technology areas across the Midlands and business representative organisations[11]. This workstream was led by SQW, with support from NTU and City-REDI.
- An academic review of literature relating to the r**ationale for intervention at a pan-Midlands scale** by NTU and City-REDI.
- A more detailed analysis of **trade flows** by City-REDI, using input/output data to show key trade movements within/across the ME and how these are changing over time.

1.10 At the same time, four further strands of research activity were progressed to inform the IER:

- The creation of **Local Area Profiles** in collaboration with each LEP in the Midlands. Led by City-REDI, these profiles present a LEP-level perspective on the four IER research questions.
- The development of future growth projections and scenarios, led by Cambridge Econometrics.
- An assessment of the **potential impact of Brexit on sectors** in the Midlands, which was led by City-REDI and Cambridge Econometrics.
- A high-level analysis by NTU, City-REDI and the Black Country Consortium of **public spending** in the Midlands over recent years.

1.11 This overarching IER report draws together the evidence from all of the research outlined above, providing a summary of the findings against each of the four IER research questions and concludes with some wider reflections on the main implications for policy going forwards.

[10] International comparators were also analysed at a very headline level.
[11] Business nominations were sourced from LEPs and the Midlands Engine Business Forum, the Observatory team and Project Board, and the Beauhurst database. Business representative organisations consulted included the Institute of Directors, the Federation of Small Businesses and Confederation of British Industry

Report structure

1.12 This IER report is structured as follows:

- **Section 2** provides an overview of economic performance in the Midlands
- **Sections 3-6** present evidence on the key factors driving productivity performance
- **Section 7** highlights some of the main economic linkages across the Midlands
- **Section 8** considers the rationale for a pan-Midlands approach
- **Section 9** reflects on the future economic growth prospects for the Midlands Engine
- **Section 10** distils the key challenges and opportunities for the Midlands economy and comments on the main implications for policy.

1.13 The report contains five supporting annexes: Annex A provides references; Annex B presents granular data on productivity and jobs; Annex C contains a list of Cambridge Econometrics' 45 sector definitions; Annex D presents categories of public sector investment analysed in Section 3; and Annex E provides further detail to support Section 8. The report is also underpinned by a series of technical evidence papers that are available separately.

2. AN OVERVIEW OF ECONOMIC PERFORMANCE

2.1 This Section presents an overview of economic performance in the Midlands and the scale and nature of the Midlands' performance gap with national benchmarks[12]. We also comment on the spatial variation in scale and economic performance across the Midlands.

Key messages

- GVA per capita in the Midlands was 92% of the England minus London average in 2017, which equates to a GVA gap of £20bn in that year. This gap widens considerably if we compare the Midlands with the rest of England, including London (to 76%).

  ➜The majority of this gap is due to under-performance in productivity (GVA per job), with the Midlands' productivity achieving only 94% of the England minus London average. If the GVA generated by jobs in the Midlands matched the England minus London average, this would boost GVA by £14.3bn in 2017. The data suggest that accelerating productivity growth across the region should be a key strategic priority for the Midlands Engine and indeed the UK government.

  ➜ The employment rate also plays a role in relation to the GVA deficit, but the gap is narrower (97% of the England minus London average).

- There is considerable spatial variation in economic size and performance within the Midlands.

  ➜Three LEP areas (Greater Birmingham and Solihull, Coventry and Warwickshire and Leicester and Leicestershire) have consistently out-performed the Midlands average in terms of productivity levels. Moreover, productivity in Greater Birmingham and Solihull, and Coventry and Warwickshire exceeded the England minus London average in 2017.

  ➜ However, c.60% of the Midlands' GVA is accounted for by the economies of six LEP areas where productivity is below the Midlands average, and employment rates are very variable.

[12] Note, references to the Midlands using Cambridge Econometrics data/analysis in this Section refer to the East and West regions combined unless specified otherwise, rather than an aggregation of the nine LEP areas that comprise the Midlands Engine (as this would lead to duplication of the Local Authorities that are in more than one LEP geography). The Midlands data presented here therefore includes Local Authorities within LEPs that are not covered by the Midlands Engine, e.g. East Northamptonshire, Northampton and South Northamptonshire in SEMLEP and Rutland in Greater Cambridge & Greater Peterborough LEP.
[13] GVA is defined by ONS as the value of the amount of goods and services that have been produced, less the cost of all inputs and raw materials that are directly attributable to that production.
[14] i.e. Midlands population in 2017 multiplied by GVA per capita average for England minus London in 2017.

[15] i.e. Midlands population in 2017 multiplied by GVA per capita average for the rest of England in 2017.
[16] Recognising that London is a global centre, with a unique economic role and composition.
[17] i.e. The rest of England and England minus London
[18] This is in part driven by the deregulation of the financial services industry in London (which is included within this area)

Overview of economic performance at the Midlands level

Economic performance and trends

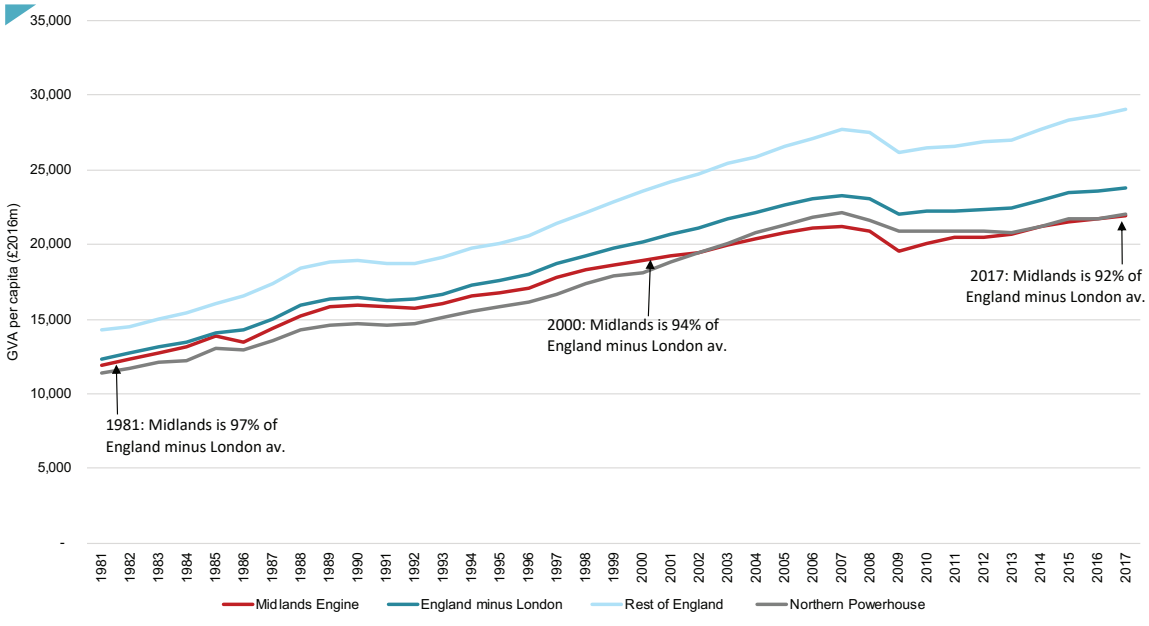
2.2 In 2017, the Midlands Engine economy generated £233.5bn in Gross Value Added[13] (13% of the UK economy) and was home to 10.6m people and 5.3m jobs (accounting for 16% and 15% of the UK total). This gives a **GVA per capita figure of nearly £22,000, which represents 92% of the England minus London benchmark. If this gap in GVA per capita with the England minus London average was closed, the Midlands economy would generate an extra £20bn each year[14].**

2.3 However, if we compare the Midlands with the rest of England (including London, but excluding the Midlands), GVA per capita is only 76% of the benchmark figure. This gives a much larger GVA gap of £76bn[15], which is close to the total GVA of Greater Birmingham and Solihull, and Leicester and Leicestershire LEP areas combined.

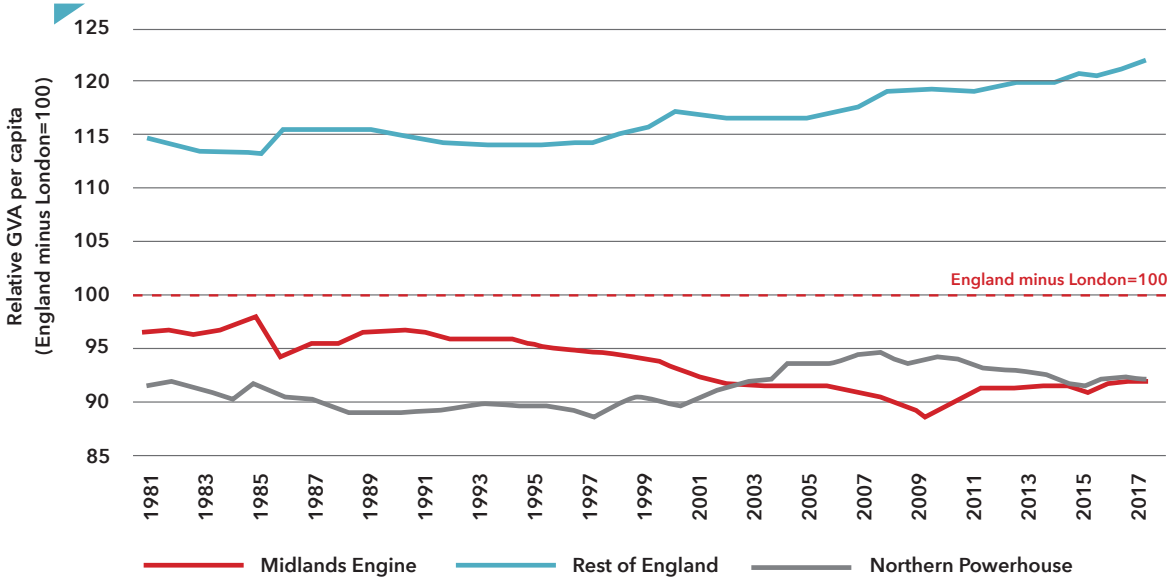
2.4 Encouragingly, in terms of total GVA output, the Midlands Engine economy has performed well o ver the last decade in the post-recession environment. Since 2009, output (GVA) has grown faster than the rest of England and substantially faster than England when London is excluded[16]. The region's GVA per capita increased by 12% between 2007-17, compared to the rest of England and England minus London, which achieved uplifts of 11% and 8% respectively. This is a marked turnaround from its pre-recession trend, where it increased slower than benchmark areas[17]. In terms of GVA per capita, the Midlands Engine has recovered to broadly match performance in the Northern Powerhouse geography, after falling behind between the mid-2000s and the mid-2010s. However, in absolute terms, the Midlands still finds itself some way behind the rest of England, with the GVA per capita gap widening from the mid-1990s onwards[18].

Source: CE calculations, ONS

Figures 2.1: GVA per capita gap analysis



Source: CE calculations, ONS



Decomposing the Midlands prosperity gap

2.5 GVA per capita can be broken down into drivers of interest to help articulate the longer run determinants of growth within an area, and explain potential divergences in economic performance between areas. Specifically, it can be decomposed using the following, each with its own economic meaning and policy implications[19]:

$$\frac{GVA_{wp}}{Population_{res}} = \frac{GVA_{wp}}{Jobs_{wp}} \times \frac{Workers_{res}}{WAP_{res}} \times \frac{Jobs_{wp}}{Workers_{res}} \times \frac{WAP_{res}}{Population_{res}}$$

GVA per capita = Labour Productivity x Employment Rate x Jobs per Worker x Working-Age Share.

2.6 Table 2.1 shows the change in GVA per capita for the periods of time over which data are available, decomposed into the different components mentioned above. For the Midlands, and England as a whole, **productivity accounts for approximately four-fifths of the change in GVA per capita, while the employment rate makes up the remainder.** Jobs per worker[20] and the share of working age population largely cancel each other out. This makes sense because the employment rate and jobs per worker will be limited over time, while productivity (through enhanced investment and technological progress) can (in theory) continually increase.

[19]Where 'WAP' stands for working-age population, 'wp' represents workplace figures and 'res' refers to residential figures.
[20] i.e. jobs per person in employment.

Table 2.1: Contribution to Overall Change in GVA per capita 1992-2017 (%)

	Midlands Engine	England
GVA per capita	100.0%	100.0%
Productivity	81.9%	77.4%
Jobs per Worker	25.2%	25.9%
Employment rate	-7.3%	-3.5%
WAP share	100.0%	100.0%

Source: Cambridge Econometrics calculations, ONS, BRES, LFS

2.7 The graphs overleaf show the gap analysis for each of the GVA per capita components for the Midlands (compared to the England minus London average) in turn. We observe that:

- For **productivity**, the gap with the rest of England widened from the early 1990s to the last recession, but started to close subsequently. However, the post-recession recovery seems to have stalled somewhat in the last few years (compared to the Northern Powerhouse for example, where the gap has closed since 2014). In 2017, **productivity in the Midlands was 94% of the England minus London average** (in the Northern Powerhouse, the gap was 95%). If the Midlands closed the *productivity* gap[21], the region would be £14.3bn better off. This demonstrates how the under-performance in productivity accounts for a substantial proportion of the £20bn GVA gap identified above.
- The Midlands performed broadly in-line with the rest of England (including London) prior to the mid-2000s in terms of the **employment rate,** but then started to diverge for the rest of the period. This is a concern as it indicates a worsening situation and a trend that shows no sign of improvement. In 2017, the employment rate in the Midlands was 97% of the England minus London average.
- In terms of the **number of jobs per worker**[22], the Midlands Engine outperformed England minus London until the early-2000s, after which performance declined. Since then, it has remained just below the benchmark until 2017 when the gap closed again. In 2017, the number of jobs per worker in the Midlands was 101% of the England minus London average.
- The share of **working age population** steadily decreased from 1981 to 2010, relative to the England minus London average. However, since then, the trend has reversed. This has been driven by working age population growing 1pp faster than the England minus London average between 2010-2017. In 2017, the share of working age population in the Midlands matched the England minus London average.

2.8 As shown in Figure 2.2, the main contributory factors in relation to the Midlands' GVA per capita deficit are gaps in productivity and (to a lesser degree) employment. In comparison, the number of jobs per worker and the working age population are broadly in line with England minus London.

2.9 We can see that the Midlands made progress in closing the productivity gap with England minus London in the early 1990s, but then the gap progressively widened until the last recession. From 2008, productivity performance in the Midlands improved relative to England minus London, but this was largely driven by the flatlining of GVA per capita growth nationwide (so the performance of the Midlands Engine appears relatively better due to the downturn of other areas) and the so-called 'productivity puzzle' at the UK level. Since 2010, the Midlands' productivity gap has remained at c.94-95% of the benchmark.

[21] i.e. if GVA per job in the Midlands matched the England minus London average productivity level in 2017.
[22] Number of jobs is workplace-based (i.e. jobs in the Midlands), however number of workers is residence-based.

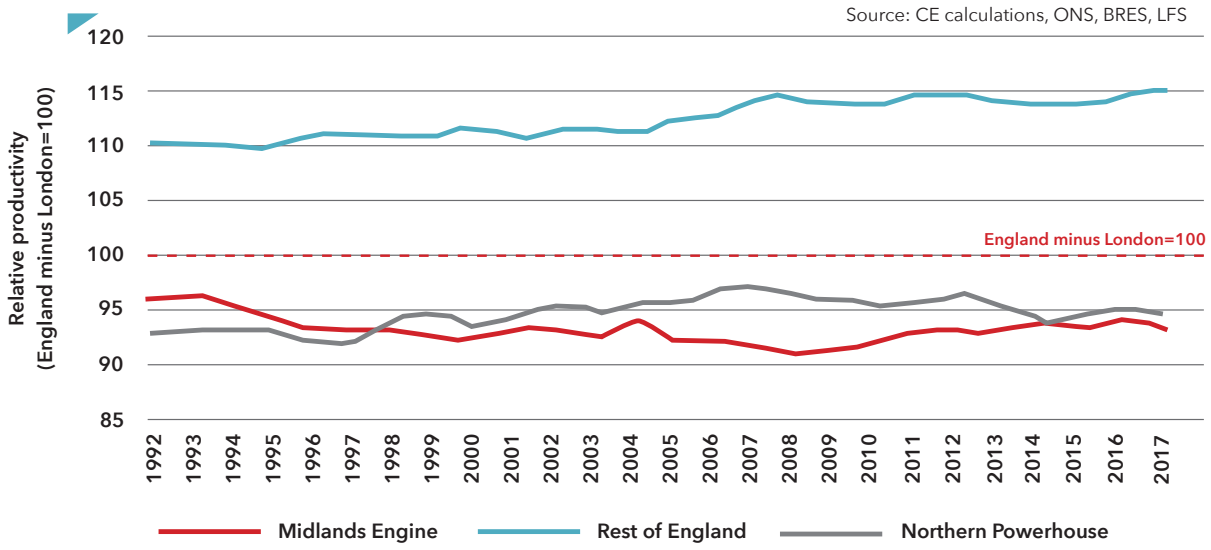
2.10 In comparison, the Northern Powerhouse made steady progress in closing the productivity gap with England minus London since the late 1990s, but the gap has widened since 2012. Exploring productivity by sector for the Midlands and the Northern Powerhouse over recent years in more detail, we can observe the following:

- Productivity in the broad sector of 'finance and business services'[23] in the Midlands was 90% of the England minus London average in 2017, whereas in the North it was 95%. However, for 'other services'[24], the Midlands appears to have experienced a slightly stronger recovery in productivity since 2014 (to 101% of the benchmark in 2017), whereas in the North it has improved (to 96% of the benchmark).
- On aggregate, the productivity of the Midlands' broad 'manufacturing' sector[25] declined significantly from the early 1990s to 2009 (to 84% of the England minus London average), but has since improved. That said, manufacturing (on aggregate) in the Midlands is still less productive than in the North – by 2017, manufacturing productivity in the Midlands was 94% of the England minus London average, whereas in the North it exceeded the benchmark (105%).

2.11 These are important themes that are revisited throughout the rest of this IER report. For instance, in Section 3, a more granular sectoral analysis is presented in the context of considering what factors might be contributing to the relative underperformance of the Midlands within the key areas of financial and business services, and manufacturing.

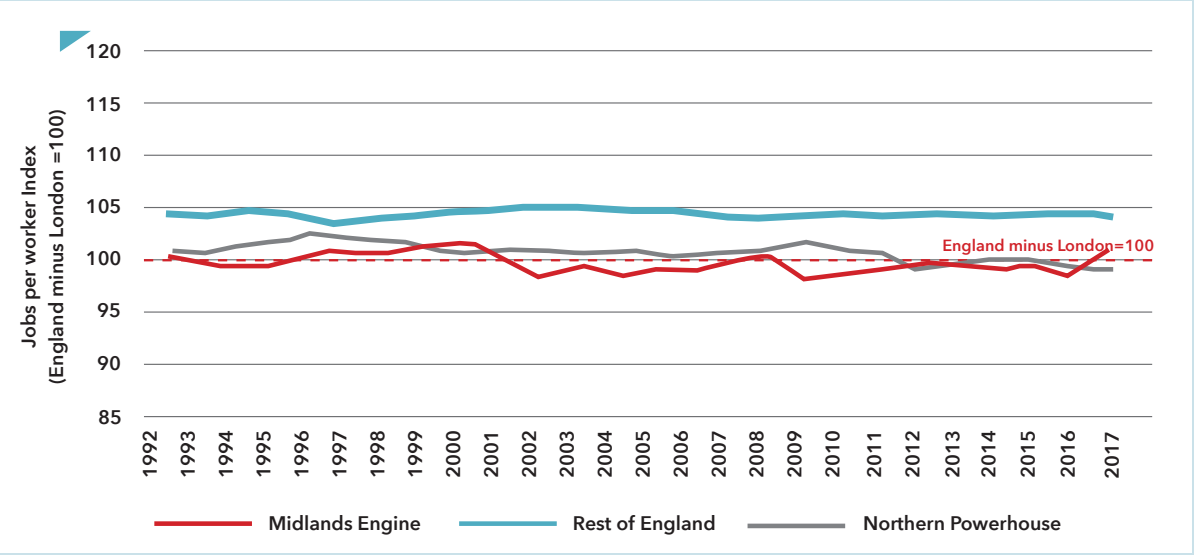
Figure 2.2: Gap analysis for components of GVA per capita

Productivity gap

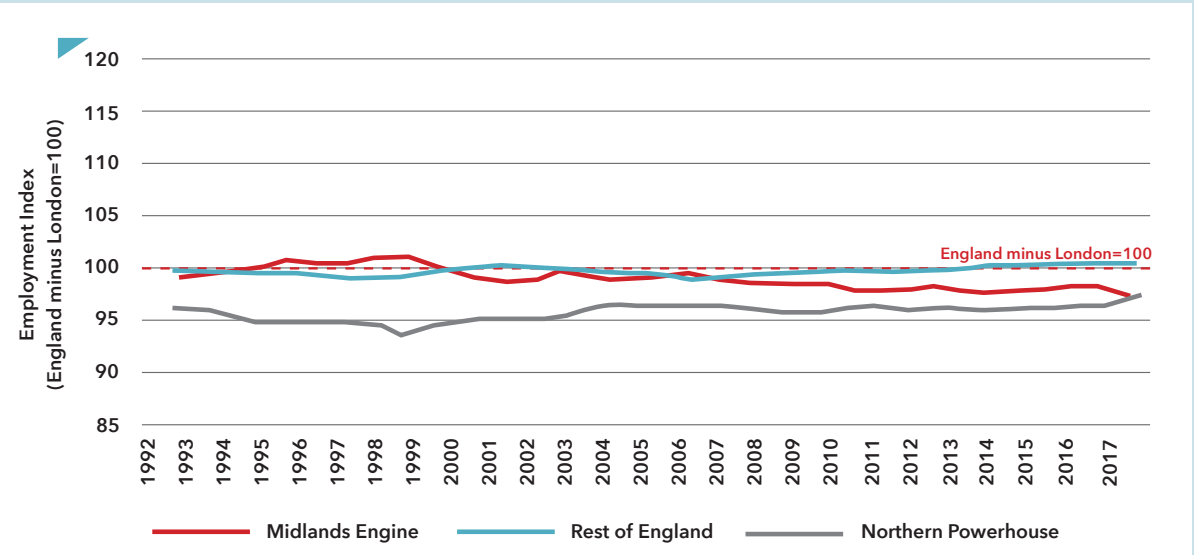


[23]Comprising Financial & insurance, Real estate, Legal & accounting, Head offices & management consultancies, Architectural & engineering services, Other professional services, and Business support services.
[24]Comprising Arts, Recreational services, and Other services.
[25]Comprising Food, drink & tobacco, Textiles etc, Wood & paper, Printing & recording, Coke & petroleum, Chemicals, Pharmaceuticals, Non-metallic mineral products, Metals & metal products, Electronics, Electrical equipment, Machinery, Motor vehicles, Other transport equipment, and Other manufacturing & repair.

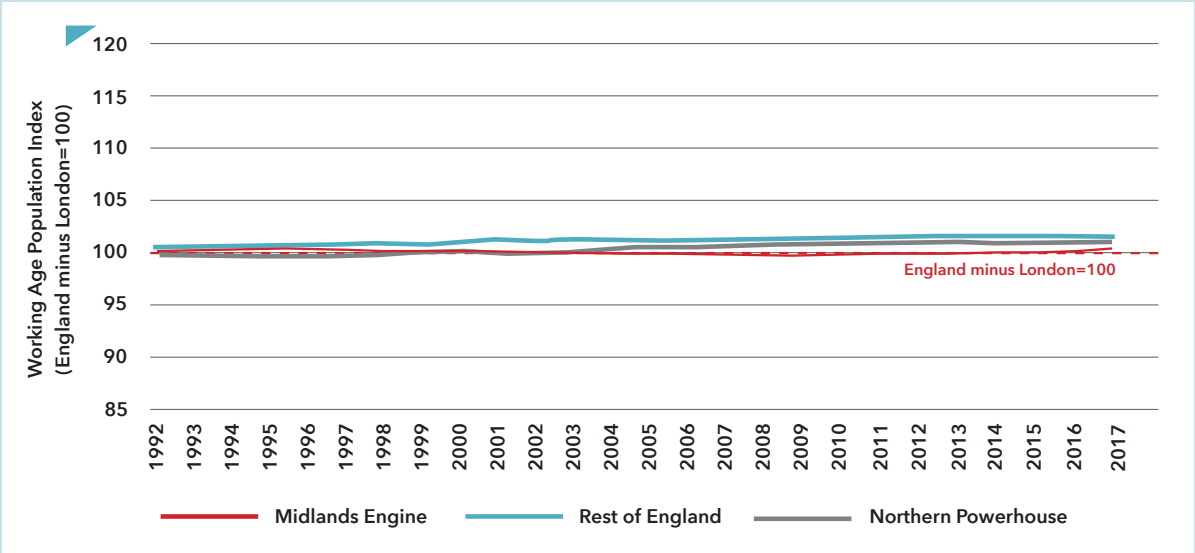
Relative jobs per worker gap analysis



Employment rate gap



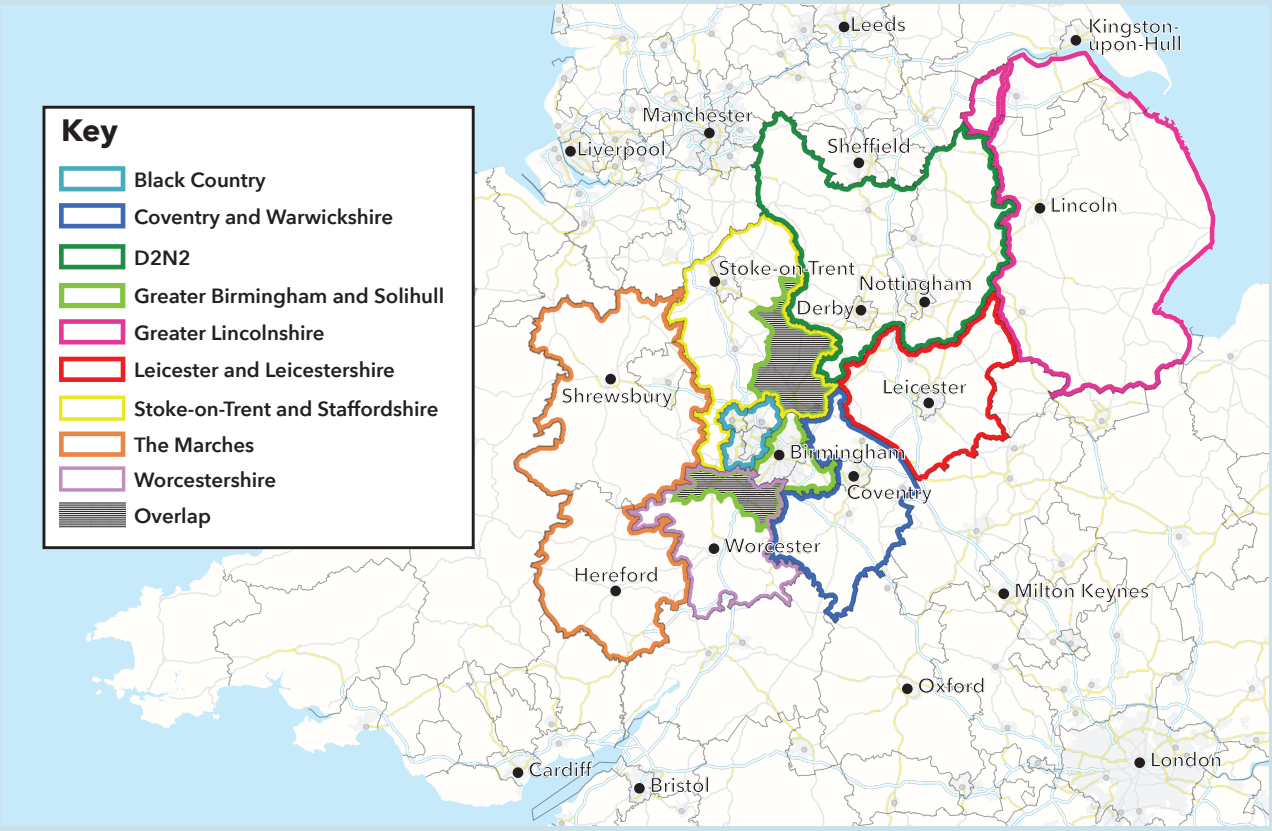
Working age population gap



Spatial variation in economic performance across the Midlands

2.12 The Midlands comprises nine Local Enterprise Partnerships (LEP) areas, and there is considerable diversity within and across the geography in terms of economic scale and performance. This includes the large urban conurbation of Greater Birmingham in the West, and a more polycentric urban landscape in the East with cities such as Derby, Nottingham, Leicester and Lincoln. Over a quarter of the region is rural, with more than 50 miles of coastline in Lincolnshire. As illustrated below, the LEP areas vary significantly in size, both in terms of their economic output and population

The Midlands Engine LEPs



Source: Produced by SQW 2017. Licence 100030994, contains Ordnance Survey data © Crown copyright and database right 2018.

Table 2.2: LEP scale – GVA, jobs, population and area in 2017

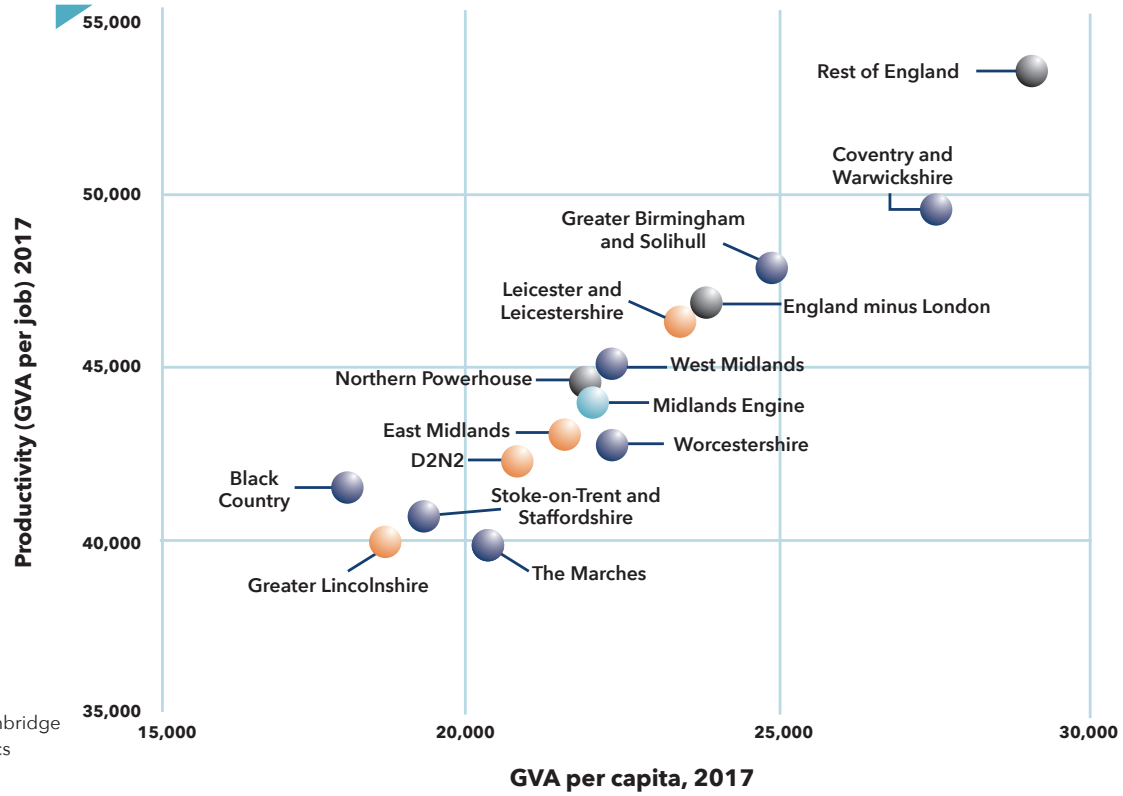
	GVA £m, 2016 prices	Jobs (000s)	Population (000s)	Area (Hectares)
Greater Birmingham and Solihull	50,483	1,053	2,031	174,371
D2N2	45,726	1,078	2,196	479,030
Coventry and Warwickshire	25,607	516	925	207,616
Leicester and Leicestershire	24,491	529	1,044	215,713
Stoke-on-Trent and Staffordshire	21,612	531	1,126	271,676
Black Country	21,346	512	1,186	35,693
Greater Lincolnshire	20,188	504	1,082	718,201
The Marches	13,879	348	684	566,730
Worcestershire	13,098	306	588	174,051
Midlands total[27]	**233,540**	**5,294**	**10,632**	**2,862,700**

Source: Cambridge Econometrics, IER Evidence Paper – Local Area Profiles

2.13 Figure 2 3 shows GVA per capita across the Midlands geographies alongside that of productivity for the latest year of available data. We can see that in 2017, GVA per capita and productivity in the West Midlands was slightly above the Midlands average, and the East Midlands was slightly below. However, the West Midlands is more heterogeneous than the East, containing the top-two performing LEP areas for productivity (Coventry & Warwickshire, and Greater Birmingham and Solihull), but also three of the four lowest-performing areas (the Marches, Stoke-on-Trent and Staffordshire, and the Black Country). Further decomposition of the components of GVA per capita at LEP level are provided in a supporting evidence paper[28]. This reveals that, as with the overall Midlands results, **productivity accounts for the majority of the change in GVA per capita across the LEP areas**. However, there are some variations, with typically those which are lower-performing on GVA per capita being driven relatively more by changes in the employment rate. Figure 2 4 Figure 2 5 and Figure 2 5 show productivity trends by LEP area over time, relative to the Midlands average.

[27] Note: the sum of LEP figures does not equal the Midlands total as some Local Authorities are in more than one LEP. Midlands is East and West Midlands regions combined.
[28] See IER Evidence Paper – A Review of Existing Evidence

Figure 2.3: Productivity and GVA per capita in the Midlands LEP and benchmark areas (2017)



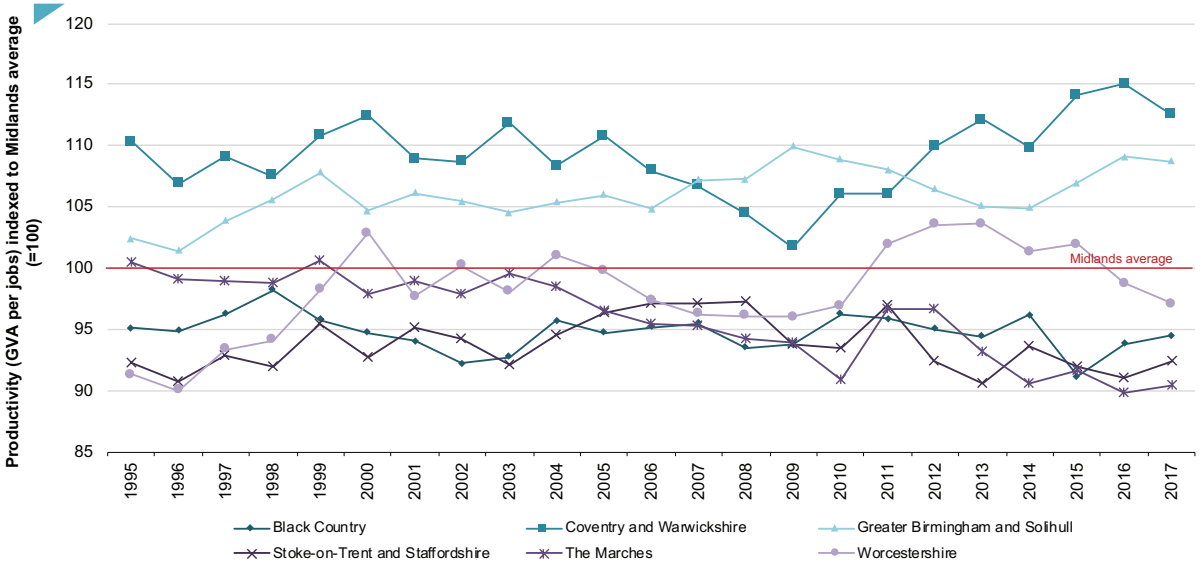
Source: Cambridge Econometrics

2.14 Overall, the LEP-level analysis shows that, in terms of productivity, there appear to be four "types" of area in the Midlands:

- There is consistently strong performance in three coterminous LEP areas in the middle/south of the region - Coventry and Warwickshire, Greater Birmingham and Solihull, and Leicester and Leicestershire - where productivity exceeds the Midlands average and has done so for the last two decades. Together, these areas account for over two-fifths (over £100bn) of the Midlands GVA in 2017. These areas have a number of characteristics that are associated with high performing places, including an over-representation of highly skilled people (and NVQ4+ skills are increasing faster than the Midlands average), a higher share (and growth) of employment in knowledge-intensive businesses and relatively high productivity sectors, high growth firms, and strong performance on innovation measures (this is discussed in more detail in subsequent Sections).
- One LEP area – D2N2 – accounts for a substantial share of the Midlands economy (one-fifth in 2017), but productivity has persistently remained below the Midlands average.
- Three of the more rural LEP areas account for one-fifth of the Midlands economy combined, and display a mixed picture: in the Marches and Greater Lincolnshire, productivity is low and the gap with the Midlands average has widened, whereas in Worcestershire productivity performance is closer to (but still below) the Midlands average (and actually exceeded this benchmark for a short period between 2011 and 2015).
- Finally, the two LEP areas north of Birmingham (Stoke and Staffordshire, and the Black Country) account for just under one-fifth of the economy. Productivity is low and has remained below the Midlands average over the last two decades, although the Black Country has shown signs of improvement (relative to the Midlands average) since 2015.

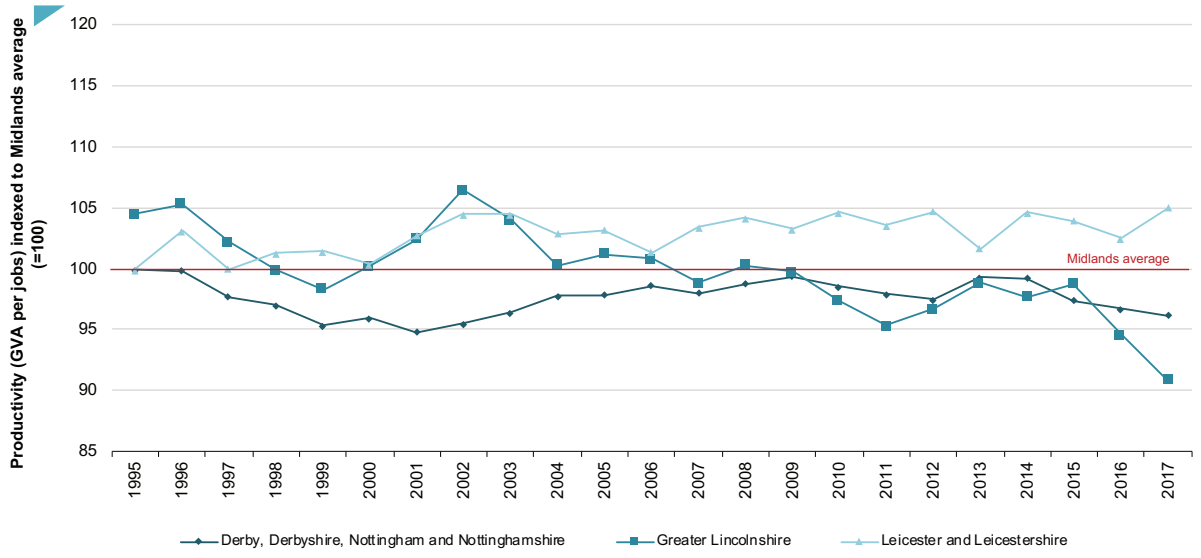
Source: SQW analysis of CE data

Figure 2.4: Productivity trends in West Midlands LEPs



Source: SQW analysis of CE data

Figure 2.5: Productivity trends in East Midlands LEPs



Conclusions

2.15 In summary, GVA per capita in the Midlands was 92% of the England minus London average in 2017 (and this gap widens considerably if we compare performance with the rest of England, including London, to 76%). The majority of this gap is due to under-performance in productivity, with the Midlands' productivity only reaching 94% of the benchmark. The employment rate also plays a role, but the gap is narrower. The population structure and jobs per worker do not appear to make a difference.

2.16 There is considerable spatial variation in productivity performance within the Midlands, with three LEP areas (Greater Birmingham and Solihull, Coventry and Warwickshire, and Leicester and Leicestershire) consistently out-performing the Midlands average.

2.17 These findings align with national/international thinking, where productivity is generally seen as the primary driver of long-run improvements in GVA per capita. To quote Paul Krugman:

> ***'Productivity isn't everything, but in the long run it is almost everything. A country's ability to improve its standard of living over time depends almost entirely on its ability to raise its output per worker.'***[29]

2.18 Therefore, gaining a better understanding of the Midlands' productivity performance and barriers to improving this are crucial to improve economic prosperity across the region and deliver benefits for the UK as a whole.

2.19 A range of factors influence productivity performance, with a policy emphasis on the five drivers of productivity in the 2000s (investment, innovation, skills, enterprise and competition) and more recently, the five foundations framework of the Industrial Strategy in 2017 (business environment, ideas, people, infrastructure and places)[30]. However, there is still considerable academic debate about which factors have the strongest impact on productivity, and whether they are consistent between different places and time periods. As a recent review by the Productivity Insights Network stated:

> ***"Today we understand that productivity and productivity growth is a result of a complex interplay between many different influences. Yet, identifying the precise interplay between these influences is very difficult and may well be contingent upon the context and time"***[31]

2.20 In the following Sections, we explore the drivers of the Midlands' recent productivity performance and their relative importance using the Industrial Strategy's five foundations framework[32]. This evidence draws on literature, secondary data analysis, qualitative feedback from businesses and the Local Area Profiles. The research team has deliberately sought to provide a concise summary of the key issues and identify challenges/opportunities that appear to be prevalent across the Midlands and/or in multiple places. However, we recognise the region is not one homogenous area and have therefore sought to highlight commonalities or differences within the Midlands, where relevant, in the material.

2.21 In terms of relative importance, in the evidence that follows we can see that across the data, literature and business interviews, the most commonly cited **critical factors driving the productivity gap in the Midlands are skills, transport connectivity, business finance, and innovation, R&D and commercialisation. Other important barriers to productivity and growth include digital connectivity and hard infrastructure such as utilities.**

2.22 A more detailed analysis of the factors driving productivity levels can be found in three supporting technical Evidence Papers: A Review of Existing Evidence; A Synthesis of Business Perspectives; and Local Area Profiles for each of the nine LEPs in the Midlands.

[29] Krugman, P. (1994) The Age of Diminished Expectations.
[30] For example, see here: https://productivityinsightsnetwork.co.uk/app/uploads/2019/01/Productivity-Policy-Review.pdf
[31] McCann, P (2018) Productivity Perspectives Synthesis
[32] With a focus on Business Environment, Ideas, People, and Infrastructure – the fifth Foundation, Place, is integrated with the four other Foundations, where we highlight commonalities and differences across different places in the Midlands.

3. THE BUSINESS BASE AND ENVIRONMENT

3.1 This Section summarises evidence on the strengths and weaknesses of the Midlands' business base, in the context of productivity performance, based on the evidence gathered for this IER. It covers business demography and dynamism, the sectoral structure and productivity within sectors, trade and investment flows, and access to growth finance.

Key messages

- The Midlands has 816,000 businesses; the large majority are micro-sized. Business start-up rates are relatively low, and parts of the region have low business density. Survival rates are relatively high, but there is a lack of business dynamism/growth.

- Whilst the Midlands has too many jobs in lower productivity sectors and too few in higher performing sectors, productivity within sectors is the key driver of overall productivity performance in the region.

    ➜ Only 10% of jobs are in sectors where Midlands productivity in that sector exceeds the national average (England minus London).

    ➜ The motor vehicles sector excels, where productivity is well above the national benchmark and there is a relatively high concentration of employment. However, many of the region's other manufacturing (and affiliated) sectors under-perform in terms of productivity.

    ➜ Productivity is also relatively low in many of the region's business-related service sectors – for example, financial and insurance, business support services and other services, and these sub-sectors account for a large share of jobs.

- The Midlands performs well in the export of goods (which are largely generated by manufacturing/machinery) but less so in services. Insufficient SMEs export, with challenges around awareness of routes to market and appropriate leadership/management skills to export.

- The Midlands has performed relatively well in attracting Foreign Direct Investment (FDI), including in high productivity sectors. However, firm level capital investment and public sector expenditure in the region is relatively low.

- Finance for business growth and innovation (especially the second valley of death and pathway to commercialisation) is commonly cited as one of the most significant challenges for businesses in the region. There remains a lack of awareness of finance available, difficulties navigating what is perceived to be a fragmented landscape, insufficient supply in general, and investment readiness issues for some.

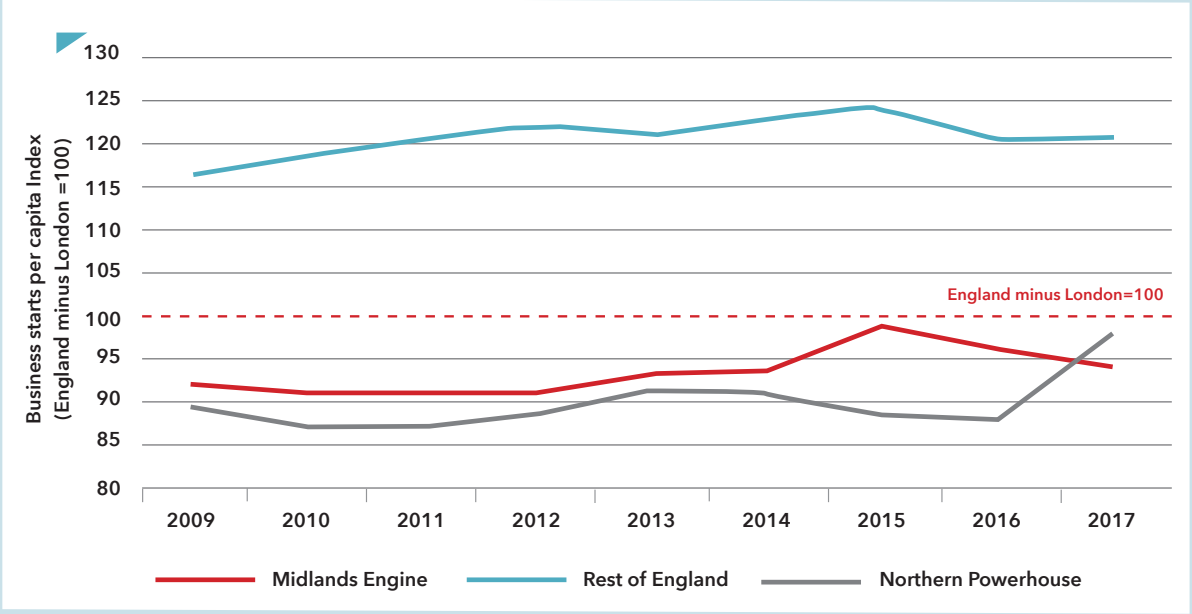
Business demography and dynamism

3.2 In 2018, the Midlands was home to 816,000 private businesses (16% of the England total), the vast majority of which were micro-sized (0-9 employees)[33]. That said, the region also has a number of large businesses (c.1,100 firms have 250 employees or more), many of which are internationally significant, and some are foreign-owned (this is discussed in more detail below).

3.3 The ability to start and grow firms is an important indicator of a strong economy. Using the measure of **business starts per capita, the Midlands Engine has consistently underperformed relative to** the England minus London average (see Figure 3.1). The gap narrowed to 2015, but appears to have widened since. There is a large performance gap with the rest of England too, although this is mainly due to the strong start-up culture that exists in London, and this gap has widened since 2015. That said, the survival rate of businesses within most parts of the Midlands Engine is higher than the UK average, which could represent stability or a less dynamic business base.

3.4 These findings are corroborated by the literature, which points towards challenges around **low business birth rates[34], low business density** in parts of the region[35] (which is important for agglomeration benefits, for example), variable growth rates in business stock across the LEP areas, and a general concern around the lack of business dynamism in many parts of the economy[36]. Whilst some areas are experiencing higher business failure rates[37], some of the literature attributes this to start ups in low margin, locally competitive service sectors, which do not survive, rather than a reflection of effective business dynamism[38].

Figure 3.1: Business starts per capita gap analysis

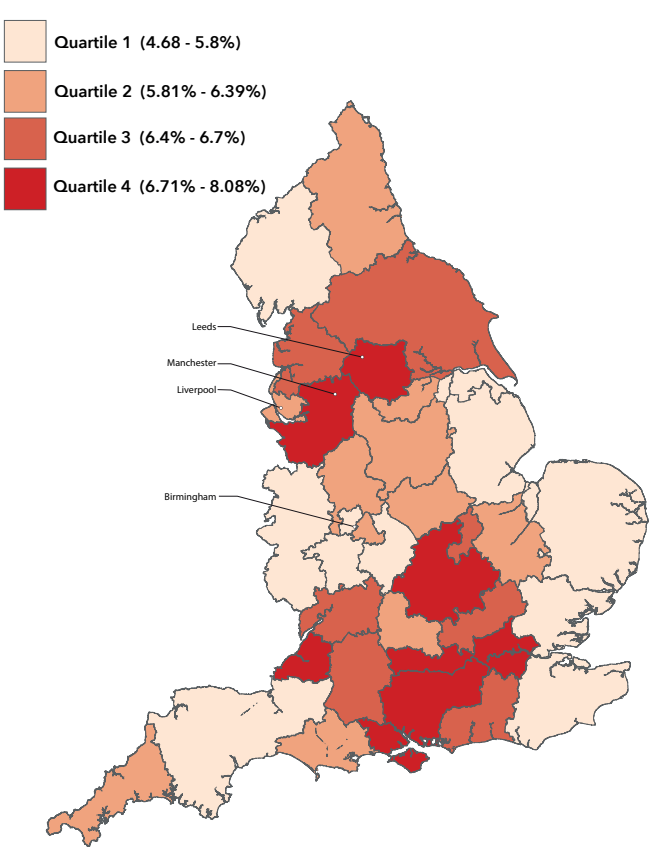


Source: CE calculations, ONS. Note, the rest of England includes London

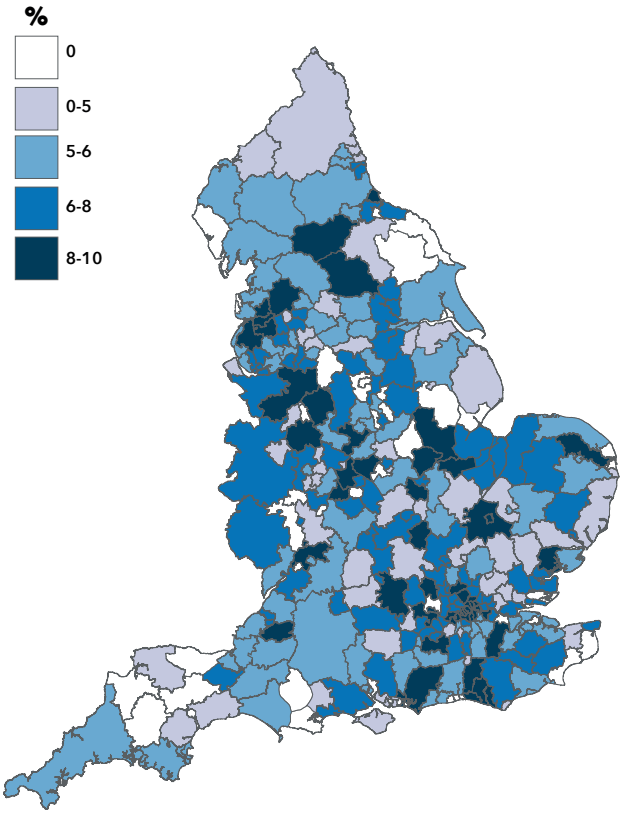
3.5 Midlands-wide (and national) research also shows a strong relationship between productivity and the density of scale-ups in a LEP area[39]. There are **some concentrations of high growth firms** (HGFs[40]) in the Midlands (for example, around Greater Birmingham), which suggests some entrepreneurial potential within the region, but not to the same extent as in the Northern Powerhouse or the South[41]. Moreover, the Midlands is home to LEP areas with some of the lowest incidences of HGFs in the Country (i.e. the Black Country, the Marches, Greater Lincolnshire, and Stoke and Staffordshire)[42].

Figure 3.2: High Growth Firms

High-growth firms incidence rate (2013-16), quartiles



High growth firms as a proportion of all firms with 10+ employees



Source: Enterprise Research Centre (ERC), 2018 presented in BEIS (2019) Midlands Engine - Evidence Pack

[33] BEIS (2019) Midlands Engine - Evidence pack sourced from BEIS (2018), Business Population Estimates; https://www.gov.uk/government/statistics/business-population-estimates-2018
[34] Low business birth rates was raised as an issue in all but one of the LEP Local Area Profiles
[35] E.g. D2N2 and rural LEP areas
[36] For example, see the Black Country Consortium (2017) WMCA Annual Economic Review; and DCLG (2017) Midlands Engine Strategy
[37] E.g. business death rates in 2017 were above the UK average in Greater Birmingham and Solihull, and Leicester and Leicestershire. Business death rate refers to the number of business deaths as a proportion of active enterprises
[38] E.g. Leicester and Leicestershire
[39] For example, see Policy Exchange (2018) Powering the Midlands Engine
[40] Defined by the OECD as enterprises with average annualised growth greater than 20% per annum, over a three year period, and with ten or more employees at the beginning of the observation period.
[41] BEIS (2019) Midlands Engine - Evidence Pack sourced from Enterprise Research Centre (2018)
[42] As a proportion of all firms with 10+ employees, 2012-15. See ERC (2016) Spatial Incidence of High Growth Firms

Sectoral structure

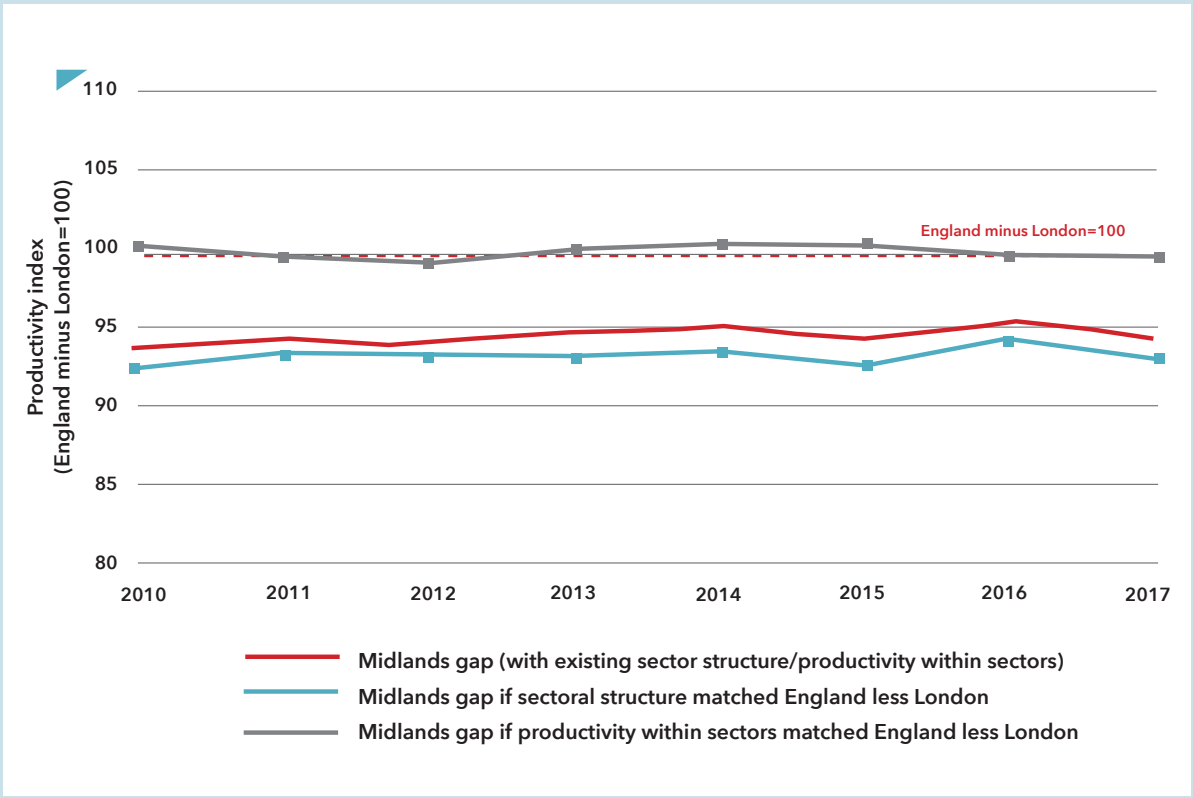
3.6 The literature refers to the prevalence of lower productivity sectors in the Midlands[43], and too few jobs in the most productive sectors, as a key factor contributing to the Midlands' productivity gap. In part, this reflects deindustrialisation and the shift from manufacturing (which historically provided relatively well-paid employment in relatively accessible skilled/semi-skilled jobs) to services.

3.7 However, crucially, it is the nature of activities and productivity *within* sectors that accounts for the majority of the change in productivity, rather than sectoral composition of the Midlands economy[44]. Research has shown that the sectoral mix (i.e. sector shifts, for example from manufacturing to services) is much less important than what occurs *within* sectors (i.e. shifts in tasks and functions)[45]. Indeed, some LEP-level evidence recognises that the productivity gap is unlikely to be closed by efforts to (re)shape industrial structures, and suggests that the focus should be on under-performing firms *within* certain sectors[46]. Some of the national literature argues that the under-performance of the typically more productive and larger firms has played a key role in the UK's recent productivity downturn given their scale[47].

3.8 **An analysis for the Midlands shows that almost all of the productivity gap is due to productivity within sectors rather than sectoral structure.** In Figure 3.3 we have tested the contribution of sectoral composition and productivity within sectors to the Midlands productivity gap since 2010. The key messages are as follows:

- If the Midlands economy matched the England minus London sectoral structure (i.e. if the proportion of jobs in each sub-sector in the Midlands mirrored the benchmark, but Midlands productivity within sectors remained constant) the productivity gap would actually widen. This is because the Midlands employment share in comparatively high productivity manufacturing sectors would decrease. Under this scenario, the Midlands productivity gap in 2017 would increase from 94% to 93% with England minus London.
- If productivity performance of each sector in the Midlands matched the England minus London productivity for each sector (but the Midlands sectoral composition remained the same) the productivity gap would almost completely close (to 99% in 2017).

Figure 3.3: Contribution of sectoral composition and productivity within sectors to the Midlands productivity gap



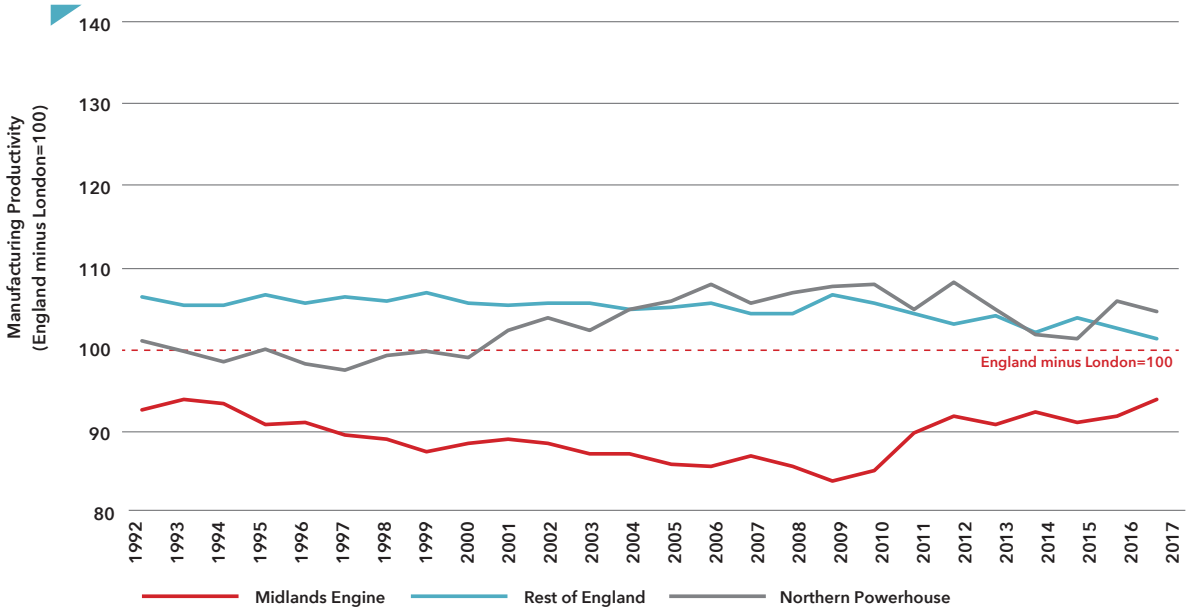
Source: CE

[43] And for most labour intensive parts of this sector, it is inevitably harder to achieve big improvements in productivity. See Lisenkova (2018) Demographic ageing and productivity, for the Productivity Insights Network
[44] EMSI (2018) Midlands Engine: labour market intelligence
[45] Martin, R., Sunley, P., Gardiner, B., Evenhuis, E., Tyler, P., (2018) The city dimension of the productivity growth puzzle: the relative role of structural change and within-sector slowdown, Journal of Economic Geography
[46] For example, see NTU (2017) D2N2 Inclusive Growth Report
[47] McCann (2018) Productivity perspectives synthesis for the Productivity Insights Network

3.9 Productivity performance within sectors is explored in more detail below[48]. At a broad level, we can see that productivity within Midlands' manufacturing base is improving, but remains below the national and Northern Powerhouse benchmarks. Productivity in the financial and business services has been a persistent challenge in the Midlands over recent decades, and more so than in the North.

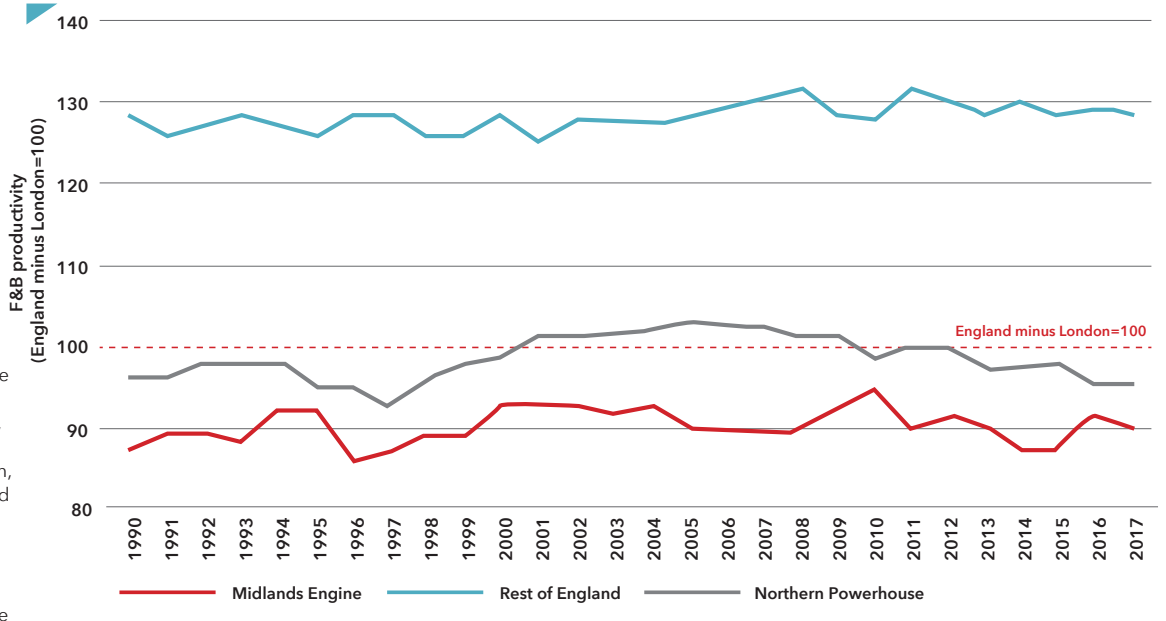
Figure 3.4: Broad sector productivity performance

Manufacturing productivity performance



Source: CE

Financial and business services productivity performance



Source: CE

[48] Note: productivity is more difficult to measure in public services. However, the proportion of jobs in the Midlands in education, residential/social care and health is broadly in line with the England minus London average, and the share of Midlands jobs in public admin and defence is slightly lower than the benchmark.

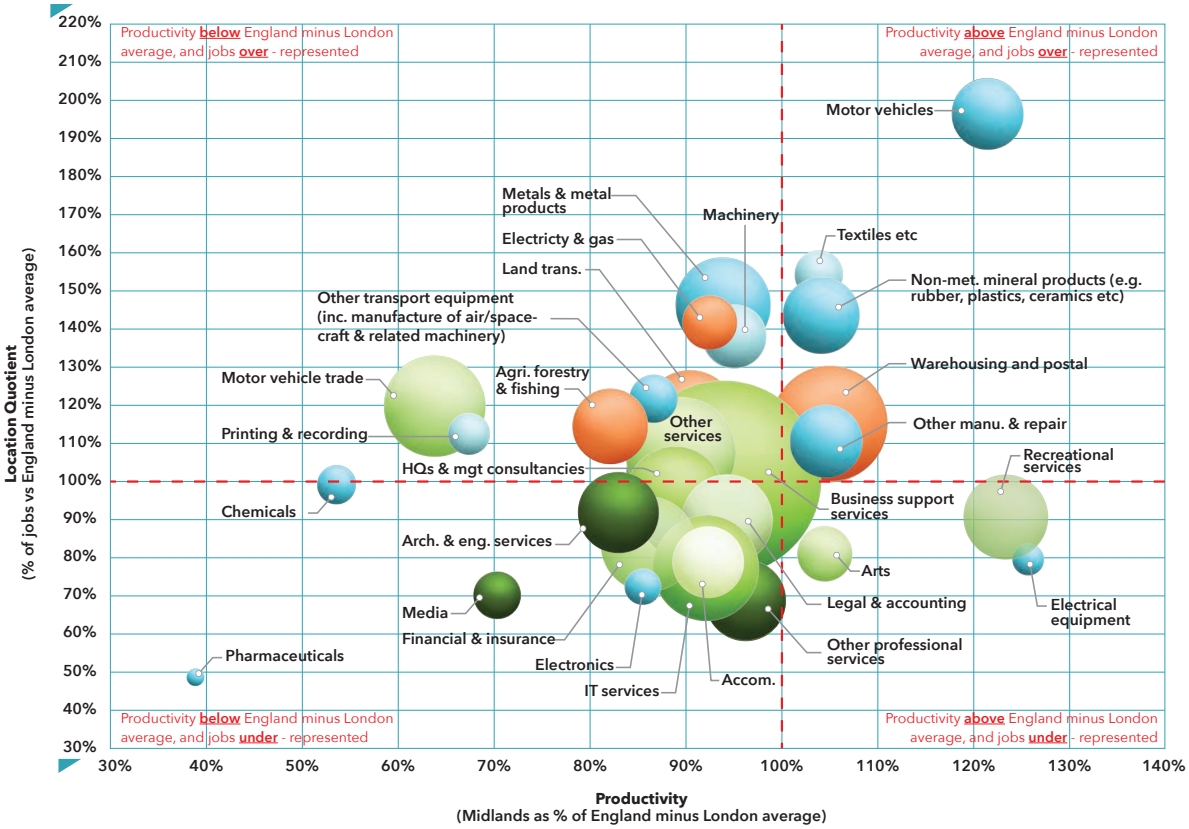
3.10 Figure 3.5 provides a more granular assessment of the Midlands' sectors. It shows the relative productivity performance, concentration (location quotient – used as a proxy for specialisation) and scale (in terms of GVA and jobs) for sector in the Midlands in 2017. We have only presented sectors here where productivity diverges from the England minus London benchmark[49], i.e. the graphic does not present sectors where productivity broadly aligns with the benchmark. More detailed data for all sectors is available in Annex C.

3.11 On this measure, **only 10% of jobs in the Midlands are in sectors where productivity in that sector is *above* the England minus London average.** The Midlands Engine has a small number of industries in which it out-performs the national benchmark on productivity and is highly specialised in, although these sectors account for only 7% of all jobs in the Midlands. Around half of all jobs (53%) are in sectors where productivity in the Midlands is broadly in line with the national benchmark. **However, over one third of jobs (37%) are in sectors where productivity is *below* the national average** and some of these sectors account for a substantial number of jobs and/or are over-represented in the Midlands. Whilst we acknowledge the limitations of using SIC-based sector data, particularly for cross-sector and nascent technologies/capabilities, from our analysis of the data, it is striking that:

- **The motor vehicles sector excels in the Midlands** – productivity is well above the national benchmark (at 121%) and jobs are heavily concentrated in the region (accounting for 60,000 jobs). Productivity performance is also relatively strong in textiles, non-metallic mineral products, other manufacturing and repair, and warehousing and postal services.
- **Productivity performance is poor in some of the region's priority sectors that are in/affiliated to its key strengths.** For example, employment in other transport equipment (which includes aerospace manufacturing) and motor vehicle trade is over-represented in the Midlands, but productivity in these sectors is only 87% and 64% of the England minus London average respectively. Pharmaceuticals is small-scale and under-represented in the Midlands and productivity is only 39% of the benchmark. National research into manufacturing productivity points towards the importance of good planning processes, a positive culture, effective leadership and management, as well as moving up the value chain and embracing digitisation[50].
- In terms of services, productivity in public services (such as public administration, health and education) is broadly in line with the benchmark. However, **many service sub-sectors under-perform in terms of productivity.**
    - ➜ Some of these account for a substantial number of jobs – for example: 108,000 jobs are in 'financial and insurance' where productivity is 86% of the benchmark; 155,000 jobs are in 'other services', but productivity in this sector is 90% of the national average; 455,000 jobs are in 'business support services' where productivity is 94% of the benchmark.
    - ➜ Other under-performing service sub-sectors account for a smaller share of jobs, but are an important aspect of a competitive economy, including 'other professional services' (productivity is 96% of the benchmark), architectural and engineering services (83%), and media (70%).
- Local and national research into the productivity of professional and financial services links under-performance to skills and innovation in the sector, particularly in relation to digitisation[51]. It may also reflect the nature of services undertaken in Midlands cities compared to (say) Leeds, Manchester and Newcastle (as well as Liverpool and Sheffield, but to a lesser extent) in the North and/or Edinburgh and Glasgow in Scotland especially in terms of financial and legal services. Importantly, there may be some data issues associated with the tendency for GVA to be captured and recorded at the address of the firm's headquarters as opposed to whether that GVA was actually generated. Also, the data presented in this report are unlikely to include the new HSBC UK headquarters in Birmingham, which were officially occupied by November 2018.

[49]Using Cambridge Econometrics 45 sectors
[50]For example, see: Unpicking the productivity narrative in UK manufacturers – Productivity Insights Network, 2019; and The future of productivity in manufacturing – Green et al, 2016
[51]For example, see: An investigation into the foundations of productivity for businesses, professional and financial services in West Midlands Combined Authority area – Productivity and Skills Commission, 2018; and The productivity agenda: moving beyond cost reduction in financial services – PWC, 2018

Figure 3.5: Midlands sectoral productivity performance, scale and concentration relative to the England minus London average (for sub-sectors where productivity performance is above or below the benchmark) 2017



Source: SQW analysis of Cambridge Econometrics data. Note: data for all sectors is available in Annex B. Note: Midlands sectoral productivity performance, scale and concentration relative to the England minus London average shown for sub-sectors where productivity performance is above or below the benchmark only, 2017. Size of bubble represents Midlands jobs in 2017.

Markets and exporting

3.12 Exporting is recognised as a key contributor to raising productivity within the national literature, as exposure to the pressures of international markets forces more innovation and continuous improvement within businesses to remain competitive[52]. Recent research by the Centre for Cities suggests that, in order to raise regional productivity, a "sharper focus" is needed on improving the performance of exporting businesses, including the development and attraction of more high performing exporting firms[53].

3.13 **In 2017, the Midlands exported £54bn in goods, which accounted for 22% of England's total** (but £18bn lower than the Northern Powerhouse area)[54]. The EU is the largest market for Midlands goods exports, followed by Asia and Oceania, and then North America[55]. The West Midlands performs strongly in exporting, with the third highest level of exports of any UK region (£33.5bn; c.74,750 per business) and the fastest growing UK region for goods exports (27% growth between 2015 and 2017). The East Midlands is ranked 6th in terms of the volume of its exports (£20.5bn; c.55,750 per business)[56]. Moreover, the West Midlands is also the only UK region with a trade surplus to China[57]. In the East Midlands, Derby (along with North/North East Lincolnshire, Leicestershire and Rutland) contribute significantly to the region's overall goods exports[58]. The Midlands shares specialisms in the export of Machinery and Transport Equipment thanks to the presence of large global companies such as Rolls-Royce, Jaguar Land Rover, Toyota, Bombardier and JCB that together make an important contribution to overall exports. The literature also notes that many SMEs are in the lower tier of supply chains so are 'indirect' exporters as top tier firms export products made using components produced by the SMEs.

3.14 However, between 2011 and 2016, the Midlands **ranked relatively poorly in terms of the value of its *services* exports** (the three biggest categories were financial, insurance and pensions, and travel) and current **exports are heavily concentrated** within Machinery & Transport and EU markets.

3.15 According to the literature, "not enough SMEs export"[61], and there is **scope across the Midlands to increase the number and extent of firms exporting**. For example, whilst only one in five West Midlands SMEs currently export, the Greater Birmingham and Solihull LEP estimated that up to 12% of other firms have the characteristics to become exporters and just over half of those who do export could become "persistent" rather than "occasional" exporters[62]. However, evidence from individual LEPs highlights a lack of awareness of routes to market and appropriate leadership and management skills to successfully engage in new markets[63]. A small number of businesses interviewed also highlighted the lack of appropriate skills to grow their businesses internationally. Businesses also noted the political uncertainty surrounding Brexit and regulatory challenges as barriers to growing exports, and the importance of local airports providing rapid and easy access to key foreign markets.

[52] See for example Harris (2018) – FDI, Capital and Investment Markets and Centre for Cities (2018) – The wrong tail - Why Britain's 'long tail' is not the cause of its productivity problems; and also BEIS (2019) Midlands Engine - Evidence Pack
[53] Centre for Cities (2018) The wrong tail – why Britain's "long tail" is not the cause of its productivity problems
[54] Midlands Engine (2019) Internationalisation Strategy; and BEIS (2019) Midlands Engine - Evidence Pack sourced from HMRC (2017), Regional Trade in Goods Statistics dis-aggregated by smaller geographical areas
[55] BEIS (2019) – Midlands Engine - Evidence Pack sourced from HMRC; Regional Trade Statistics online interactive database; https://www.uktradeinfo.com/Statistics/BuildYourOwnTables/Pages/Home.aspx (accessed February 2019)
[56] WMCA (2018) – State of the Region; and BEIS (2019) Midlands Engine – Evidence Pack which found that the West Midlands exports c.63% more than the East Midlands
[57] DfT (2017) HS2 Regional Briefing - Midlands
[58] BEIS (2019) – Midlands Engine - Evidence Pack sourced from HMRC (2017), Regional Trade in Goods Statistics dis-aggregated by smaller geographical areas
[59] BEIS (2019) – Midlands Engine - Evidence Pack sourced from ONS (2018); Regionalised estimates of UK service exports; https://www.ons.gov.uk/businessindustryandtrade/internationaltrade/datasets/regionalisedestimatesofukserviceexports
[60] Midlands Engine (2019) Internationalisation Strategy
[61] For example, see Black Country Consortium (2017) Industrial Strategy Response
[62] Greater Birmingham and Solihull LEP (2016) SEP
[63] For example, as noted by the Black Country and Marches LEPs

Inward investment

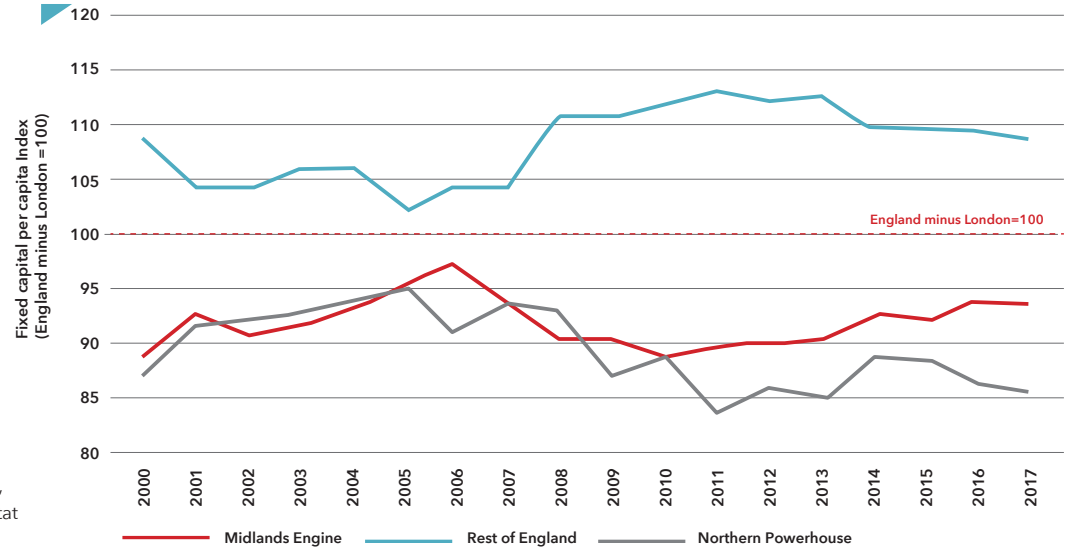
3.16 Inward investment is important for productivity, with previous research finding that *"an inward investing foreign firm will typically be 25-40% more productive than domestically owned firms in the same sector"*[64]. **The Midlands as a whole has performed relatively well in attracting Foreign Direct Investment** (FDI), with 130% growth in the number of inward investment projects between 2011 and 2015, creating over 48,000 new jobs and safeguarding a further 23,000[65]. More recent data show a total of 224 FDI projects in 2018/19, which accounted for 12.6% of the UK total FDI projects that year[66]. FDI into the Midlands includes investment in high productivity sectors – and in some instances has benefited significantly from investment in terms of spillovers for supply chains and boosted productivity performance[67]. For example, the Midlands ranks as a top global destination for automotive FDI[68] (which brings both jobs and productivity gains), and has also seen substantial investment in business, professional and financial services as well as digital and creative industries, which have successfully attracted investment from London.

3.17 However, performance is variable across the Midlands. For example, investor sentiment is strong in some areas, with the West Midlands recognised as an excellent place to do business[70]; however, evidence from some of the more rural LEPs highlighted a limited awareness of their inward investment opportunities and a lack of suitable sites into which businesses could move, which hampers private sector investment at scale[71]. There was also some concern around the ability of local firms to win contracts and (in some cases) limited knowledge diffusion from firms to the wider economy.

Firm-level investment

3.18 In terms of **investment by existing firms,** the gap in fixed capital expenditure per capita (which is key to the adoption of the latest technologies) between the Midlands and the England minus London average widened and remained persistent between 2006 and 2012, with a slight narrowing of the gap since then (see Figure 3.6). If the Midlands is to accelerate its productivity growth in the future then it will need to improve this metric, although access to finance issues are cited as a major factor inhibiting firm level investment in the Midlands (this is discussed in more detail below).

Figure 3.6: Fixed capital expenditure per capita gap analysis



Source: CE calculations, ONS, Eurostat

Public sector investment in the business environment

3.19 In terms of public sector expenditure, total identifiable expenditure[72] on services was £8,707 per capita in 2017, compared to the UK average of £9,350 per capita. Over 2008-17, total identifiable expenditure in the West Midlands remained broadly in line with the English average over the last decade, whilst expenditure in the East Midlands remained below the English average. This varies by public sector function, but it is notable that spend per capita on "economic affairs" in the Midlands was £605 in 2017-18, compared to the UK average of £806 per capita. Within this category, the West Midlands had the second lowest spend per capita on enterprise and economic development at £75, a decrease of £9 on 2008-09. Spend was £116 in the East Midlands (ranking 7th of 12 regions), up from £82 in 2008-09. In contrast, spending over the period more than trebled in the South East from £61 to £203 (ranked 2nd[73]. With regards to the region's ability to secure other sources of public investment, such as Regional Growth Fund, Local Growth Deal investment and ESIF allocations, the Midlands lags behind the Northern Powerhouse.

Access to finance for growth and innovation

3.20 Access to finance issues were prevalent across Midlands-specific literature and our business consultations.

3.21 Of the 52 business organisations interviewed for this IER, 20 raised issues in accessing finance, and these spanned a range of sectors, geographies and size. Some businesses consulted have continually reinvested small-scale profits into productivity-enhancing technologies through an "organic cycle of reinvestment", but this is a slow process. However, SMEs have reportedly found it difficult to secure business loans to finance growth/high value capital investment. Access to finance for innovation has also been an issue: businesses described the realities of the "valley of death" in the early stages of R&D, as well as a "second valley of death" where a significant amount of capital is required to take a new product to market (especially internationally) in some sectors. The lack of finance for the latter was seen as a major challenge, particularly for capital intensive sectors (e.g. engineering) where it takes a longer period of time to generate a return on investment for the funder. This lack of finance slows down the commercialisation process and inhibits businesses' ability to expand into new markets (as illustrated in the message box).

> ***An advanced manufacturing firm in the Midlands supplying major OEMs in the automotive sector and specialising in autonomous vehicles argued that the "number one" barrier to growth is the lack of finance. The consultee argued that, whilst the UK supports early-stage R&D to develop a new product, there is a lack of financial support to take a product to market globally (and the cost of doing so is significant). As a result, the business is struggling in the "second valley of death".***
>
> Source: Business interviewee

[64] WMCA (2018) – Report of the West Midlands Productivity & Skills Commission
[65] Midlands Engine (2017) – The Midlands Engine for Growth Prospectus
[66] Department for International Trade (2018) Inward Investment Results for 19 June 2019
[67] WMCA (2018) – Report of the West Midlands Productivity & Skills Commission
[68] Black Country Consortium (2018) West Midlands Industrial Strategy Sector Evidence Full Pack
[69] WMCA (2018) – Report of the West Midlands Productivity & Skills Commission
[70] WMCA (2018) – Industrial Strategy Consultation Document
[71] For example, see The Marches LEP (2014) SEP
[72] Expenditure is identifiable where spending has been allocated for the benefit of enterprises, communities or individuals within regions (for example, functions such as; economic affairs, education and social protection).
[73] Midlands Engine Economic Observatory (2019) Midlands Engine Public Expenditure Analysis.

3.22 The literature, data and business consultees identified a number of challenges in accessing finance. These are nuanced across the Midlands, but in headline terms, reoccurring issues included the following:

- **On the demand-side**, issues included a lack of awareness of available finance (especially equity in places, but also public funds such as the Midlands Engine Investment Fund[74]), difficulties in navigating funds available, and confusion around the most appropriate source of finance for the business. Concern was also expressed in the literature and by a business representative organisation around investment readiness across the Midlands, a lack of leadership and management skills to access appropriate finance, and an aversion towards external finance/debt/high gearing[75]. In addition, the supporting professional and finance service "infrastructure" is reportedly weak in some parts of the region.
- **On the supply-side**, it was reported that there are challenges around the co-ordination, type/focus and scale of finance available. The literature referred to a fragmented funding landscape and some businesses have observed competition (rather than collaboration) between the various programmes that are available. Businesses also stated that there is a tendency for public sector finance to place too much of an emphasis on job creation (rather than productivity gains), university spin outs, cutting edge technologies (without provision for more general productivity improvements/new products with export potential in other sectors) and/or larger businesses. There are also concerns about the lack of appetite for risk across some of the funding available (especially banks, but also some public sector provision) and some difficulty in Midlands firms competing for nationally competitive public funds.
- Businesses also argued the scale of finance available is insufficient – both in terms of the quantum of investment required to take products to market (especially in engineering and HLS sectors) and the scale of the challenge across the region (as one business representative put it, seed finance for R&D is "spread thin"). This is supported by data, which show that in 2019, the East Midlands had the fifth smallest number of Venture Capitalists (VCs) in the UK (21), and whilst the West Midlands had a slightly higher number (28), both regions had far fewer than the North West (60) and London (1,109). This lack of presence is reflected in the small proportion of equity deals in the region. **Whilst the East and West Midlands account for 6% and 8% of UK SMEs respectively, the regions accounted for just 1% and 3% of UK equity deals in 2018.** This emphasises the importance of proximity between VCs and the businesses they fund (and support more generally), and therefore the need to raise the presence of VCs across the Midlands. Trends in debt lending to SMEs are broadly similar, with regions such as the East Midlands, receiving a lower share of SME lending versus their share of the SME population[77].

[74] For example, the British Business Bank's Finance Survey found that there is lower awareness of venture capitalists and jbusiness angels amongst SMEs in the Midlands, with awareness rates at 66% and 35% respectively (compared to 74% and 47% of London SMEs) .
[75] See for example LLEP (2017) Building Our Industrial Strategy Response; Black Country Consortium (2017) Industrial Strategy Response; Centre for Cities (2013) Supporting business innovation in Coventry & Warwickshire
[76] SQW (2017) A Science and Innovation Audit for the West Midlands
[77] British Business Bank (2019) Small Business Equity Tracker; British Business Bank (2019) Small Business Finance Markets

4. IDEAS AND INNOVATION

4.1 This Section summaries the evidence on R&D and innovation in the Midlands, including specialisms and expertise in the region, R&D investment and collaboration, and the diffusion and absorption of knowledge across the wider business base.

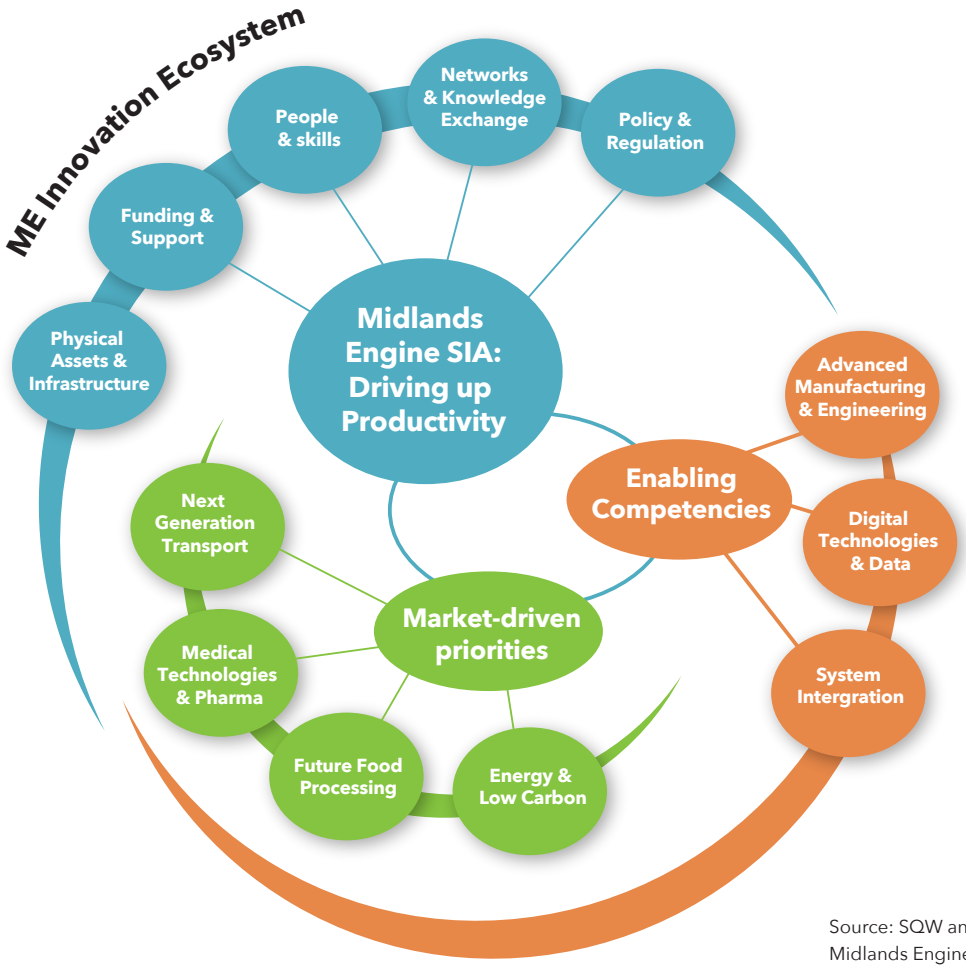
Key messages

- World class specialisms, assets and innovation anchors are evident across the Midlands, with distinctive strengths in advanced manufacturing and engineering, including next generation transport, medtech, food processing and energy/low carbon, digital technologies and data, and systems integration.
- R&D intensity across the region as a whole is below the England minus London average, although it has shown strong growth in recent years (relative to the benchmark).
- Four key innovation challenges were identified in the evidence base (in addition to access to finance for innovation and commercialisation, as noted in Section 3):
    - ➜ R&D spend is concentrated in a relatively small number of highly innovative firms/ institutions, masking variable performance across the region.
    - ➜ Innovation assets are not particularly well joined up and integrated across the Midlands.
    - ➜ Businesses cited difficulties engaging with universities, where issues include a lack of knowledge of university expertise and how to access it, and the pace of response.
    - ➜ Diffusion of knowledge and innovation across the wider business base is slow, along with absorptive capacity issues.
- The evidence highlighted significant opportunities to strengthen R&D and innovation links within the region, enabling world class capabilities to come together on common agendas, encouraging cross-sector synergies between Midlands' specialisms, and facilitating the dissemination/adoption of innovation across the wider business base.

Sectoral specialisms and capabilities

4.2 The Midlands is home to a number of nationally **significant clusters and highly productive sector specialisms** that are seen as key to driving future economic growth, many of which are common and/or complementary across the Midlands. The Midlands Engine's Science and Innovation Audit (SIA) went through an extensive analysis and consultation process to identify four "market driven priorities" (where the region has world-class strengths) and three "enabling competencies" (that could drive global business competitiveness to support faster innovation and productivity growth), as illustrated below.

Figure 4.1: Midlands Engine's Science and Innovation Audit



Source: SQW and Midlands Engine partners

4.3 Whilst we are not seeking to replicate the SIA or detailed sector studies here, it is worth highlighting that based on the existing literature, Local Area Profiles and business interviews conducted for this IER, the Midlands has notable strengths in a number of areas summarised in Table 4.1 below[78]. It is notable that in some instances, sectoral specialisms/capabilities/assets relate to sectors that appear to be under-performing in terms of productivity in the analysis above (e.g. Transport Engineering, Pharmaceuticals, plus Business, Professional and Financial Services).

Table 4.1: Key sectoral competencies and strengths in the Midlands

Specialisms and strengths	Illustrations	Commonalities across the Midlands
Advanced manufacturing and engineering, including transport	Advanced manufacturing and engineering are key strengths across the whole of the Midlands, covering designing, validating, producing, and servicing new products and industrial processes, across a diverse and increasingly integrated range of sectors and markets. Linked to this, the Midlands' expertise in Next Generation Transport includes aerospace/ space, automotive, motorsport and rail sectors, with a focus on high performance system simulation/ modelling, advanced digital design/ physical validation, advanced materials/processes, and digital manufacturing, supply chain and service management.	A presence across all LEPs. Examples of specialisms include advanced manufacturing in the Black Country and Derbyshire, the automotive clusters around Coventry and Warwickshire and Greater Birmingham and Solihull, ceramics in Stoke and Staffordshire, aerospace, automotive and rail in Derby, plus space technologies in Leicester.

Cont. on next page.

[78] SQW (2016) A Science and Innovation Audit Report for the Midlands Engine; DCLG (2017) Midlands Engine Strategy; MediLink (2018) Midlands Engine, driving life sciences; Greater Birmingham and Solihull LEP (2015) Greater Birmingham Life Sciences Commission; Greater Birmingham and Solihull LEP (2015) Greater Birmingham Life Sciences Commission; Regeneris (2017) Midlands Energy Sector Research.

Cont.
Table 4.1: Key sectoral competencies and strengths in the Midlands

Specialisms and strengths	Illustrations	Commonalities across the Midlands
Energy and Low Carbon	Energy and Low Carbon expertise includes geo-energy, thermal energy systems, nuclear, energy storage, smart integrated energy systems and environmental technologies more generally. The region supports one in three jobs in the energy sector nationally.	A presence across all the Midlands LEP areas e.g. through the work of the Energy Research Accelerator, which works across the Midlands Innovation group of universities and partners. However, there are concentrations of activity in Greater Birmingham and Solihull, Leicestershire, Greater Lincolnshire, the Marches, Stoke/Staffordshire and D2N2.
Life sciences, particularly medtech	The Midlands has a large number of medical technology, diagnostics and device companies and expertise in life sciences that spans a range of specialisms. Globally significant companies are also based in the region, along with extensive clinical trials infrastructure and major NHS assets.	Examples include Nottingham (such as BioCity and MediCity incubation environments), and Birmingham (e.g. the Institute for Translational Medicine and the medipark campus proposals for Battery Park), as well as medical technologies in Stoke/ Staffordshire, sports science in Leicestershire, and health innovation in the Marches. The Defence and National Rehabilitation Centre near to Loughborough is a major new addition to the region's health and life science offer.
Business, Professional and Financial Services (BPFS)	The BPFS sector is a significant and diverse sector. The sector's size (currently 22% of output) means it will remain one of the most important growth sectors in the forecast, although it is expected to grow at a slightly slower rate (1.3% p.a.) than the overall economy (1.4% p.a.). The sector also has a significant role in the competitiveness of other sectors - for example, in terms of providing support to the region's automotive and advanced manufacturing activities, plus its start-up ecosystem.	More concentrated spatially than other specialisms. Birmingham is the only place with a 'full service offering' outside London that serves a global client base.

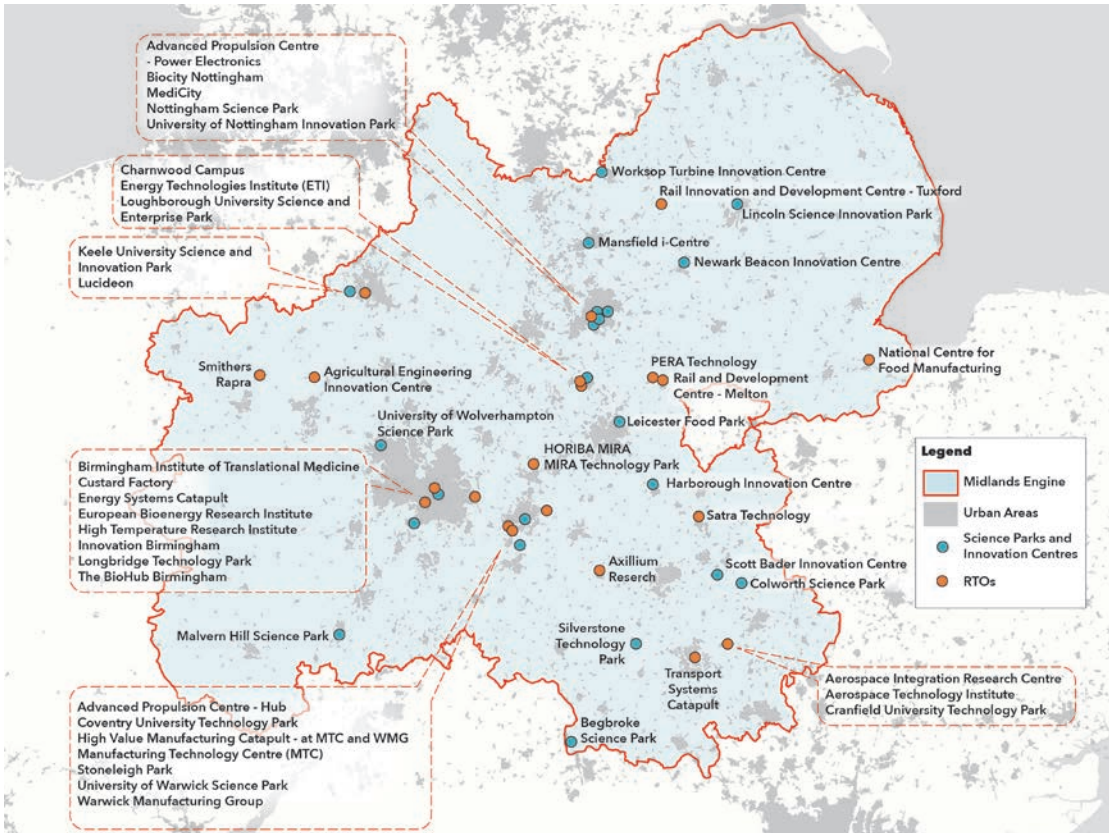
Specialisms and strengths	Illustrations	Commonalities across the Midlands
Future food processing / agri-tech / agri-food	Future food processing covers the areas of 'food processing efficiency', 'delivering a zero waste food chain', and 'food product innovation' in the food and drink sector.	For example, Greater Lincolnshire reports that it has the UK's largest and most progressive agri-food sector; food and drink, particularly in meat and dairy processing, alongside precision farming, are priorities for the Marches; food processing and agri-tech are strengths in D2N2 and Worcestershire respectively.
Digital technologies and data	Digital technologies and data covers the strengths in the region's academic, research and industrial base in exploiting and understanding data and information. A diversity of strengths, including satellite-enabled data, the use of digital technologies (with cross-overs to other capabilities above, such as agri-food tech and industrial digitisation more broadly), and cyber security.	Digital technology strengths are highlighted by most LEPs in the Midlands. Local strengths include cyber security/metrics in the Black Country, Worcestershire and the Marches; digital gaming in Coventry and Warwickshire; digital engineering in Worcestershire; and fintech in D2N2 (particularly Nottingham).

Source: Literature review and IER Evidence Paper – Local Area Profiles

4.4 The literature also highlights how the Midlands is **home to some major world-class assets and "innovation anchors"**, many of which are at the forefront of the industrial digitisation agenda nationally and internationally. This includes 25 high tech/science business parks and innovation and technology centres (see map below), 25 universities (including a collaboration of eight research-orientated universities) and 54 Further Education Colleges, eight Enterprise Zones, and a variety of other nationally and internationally significant research institutions and R&D intensive companies[79]. Some LEP areas also perform well in terms of generating active university spin offs (e.g. Greater Birmingham and Solihull, D2N2, and Coventry and Warwickshire)[80]. Moreover, these assets are a **magnet for inward investment**, including attracting global companies and their R&D facilities (as discussed above).

[79] See GVA (2016) The Midlands Engine and the Knowledge Economy; and Midlands Engine (2019) Driving Lifesciences
[80] Smart Specialisation Hub (2019) University Business Interactions.

Figure 4.2: RTOs and science parks in the Midlands Engine



Source: SQW (2016) Science and Innovation Audit. Note: the map covers the nine LEP areas currently covered by the Midlands Engine, plus SEMLEP

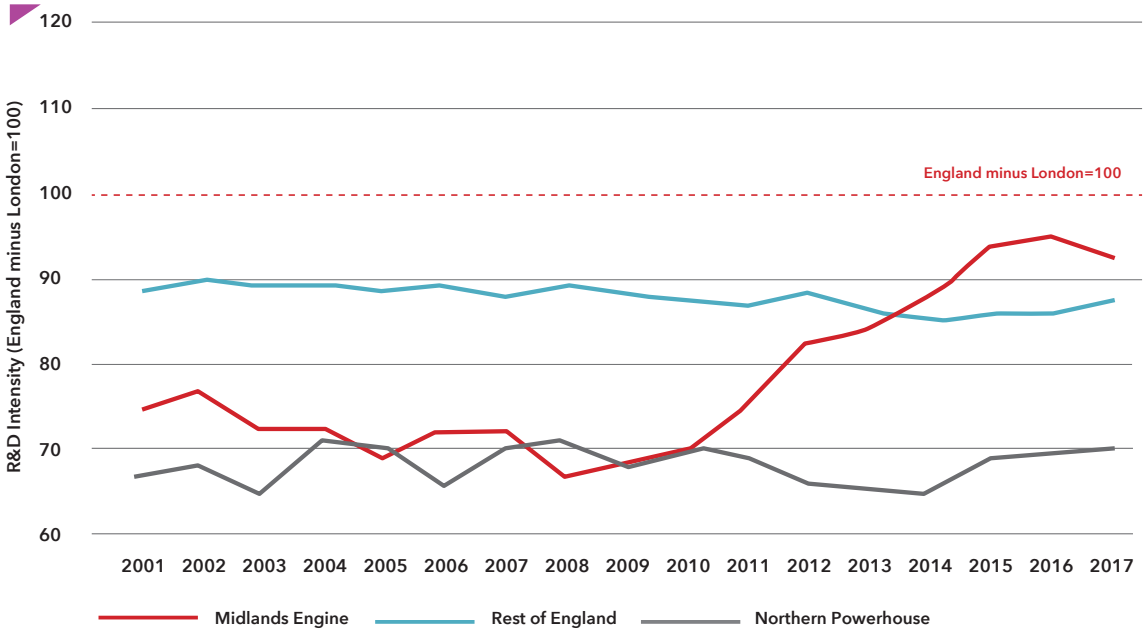
4.5 The Midlands' larger firms account for the lion's share of R&D investment and are key anchors within innovation systems, as well as accounting for a large proportion of economic output in the region. Higher productivity of larger and/or foreign owned firms (especially in manufacturing) operating in more competitive markets is also well documented nationally[81]. However, they also present risks to the local supply chain – this is discussed in more detail in Section 7.

4.6 Whilst in many cases the Midlands' leading firms have had a presence in the region for decades (indeed some major companies have been operating in the Midlands for centuries and others have recently relocated HQ functions back to the region e.g. HSBC in Birmingham): they have extensive capital assets locally, contribute to and benefit from local infrastructure, and are cornerstones of the local, regional and national economy. However, in a global economy, capital is extremely mobile and therefore, it is imperative that policy makers target their investments effectively to ensure that the Midlands Engine remains one of the world's best locations for transport equipment manufacturing and other highly productive activities.

R&D and innovation activity

4.7 Higher **R&D intensity**[82] is critical for technological progress and productivity performance, to improve the efficiency of goods and service production, allowing places to gain or extend their competitive advantage. As illustrated in Figure 4 3, the Midlands under-performs against the England minus London benchmark for R&D intensity, but has made significant progress in closing the gap since the early 2010s.

Figure 4.3: R&D Intensity index gap analysis



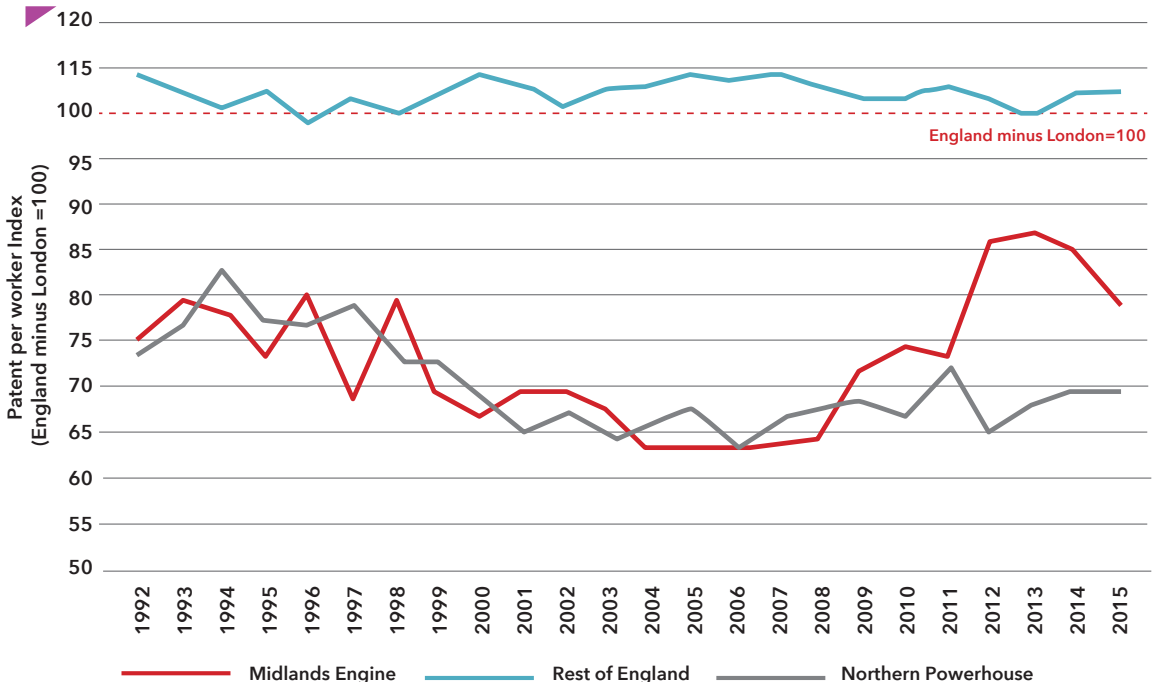
Source: CE calculations, ONS

[81]For example, see Harris (2018) FDI, capital and investment markets, for the Productivity Insights Network
[82]Expenditure on R&D as a percentage of Gross Domestic Product

4.8 If we focus on firm-level R&D activity, at nearly £4bn, the Midlands accounted for 17% of **expenditure on R&D performed in UK businesses** in 2017, although private sector R&D spend per capita was below the UK average[83] and performance across the region is variable[84]. The evidence also shows that:

- the West Midlands had the highest proportion of firms that were both product and **process innovators** of all UK regions, and the East Midlands was the second most innovative region in terms of product or process innovation[85].
- the Midlands is home to some of the highest levels of **"business model innovation"**[86 87], in England (for example, Worcestershire and Coventry and Warwickshire LEP areas were ranked 2nd and 3rd in England respectively) but there is considerable variation within the region[88].
- In terms of **patents per worker**, the Midlands' performance has improved over the last ten years, moving towards the national benchmark, before slowing down again in 2014-15, as illustrated below. Over the 2013-14 period, innovators in the Midlands were responsible for 18% of all patents submitted in the UK (totalling 8,000 patents in the region)[89].

Figure 4.4: Relative patent per worker gap analysis



Source: CE calculations, ONS

[83]For example, BEIS (2019) Midlands Engine - Evidence Pack found that in 2015, private R&D spend per capita in the West and East Midlands was 20% and 15% below the UK average respectively.
[84]Based on sub-regional data for spend per full-time job, the Black Country, Coventry and Warwickshire, D2N2 and Worcestershire LEPs perform above the Midlands LEP average (2014/15). See Quarterly Economic Commentary for further details.
[85]SQW (2016) A Science and Innovation Audit Report for the Midlands Engine
[86]ERC (2019) Benchmarking local innovation – the innovation geography of England: 2019
[87]i.e. A firms' adoption of new organisational processes such as supply chain management, business re-engineering, knowledge management, lean production, and quality management
[88]Stoke and Staffordshire and Greater Lincolnshire LEPs were ranked 35th and 38th respectively
[89]SQW (2016) A Science and Innovation Audit Report for the Midlands Engine

4.9 However, existing literature also suggests that knowledge generation and R&D spend is often concentrated in a small number of highly innovative firms and leading research institutions, and Midlands-level averages mask considerable variation in performance within the region. This uneven distribution of innovation activity appears to be evident across many sectors and places in the Midlands. Indeed, five of the nine Local Area Profiles highlighted low levels of Business Enterprise R&D Expenditure (BERD) per employee[90].

4.10 **Performance in securing public sector innovation funding has also been variable**. Across the Midlands as a whole, £1.6bn in Innovate UK funding was secured for the 2012-2021 period, but some parts of the economy are more successful than others, and SMEs in the Midlands tend to engage less with these funding streams[91]. Data also shows that the Midlands secured the third highest value of UKRI funding and number of Horizon 2020 awards between 2014-2018, behind London and the South East and the Northern Powerhouse. This indicates a potential lack of absorptive capacity to make the best use of funding streams available for innovation (discussed in more detail below), and in some places, reflects the lack of research intensive universities.

[90] Leicester and Leicestershire, the Marches, Greater Birmingham and Solihull, Black Country, and Greater Lincolnshire
[91] For example, see SQW (2017) A Science and Innovation Audit for the West Midlands

R&D collaboration and clustering

4.11 Within the literature, there is concern that the Midlands' assets are "not joined up"[92]. It is also reported that there is scope to **improve collaboration between innovation assets and the business base** to create a more seamless pathway for the diffusion and commercialisation of innovation, including cross-sector and in areas of technology convergence [93]. The literature also highlights opportunities to better exploit the innovative potential of university and other high-tech facilities to expand/strengthen clusters of high-tech businesses across a range of sectors in the Midlands[94].

4.12 These findings were corroborated by the businesses interviewed for the IER, who cited **issues around engaging with the research base** as a barrier to innovation, productivity improvement and growth. The businesses pointed to a lack of knowledge of where expertise lies, how to access it, and some concerns around university interest and responsiveness. These challenges appeared to span a variety of sectors, including advanced manufacturing, media/digital and HLS. The lack of a clear gateway into universities was seen as a major obstacle for engagement for many businesses interviewed. A small number of businesses also noted the **difficulties in exploring opportunities for cross-sector synergies and innovation**, and the lack of support/facilitation in this respect across the Midlands. Business perspectives on how linkages could be strengthened are discussed further in Section 7.

4.13 Clustering was also seen as critical to enabling innovation by a number of the businesses consulted, with mixed success reported across the Midlands to date. Consultees gave examples of successful clusters – such as gaming in the West Midlands, and biotech in the East Midlands – but there was certainly an **appetite from businesses to create stronger clusters and business networks** across the region. Consultees argued this would help to create a more vibrant environment for innovation and collaboration, attract more sizeable businesses to the area, attract talent and create more "depth" in the labour market (especially for higher level skills and expertise).

[92] For example, see SQW (2018) Economic and policy review, to inform the D2N2 SEP
[93] For example, see Black Country Consortium (2018) West Midlands Industrial Strategy Sector Evidence Full Pack
[94] For example, in the Leicester and Leicestershire SEP

Knowledge diffusion and absorptive capacity

4.14 Knowledge diffusion is vital to improve productivity and is a key factor in explaining differences in regional growth levels[95]. However, in the Midlands, there appears to be **slow diffusion of innovation and knowledge** from the region's science assets to the wider business base, and calls across the literature for more support to help the "long tail" of less innovative and less productive businesses to engage in more innovative activity. There are also concerns about "under-leveraged" innovation assets in parts of the region so, whilst the Midlands is home to world-class research strengths, these are insufficiently focused on commercialisation[96] and supporting productivity growth.

4.15 Linked to this, the literature highlights **absorptive capacity issues** across the business base, and within SMEs in particular. A number of factors influence this, including skills shortages[97], personality and cultural traits (including attitudes towards risk)[98], the national business support offer (lacking and variable) and a lack of effective leadership to encourage technology diffusion. This issue is not necessarily unique to the Midlands[99], but if tackled successfully, it could help to close the region's productivity gap.

4.16 Jürgen Maier's *Made Smarter* review[100] of industrial digitalisation highlights relatively slow levels of technology adoption within UK businesses acting as a brake on productivity improvements. In line with the need for a better coordinated and more consistent approach nationally, Midlands partners will need to focus future business support interventions on increasing productivity and long-term resilience, by accelerating technology adoption as well as boosting skills as well as leadership and management capacity.

[95] See for example Huggins (2018) Innovation and Productivity, for the Productivity Insights Network
[96] For example, see SQW (2018) Economic and policy review, to inform the D2N2 SEP
[97] For example, research by the WMCA has found their business, professional and financial sector is very risk averse, and skills sets are not particularly conducive to entrepreneurial thinking and exploration of innovative ideas (especially in relation to artificial intelligence. This work highlighted the importance of skills development in the context of innovation/adoption as a key priority in raising productivity. See West Midlands Combined Authority (2018). Report of the West Midlands Productivity & Skills Commission
[98] See for example Huggins (2018) Innovation and Productivity, for the Productivity Insights Network
[99] For example, the Productivity Insights Network has found that, in terms of technology adoption, the gap between top and bottom performing businesses in the UK is greater than competitor countries and that knowledge diffusion has deteriorated sharply in recent years. See McCann (2018) Productivity Perspectives Synthesis
[100] Industry-led Review exploring how UK manufacturing can maximise benefits from increasing adoption of digital technology through a strong industry and government partnership (October 2017) https://www.gov.uk/government/publications/made-smarter-review

5. PEOPLE AND SKILLS

5.1 This Section characterises the Midlands' demographic and skills base, with an emphasis on the implications for productivity. It covers population, health and deprivation, skills and associated shortages and gaps, and occupations and pay.

Key messages

- The Midlands is home to a relatively young, stable and ethnically diverse population. However, life expectancy is below the national average and acute deprivation is evident in both urban and rural parts of the region.
- The Midlands offers specialist skills and expertise within its world class research and innovation assets (see Section 4).
- However, across the region as a whole, skills issues are evident – in the data, literature and business interviews - as one of the most important drivers of the Midlands' productivity gap.
- The Midlands has too few people with high level qualifications, and too many with no/low qualifications. Linked to this, there are fewer professional occupations in the Midlands, and an over-representation of lower-skilled process and elementary roles. As a result, earnings are below the national average.
- School performance is variable, with some excellent attainment levels in some areas, but parts of the region suffer from poor early years outcomes.
- Apprenticeship starts saw a sharp and more pronounced decline between 2016/17 and 2017/18, which is a concern given the structure of the Midlands economy, but have since started to increase.
- Skills gaps and shortages were evident across the Midlands' LEP areas and in many sectors that are critical to the Midlands economic performance and growth. Key issues included leadership and management (with implications for a businesses' ability to invest, innovate and operate productively), and sector-specific gaps in engineering, health and life sciences, digital/data analytics and STEM in general.
- Attracting and retaining talent is a challenge for the Midlands, both in relation to graduates and more experienced workers/entrepreneurs. In part, this is attributed to perceptions of the Midlands as a place to live and work, insufficient "depth" in local labour markets (providing job choice if people move to the area) and commuting issues.
- Poaching and wage competition between large multinationals and SMEs is reportedly an issue within the Midlands, hindering business growth.

Demographics and health

5.2 The Midlands has a **relatively young population**[101] and a **diverse ethnic mix**, with the largest non- white British population outside of London[102]. However, in common with the rest of the UK, the Midlands is forecast to have an **increasingly ageing population,** especially in rural areas, as younger people move to urban towns and cities for work and as older people retire in rural areas[103]. There is also a more nuanced spatial pattern of ageing in the Midlands, where the east coast of Lincolnshire is characterised by a lower income ageing population, compared to more prosperous parts of the Peak District, for example. An ageing population can impact upon productivity, both by reducing the productive potential of the population and increasing demand for services (especially low productivity-growth and labour-intensive health, care and leisure services)[104]. Analysis from Cambridge Econometrics shows that the changing working age population (WAP) share between 2007 and 2017 has already had a negative impact on GVA growth rates and GVA per capita – this follows a similar pattern to the English average, but the scale of impact is more pronounced in the Midlands.

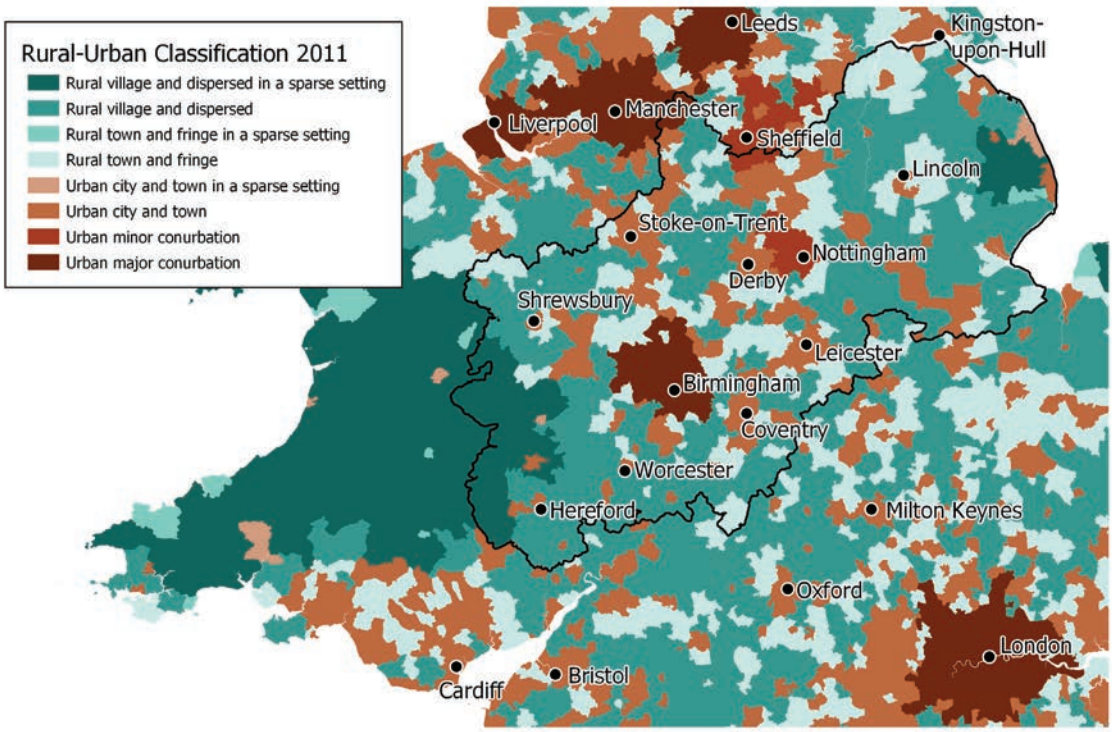
5.3 The literature also reveals that **life expectancy** in the Midlands is lower than the UK average[105]. Life expectancy at birth for males (2015-17) was 78.8 and 79.4, and for females, 82.7 and 82.9, in the West and East Midlands respectively (compared to the England average of 79.6 and 83.1)[106] . This, coupled with poor **mental health and wellbeing issues,** acts to reduce the workforce participation and productivity in parts of the Midlands. For example, in the West Midlands one in four adults have a mental health condition, around one in five people using mental health services were also using alcohol or substance misuse services, and over 450 lives were lost to suicide in 2015. The economic cost of mental health to the West Midlands has been estimated at 12.6bn[107]. Nationally, the impact of health inequalities has recently been estimated at £31-33bn in productivity losses per year[108] and is recognised as an issue in the Government's Industrial Strategy.

[101] Midlands Engine (2017) – Vision for Growth
[102] MediLink Midlands (2018). Midlands Engine, Driving Lifesciences
[103] BEIS (2019) – Midlands Engine - Evidence Pack sourced from ONS Population Estimates
[104] Lisenkova, K. (2018) Demographic Ageing and Productivity
[105] Black (2018) – WMCA State of the Region
[106] Public Health England (2019) Public Health Profiles
[107] West Midlands Combined Authority (2017). Thrive West Midlands: An Action Plan to drive better mental health and wellbeing in the West Midlands
[108] Research by Frontier, reported in Metro-Dynamics (2017). Health and Wealth: the inclusive growth opportunity for mayoral combined authorities

Spatial distribution of people

5.4 **A relatively high share of the Midlands Engine's population lives in rural areas** (including hub towns): 26% in 2011, compared to an England average of 24% and Northern Powerhouse average of only 19%[109]. Moreover, the East Midlands has more rural residents than the West Midlands[110]. Some of the LEP documentation argues that the distribution of economic activity and poor infrastructure provision (see below) across rural areas makes it more difficult for employees to access jobs (especially those without private transport)[111]. Also, the West Midlands contains the major urban conurbation of Greater Birmingham, whereas the East is more polycentric. This emphasises the importance of effective linkages to other cities which could "allow each city to 'borrow size' from the others" (effectively creating critical mass and agglomeration benefits)[112].

Figure 5.1: Rural Urban Classification, based on 2011 census data



Source: Produced by SQW 2019. Licence 100030994, contains ONS data

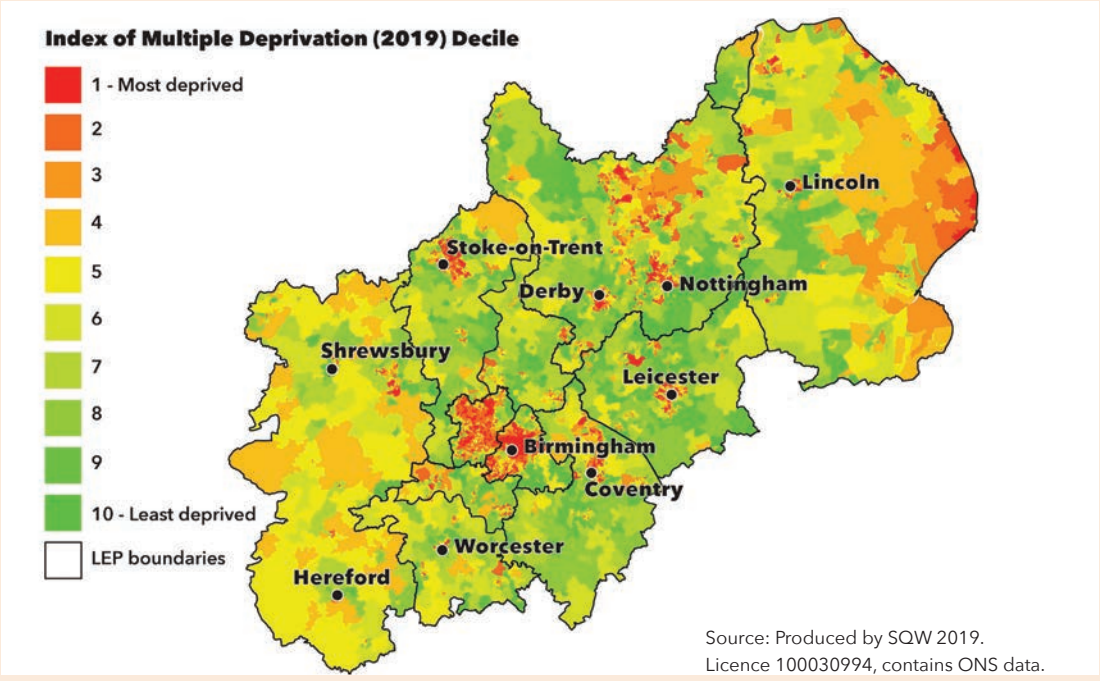
[109] BEIS (2019) Midlands Engine - Evidence Pack sourced from 2011 Census usual resident population
[110] Analysis by the ESRC, reported in BEIS (2019) Midlands Engine - Evidence Pack sourced from Economic and Social Research Council, Society Now magazine, Summer 2014 edition, page 20
[111] The Marches LEP (2014) – SEP; also Greater Lincolnshire LEP (2016) SEP
[112] Centre for Urban and Regional Development Studies (2005) City Regions and Polycentricity: the East Midlands Urban Network

Deprivation and the inclusive growth challenge

5.5 Many of the Midlands' documents make the case for inclusive growth in terms of equality, and note that inequalities can act as a drag on growth by limiting the expansion of demand from those groups with stagnant/declining relative incomes[113]. This is particularly important in closing the employment rate gap described in Section 2. Notably, the West Midlands' Local Industrial Strategy (LIS) calls for the creation of a more inclusive economy that will drive productivity gains through increased support for SMEs, and targeted interventions for young and low skilled workers, so that more high-value jobs become available as part of more productive and sustainable career paths.

5.6 Overall, 13.3% of the Midlands' Super Output Areas (SOAs) are in the 10% most deprived areas nationally. **Pockets of deprivation are evident in both urban and rural areas**, as illustrated by the map below. The literature also highlights the presence of deprivation in rural areas, which is often dispersed[114]. Inequality is also more likely to affect those in the black and minority ethnic (BAME) community, those with disabilities, those with low/no qualifications, and those in employment, but with low wages[115].

Figure 5.2: Index of Multiple Deprivation (IMD) Decile by Lower Layer Super Output Area (LSOA) (where 1 is most deprived 10% of LSOAs)



Source: Produced by SQW 2019.
Licence 100030994, contains ONS data.

[113] Pike, A; Rodreguez-Pose, A; Tomaney, J (2016) – Shifting horizons in local and regional development
[114] For example, see Worcestershire LEP (2014) Strategic Economic Plan; also West Midlands Combined Authority (2019). Inclusive Growth: update and next steps. A paper to the WMCA Board
[115] WMCA (2018) – Regional Skills Plan

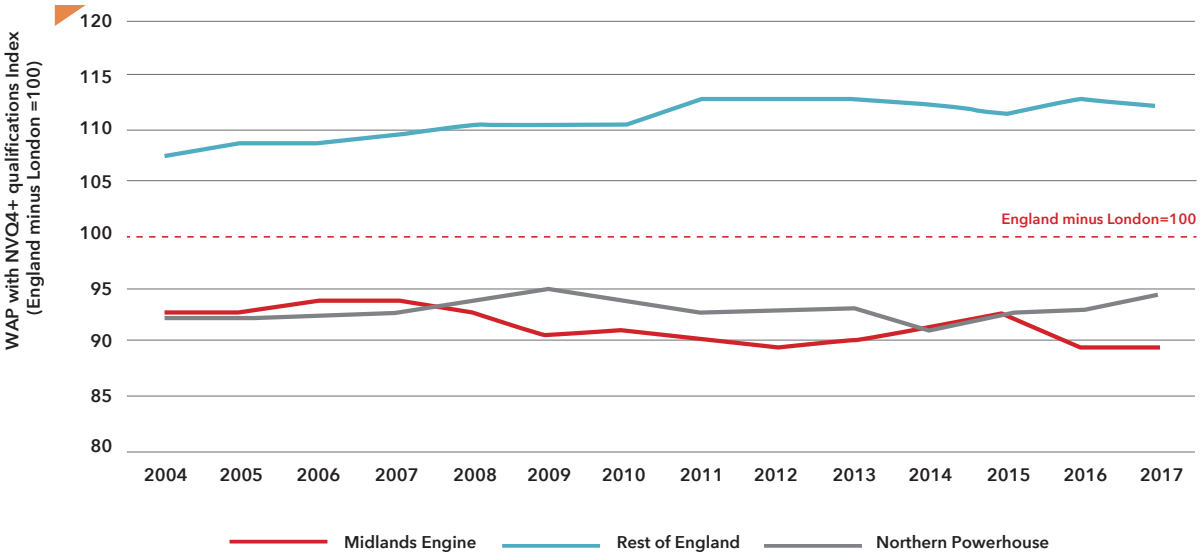
Skills and qualifications

5.7 There is a well-documented correlation between economic productivity and educational level, and over the long-term, a 1% rise in the share of the workforce with a university education is estimated to increase productivity by 0.2-0.5%[116]. Overall, **the Midlands has insufficient people with high level qualifications (33% compared to 39% across the UK) and too many with no qualifications (9.2% vs 8.0% respectively), and is commonly cited as an important contributor to the productivity gap**[117]. The gap with the Northern Powerhouse on no/low skills is particularly striking. These skills issues are reflected in multiple local level documents from areas across the Midlands, as well as key datasets (e.g. see Figure 5.3 and Figure 5.4). That said, throughout this Section, it is important to recognise that average figures mask considerable variation across and within each area (see Table 5.1). For example, the proportion of working age adults with no qualifications ranges from 7.1% in the Marches to 15.7% in the Black Country, and in Worcestershire 36.3% of adults have NVQ4+ compared to 24.5% in the Black Country and 28.0% in Lincolnshire (2018).

5.8 A range of issues are discussed in the literature to explain the region's poor skills performance. A detailed piece by City-REDI argued that, for the WMCA area, key barriers to skills development included a lack of resources (e.g. financial, transport), work experience, home responsibilities (e.g. caring), as well as a lack of flexibility in skills provision, English skills, low confidence and mental health problems[118]. Low investment by employers in skills and training is also a challenge, particularly in small businesses[119].

Figure 5.3: Relative proportion of WAP with NVQ4+ gap analysis

Source: CE calculations, APS



[116] https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/486500/BIS-15-704-UK-skills-and-productivity-in-an-international_context.pdf, cited in Policy Exchange (2018) Powering the Midlands Engine
[117] Data sourced from Annual Population Survey, 2018. Supporting literature includes Midlands Engine (2017) Vision for Growth; BEIS (2019) Midlands Engine - Evidence Pack
[118] City-REDI (2018) Skills
[119] For example, see Black Country Consortium (2017) SEP; and City-REDI (2018) Skills

Figure 5.4: Relative proportion of WAP with low (NVQ Level 1) or no qualifications gap analysis

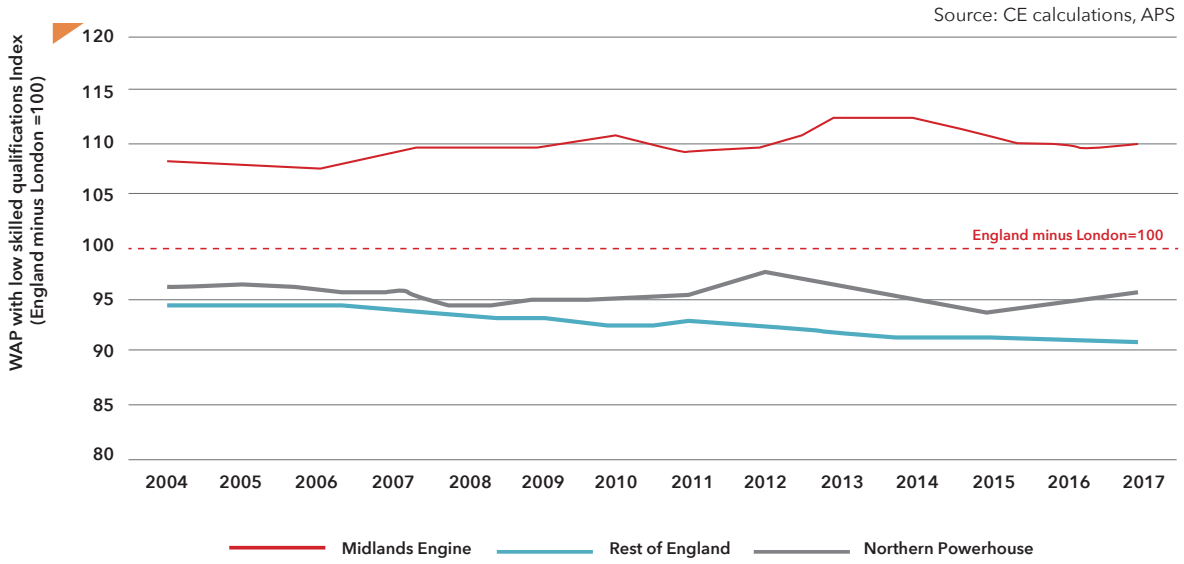


Table 5.1: Qualification levels in the Midlands (16-74-year olds)

	% with NVQ4+			% with no qualifications		
	2008	2018	Change	2008	2018	Change
Black Country	18.8	24.5	5.7	21.4	15.7	-5.7
Coventry and Warwickshire	28.8	38.2	9.4	13.5	9.0	-4.5
D2N2	25.8	33.4	7.6	14.3	7.8	-6.5
Greater B'ham and Solihull	24.3	33.8	9.5	18.4	9.3	-9.1
Greater Lincolnshire	20.2	28.0	7.8	12	8.1	-3.9
Leicester and Leicestershire	25	34.5	9.5	16.2	9.9	-6.3
Stoke-on-Trent and Staffs	23	33.4	10.4	16.1	7.9	-8.2
The Marches	27.3	35.2	7.9	13	7.1	-5.9
Worcestershire	26.1	36.3	10.2	13.4	7.2	-6.2
Midlands	24.2	32.8	8.6	15.8	9.2	-6.6
Northern Powerhouse	27.3	33.9	6.6	12.6	8.9	-3.7
United Kingdom	28.5	39.2	10.7	13.7	8.0	-5.7

Note: Change is given in percentage points from 2008 to 2018. Source: SQW analysis, Annual Population Survey

Skills and qualifications

5.9 There are **excellent schools and attainment levels in parts of the Midlands**[120], but the region also suffers from **low early years and primary school outcomes.** School readiness has a strong impact on future educational attainment and life chances, and in the Midlands the average school readiness at age 5 is 69.7%, slightly below the England average of 71.5%. Again, there is considerable difference across the region, with Staffordshire, Herefordshire, Solihull and Warwickshire above the national average. According to the CBI, there is a direct correlation between secondary school achievements and local productivity[121]. The Midlands lags behind the national average in Progress 8 scores for GCSE pupils (-0.1 vs -0.02 respectively) – but again performance varies, with stronger performance in Warwickshire, Worcestershire and North Lincolnshire[122].

5.10 **Apprenticeship starts** were relatively consistent year-on-year between 2014/15 and 2016/17 in the Midlands and across England as a whole. The number of starts fell sharply between 2016/17 and 2017/18 in the Midlands (by 24%). This mirrored national trends, and coincided with the introduction of the levy and the shift from Frameworks to Standards which compounded uncertainties for employers. However, the drop was more pronounced in the Midlands than the national average. This is a concern, given the make-up of the Midlands economy and national research that demonstrates the positive impact of apprenticeships on business efficiency, the quality of products and services, and young people's employment prospects[123]. However, the most recent data for 2018/19 show a slight upturn for both the Midlands and England, and the Midlands has experienced an increase in Advanced Level Apprenticeships specifically (compared to a decline nationally) over this period.

[120] Such as Lincolnshire and the Marches
[121] Reported in Schootbrugge, S (2017) Productivity Boost in Warwickshire
[122] Midlands Engine Economic Observatory (May 2019) Midlands Engine Quarterly Economic Commentary. Progress 8 is a measure of the progress children make between the end of primary school and the end of secondary school. A score of +1 means that pupils in that school achieve one grade higher in each qualification than other similar pupils nationally. Schools with a Progress 8 score of below -0.5 are not achieving the minimum standard expected by the Government.
[123] For example, see Centre for Economics and Business Research (2013) Productivity matters: the impact of apprenticeships on the UK economy; and HMG (nd) Employer guide to apprenticeships

[124] E.g. see Abreu (2018) Skills and Productivity; Black Country Consortium (2017) SEP
[125] McCann (2018) Productivity perspectives synthesis
[126] WMCA (2018) Skills Plan
[127] For example, see ABPI (2015) Bridging the skills gap in the biopharmaceutical industry; and Emsi (2018) Midlands Engine Labour Market Intelligence; Greater Lincolnshire LEP (2019) Local Industrial Strategy opportunities; Regional Observatory; Birmingham City University (2017) - Tech and Digital: Deep Dive Report; the Marches LEP (2016) SEP Refresh
[128] Reported in SQW (2018) Economic and policy review, to support the D2N2 SEP
[129] E.g. see Centre for Cities (2013) Supporting business innovation in Coventry and Warwickshire, where the shortage of engineers and graduates is said to hamper innovation activity
[130] See for example, the Marches LEP (2016) SEP Refresh
[131] City-REDI (2018) Skills; WMCA (2018) Regional Skills Plan

Skills gaps, shortages and under-utilisation

5.11 **Skills gaps and shortages** are reflected in all but one of the LEP Local Area Profiles and many pan-Midlands documents, including in fields that are critical to the Midlands' current and future productivity performance and economic growth. The UK Employer Skills Survey found that skills gaps reported by employers was highest in the East and West Midlands (and Yorkshire and Humber) in 2017[124]. Moreover, labour/skills issues were raised by 33 businesses and all business representative organisations consulted for this IER, with one of the latter arguing that skills was *"the biggest member issue by far"*. Persistent issues include:

- **Leaderships and management skills**, which influence the ability of business leaders to innovate, invest, access finance and exploit new markets/exporting opportunities – all of which play a key role in raising in-firm productivity. This is not unique to the Midlands – indeed, the Productivity Insights Network argues the UK as a whole has *"a longer tail of poorly-managed firms than competitor countries"*[125]. The literature also points towards a gap in middle management, which has limited productivity gains in some sectors (business and professional services were mentioned)[126]. These findings were corroborated by business interviewees, who highlighted insufficient **"good quality management skills"**, including finding STEM graduates who are 4-5 years into careers, as well as senior management, and stronger leadership and management skills at the middle level of management.
- **Occupation-specific, technical competencies,** most commonly relating to STEM skills, digital, maths, data analytics, computation, software engineering, 3D printing, CAD, graphic design etc[127]. This was evident in both local literature and our business interviews.
    - ➜ For example, the West Midlands Combined Authority area is cited as one of the largest centres for digital and tech enterprises outside of London, but almost three-quarters of large employers and half of SMEs in the area report digital skills shortages, and the pace of technological change is making it difficult for skills providers to keep up. This reflects a national shortage of digital skills, but is particularly critical to maintain and grow the West Midlands' competitive strengths in digital tech.
    - ➜ In D2N2, research found that half of all vacancies in the area were in core technical and semi-technical occupations, slightly higher than across the UK as a whole[128].
- **Sector-specific skills**, especially for the engineering[129], manufacturing[130], automotive, health and life sciences, where there is a rapid shift towards more digital focused capabilities e.g. in relation to precision medicine and data driven healthcare. Again, STEM skills are critical given the nature of the Midlands economy.
- **Work readiness and employability skills** were highlighted in the literature as an issue across the Midlands and, linked to this, a limited awareness of career opportunities amongst young adults, with a suggestion that this could be related to a disparity in the quality of careers advice and guidance[131]. A business representative organisation consulted for the IER also noted that work readiness of college/university graduates was a prominent issue across their members.

5.12 **Skills poaching and pay competition** is also an issue *within* the Midlands. Both manufacturing and digital SMEs interviewed for the IER argued they are being priced out of the market by large global firms in the area who are able to pay "significantly more" for skilled staff. This was reportedly hindering the growth of some firms.

5.13 Where there is a strong supply of graduates from the Midlands' universities, **graduate retention** was identified as an issue in the literature, data, Local Area Profiles (alongside the retention of skilled staff more generally) and a small number of the business interviewed. According to the latest data, the East Midlands has the lowest graduate retention rate of any UK region, with only 44% of those who studied in the region in employment there six months after graduation. Places such as Nottingham experience high outflows of graduates, many of whom head for London[132]. The West Midlands performs slightly better at 56%, with particularly strong performance in Birmingham (and the Marches and Coventry and Warwickshire benefit from a high number of graduates returning to the area for employment after studying elsewhere[133]). However, both the East and West regions lag behind the North East, Wales, the North West, London and Scotland[134]. According to the Centre for Cities, a key factor influencing patterns of graduate migration is thought to be future career opportunities (both short and longer term)[135].

5.14 The central location of the Midlands is seen to make the region **well-placed to attract dynamic, flexible and skilled workers.** However, some of the businesses consulted have also found it difficult to **attract talent** to the Midlands, including large-scale global advanced manufacturing firms and a financial services firm. Consultees felt that the Midlands was not considered a "desirable or attractive" place to live compared to other locations, such as London or some cities in the North, both for graduates and more experienced workers. There were also examples where poor transport connectivity/difficult commutes, combined with the lack of "depth" in local labour markets (providing job choice if staff moved to the area), had also deterred potential recruits from moving to the Midlands.

A global advanced manufacturing firm in the East Midlands noted how disruptive digitisation is now – and in this context, traditional apprenticeships are not providing what is needed by industry. The consultee felt that colleges were slow to respond to changing needs, in part due to funding limitations, and training equipment is outdated (with the exception of the Manufacturing Technology Centre in Coventry, but this was not accessible for the business). It was argued that many electrical, manufacturing and engineering qualifications need "revamping" to include data and digital skills.

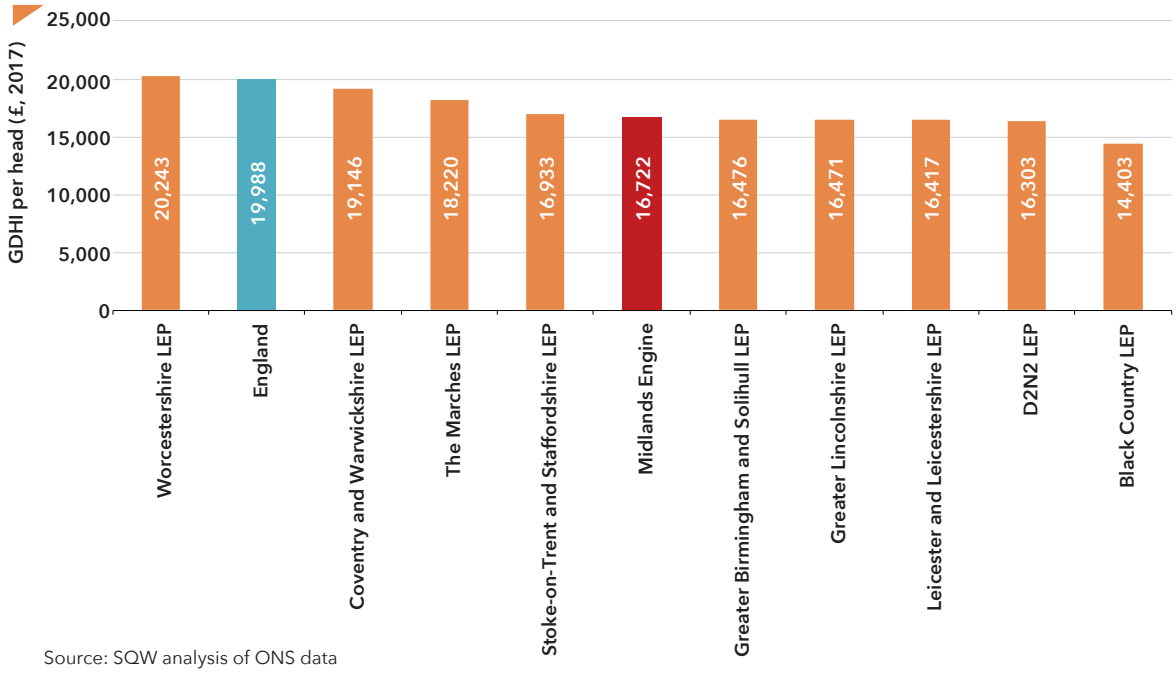
Source: Business interviewee

5.15 On the supply-side, a small number of businesses consulted for the IER in advanced manufacturing and digital/media sectors expressed ongoing frustration with the **quality of education courses and the mismatch with business needs**, both at Further and Higher Education levels. As illustrated in the message box, this focused on the need for more business-ready digital skills.

5.16 Finally, the literature also highlights issues around skills under-utilisation and under-employment amongst those in employment in parts of the Midlands. For example, youth under-employment was cited in the Marches[136] and in the West Midlands, 30% of employers reported having staff that were under-utilised (i.e. those that have both qualifications and skills that were more advanced than required for their current job role)[137].

[132] https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/486500/BIS-15-704-UK-skills-and-productivity-in-an-international_context.pdf, cited in Policy Exchange (2018) Powering the Midlands Engine
[133] Midlands Engine Economic Observatory (2019) Quarterly Economic Commentary
[134] BEIS (2019) Midlands Engine - Evidence Pack sourced from Analysis of HESA data, https://www.hesa.ac.uk/data-and-analysis/students/table-11; see also Midlands Engine (2018) Skills Strategy
[135] Centre for Cities (2016) The Great British Brain Drain
[136] The Marches LEP (2014) SEP
[137] WMCA (2018) Report of the West Midlands Productivity & Skills Commission

Figure 5.5: Gross Disposable Household Income (GDHI) per capita, £ 2017



Source: SQW analysis of ONS data

5.17 According to a recent EMSI labour market analytics report, on aggregate, the Midlands "stands out" **for fewer professional jobs and more low-skilled process and elementary roles**[138], but the picture is nuanced at a local level. For example: some areas are dominated by low skill, low wage jobs in traditional sectors with pockets of high or growing productivity activity[139], and some parts of the region are home to sectors where higher level occupations exceed the national average (e.g. the West Midlands' financial/professional and tech/digital sectors)[140].

5.18 Reflecting the Midlands' occupational structure and quality of jobs, **earnings are also below the national average**. In 2018, the median gross weekly pay for full time workers in the East and West Midlands was 7% and 6% lower than the UK average respectively[141]. However, as above, there is considerable variation across the Midlands, with workers in some of the southern districts amongst the highest paid (e.g. Warwick, Bromsgrove and Rugby) and other parts of the region suffering from a low skills/pay equilibrium[142]. The region has made progress in narrowing the **gender pay gap** over the last 20 years, but this remained at 10% in the West Midlands and 12% in the East Midlands in 2018.

5.19 Gross Disposable Household Income (GDHI) per capita[143] across the Midlands as a whole also lags behind the national average, with eight of the region's nine LEP areas below the England average (see Figure 5.5). This has implications for the Midlands' inclusive growth challenge, and the vulnerability and wellbeing of the region's residents. Again, there is considerable variation across the region, where GDHI per capita in the Black Country is only 71% of income in Worcestershire.

[138] EMSI (2018) Midlands Engine: labour market intelligence; BEIS (2019) – Midlands Engine - Evidence Pack
[139] For example, see Greater Lincolnshire LEP (2019) Lincolnshire's Evolving Opportunities Framework
[140] Black Country Consortium (2018) West Midlands Industrial Strategy Sector Evidence Full Pack; and Birmingham City University (2017) - Tech and Digital: Deep Dive Report
[141] BEIS (2019) Midlands Engine - Evidence Pack sourced from BLGA analysis using ONS Annual Survey of Hours and Earnings
[142] See Huggins (2019) UK Competitiveness Index; NTU (2017) Inclusive Growth Report; and NTU (2017) Inclusive Growth Report for D2N2; also see Greater Lincolnshire LEP
[143] This data is produced by ONS by dividing total GDHI estimates (in £m) by the resident population of an area to give GDHI per capita.

6. INFRASTRUCTURE

6.1 This Section summarises evidence on the strengths and weaknesses of the Midlands' enabling infrastructure offer for businesses, including transport, digital connectivity, premises and utilities, and the implications for productivity performance.

Key messages

- The Midlands is a central and low-cost location, with good north-south transport links, a strong supply of high tech business parks and incubators, and a strong cultural and natural environment.
- However, poor transport and digital connectivity in parts of the Midlands, and lack of suitable premises and insufficient utilities, are creating significant barriers to business productivity and growth. Specific challenges identified through the IER process are as follows:

  - ➜ In some areas, transport connectivity is poor, especially travelling east-west across the region. This was well-documented across the literature and raised by many of the businesses consulted. Issues include high levels of congestion on the road network, and very slow and unreliable train journeys. This is hampering business productivity, making it difficult for employees to commute to work and for businesses to access customers, collaborators and suppliers.
  - ➜ International airports are increasingly important enabling assets for modern knowledge-based economies. The evidence identified issues relating to the lack of direct routes to some key growth markets and land access to airports within the Midlands (for businesses and their clients).
  - ➜ Public transport spending per capita in the Midlands is consistently below the national average.
  - ➜ Digital connectivity is highly variable and in places (both urban and rural) wholly inadequate. This limits the ability of staff to work from home and the productivity of home-based businesses, and hinders modern communications with clients/suppliers overseas.
  - ➜ The Midlands is an attractive, low cost business environment, However, there is insufficient grow-on space, large-scale industrial premises and Grade A office space in parts of the Midlands. The supply of utilities (especially water and electricity) is holding some firms back.

Transport connectivity and investment

6.2 Effective and efficient transport infrastructure is essential for regions to connect with each other and within themselves, for businesses located there and the people who live within them. As such, it is an important and necessary condition for productivity growth to have well-functioning strategic and local transport networks.

6.3 The Midlands is **centrally located, with good north-south transport links and international connections.** For example, 90% of the UK population is located within four hours' drive to the West Midlands[144]. High Speed 2 is clearly a major strategic opportunity for the region, including through the opportunities to develop strong partnerships outside the Midlands to attract global investment and maximise collaboration opportunities e.g. with the globally significant science and innovation assets in the Golden Triangle or with key economic centres in the Northern Powerhouse or Scotland's Central Belt etc.

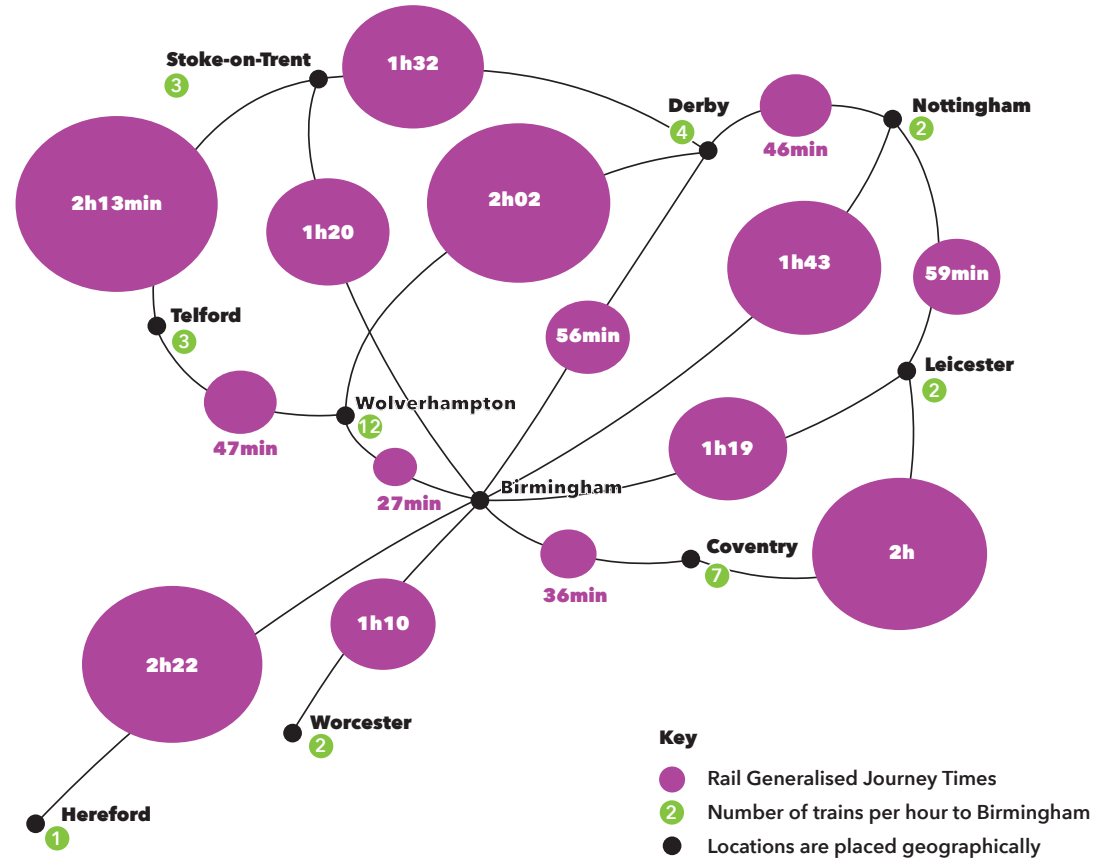
6.4 However, **travel across the region is a well-documented challenge** in the literature – including across all nine of our LEP Local Area Profiles – and was identified as a barrier to growth and productivity by three-fifths of the organisations interviewed (for many of these it is a major constraint). As a polycentric economic geography, the Midlands is fragmented into small, poorly connected areas and dispersed populations, with a large rural hinterland. The implications of this are explored further in Section 8. East-west transport was described by some commentators in the literature as being "inadequate", and connections between urban centres are generally poor relative to some other parts of the UK.

6.5 **Rail connectivity between cities and to rural areas is slow** (e.g. Coventry to Leicester which are under 30 miles apart, but can take 1.5 hours by train), infrequent (e.g. Leicester to Birmingham), or both (e.g. Birmingham to Nottingham) as illustrated below. Businesses consulted indicated that public transport links between railway stations and business parks/business premises are also poor, with limited public transport options for shift workers (for early mornings/late nights). The opportunities for freight transport on the rail networks was described as "non-existent" by some consultees, and restricted rail freight capacity was seen to be limiting the growth of the logistics sector/supply chains in some areas of the Midlands. There was some optimism amongst consultees that HS2 would increase capacity and improve access to clients in London, but at the same time, a frustration that existing rail (and road) infrastructure needs to become more reliable and accessible within the region.

6.6 The proposed £2bn Midlands rail hub is an ambitious package of investments designed to transform east-west rail connectivity across the Midlands Engine. According to Midlands Connect, the programme will enhance links between Leicester, Nottingham, Coventry, Derby, Hereford and Worcester, as well as improving connectivity to Wales and the South West.

[144] Black Country Consortium (2018) West Midlands industrial Strategy Sector Evidence Full Pack

Figure 6.1: Current (generalised) journey times and frequencies of rail services in the Midlands



Source: Midlands Connect

6.7 **The road network also suffers from high levels of congestion**, and journey times are slow and unreliable, which is a major challenge for the Midlands given its over-reliance on roads compared to elsewhere in the UK. Road congestion is particularly acute in Birmingham, Nottingham and Leicester, which were identified by the National Infrastructure Commission as within the top 10 most congested areas outside of London in 2018[146].

6.8 **International airports** in the Midlands were seen as important assets, although some concerns were raised in the literature and by consultees regarding surface connectivity issues surrounding airports and (in some instances) inadequate connections to key growth markets.

An interesting piece from the Productivity Insights Network[145] argued that poor public transport was a key reason that Birmingham is "significantly less productive than almost all similar-sized cities in Europe" (on the basis that many economists argue that larger cities are more productive). The hypothesis here was that, given Birmingham's over-reliance on buses and the extremely slow and unreliable bus service in peak times, the city "sacrificed" agglomeration benefits that would normally be associated with a city of its size (compared to, for example, cities such as Lyon which rely on trams and metros that deliver more reliable journey times at any point in the day).

6.7 **The road network also suffers from high levels of congestion**, and journey times are slow and unreliable, which is a major challenge for the Midlands given its over-reliance on roads compared to elsewhere in the UK. Road congestion is particularly acute in Birmingham, Nottingham and Leicester, which were identified by the National Infrastructure Commission as within the top 10 most congested areas outside of London in 2018[146].

6.8 **International airports** in the Midlands were seen as important assets, although some concerns were raised in the literature and by consultees regarding surface connectivity issues surrounding airports and (in some instances) inadequate connections to key growth markets.

6.9 **These issues have a bearing on productivity**, in terms of the size of a potential talent pool for local businesses, supply chain operations, and the time and cost incurred to reach partners, clients and suppliers . According to Midlands Connect, this means that businesses, commuters and leisure travellers have to schedule additional time into their journey to give them confidence that they can arrive on time, and this wasted time significantly impacts on business productivity and constrains the potential for business growth . A number of the LEP-level documents also describe how the flow of labour and goods are impeded by inadequate infrastructure (for example, in Greater Lincolnshire, the Marches, Stoke and Staffordshire, Greater Birmingham and Solihull).

An innovative and growing HLS firm in the East Midlands argued that poor road infrastructure is a "major inhibitor" to recruiting skilled staff. They find it difficult to attract staff to move into the area (due to poor image) but long delays/journey times make commuting from further afield difficult. As an example, the firm recently offered a sales manager position to a strong candidate, but this was rejected after the applicant tested the commute. This has happened in the past, and the situation is worsening. The consultee suggested that applicants would rather find a job closer to home.

Source: Business interviewee

6.10 Businesses interviewed for the IER concurred, describing how the transport issues above often

- **make it difficult for employees to commute to work**, limiting the pool of labour (especially for higher skills). Consultees gave examples of struggling to attract skilled staff to the business and losing staff because of difficult/unpleasant commutes, and poor connectivity effectively shrinking the labour market catchments on which they can draw.
- **impede businesses' access to customers, collaborators and suppliers.** As two business representative organisations stated, poor East/West transport links makes it "unnecessarily hard" for businesses to trade between the two geographies, and therefore business linkages occur where transport networks allow. Service sector firms also described how poor transport links are limiting their spatial reach across the Midlands.

6.11 In turn, this is influencing the growth, productivity and costs of some businesses. These issues were raised by multiple large-scale global advanced manufacturing and retail firms, as well as SMEs in the Midlands.

6.12 Views on the potential productivity gains by improving travel times are debated across the literature: for some *"improving connectivity is worth doing, but is unlikely to have a transformative effect"* [149]; whereas others argue that reducing journey times by (for example) 50% could increase productivity by 5-6% in cities such as Nottingham and Birmingham.[150]

[145] Productivity Insights Network (2019) Transport, city size and productivity
[146] BEIS (2019) Midlands Engine - Evidence Pack sourced from National Infrastructure Commission (2018) https://www.nic.org.uk/news/manchester-tops-traffic-congestion-league/
[147] For example, see CBI (2016) - Unlocking Regional Growth; Understanding the drivers of productivity across the UK's regions and nations
[148] Midlands Connect (2015) Economic Impacts Study
[149] Policy Exchange (2018) Powering the Midlands Engine
[150] CBI (2016) Unlocking Regional Growth; Understanding the drivers of productivity across the UK's regions and nations

6.13 **Public transport spending per capita** in the Midlands lags behind other parts of the UK. For example, the data reveal a spend level of £245 per capita for the East Midlands compared to £1,019 per capita in London in 2017-18. More generally, spending in the Midlands has consistently been below even the England minus London benchmark, as shown in Figure 6.2. In the pre-recession period, transport per capita expenditure was roughly in line with the Northern Powerhouse. However, since then, the Northern Powerhouse has exceeded the benchmark, and the Midlands gap has widened post-2014. Other analysis[151] shows a similar picture: public sector spending on transport per capita in the East Midlands rose by only 3% between 2008-09 and 2017-18 (cf. England average of 50%) and average annual spending on transport per capita in the East Midlands was the lowest in England over the last decade (£224), while spend in the West Midlands was £291 over the same period (cf. £348 English average). In West Midlands, public sector spending on transport per capita rose by 46% between 2008-09 and 2017-18; although, that growth has only been achieved since 2013-14, matching the England average trend.

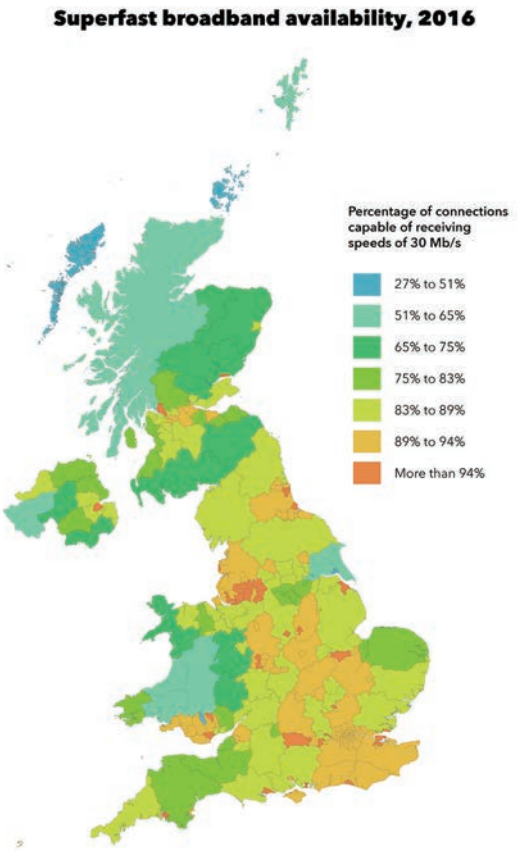
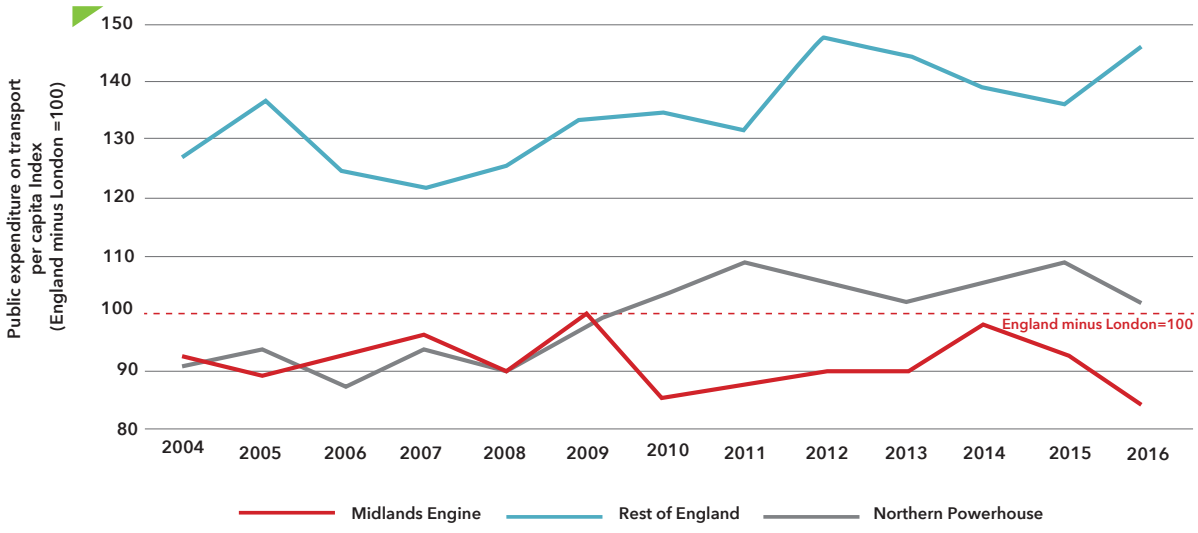


Figure 6.2: Public expenditure on transport per capita gap analysis



Source: CE calculations, ONS, PESA

[151] Midlands Engine Economic Observatory (2019) Midlands Engine Public Expenditure Analysis

[152] BEIS (2019) Midlands Engine - Evidence Pack sourced from House of Commons Library, Superfast Broadband Coverage in the UK (2017); Superfast Broadband Rollout (2015) and Ofcom; also reported in business consultations

Broadband connectivity and mobile coverage

6.14 Broadband speeds appear good in the Midlands on aggregate, and in 2018, the West Midlands was selected to become the UK's first multi-city 5G test bed to trial new high-speed connectivity. However, **digital connectivity is very variable** across the region, particularly in rural areas (such as the Marches and rural parts of Leicestershire and Staffordshire). Perhaps surprisingly, this is also the case in cities such as Birmingham, as illustrated in the map[152]. Seven of the nine Local Area Profiles for LEPs identified poor superfast broadband coverage as an issue for both businesses and homes, and 18 of our business interviews commented that digital connectivity was inadequate or could be improved. Businesses described how this is currently:

- **limiting the ability of staff to work from home effectively**, especially in more rural/remote parts of the region. This is important in a context where poor infrastructure is a barrier to commuting and the opportunity to work from home is seen as an important "selling point" for businesses to attract skilled workers. Businesses also argued that the inability to work from home due to poor connectivity has meant staff have to commute into work (which places greater pressure on road networks) and hinders the productivity of small businesses that are based at home in these areas.
- **hindering modern communications with existing/ potential customers and suppliers**, particularly those overseas (as illustrated in the message box). Not only is this an issue for firms looking to trade internationally, but it is also hindering efforts to reduce business travel.
- And, for professional service firms who frequently use trains to reach clients across the region (and, as noted above, journey times are slow), **poor digital connectivity on trains is a barrier to productivity.**

A small innovative HLS firm in the East Midlands is increasingly seeking to use Skype calls/webinars, to improve productivity and reduce the firm's environmental footprint (by reducing business travel). However, despite being located on a business park, they described the digital connectivity as "awful" and are having to invest substantial amounts of internal finance to address the issue. Another firm in the East Midlands – a large global manufacturing firm – argued that the broadband connectivity is not good enough for modern business needs. They try to do global video conferencing with customers, but it is typically "a disaster".

Source: Business interviewees

6.15 There was also a concern amongst businesses that, without fast reliable broadband, businesses in parts of the Midlands **risk "missing out" on future technological developments** in infrastructure. This includes (but is not limited to) the ability to introduce automated systems/industrial digitisation across some of the region's key sectors.

6.16 Finally, **Poor mobile phone coverage** was also identified in the literature as an issue for some rural areas, such as the Marches and Greater Lincolnshire.

6.17 This "digital divide" would appear to be acting as an anchor on productivity growth in some areas of the Midlands Engine and without intervention, it is likely to become more of an inhibitor to the region's long-term competitiveness.

Land, property and utilities

6.18 The Midlands provides a **low-cost business environment,** compared to London and the wider South East (and in some cases Manchester and Leeds), making it cheaper to start and operate a business. The literature also highlighted a **strong supply of business parks, innovation districts and incubators (within certain areas of the Midlands) focused on supporting technology rich firms** etc. However, a number of LEP documents and businesses consulted raised issues with the availability of land or commercial property that is hindering business growth. These varied by location and sector, but there were three reoccurring challenges:

- **Inadequate supply of modern and flexible grow-on space**[153], particularly for small, highly innovative firms that are growing rapidly, such as those within the HLS, digital and advanced manufacturing sectors. This also included a lack of specialised grow-on facilities for chemical and engineering activities, and space for those emerging from incubators and accelerators.
- **A shortage of industrial units at sufficient scale and/or industrial land at an affordable price** to enable businesses in some of the Midlands' priority sectors to expand (e.g. advanced manufacturing and precision engineering). For example, an advanced manufacturing firm consulted in the West Midlands has been split over multiple sites as they have grown, and are unable to find a single unit that is large enough space in the right location to accommodate the whole business.
- **A lack of high quality Grade A office space** in parts of the region (notably cities in the East Midlands). Rental rates are low, which is beneficial for businesses, but this means that speculative development is limited. As a result, consultees in the professional service sectors argued that places such as Nottingham had struggled to attract inward investment of high quality, larger employers, which is important for growth, building critical mass/agglomeration and creating a vibrant sector in the city.

6.19 The literature and a small number of businesses consulted noted issues relating to:

- **The supply of utilities**, especially electricity, fibre broadband and water supply. In some instances, this is holding back expansion or limiting the ability of firms to operate at maximum capacity (e.g. in the Black Country). This is key given that many of the Midlands' important sectors are relatively energy-intensive, and there are opportunities associated with the region's strengths in low carbon energy.
- **Housing provision**, i.e. the lack of appropriate housing in the "right" locations, is undermining businesses' ability to recruit and retain staff. House prices continued to increase more quickly than the national average (5.3% compared to 4.5% nationally), but remain below the national average (78%), as does the house price to earnings ratio (6.59 vs 7.91 in 2017)[154]. That said, there are still parts of the region where housing affordability is a challenge – for example, in rural parts of Herefordshire where local earnings are low[155]. The literature points towards a need to diversify the type of housing available to ensure sufficient quality and choice, to support retention and attract skilled workers to the area[156]. There is also a concern in parts of the region regarding the lack of supply, quality, choice and mix of affordable and social housing[157], which is particularly important in the context of ensuring inclusive growth. In four of the LEP Local Area Profiles, house building is seen as a key opportunity to meet demand and deliver against Government targets.

[153] For example, Coventry and Warwickshire, Black Country, Stoke and Staffordshire, the Marches, and West Midlands wide documentation.
[154] Observatory Quarterly Economic Commentary
[155] The Marches LEP (2018) Strategic Economic Plan Evidence Base
[156] For example, in Greater Lincolnshire and the Black Country
[157] See WMCA (2018) Industrial Strategy Consultation Document

7. ECONOMIC LINKAGES ACROSS THE MIDLANDS

7.1 This Section explores the scale and nature of key economic relationships and flows across the Midlands. During the first phase of research undertaken for the IER, it became apparent that generally, the available evidence was under-developed in relation to important economic linkages and collaborations across 'administrative borders' within the Midlands – particularly in the LEP-level material. This applied both to existing interactions and specific growth opportunities associated with future potential relationships or integrated ways of working. The existing evidence base was also rather weak when it came to considering potential synergies with key economic and innovation assets located outside of the Midlands, such as those within the so-called 'Golden Triangle' or Northern Powerhouse. Whilst it has not been possible (within the scope of this IER process) to undertake detailed research within and across sectors as part of the IER, further top down evidence on economic linkages within the Midlands has been gathered through an analysis of trade flow data and business interviews (exploring economic linkages at present and where these could be strengthened). The main findings are summarised below.

Key messages

- According to published trade data, the East Midlands region exports more to the West Midlands region than vice versa, and the largest bilateral trade relationships between the two are between the real estate, renting and business activities sectors[158]. Manufacturing related trade relationships are also evident, where the West Midlands has a trade surplus in the export of electrical/optical and transport equipment and other manufacturing goods to the East Midlands.

- In terms of trade with the rest of the UK, both the East and West Midlands are heavily dependent on imports from Inner London, followed by neighbouring areas to the South (e.g. East Anglia, Berkshire, Buckinghamshire and Oxfordshire). A large proportion of these imports are non-market services, real estate renting, business activities and distribution. The Midlands' region also exports these services elsewhere in the UK, which may present opportunities for the region, and is a net exporter of 'other manufacturing' products.

- Businesses consulted use "local" suppliers where possible, and this includes low and higher value services, as well as services and physical components/materials for manufacturing (e.g. in rail, automotives, energy and aerospace). However, the evidence also suggests that supply chains are typically within the East or West Midlands (rather than at a pan-Midlands level) primarily because of poor transport links. Additionally, there are reportedly some issues around the quality/reliability/capacity of local firms to meet supply chain opportunities. Some firms are bound to national/global procurement contracts of parent companies, which limits their ability to procure locally.

- There is evidence of economic linkages across the Midlands in relation to innovation, particularly in the advanced manufacturing and engineering sectors, driven by the presence of 'best in class' research capabilities and/or spatial proximity. However, assets could be better joined up (as discussed in Section 4) and improving businesses' understanding of/access to university expertise, and the commercial behaviours within some universities, would be helpful in addressing this.

[158] This data uses Eurostat groupings of industrial classifications.

Quantitative evidence on trade flows

7.2 The material summarised here draws on a more detailed evidence paper, Interregional Trade and Exposure to Brexit, produced by City-REDI[159] as part of the IER process. Data is sourced from the EURegio database[160] and two caveats are noted in relation to this: the most recent sub-regional data is for 2010; and the data uses NUTS2 classifications, so Rutland and Northamptonshire are included in the East Midlands data, although these areas are formally outside the spatial footprint covered by the Midlands Engine partnership.

Trade within the Midlands

7.3 Overall, **the East Midlands region exports more to the West Midlands region than vice versa**. Exports from East to West were £3.3bn, with nearly £3bn going from West to East, giving the East Midlands a 'trade surplus' of c.£242m in 2010.

7.4 **The largest bilateral trade relationships are between the real estate, renting and business activities sectors in each region.** The West Midlands sector exports £202m to its East Midlands counterpart, with £186m in trade flowing from East to West (6-7% of total trade flows). In total, the real estate, renting and business activities sector is the exporter in seven of the top 10 sectoral trade flows across the East and West Midlands. Bilateral flows between the construction sectors in each of the two regions are also significant; £183m flows from East to West, with £146m going in the opposite direction (5-6% of total trade flows).

Further details are presented below. Surprisingly, manufacturing and engineering activities do not feature in the top 10 sectoral trade flows across the East and West Midlands. However, more detailed data show that the West Midlands has a small trade surplus[161] in the export of electrical/optical and transport equipment to the corresponding sector in the East Midlands (a surplus for the West of £9.3m in 2010) and the export of other manufacturing goods from the West Midlands to the East Midlands' electrical/optical and transport equipment sector (a surplus of £9.0m in 2010).

[159] Carrascal-Incera and Ortega-Argies (2019) Interregional trade and Exposure to Brexit
[160] This EU source merges data from World Input-Output Database (the 2013 release) with regional economic accounts, and inter-regional trade estimates, and is complemented with survey-based regional input-output data for a limited number of countries. All used data are survey data and only non-behavioral assumptions have been made to estimate the EUREGIO dataset. See https://papers.tinbergen.nl/18084.pdf
[161] i.e. the West Midlands exports to the East Midlands are higher than the East Midlands exports to the West Midlands

Figure 7.1: Top 10 East/West bilateral trade relationships (2010)[162]

Rank	Exporter	Importer	Sector Exporting	Sector Importing	Value £m)
1	West Midlands	East Midlands	Real estate, renting and business activities	Real estate, renting and business activities	201.4
2	East Midlands	West Midlands	Real estate, renting and business activities	Real estate, renting and business activities	186.1
3	East Midlands	West Midlands	Construction	Construction	182.7
4	West Midlands	East Midlands	Real estate, renting and business activities	Non-Market Services	173.1
5	East Midlands	West Midlands	Real estate, renting and business activities	Non-Market Services	168.1
6	West Midlands	East Midlands	Real estate, renting and business activities	Retail Trade and Distribution	165.4
7	West Midlands	East Midlands	Construction	Construction	145.9
8	East Midlands	West Midlands	Real estate, renting and business activities	Retail Trade and Distribution	142.8
9	West Midlands	East Midlands	Real estate, renting and business activities	Financial intermediation	139.3
10	East Midlands	West Midlands	Transport, storage and communication	Transport, storage and communication	130.6

Source: Interregional trade and exposure to Brexit Evidence Paper, drawing on data from EUREGIO http://papers.tinbergen.nl/18084.pdf

[162] Notes: UKF – East Midlands: UKF1 Derbyshire and Nottinghamshire: UKF2 Leicestershire Rutland and Northants; UKF3 Lincolnshire; UKG- West Midlands: UKGI Herefordshire Worcestershire and Warwickshire; UKG2 Shropshire and Staffordshire; UKG3 West Midlands. Non-market services sector covers public and private non-profit services provided to the community or to individual consumers (either free of charge or at a fee which is well below 50% of production costs). It includes public administration and defence, education, and health and social work

Trade between the Midlands and the rest of the UK

7.5 **Both the East and West Midlands regions are heavily dependent on imports from Inner London.** They represent c.25% (West Midlands) and c.20% (East Midlands) of imports from the rest of UK (excl. bilateral Midlands trade). This may – in part – reflect a headquarters effect rather than "real" trade flows. The next highest sources of UK-based imports represent under 10% of the total – 9% from East Anglia for the East Midlands, and 9% from Berkshire, Buckinghamshire and Oxfordshire for the West Midlands. The **sectoral composition of UK imports is relatively similar for East and West Midlands:** imports of non-market services are the highest (21% for East Midlands and 22% for the West Midlands), followed by real estate, renting and business activities (16% for both), and distribution (11% for both).

7.6 In comparison to imports, **destinations of UK-based exports from the West and East Midlands are more evenly distributed**, with no common dominant region (see Table 7 1:). The top exporting sectors to elsewhere in the UK are similar to the top importers with real estate, renting and business activities (17% for East Midlands and 16% for the West Midlands) and non-market services[163] (13% and 17% respectively) again the top two. **Other manufacturing is the next highest and has notably higher export flows than imports flows** (5% of imports to both regions, but 11% of East Midlands' and 12% of West Midlands' exports).

Table 7.1: Top sources of imports and destinations of exports, within the UK (2010)

	Origin of imports into East Midlands (within UK)			Destination of exports from East Midlands (within UK)	
1.	Inner London	20%		East Anglia	9%
2.	East Anglia	9%		Inner London	8%
3.	Greater Manchester	7%		East Riding and North Lincolnshire	8%
4.	Berkshire Bucks and Oxfordshire	7%		South Yorkshire	7%
5.	West Yorkshire	5%		Greater Manchester	7%
	Origin of imports into West Midlands (within UK)			**Destination of exports from West Midlands (within UK)**	
1.	Inner London	25%		East Wales	12%
2.	Berkshire Bucks and Oxfordshire	3%		West Wales and The Valleys	9%
3.	East Wales	4%		Inner London	8%
4.	South Western Scotland	9%		Gloucestershire Wiltshire and North Somerset	6%
5.	Gloucestershire Wiltshire and North Somerset	3%		Berkshire Bucks and Oxfordshire	5%

Source: SQW analysis of Interregional trade and exposure to Brexit Evidence Paper

7.7 **Within each region, top trade partners for exports and imports are relatively similar.** As shown in the table above, four of the top five UK-based origins for imports into the West Midlands are also in the top five UK export destinations. Similarly, three of the top import sources for the East Midlands are also in the top five export destination. **This trade pattern may be influenced by geography** – both regions export more to neighbouring or geographically closer areas than remoter parts of the UK.

Qualitative evidence from business consultations and literature

7.8 The research team's interviews with businesses across the Midlands explored economic linkages in two ways: first, supply chain relationships in the region (and beyond); and second, collaborative R&D and innovation activities. In both cases, the presence and drivers of these interactions were discussed, along with the scope to strengthen these economic linkages in the Midlands going forwards. As noted in the introduction, overall, the evidence on economic linkages was limited in the existing evidence base, but the team has sought to incorporate the available material where possible.

Supply chains

7.9 For those consulted, key factors influencing the choice of suppliers included location, quality, price, capacity and (for businesses part of national/global corporations) company structure. There was a **general preference amongst many of the businesses consulted to use "local" suppliers where possible**[164]. Reasons for this ranged from practical benefits to ethical considerations. Respondents were **likely to use local firms to supply services**, supporting the trade data analysis above. This included both lower value services (e.g. cleaning, catering, postal and security) as well as complementary services that are higher value (e.g. architects, recruitment and accountancy).

> ***An advanced manufacturing SME in a rural part of the West Midlands imports almost 100% of its physical inputs from China because the Midlands/Europe are not able to produce these inputs. The firm tries to use local services where possible e.g. advertising firms.***
>
> Source: Business interviewee

7.10 The literature highlighted that, in some parts of the region, there is also a strong alignment between sector strengths and supporting services – for example, Derby's rail and transport engineering sector has a number of allied specialised service consultancies in the area, and in the West Midlands, local services match the needs of the local advanced manufacturing client base, providing sector-specific advice and guidance on exports etc[165].

> ***A digital SME based in a West Midlands city has made a conscious commitment to businesses in that city - "we're supporting a sense of civic pride by connecting and supporting other local businesses".***
>
> Source: Business interviewee

[163] Public and private non-profit services (either free of charge or at a fee which is well below 50 per cent of production costs), including public admin and defence, education, and health and social work.
[164] 'Local' means different things to different companies, and for some located close to the Midlands Engine boundary, this could include areas outside of the Midlands.
[165] Black Country Consortium (2018) West Midlands Industrial Strategy Sector Evidence Full Pack; Also, City-REDI et al. (2018) An investigation into the foundations of productivity for business, professional and financial services in the West Midlands Combined Authority Area – for the Productivity and Skills Commission.

7.11 There is also **qualitative evidence of strong manufacturing supply chain relationships** in the Midlands (even though this does not appear in the East-West Midlands trade data above). Examples from our business consultations included: rail sector supply chains within the West Midlands; automotives, which is perceived as being well connected in "corridors", e.g. one of the global advanced manufacturing firms consulted in the East Midlands estimated that c.30% of inputs – primarily physical components - are sourced from the Midlands; energy manufacture, e.g. another global firm stated that 46% of UK inputs are sourced from the Midlands, of which nearly one-third are very localised; and aerospace supply chains, which is "well connected, with a long-term order book". Many of the LEP documents reviewed refer to connections between their businesses and the Midlands' automotive supply chain and, for example, the West Midlands Combined Authority area reportedly has the "deepest and most diverse" automotive supply chain in the UK[166] .

7.12 However, the qualitative research also indicates that:

- **Supply chains are typically *within* the East or West Midlands** - rather than routinely operating at a pan-Midlands level – primarily because of poor transport links (a view from business representative organisations). This may explain the lack of manufacturing-related trade relationships between the East/West regions in the data above.
- For some businesses consulted, spatial proximity is not the key driver, and the choice of suppliers is based on price, quality – and in some instances – where the Midlands does not have the capability to supply a product at all. For example, consultees indicated that they import highly specialised materials because they are only available from a small number of suppliers globally, such as the raw materials used by a health/life sciences company to produce their products for global export. A small number of other firms consulted raised concerns with the capacity, reliability and quality of some suppliers in the region. This issue was also highlighted in the literature, for example in the West Midlands where "too many major West Midlands businesses are reliant on foreign located supply chains, often because local businesses cannot meet their quality standards"[167].

  An international financial services firm in the West Midlands is "fairly agnostic about spatial proximity of supply chain." Suppliers are nationally sourced to deliver the best price/ quality ratio.

  Source: Business interviewee

- **Company structure also influences the geography of some supply chains**. Whilst a centralised procurement model offers economies of scale for firms with operations at a national/international level, this may also 'bind' the operations in the Midlands into a much wider global supply chain network that is determined by parent companies (elsewhere in the UK or overseas). With its presence of large multinational manufacturing firms, the Midlands is perhaps more exposed to this than elsewhere in the UK.

[166] Black Country Consortium (2018) West Midlands Industrial Strategy Sector Evidence Full Pack
[167] For example, as documented in West Midlands Combined Authority (2016) Strategic Economic Plan, Making Our Mark: The West Midlands, the best region in the UK to do business

7.13 Of the business consultees able to offer a view, around half thought that more could be done to strengthen Midlands-based supply chains[168]. Suggestions are summarised in the table below.

Table 7.2: Business views on opportunities to strengthen supply chain relationships

- Greater collaboration between suppliers so that they can provide an integrated solution to an Original Equipment Manufacturer (OEM), instead of disconnected components. Collaborations between SMEs and Universities/Research and Technology Organisations (RTOs) would also strengthen the capabilities of suppliers.
- Improved access to finance – two firms reported that they were prevented from using local suppliers as the suppliers couldn't access sufficient finance to scale their production up to meet the needs of the consultee firm.
- Two business representative organisations noted that improving transport links between the East and West Midlands would encourage more firms to take a pan-regional approach to their supply chains.
- Three firms from different industries noted that having a wider and deeper business base in the Midlands would allow them to use more local suppliers. This related to improving current negative perceptions of the reliability of some existing suppliers, and also developing new capabilities in the Midlands to meet the needs of those firms higher-up the supply chain
- A business representative organisation and small number of businesses suggested that supply chains could be supported to operate across sectors and/or within adjacent sectors as technologies and market opportunities converge.
- One firm stated that a local government commitment to use local suppliers would help to strengthen the supply chain.

Source: SQW; IER Evidence Paper – A Synthesis of Business Perspectives

Innovation and R&D

7.14 The focus of the business interviews for the IER was predominantly on innovative businesses in the Midlands' key sectors. Encouragingly, around 60% of respondents[169] reportedly conduct collaborative innovation/R&D with universities and/or RTOs. Almost all of these did so **with partners in the Midlands**. Many of these were advanced manufacturing and engineering firms (including those within the transport, chemicals, food and the life science sectors) with strong relationships with the High Value Manufacturing Catapult (HVMC) centres in the Midlands, Warwick Manufacturing Group (WMG), and the Manufacturing Technology Centre (MTC) as well as collaborations with the universities of Birmingham, Keele, Leicester, Loughborough, Nottingham and Nottingham Trent. Some of these firms collaborate with Midlands-based institutions specifically because they were deemed to be 'best in class', whereas other relationships were driven by spatial proximity (rather than the Midlands providing a particularly unique offer).

[168] 18 respondents thought supply chain relationships could be strengthened in the Midlands, and 19 thought there was not an opportunity to strengthen supply chains (either because they already have a strong local supply chain or because inputs were so specialised and only available in a very small number of places globally).
[169] 26 businesses, note that responses from business representative organisations were not included in this question

7.15 **Perspectives on whether spatial proximity matters were mixed**. Although the sample size is small (so caution is needed when interpreting these results), all scales of firm consulted - micro, SME and large - were more likely to collaborate on innovation with partners within the Midlands than partners outside the region, and micro businesses were more likely than large firms to collaborate with partners based in the Midlands. Spatial proximity was considered crucial for graduate recruitment and in building lasting personal relationships and partnerships. For some, proximity also mattered from a practical point of view, facilitating partner site visits and accelerating the R&D process (e.g. the importance of access to clinicians and patients in the context of life sciences or in iterative product development phases within advanced manufacturing and engineering). That said, over half of the businesses consulted who engaged in R&D claimed that spatial proximity was not important for innovation. The reason – across all business scales and sectors – was that businesses want to collaborate with 'the best' partners, regardless of where they are located. In determining 'the best', the expertise of key individuals, the track record of specific institutions, and the quality/specialisation of facilities/equipment available were all reported as being highly relevant.

7.16 As discussed in Section 4, there is evidence to suggest that the Midlands innovation assets are not as joined up as they could be, and the businesses consulted highlighted challenges in collaborating to innovate and accessing the region's expertise. Businesses' suggestions on how these issues impacted on their operations focused on two areas:

- Businesses identified a lack of knowledge about the specialisms of the different Midlands universities, and how to access this. Some suggested mapping the core competencies of the region's universities, creating a centralised online portal of university specialisms and holding a yearly "Cambridge University style" science festival to facilitate networking opportunities.
- Businesses also commented on the need to change attitudes towards collaborative R&D and particularly commercialisation at some universities, which can influence the pace and focus of R&D activities and IP negotiations.

7.17 Challenges associated with business-academic collaboration/R&D are not unique to institutions in the Midlands, but if the Midlands was (comparatively more) successful in addressing these "coherence" issues, the region could build its reputation for being one of the best places in the UK for open innovation.

8. RATIONALE FOR A PAN-MIDLANDS APPROACH

8.1 The first phase of research for the IER, which focused on the existing evidence base, found limited material on the rationale for pan-regional intervention in the context of economic development and accelerating productivity growth. To address this gap, the second phase of research included a 'deep dive' review into *"What functions or activities does it make sense to discharge at the pan-regional level of the Midlands Engine? "*

8.2 This Section provides a synopsis of this deep dive exercise and its key findings. First, the research team outlines the concept of the Midlands Engine as a pan-region between the regional and national scales. Following this, the authors detail the geography of the Midlands[170], setting out its spatial and economic development, highlighting its polycentric nature. The final section considers the links between functions and activities at different geographical scales and informed by the available evidence, sets out which might be most appropriate at the Midlands Engine level[171]. A more detailed discussion on the topic is available in the supporting evidence paper[172]. The material primarily draws on academic literature but, where appropriate, we also highlight views from the business consultations and Local Area Profiles on the value of a pan-Midlands approach. Note that as part of the deep dive into "functions", the reviewers have intentionally not sought to cover issues associated with delivery "form" except for the key issue of spatial level.

[170] While the primary focus is on the Midlands Engine geography, when discussing the Midlands in historical context in some instances the NUTS 1 region definitions of the West Midlands and East Midlands are used. The latter includes Northamptonshire and Rutland.
[171] The views expressed are those of the authors and do not represent the views or policy of the Midlands Engine Partnership or its constituent organisations.
[172] Green, A.E. and Rossiter, W (2019) Geographical scales and functions: the case of the Midlands Engine, Midlands Engine Economic Observatory

Key messages

- Drawing primarily on academic literature, the deep dive research found that there is a rationale for pan-Midlands intervention in terms of:

    - ➜ Advocacy, identity and promotion: developing and delivering a coherent, compelling and consistent set of messages about the Midlands – both internally and externally
    - ➜ Genuinely strategic and evidence-based decision-making and evaluation that cuts across policy domains
    - ➜ Science and innovation: co-ordination, joining-up agendas, prioritisation and making the case for investment
    - ➜ Internationalisation, including inward investment and international business more broadly
    - ➜ Infrastructure (inter-regional and intra-regional transport, digital connectivity, utilities, energy): planning, co-ordination and making the case for investment across administrative boundaries and ensuring that provision is aligned with functional economies
    - ➜ Some elements of business finance, notably venture capital/investment fund schemes that require more specialist (fund management) expertise and scale
    - ➜ Skills advocacy, especially creating the conditions to attract/retain young talent, addressing key sector shortages, leadership and management

- This is broadly consistent with the feedback from business, where it was felt that there is scope to add value at the pan-Midlands level in terms of transport, supply chains, finance, innovation, skills shortages in key sectors, and developing/communicating a unified identity/voice for the Midlands. Many of these themes were also evident in the Local Area Profiles, e.g. transport and digital infrastructure, the devolution of funding and finance to the Midlands, and energy supply.

- In any debate on the role of pan-Midlands activity, it is important to recognise the levers/powers available at each spatial level, and ensure clarity and agreement on the functional division of responsibilities and how Government "tiers" work together as part of an integrated economic system.

The Midlands Engine as a pan-region

8.3 In the context of the Northern Powerhouse, the central idea of a pan-region is to provide a counterbalance to London[173]. This pan-regional scale is considered appropriate to drive growth, based on the argument that the national scale is too large and Local Enterprise Partnership (LEP) level geographies are too small[174]. The Northern Powerhouse is considered both a brand and a strategy[173], and it is argued the same can be said for the Midlands Engine[175].

8.4 Policy areas benefitting from co-ordination at a pan-regional scale include transport, infrastructure, science and innovation and productivity[176,]. Investments in transport to improve connectivity are seen as one way of achieving agglomeration[177, 178], while science and innovation are seen as key success factors for regional economies[179]. However, in the light of the lack of executive functions held at a pan-regional scale, Bentley (2018) suggests that rather than representing a re-territorialisation of policy making, the pan-regional Midlands Engine scale represents a delegation of the administration of national policy to the meso-scale[175].

8.5 Decentralisation (including devolution – i.e. the transfer of power and control from national to sub-national level) is a further ingredient in the establishment of pan-regions such as the Midlands Engine. Decentralisation has been advocated as a way of improving economic performance on the grounds that decisions may be made closer to the businesses and people that they affect and as a result they may be more sensitive to an in-depth understanding of regional/local economic potential and other place-specific factors[180].

[173] Lee, N. (2017) 'Powerhouse of cards? Understanding the 'Northern Powerhouse', Regional Studies 51 (3), 478-489.
[174] Cox. E. (2017) 'Scale matters: making industrial strategy more than the sum of its parts, IPPR blog, https://www.ippr.org/blog/scale-matters-making-industrial-strategy-more-than-the-sum-of-its-parts (accessed 5 September 2019)
[175] Bentley, G. (2018) 'Territory, policy and governance at meso-scale? The Midlands Engine', in 'Place-Based Perspectives on the UK Industrial Strategy', Institute for Policy Research Policy Brief, University of Bath.
[176] Sandford, M. (2014) Devolution to local government in England, House of Commons Library Note SN/PC/07029.
[177] HMT (2007) The Sub-national Review of Economic Development and Regeneration. HMSO, London.
[178] Bentley, G. (2018) 'Territory, policy and governance at meso-scale? The Midlands Engine', in 'Place-Based Perspectives on the UK Industrial Strategy', Institute for Policy Research Policy Brief, University of Bath.
[179] Lee, N. (2017) 'Powerhouse of cards? Understanding the 'Northern Powerhouse', Regional Studies 51 (3), 478-489.
[180] Pike, A., Kempton, L., MacKinnon, D., O'Brien, P. and Tomaney, J. (2019a) Submission to HCLG Select Committee Inquiry on Progress on Devolution in England, CURDS, University of Sandford, M. (2014) Devolution to local government in England, House of Commons Library Note SN/PC/07029.

The spatial and economic development of the Midlands

8.6 The Midlands Engine has a relatively open configuration in that it is relatively unconstrained by physical boundaries. In consequence, development to the north and south of the region, in particular, is influenced by major centres of economic activity located outside of its own boundaries – such as Sheffield and Manchester in the north, Peterborough to the south east and Oxford and Milton Keynes and Northampton in the south, as well as those in the region.

8.7 The spatial economy of the Midlands is essentially polycentric in character (as discussed further below), but the nature of this polycentricity is by no means uniform across the pan-region. It is an asymmetrical form of polycentrism that sees the West dominated by the Greater Birmingham conurbation, while the East comprises a network of historic county towns that became cities of modest size through the twin processes of industrialisation and urbanisation during the nineteenth century.

8.8 This in turn raises an interesting question as to what form of governance is appropriate to a region with these characteristics and also the functions that it may be appropriate to discharge at the larger pan-regional scale of the Midlands.

8.9 It is also worth noting the historical governance arrangements in the region, with Government Offices for the East and West between 1994 and 2011[181] and ongoing significance for statistical purposes, which has left a strong legacy in terms of identity and economic functions. Today, complex layers of governance operate across the Midlands, with 64 Local Authority Districts, nine LEPs and the West Midlands Combined Authority with additional devolved powers (but an absence of Combined Authorities in the East Midlands), as well as pan-Midlands sector bodies such as Made in the Midlands and the Midlands Aerospace Alliance, and the Midlands Innovation and Midlands Enterprise Universities.

Implications of polycentricity in the Midlands

8.10 The Midlands can be described as an 'asymmetrical polycentric region' reflecting the fact that the population and economic activity is dispersed across a number of significant centres. But the term polycentricity also has a functional meaning in referring to a model of regional development in which a number of linked, but physically separate economic centres complement each other through specialising in different areas of economic activity or service provision[182,183] . A key test of functional polycentricity relates to the level of interaction evident between the centres in such a region.

8.11 Evidence as to how far the Midlands fits a definition of a functionally polycentric region is somewhat mixed. It is clearly an area within which there are multiple centres. How far these centres interact and complement each other in terms of the functions that they provide is more debatable. There is some evidence that Nottingham and Derby have specialised to a degree – Derby focussing on manufacturing linked to transport, while Nottingham has become more services orientated. However, whether the nature and strength of interactions between different cities is sufficient to be regarded as an example of functional polycentricity is more debatable.

[181] With similar permutations in the Midlands prior to 1994
[182] Parr, J. (2004) The Polycentric Region: A closer inspection, Regional Studies volume 38 issue 3.
[183] Parr, J. (2014) The Regional Economy, Spatial Structure and Regional Urban Systems, Regional Studies, volume 48 number 12, 1926-1938

8.12 As a model of regional development, the polycentric urban region has excited interest in academic and policy circles because it would appear to offer the potential economic advantages associated with agglomeration without the disadvantages associated with congestion that are often experienced in large conurbations[184]. As an approach to regional development, the polycentric model emphasises the importance of providing/planning for the kind of good infrastructure that can facilitate the development of spatial divisions of labour and complementarities between neighbouring centres. This in turn raises the fundamental question about the appropriate governance model for a region with polycentric characteristics.

Boundaries, governance and jurisdiction design

8.13 In the UK, debates about the optimal scale of jurisdictions have tended to focus on the related spheres of devolution, regional policy and local government. Drawing on the international political science literature, it is possible to discern two alternative orientations to jurisdictional design: an instrumentalist approach and a communitarian perspective[185]. The former is concerned with balancing territorial heterogeneity with administrative efficiencies that are often associated with scale. The latter tends to emphasise questions of community or territorial identity.

8.14 The move away from regions and towards LEPs as vehicles for promoting economic development after 2010 can be seen as a shift away from an instrumental towards a more communitarian approach to jurisdictional design.

8.15 There are three questions about the role and spatial extent of different jurisdictions:

- To what extent should boundaries reflect 'functional economic' or other areas?
- What fundamentally is the role of local or regional institutions (and their relationship with Whitehall) – are they agents of central government or autonomous authorities responsible to their populace?
- What is the optimal relationship (or fit) between spatial scale and functional competence to be delegated?

8.16 None of these questions have been resolved. As a result, they have tended to resurface periodically – sometimes in the context of a royal commission or similar enquiry – and more recently in the move to largely city-regional 'devo-deals' in England.

8.17 The recent policy discourse of devolution in England has been dominated by the related concepts of localism and city regionalism. It has also been framed by a general concern about the excessive centralism characteristic of the British state[186]. Since the abolition of the regional tier in England after the 2010 General Election, the regional scale has faded from the debate, although a knowledge and assessment of functions and activities undertaken by Regional Development Agencies (RDAs) that operated at this scale provides insights into the types of functions that can be undertaken at different spatial scales. Irrespective of the policy domain or service under consideration, the structural options for governance/management would now seem to be local or national.

[184] Coombes, M., Charles, D., Raybould, S. and Wymer, C. (2005) City Regions and Polycentricity: The East Midlands urban network, EMDA, Nottingham.
[185] Hooghe, L. & Marks, G. (2016) Community, Scale, and Regional Governance: A Postfunctionalist Theory of Governance, Volume 2, Oxford University Press, London.
[186] McCann, P. (2016) The UK Regional–National Economic Problem, Routledge, London.

Links between functions/activities at different geographical scales

8.18 So, what are the strategic policy concerns that are appropriately addressed at pan-regional scale? In general, these are likely to relate to policy domains for which the relevant spatial scale is larger than the coverage of individual local authorities or LEPs, but smaller than the national scale. Transport, strategic infrastructure and utilities, economic development, and some aspects of innovation policy could all be seen as strong candidates. These tend to be characterised by significant scale (and capital requirements) to support investment, or obvious benefits associated with economies of scale/efficiencies of administration, and/or the need to plan in order to meet the needs of large/multiple areas. It is not coincidental that these policy domains have been the focus of Combined Authorities in Greater Manchester and the West Midlands (based on Greater Birmingham).

8.19 Even before the abolition of the RDAs, a major comparative study of the nature and extent of regional devolution in 42 nations noted the modest extent of devolution to the then UK regions. In this research, two tiers of regional government emerged as the most common configuration. A key point of difference for the UK that influences this outcome is the relative lack of powers and particularly fiscal autonomy enjoyed by the regional or sub-regional tier. This explains the characterisation by some of devolution to pan-regional areas like the Northern Powerhouse and Midlands Engine as a form of administrative devolution of national policy implementation[175] – in contrast to more meaningful forms of executive and fiscal devolution evident in many other nations at the regional and sub-regional scale.

8.20 A further point of difference when comparing the nature and extent of devolved powers in England and the wider UK to that enjoyed by sub-national tiers of government internationally, is the inconsistent and ad hoc nature of devolution in the UK. This is evident for the devolved nations of the UK and when the powers of ostensibly similar forms of sub-national government are compared.

Fit between geography and function

8.21 When considering appropriate geographical scales for discharging different functions and activities there are a range of concepts and issues to consider. One key such concept is **subsidiarity** – i.e. the principle that social and political issues should be dealt with at the most immediate (or local) level that is consistent with their resolution. Another is **additionality** – which is concerned with how working at a pan-regional scale (or other broader geographical scale) can add value to activities at finer scales of geographical disaggregation (e.g. through co-ordination of activities, advocacy, etc.). The Midlands Engine Vision for Growth (2017) places additionality (i.e. generating added value for collaboration) at the heart of the role of Midlands Engine activity at the pan-regional scale and identified connectivity, investing in strategic infrastructure, growing international trade and investment, increasing innovation and enterprise, and shaping great places as priority activities at the pan-regional scale.

8.22 Four key questions posed by Cheshire (2007) capture some of these concepts and are of relevance here when considering the fit between policies/ functions and geographical scales[187]:

- Do conditions vary across space in ways that mean there is a plausible case for local tailoring of policies to regional/ local circumstances?
- Are there likely to be spillovers at particular spatial scales that ought to be considered?
- Are there economies of scale or scope affecting the policy issue in question that need to be taken into account?
- Are there synergies or co-ordination challenges within and between policies and functions such that they should be examined together at one or more spatial scales so that complementarities are achieved?

8.23 While there might be an 'ideal' geographical scale at which a particular function should be discharged, in practice, **pragmatic considerations** (taking into account institutional structures and capacity at different scales) and **governance issues (**including facilitation and challenging roles) play a part. The **responsibilities** of actors and different geographical scales, the extent of fiscal autonomy and the **levers** (including financial resources) they have available to them at different geographical scales are key factors here.

8.24 Based on the evidence reviewed for this IER, the research team has **suggested appropriate geographical scales for discharging different functions and activities across a range of policy domains**[188]. This is summarised in Table 8.1. Please note, inevitably the process for determined geographical scales is interpretive, and the functions/scales presented here are not designed to be definitive or exhaustive. Rather it is intended to stimulate an informed discussion and debate about the appropriate focus of Midlands Engine activity over the coming years. A more detailed discussion is available in Annex E.

[187] Cheshire, P. (2007) Optimal areas for planning, local economic development and transportation, LSE.
[188] There may be some activities (e.g. engagement with individuals furthest from the labour market) which are appropriate to undertake at finer levels of geographical disaggregation (e.g. the ward or neighbourhood scale) but these levels are not considered here. The national and neighbourhood scales are omitted in the interest of clarity.

Table 8.1: Scales and functions

Scale →	**Pan-regional** (i.e. the scale at which the Midlands Engine operates)	**Regional** (i.e. NUTS 1 regional scale, at which RDAs operated previously)	**Sub-regional** (incl. LEPs, Combined Authorities, Chambers of Commerce, etc)	**Local** (i.e. the local authority scale)
Function ↓				
Advocacy	Skills Innovation Transport Enterprise Internationalisation Digital infrastruc-ture Environment	Skills Innovation Transport Enterprise Internationalisation Digital infrastructure Environment	Digital Infrastructure	Digital infrastructure
Strategic Planning	Innovation Transport Enterprise Internationalisation Digital infrastructure Environment	Innovation Transport Enterprise Internationalisation Digital infrastructure Environment	Skills Enterprise Digital infrastructure Environment	
Delivery	Innovation Enterprise – supply chain development/ investment funds Internationalisation Digital infrastructure Environment	Innovation Transport Enterprise – supply chain development / investment funds Internationalisation Digital infrastructure Environment	Transport Enterprise- generic business support/ Enterprise Zones Internationalisation Digital infrastructure Environment	Skills Transport Enterprise – generic business support/ Enterprise Zones Internationalisation Digital infrastructure Environment

Source: NTU and City-Redi Evidence Paper entitled "Geographical scales and functions: the case of the Midlands Engine"

8.25 In populating this table, the researchers have sought to apply the principles of subsidiarity and additionality noted above, but also consider:

- the availability of levers to genuinely influence outcomes at different spatial scales
- the spatial extent/nature of the phenomena to be addressed
- the existing locus of strategic decision making and delivery responsibilities in different domains[189]
- evidence compiled as part of the wider Midlands Engine IER process (including business interviews) and the wider literature
- reflection on their collective experience of researching and working in regional economic development in the Midlands at a variety of geographical scales and across various locations.

8.26 The key messages emerging from the overall assessment of the functions and activities are as follows:

- For most of the functions identified there is a role for **advocacy** – and to some extent for **strategy development** also - at the pan-regional level. There is also a role here for **collecting and sharing good practice**. There is a limited role for delivery at the pan-regional scale.
- The pan-regional scale seems particularly appropriate for functions and activities related to **specialist science and innovation investments, digital infrastructure**, (some elements of) **business finance, internationalisation** – including inward investment, strategic inter-regional (and intra-regional) **transport infrastructure, strategic spatial planning and energy.**

8.27 There are also grounds for suggesting that the pan-regional scale may be an appropriate level at which to develop strategic capabilities that can support evidence-based decision making, planning, programme and project design at other spatial scales. These capabilities may relate to research, evaluation and analytical functions that can be hard to provide at lower spatial scales dues to the specialist skills involved, the need for 'critical mass' and coordination if duplication is to be avoided. These activities cut across the policy domains presented in Table 8.1.

8.28 These findings are broadly consistent with feedback from the business interviews undertaken as part of the IER, which found:

- backing for interventions around strategic transport at the Midlands Engine level
- a case for pan-regional initiatives to support supply chains at this scale, to strengthen innovation/R&D relationships, and to ensure finance is available/accessible for businesses
- scope for a pan-Midlands approach to add value in terms of common skills issues relating to skills shortages in key sectors and the retention/attraction of talent (linked to perceptions of the Midlands as a place to live and work)
- the need for an ambitious pan-Midlands approach to creating and communicating a unified identity and vision/voice for the Midlands – both nationally and internationally.

8.29 Many of these themes were also evident in the Local Area Profiles, where LEPs supported a case for pan-Midlands collaboration on issues such as transport and digital infrastructure, the devolution of funding and finance to the Midlands, and energy supply.

[189] It should be noted that it is possible that these may change over time.

Conclusions

8.30 In the Midlands, there have been contrasting patterns of spatial economic development between the West Midlands and the East Midlands, with the Greater Birmingham conurbation dominating in the former in the way that no single city does in the latter. The boundaries of the Midlands Engine pan-region are not distinctive in physical terms, while economically major cities outside the region (e.g. Sheffield, Northampton[190] and Milton Keynes) also exert an important influence. Rather the Midlands may be characterised as displaying **asymmetrical polycentricity** where, to maximise agglomeration economies and spillovers, **good infrastructure is required** to take advantage of the specialisation and complementarities of local areas.

8.31 The degree to which administrative units conform to functional economic geographies varies. Questions about the role and spatial extent of different jurisdictions are not fully resolved. Where England is relatively distinctive (in international comparative terms at the current time) is in the lack of a regional tier of government and the **limited range of levers available at local level**. The devolution agenda is important here in terms of gaining greater powers at sub-national level. International experience also shows how different sub-national areal units come together in different ways for different purposes in patterns of networked governance. However, this requires capacity and resource for effective operation. England is also distinctive in the **lack of fiscal autonomy** enjoyed by the sub-national/local tier of government.

8.32 In terms of the fit between geographical scale and function, there is no single 'right answer' as such. There are, however, important principles that should be considered when determining the appropriate spatial levels at which to discharge particular functions or activities. These principles lead to the conclusion that issues such as **strategic intra-(and inter-)regional transport development, investments in digital infrastructure, specialist science and innovation investments, strategic business finance and international issues** (such as inward investment) are important functions amenable to intervention at the pan-regional Midlands Engine level. In other functional domains (such as skills) the pan-regional scale can be important for **advocacy and sharing good practice** – especially regarding common issues, but most delivery and planning is more appropriately focused at sub-regional and local levels.

8.33 Finally, in the context of any form of multi-level governance arrangement, it is important to recognise that the manner in which different tiers of government work together is as important as the nature of any functional division of labour between them. Indeed, the trailing of new devolution measures in the Queen's Speech of October 2019 suggests that clarity over an agreed division of responsibility between the Midlands Engine, West Midlands Combined Authority, LEPs, Local Authorities and other stakeholders in the Midlands should be regarded as an essential prerequisite if the pan-region is to respond quickly to opportunities for new strategic investments as and when they arise and to access and deploy new devolved powers should they become available. Having a clear and ambitious shared vision for the Midlands economy should be the cornerstone of any growth agenda.

[190] The former Northamptonshire LEP merged with the South East Midlands LEP and Northamptonshire lies outside the Midlands Engine area.

9. FUTURE GROWTH PROSPECTS

9.1 This Section looks at the future prospects for the Midlands Engine area[191] and its constituent LEP-level economies. To start, a baseline forecast to 2030 is presented which has been formulated by Cambridge Econometrics (CE). Then, a transformational scenario is calculated, based on a mix of what the overall Midlands productivity would look like if it was to close the gap with the rest of the UK, combined with the LEPs' own strategies and sectoral ambitions.

Key messages

- According to baseline projections the Midlands Engine economy is expected to experience relatively stable growth in the future, with performance in line with peer areas and the national average.
- Though this pattern of growth will vary both spatially and sectorally, broadly speaking, all parts of the Midlands Engine economy are expected to see continued positive momentum.
- However, critical gaps and underperformance will remain, whether benchmarked against peers or historic trends. A transformational scenario has therefore been developed, which envisages a step change in the Midlands Engine economy.
- Though highly ambitious and stretching, it is not without precedent, with the scenario informed by local policy aspirations and expected interventions. However, it only outlines what this transformational change might look like, not necessarily how it is delivered.
- Sector growth opportunities have therefore been identified, the unlocking of which will require key interventions and actions around the broad drivers of productivity (as outlined in Section 5), both within and across sectors.
- To supplement our quantitative understanding of what is required to put the Midlands Engine economy on a transformational growth path, stakeholder interviews have also been undertaken.
- **Ultimately, delivering this transformational level of change for the Midlands Engine would be significant for the Midlands and the wider UK – generating a GVA uplift of £73.3bn and creating a transformational 334,000 jobs.**

[191] For the scenarios, the Midlands Engine area is defined as the 9 LEP areas less overlap.

Baseline projections

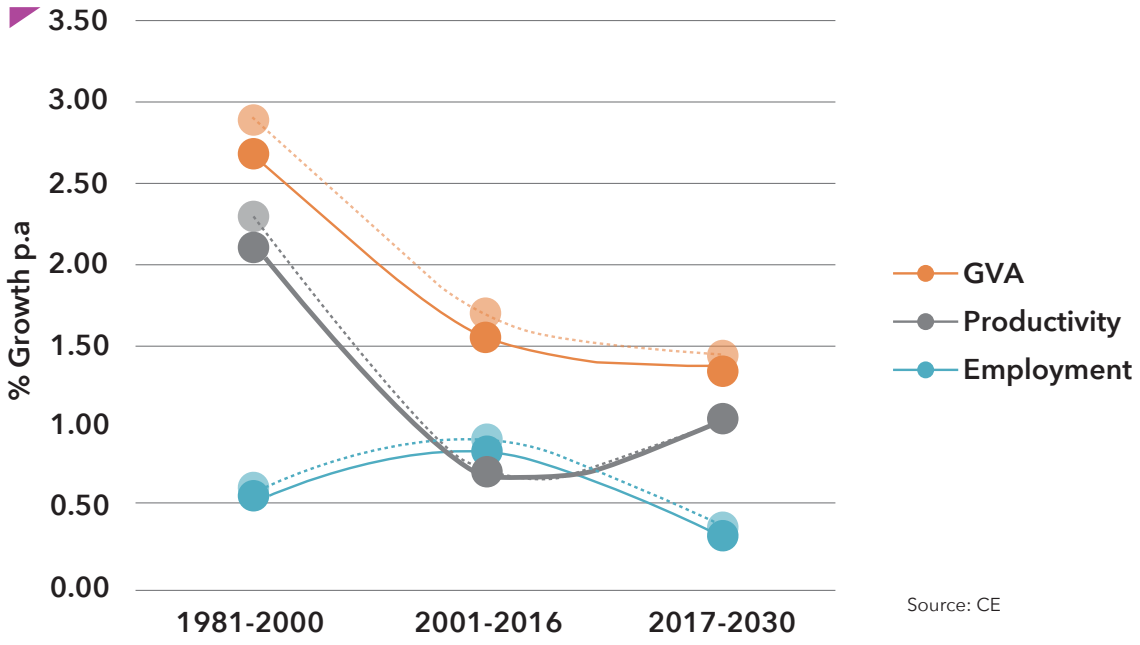
9.2 The local area projections are consistent with CE's forecast for the regions and nations of the UK. These have been developed by using CE's Multi-Sectoral Dynamic Model (MDM-E3) of the UK economy, published in June 2019. At the regional level, the most recently available data corresponds to 2017, which is therefore the 'baseline' of the projections.

This particular forecast is based on the historical growth in the local area[192] relative to the region or UK (depending on which area it has the strongest relationship with), on a sector-by-sector basis (see Annex D for a full list of sectors). They assume that those relationships continue into the future. Thus, if a sector in the local area outperformed the sector in the region (or UK) as a whole in the past, then it will be assumed to do so in the future. Similarly, if it underperformed the region (or UK) in the past then it will be assumed to underperform the region (or UK) in the future.

Headline findings from the baseline projections

Midlands Engine

Figure 9.1: Midlands Engine (bold) and UK (shaded) past and projected employment, GVA and productivity growth



Source: CE

[192] CE maintain and develop a highly disaggregated database of employment and GVA projections by 45 sectors for all unitary authorities and local authority districts in Great Britain.

9.3 The Midlands Engine is expected to see a stable pattern of growth emerge over the 2017-30 forecast period. As Figure 9.1 highlights, growth across key indicators such as GVA, productivity and employment are expected to remain positive and generally in line the national average, but at a lower level than that experienced over preceding economic cycles. Table 9.1 provides a sectoral overview of growth over the 2017-30 period.

Figure 9.1: GVA, employment and productivity by sector in the Midlands Engine, 2017-30

	Employment		GVA		Productivity	
	2017 (000's)	2017-30 (%p.a.)	2017 (£2016m)	2017-30 (%p.a.)	2017 (£2016)	2017-30 (%p.a.)
Agriculture, forestry & fishing	66	0.5	1,741	0.7	26394	0.2
Mining & quarrying	5	0.3	665	-1.7	123111	-2.0
Manufacturing	608	-0.5	38186	1.1	62845	1.6
Electricity, gas & water	71	0.0	8,684	0.2	122972	0.2
Construction	324	1.5	15,357	1.3	47459	-0.3
Distribution	840	-0.2	28,205	1.6	33576	1.8
Transport & storage	298	0.6	10,625	1.5	35607	1.0
Accommodation & food services	338	1.0	6900	2.3	20414	1.3
Information & communications	149	-0.7	8,822	2.0	59314	2.7
Financial & business services	983	0.6	41,009	1.2	41736	0.6
Government services	1,330	0.3	44,320	1.5	33326	1.2
Other services	283	0.3	10,029	0.4	35471	0.2
Midlands total	**5,294**	**0.3**	**233,540**	**1.4**	**44,118**	**1.0**

Source: CE

9.4 Employment is expected to increase by some 226,200 jobs over 2017-30 (0.3% p.a.), slightly slower than that across the UK as a whole (0.4% p.a.) (see Table 9.1). Construction (1.5% p.a.) and accommodation & food services (1.0% p.a.) are expected to be key drivers of this growth, supported by large employment increases in financial & business services and Government services, two of the area's largest sectors in employment terms. At the same time, total employment growth in the Midlands Engine is dampened by an expected decline in employment in manufacturing, distribution and information & communications.

9.5 GVA is expected to increase by 1.4% p.a. over 2017-30, slightly slower than the UK average of 1.5% p.a. over the same period. Over this period, the Midlands Engine is expected to account for 12% of the UK's economic growth. Growth will be driven by accommodation & food services and information & communications, which are expected to grow by 2.3% p.a. and 2.0% p.a. respectively. As with employment, expected GVA growth in financial & business services and Government services also underpins total GVA growth.

9.6 Modest productivity growth in line with the national average of 1.0% p.a. is expected over 2017-30, with the area expecting to see stronger GVA growth than employment growth. The main driver of productivity growth is expected to come from information & communications, which could see 2.7% p.a. growth in productivity over 2017-30. Manufacturing (1.6% p.a.), distribution (1.8%) and accommodation & food services (1.3%) are also expected to see productivity improvements faster than the whole economy average.

9.7 As Figure 6.1 reiterates, the performance of the Midlands Engine economy is expected to lag that of historic trends. In particular, it is likely productivity growth to 2030 will remain subdued at half the pace recorded between 1981 and 2000. There is also the continued challenge of keeping pace with the wider UK economy, compared to whom it has historically underperformed. Baseline projections do not indicate a substantial shift in this relationship, though positively the Midlands Engine is expected to see consistent productivity growth in line with the UK average.

LEP-level performance

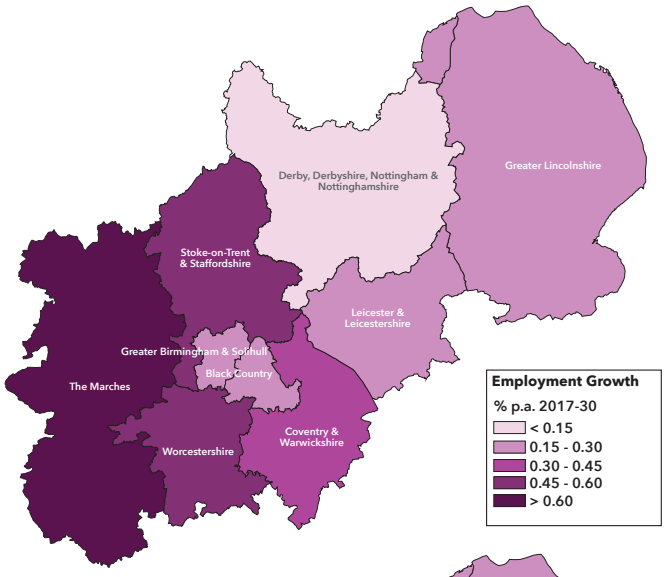
9.8 These headline projections can be broken down by Local Enterprise Partnership (LEP) to see how different areas within the Midlands Engine are expected to perform over the forecast period. Figure 6.2 shows the baseline employment, GVA and productivity projections by LEP area, whilst Table 6.2 highlights the accompanying data.

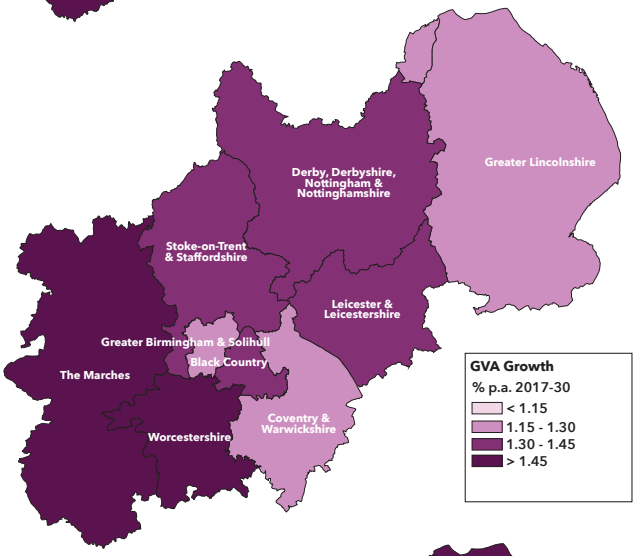
9.9 In terms of employment, The Marches is expected to see the strongest growth (0.7% p.a. over 2017-30), while D2N2 is projected to see the slowest growth (0.1% p.a.). This compares to employment growth of 0.3% p.a. across the Midlands Engine as a whole over the same period.

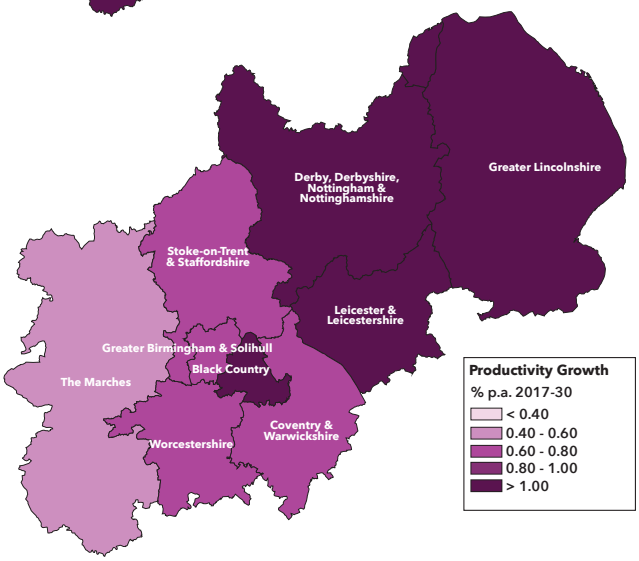
9.10 GVA growth, on the other hand, is projected to be quite similar across the Midlands Engine, with growth across all LEPs expected to be between 1.3-1.5% p.a. over 2017-30. Productivity growth is projected to be strongest in D2N2 and Leicester and Leicestershire LEPs (1.2% p.a. over 2017-30), slightly stronger than expected in the Midlands Engine as a whole (1.0% p.a.).

9.11 The Marches LEP is expected to have the weakest productivity growth across all LEPs (0.8% p.a. over 2017-30), with the LEP projected to see stronger employment growth than in the Midlands Engine as a whole.

Figure 9.2: Baseline employment, GVA and productivity projections (% growth p.a. 2017-30) by LEP







Source: CE

Table 9.2: GVA, employment and productivity by LEP, 2017-30

Source: CE

	Employment		GVA		Productivity	
	2017 (000's)	2017-30 (%p.a.)	2017 (£2016m)	2017-30 (%p.a.)	2017 (£2016)	2017-30 (%p.a.)
Black Country	512	0.3	21,346	1.3	41682	0.9
Coventry & Warwickshire	516	0.4	25,607	1.3	49629	0.9
Greater Birmingham & Solihull	1,053	0.4	50483	1.4	47957	0.9
D2N2	1,078	0.1	45,726	1.4	42436	1.2
Greater Lincolnshire	504	0.2	20,188	1.3	40075	1.1
Leicester & Leicestershire	529	0.2	24,491	1.4	46313	1.2
Stoke-on-Trent & Staffs	530	0.5	21,612	1.4	40741	1.0
The Marches	348	0.7	13879	1.5	39873	0.8
Worcestershire	306	0.5	13,098	1.5	42,841	1.0
Midlands total	5,294	0.3	233,540	1.4	44,118	1.0

Transformational scenario

9.12 The Midlands Engine has an aspiration for its level of productivity to equalise that of the UK (less-Midlands Engine i.e. the rest of the UK) by 2030. A transformational scenario which is consistent with local policy aspirations and interventions has been developed to reflect this aspiration.

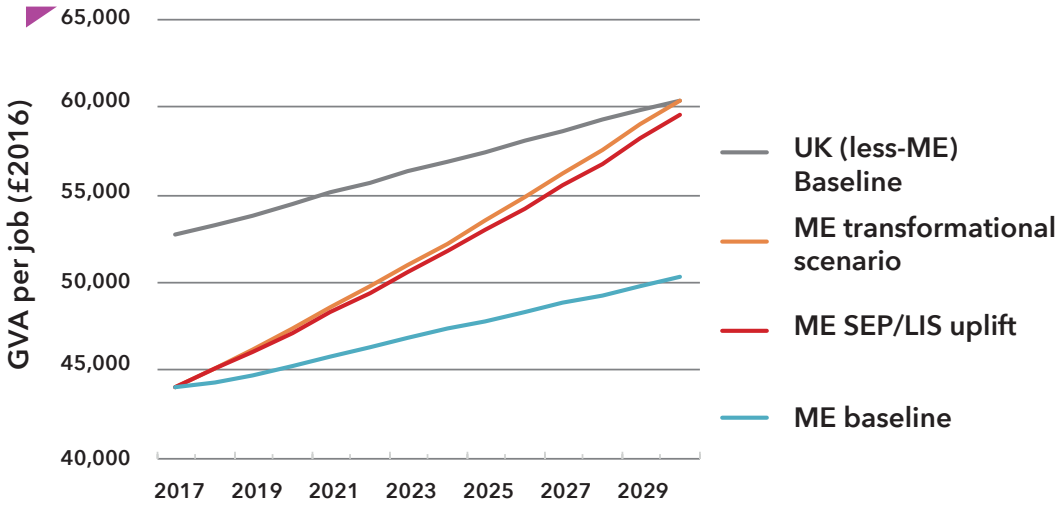
9.13 A bottom up approach has been taken to inform this transformational scenario, utilising the most recently available LEP strategy documents (specifically Strategic Economic Plans - SEPs - Local Industrial Strategies - LIS' - and local evidence reviews/reports) and their associated targets for GVA and job creation.

9.14 These targets are not applied to the scenario in a precise fashion (due to a number of issues, not least conflicting timeframes, different data sources/definitions/baselines/prices, boundary overlaps etc.), and instead act as a form of guidance in line with local policy aspirations and interventions. It is therefore the rate of aspirational growth outlined in the strategies - rather than the precise values - being considered.

9.15 As Figure 6.3 outlines, when applying this aspirational rate of jobs and GVA growth and extrapolating these trends out to 2030, the Midland Engines as a whole fails to equalize the UK (less-Midlands Engine) rate of productivity by 2030, though only marginally (by 1.4%.) Therefore, to ensure alignment with the headline Midlands Engine productivity target, a very small upward adjustment has been evenly applied to all LEP areas to eliminate this shortfall. This is also reflected in Figure 6.3.

Figure 9.3: Baseline and aspirational scenarios for productivity, 2017-2030

Source: CE



Headline findings from the transformational scenario

Midlands Engine

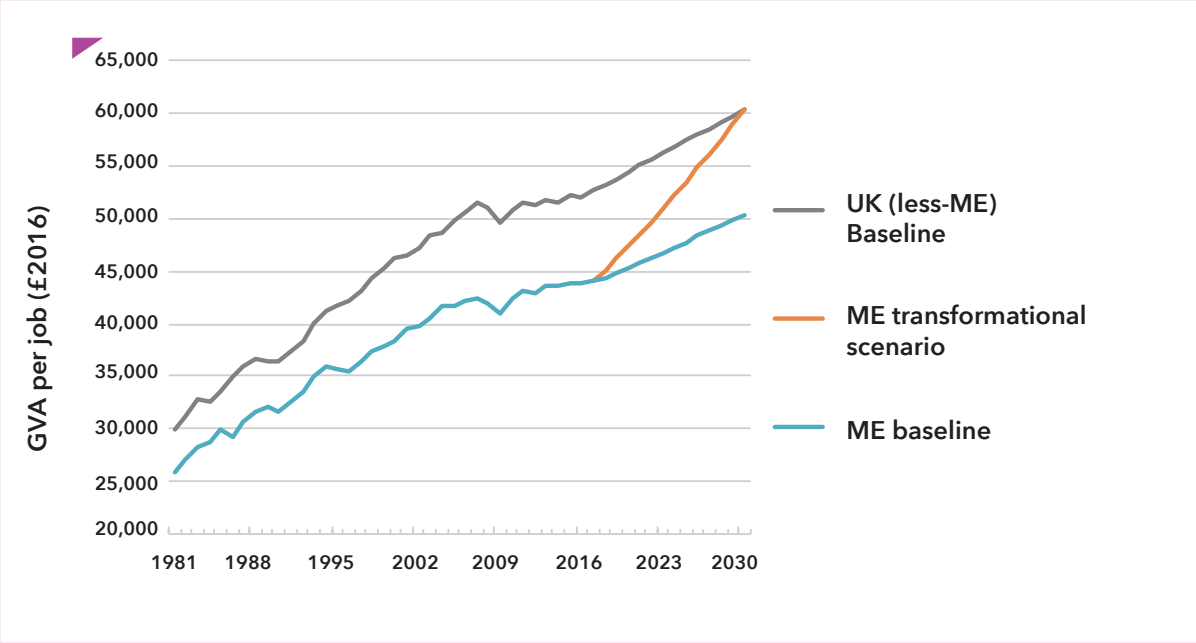
9.16 Table 6.3 and Figure 6.4 outline the scale of the uplift required by the transformational scenario compared to the baseline forecast and the UK (less-ME) average. To close the gap relative to the UK (less-ME) average (which, as of 2017 stands at 16%), productivity in the Midlands Engine must grow by 2.5% p.a. over the period 2017-30, which is over double (+1.5 pp) that of the baseline projection.

Table 9.3: Comparison of baseline and transformational scenarios, 2017-30

		Base year	Baseline projection	Trans-form-ational scenario	Baseline Growth Rate (%p.a.)	Trans-form-ational growth rate (%p.a.)
		2017	2030	2030	2017-30	2017-30
Employment (jobs, 000s)	Midlands Engine (ME)	5025	5245	5579	0.3	0.8
	UK (less-ME)	29786	31408	-	0.4	-
GVA (£2016m)	ME	221423	263772	337059	1.4	3.3
	UK (less-ME)	1570839	1897477	-	1.5	-
Productivity (GVA per job, £2016)	ME	44064	50287	60414	1.0	2.5
	UK (less-ME)	52738	60414	-	1.1	-

Source: CE

Figure 9.4: Baseline and transformational scenarios for productivity, 2017-2030



Source: CE

9.17 This 2.5% rate of growth p.a. is particularly ambitious when considering the well-publicised slowdown in productivity growth over the past decade, with it averaging a meagre 0.4% p.a. in the Midlands Engine since 2010. This slowdown of course is not unique to the region, and over this timespan productivity growth in the Midlands Engine, though slow, has still exceeded the national average.

9.18 And historically, the Midlands has been able to deliver rates of productivity growth in excess of 2% p.a., most notably over the 1980s and 1990s. This was also a time where the productivity gap between the Midlands Engine and the UK (less-ME) was relatively small and stable, averaging just over 10% through the 1980s (opening up in the mid 1990's, and currently standing at 16%).

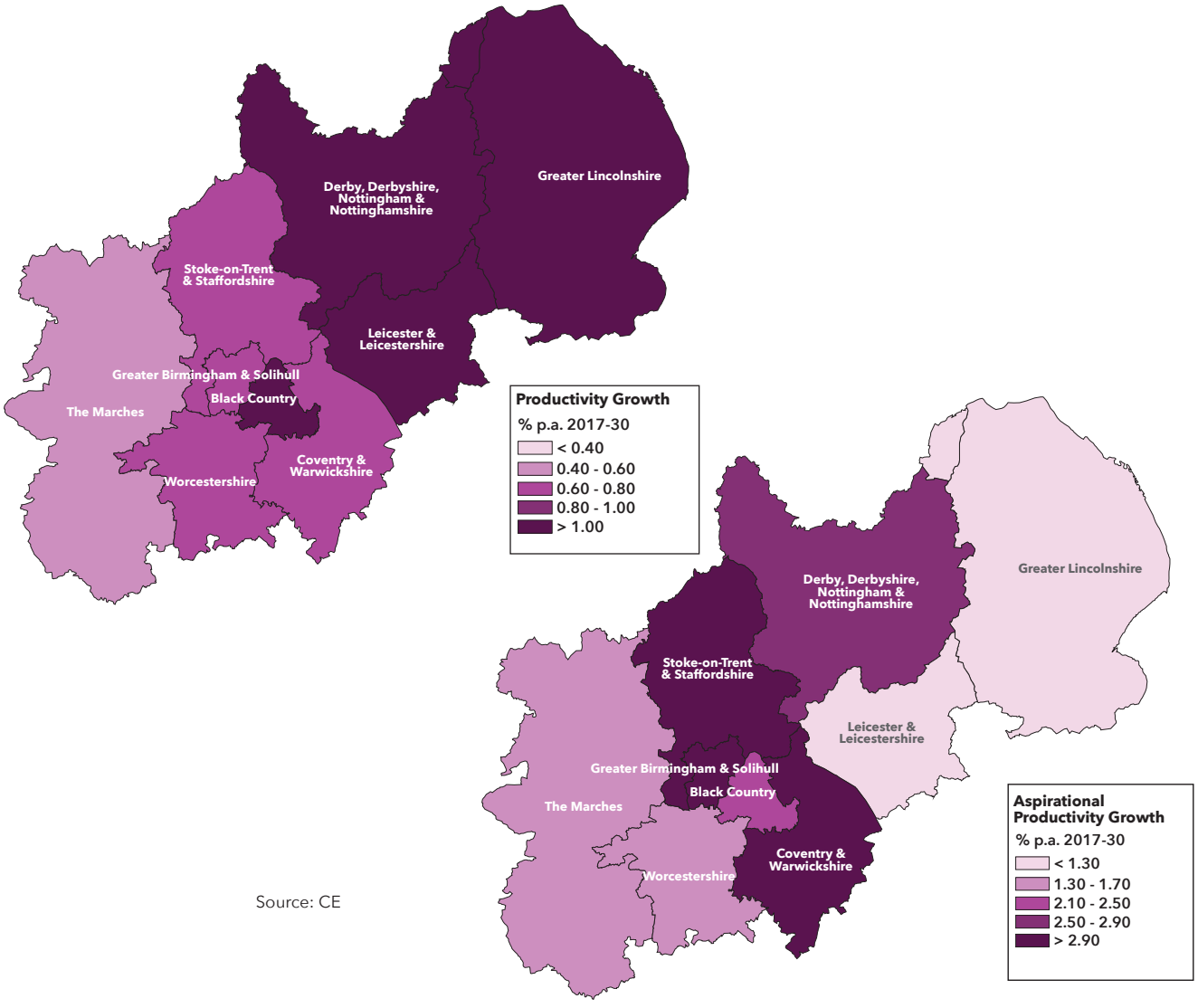
9.19 In fact, as Figure 6.4 shows, the trend for the transformational scenario closely matches that of the pre-2000's trend for the Midlands Engine. However, the likelihood of productivity growth reaching such buoyant levels, at least in the short term, appears limited. Likewise, the deviation between the productivity growth of the Midlands Engine and the UK (less-ME) has averaged only 0.1% since 1981, indicating the rarity of a circumstance where the Midlands Engine increases productivity growth substantially faster than the rest of the UK.

LEP-level performance

9.20 Because of the bottom-up approach to the transformational scenario, consistent and comparable LEP aspirations are also available. As Figure 9.5 demonstrates, greater emphasis is placed on faster productivity growth in the urban core of the Midlands Engine, with Coventry & Warwickshire (3.1% p.a.), Black Country (3.0% p.a.), D2N2 (2.9% p.a.) and Greater Birmingham & Solihull (2.5% p.a.) expected to lead the transformational level of change across the region.

9.21 This reflects the higher rates of aspirational growth targeted by these individual LEP areas in their respective strategies and policy documents. As with the Midlands Engine as a whole though, such delivery is highly ambitious; for these LEP areas, the transformational level of productivity growth is on average 3x higher than that expected by the baseline forecast. Table 6.4 provides a detailed overview of transformational employment, GVA and productivity growth by LEP.

Figure 9.5: Baseline and transformational scenarios for productivity % growth p.a. by LEP, 2017-2030



Source: CE

Table 9.4: Transformational GVA, employment and productivity % growth p.a. by LEP, 2017-30

	Employment (000s) 2017-30 (%p.a.)	GVA (£2016m) 2017-30 (%p.a.)	Productivity (£2016) 2017-30 (%p.a.)
Black Country	1.2	4.2	3.0
Coventry & Warwickshire	1.0	4.1	3.1
Greater Birmingham & Solihull	1.3	3.9	2.5
D2N2	0.4	3.3	2.9
Greater Lincolnshire	0.4	1.7	1.3
Leicester & Leicestershire	0.4	1.8	1.4
Stoke-on-Trent & Staffs	1.1	4.3	3.1
The Marches	0.9	2.3	1.4
Worcestershire	0.8	2.4	1.6
Midlands total	0.8	3.3	2.5

Source: CE

Delivering transformational change

9.22 Critical to delivering this transformational level of growth will be the realisation of the Midlands Engine sectoral ambitions. Emphasis will need to be placed on supporting the ambitions and unlocking the potential of those sectors that are regarded by the Midlands Engine LEPs as current or anticipated sector strengths (as outlined in their local strategies - see Table 9.5 for an overview).

Table 9.5: Current and projected sector strengths, as specifically referenced in LEP strategies

Sectors regarded as current or potential strengths*

	BCLEP	CWLEP	GB-SLEP	D2N-2LEP	GLLEP	LLEP	SSLEP	MLEP	WLEP
Agri, food & drink			■	■	■	■	■	■	■
Advanced manufacturing & engineering	■	■	■		■	■	■	■	■
Transport technologies manufacturing	■	■	■	■			■		
Life science & healthcare			■	■	■	■	■	■	
Environment/low carbon	■		■	■	■	■	■	■	
Logistics				■	■	■		■	
Financial & professional services	■		■	■		■		■	■
Digital & creative		■	■	■		■			■
Visitor economy	■	■	■	■	■	■		■	■
Construction	■		■	■				■	
Other consumer services	■			■				■	
Other producer services									
Other non-market services									

* Cells shaded pink indicate current or potential sector strength (as specifically referenced in strategy)

9.23 Sector-level aspirations, aligned to the wider transformational scenario, have therefore been estimated. At a minimum, all sectors are expected to increase their employment and GVA (and thus productivity) in line with the baseline forecast, but the delivery of those sectors that are regarded as current or potential sector strengths (Table 9.5) have been scaled-up by individual LEP area, to align with and ensure the transformational level of change is met. This approach retains the dynamic sectoral relationships of the baseline scenario while accommodating the individual sectoral ambitions of the respective LEPs

9.24 The outputs from this scenario are outlined in Table 6.6, which shows what a sectorally-driven transformational approach may look like across key indicators. It is expected that the Midlands Engine core sectors, where it has recognised comparative advantages - such as Manufacturing (4.6% productivity growth p.a.), Distribution (2.9%) and Information & communications (5.2%) - will drive productivity growth over a transformational scenario. Naturally, some LEP areas will deviate from these averages, highlighting their respective sectoral strengths and weakness.

Table 9.6: Transformational GVA, employment and productivity % growth p.a. by sector in the Midlands Engine, 2017-30

	Employment (000s) 2017-30 (%p.a.)	GVA (£2016m) 2017-30 (%p.a.)	Productivity (£2016) 2017-30 (%p.a.)
Agriculture, forestry & fishing	1.2	3.0	1.8
Mining & quarrying	0.8	-0.7	-1.5
Manufacturing	-0.2	4.4	4.6
Electricity, gas & water	0.5	2.0	1.5
Construction	2.0	3.2	1.2
Distribution	0.3	3.2	2.9
Transport & storage	1.0	2.7	1.7
Accommodation & food services	1.5	5.3	3.8
Information & communications	-0.2	5.0	5.2
Financial & business services	1.2	3.1	2.0
Government services	0.8	2.8	2.0
Other services	0.8	2.4	1.7
Midlands total	0.8	3.3	2.5

9.25 Of course, this approach only outlines what the transformational level of growth may look like for each sector and does not necessarily articulate how it will be delivered. As highlighted in Section 5, to put the Midlands Engine economy onto a transformational growth path interventions and changes will be required around the broad drivers of productivity, both within and across sectors.

This reflects the fact that across the key drivers of productivity some of the needs and opportunities will vary across sectors. Some LEPs have already outlined – whether in terms of infrastructure, skills, funding etc. - specific sectoral interventions which will drive productivity. For instance, the Black Country LEP has outlined its ambitions for its High Value Manufacturing City, which is expected to drive 25,000 manufacturing jobs and an additional £1bn in GVA. Greater Birmingham & Solihull LEP's plans for a UK Central Hub will unlock some £4.1bn of GVA and 78,000 jobs across automotive, distribution and logistics.

9.26 But to ensure a more granular, first-hand understanding of both the issues, restraints and opportunities associated with these productivity drivers both within and across sectors, business surveys have been undertaken as part of the IER process. These will supplement the quantitative information outlined in previous sections and provide a first-hand account of the priority issues and opportunities required to deliver the transformational level of change.

Priorities looking forward

9.27 The refreshed Midlands Engine growth strategy provides a framework that seeks to catalyse and steer the work of partners as they collectively work to improve the long-term prospects of the Midlands economy, its businesses and communities. Over the coming months, attention will shift from strategy development to action planning as the agreed strategic priorities are converted into robust, well-evidenced and compelling investment propositions. To help inform this process, the IER team asked Midlands Engine businesses and private sector representative organisations for their view on what the main strategic imperatives are for the region in the context of accelerating productivity growth (and the key barriers identified in earlier Sections). The Local Area Profiles also gathered LEP-level evidence on priorities - although it is important to note that priorities were emerging in some LEPs at the time of writing, as Local Industrial Strategies were still being developed. Across both sources of evidence, the most common priorities focused on transport, skills, access to finance, R&D/commercialisation, alongside the need for a more coherent voice/identity and joined-up thinking across the Midlands.

	Business interviews	Local Area Profiles
Transport connectivity	24 businesses (across all sectors and sizes) and four of the business organisations raised transport as a priority issue to tackle at the Midlands Engine level. This included rail and road travel within the Midlands (especially East-West routes and links between cities) in terms of time, quality, affordability and choice (i.e. local public transport). A number of consultees highlighted the importance of HS2 in improving access to London, and one business representative also argued that the Midlands should not lose sight of connections with the Northern Powerhouse. Airports, and connectivity to them, were also considered important given "a renewed focus on global markets".	All nine LAPs identified transport (rail and road) infrastructure improvement as a common priority, although these varied in scale and focus (from airports to local transport improvements). LAPs also emphasised the importance of transport for more commuting and supply chains (e.g. Black Country), innovative mobility solutions in rural areas (e.g. Greater Lincolnshire), and affordable public transport (e.g. Leicester and Leicestershire).
Skills	21 businesses across a variety of sectors, and two business representative organisations, identified skills as a priority issue for the Midlands. The focus was on work readiness, STEM skills, apprenticeships, career advice/raising aspirations of young people, graduate retention, attracting talent, leadership and management skills, and more effectively aligning education provision with business needs. The importance of digital skills in the context of industrial digitisation was also highlighted.	All of the LAPs highlighted skills and qualification issues/priorities, relating to the proportion of the population with no/low qualifications and sector specific shortages (such as STEM and digital skills for the manufacturing industry), along with retention issues. More broadly, the LAPs also highlight the need for clearer progression pathways (e.g. D2N2, Leicester and Leicestershire, Stoke and Staffs), and improving connections between business and education (e.g. Coventry and Warwickshire, Greater Birmingham and Solihull).
Finance	12 businesses (mainly SMEs, but also two large advanced manufacturing firms) and one business representative organisation prioritised finance. This included both demand and supply side issues (a lack of awareness/understanding and insufficient supply of finance), particularly relating to the commercialisation of R&D and growth finance.	Six of the nine LAPs raised business finance for growth and development as an issue. Examples include D2N2 (where finance was highlighted in the context of enabling productivity growth), and Leicester and Leicestershire and The Marches (enabling business to grow).
R&D/ commercialisation, and business collaboration	10 businesses (across a range of sizes/maturity and sectors including HLS, energy, digital/ manufacturing) and one business representative organisation argued that strengthening links between business and academia should be a priority - to stimulate innovation, accelerate commercialisation and develop networks of expertise (this also linked to improving the work readiness of graduates, noted above). Businesses also called for a greater focus on the Midlands' sectoral strengths and stronger business/supply chain collaboration at a greater scale, within and between sectors, and across the Midlands. This is perceived as a major missed opportunity at present.	All nine LAPs highlighted new interventions to encourage business innovation and/or business-academia collaboration. This includes becoming a major global centre for R&D in advanced manufacturing (e.g. Coventry and Warwickshire), a focus on the "long tail" of less productive SMEs (e.g. Black Country), increasing the number of "innovation active" businesses (e.g. D2N2), digital technologies/adoption (e.g. Worcestershire, The Marches, Greater Birmingham and Solihull), encouraging technology convergence across sectors (e.g. Leicester and Leicestershire), encouraging collaborative R&D (e.g. Stoke and Staffs), and skills for innovation (e.g. Greater Lincolnshire).

	Business interviews	Local Area Profiles
Digital connectivity	This was identified by seven businesses (from small digital firms through to global advanced manufacturing firms) and two business representative organisations as a priority, and covered the need for faster, more reliable and more consistent broadband connectivity across the region (both in premises and "on the go").	All of the LAPs identified issues with the provision of superfast broadband coverage to businesses and homes, with high variability between and within cities and rural communities. This was also raised as a priority in the context of adopting innovative 5G applications/technologies/testbeds in key sectors (e.g. Worcestershire, Coventry and Warwickshire, Leicester and Leicestershire).
Other priorities	**A coherent voice, identity and "growth narrative" for the Midlands:** 10 businesses and one business representative organisation commented on the need for more joined up thinking and action across the Midlands. There was a concern that there are too many "competing voices" in the region which hinders progress, a lack of co-ordination and focus, and a need to strengthen the Midlands' "collective identity", brand and voice. Consultees argued this would make a difference to external perceptions of the region (for example, as an attractive place to live), raise awareness and recognition of excellence in the Midlands, and ensure that economic and planning policy more effectively responds to the needs of businesses across the region (for example, by providing suitable sites/premises in appropriate locations for firms wanting to expand, and a strategic approach to house building in locations that are fully integrated with good transport links to economic centres). Other priorities raised by a smaller number of businesses included the availability of commercial property (quality and quantity) and utilities provision (and more co-ordinated planning in line with the needs of industry).	For LEPs, **place-shaping and regeneration** is also important, which spans a range of priorities from the availability of housing and cultural offer, through to the image and attractiveness of urban centres. The availability of **commercial land and property** was also highlighted as a priority in some LAPs, e.g. the Black Country (the need to pump prime office development), Leicester and Leicestershire (to improve the supply of commercial premises) and Worcestershire (where growth in business support and professional services is constrained by the shortage of commercial premises). **Inclusive growth** is highlighted in the Local Area Profiles: four mention inclusive growth explicitly and the remainder reference various issues around deprivation (including rural deprivation), economic exclusion, inclusive development and community regeneration more generally. All LEPs also flag **environmental issues** in various guises, including environmental sustainability, low carbon, and clean infrastructure etc.

Source: IER Evidence Papers – A Synthesis of Business Perspectives; and Local Area Profiles

Conclusions

9.28 Baseline projections indicate that the Midlands Engine economy is expected to experience relatively stable growth in the future, with performance in line with peer areas and the national average. This will reaffirm the Midlands Engine status as a significant growth driver for UK plc, even with the uncertain economic context and associated headwinds expected over this period.

9.29 Though there will be variations to this pattern of growth both spatially and sectorally, broadly speaking all parts of the Midlands Engine economy are expected to see continued positive momentum. For some areas and sectors this may be through higher rates of job creation and labour market absorption, whilst for others it may be delivered through productivity enhancements and greater efficiency.

9.30 By itself however this baseline level of growth is not sufficient to deliver the transformational level of economic, social and environmental change desired by the Midlands Engine and its stakeholders. Critical gaps and underperformance are expected to remain, whether benchmarked against peer areas or historical trends, whilst full potential may not be reached in some sectors and areas.

9.31 A transformational scenario has therefore been developed which envisages this step change in the Midlands Engine economy. Though highly ambitious, it is not without precedent, with the scenario informed by local policy aspirations and expected interventions, whilst also reflecting historic performance. But the scenario only outlines what this transformational level of growth will look like, and not necessarily how it will be delivered.

9.32 Critical to this will be an increased emphasis on delivering the sectoral aims and ambitions reflected in local strategies and policy documents, which will need to be reconciled with an understanding and appraisal of the broad drivers of productivity (as outlined in Chapter 5). Continued stakeholder engagement will also provide a first-hand account of the priority issues and opportunities necessary to deliver a step change within and across sectors.

9.33 Delivering this transformation level of change would be significant. It would position the Midlands Engine as one of the most competitive economic sub-regions in the UK, rebalancing growth away from London and the South East. It would generate a GVA uplift of £73.3bn, while the creation of an additional 334,000 jobs – many highly-skilled – would transform the local labour market.

10. REFLECTIONS AND IMPLICATIONS FOR POLICY

10.1 This section of the report draws together the main findings to synthesise the IER evidence in relation to the core research questions that have framed the process from the outset. It has a central focus on understanding and explaining the region's productivity performance. Informed by this evidence, it then considers some of the key implications for the Midlands over the coming years as policy-makers seek to accelerate productivity growth and build a more innovative and knowledge-based Midlands Engine economy. Towards the end of the section, the study team offer some final thoughts and observations on the key gaps that remain in the evidence base to inform future research activity.

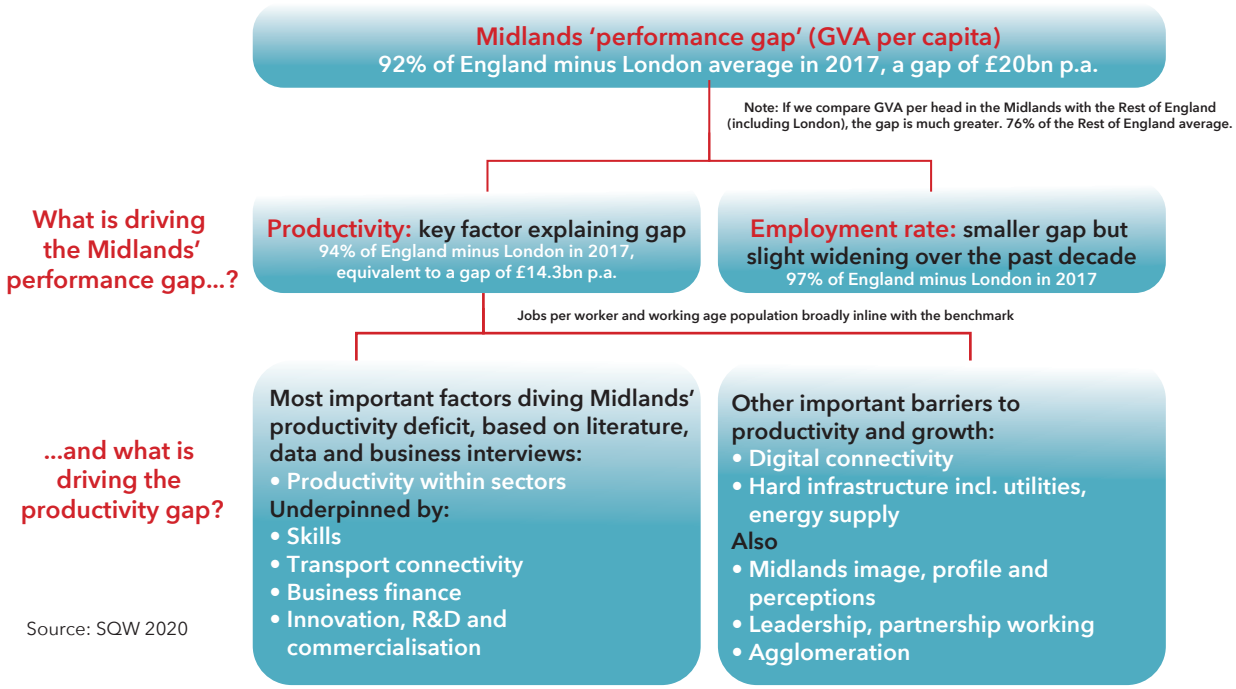
10.2 The IER team recognises that productivity gains alone will not address the breadth of the region's long-term challenges and strategic priorities. The benefits associated with creating a highly productive Midlands economy must always be balanced against other imperatives such as delivering a more inclusive, sustainable and environmentally friendly form of growth and the importance of a strong foundational economy. However, **it is clear from this review process that enhancing the region's productivity performance must be the cornerstone of the Midlands' future economic strategy and indeed a core element of the UK Government's 'levelling-up' agenda.**

Key findings

10.3 GVA per capita in the Midlands was nearly £22,000 in 2017. This was only 92% of the England minus London average and, if the gap was closed, the Midlands economy would generate an extra £20bn each year. **If we compare the Midlands with the rest of England (including London) the performance gap widens considerably, to 76% of the benchmark (equivalent to £76bn in GVA per annum).**

10.4 **Productivity is the key factor explaining the Midlands' relative underperformance in GVA per capita terms, as illustrated in Figure 10.1.** Regional productivity improved slightly compared to the national average in the post-recession period, but has remained relatively static since 2013. By 2017, productivity in the Midlands was 94% of the England minus London average (or 82% if we compare to the rest of England, including London). The employment rate also influences the GVA per capita gap, but to a lesser degree: in 2017, the Midlands' employment rate was 97% of the England minus London average. The two other drivers of the GVA gap - jobs per worker and working age population – are broadly in line with the England minus London benchmark, and therefore do not explain the gap.

Figure 10.1: Summary of factors driving the Midlands' economic performance gap



Source: SQW 2020

10.5 Over time, shifts in the sectoral structure of the regional economy have influenced productivity in the Midlands, with too few jobs in higher productivity sectors. However, at a regional level, **productivity performance *within* sectors is now much more important than sectoral structure in explaining the Midlands' productivity gap.** This reflects the types of tasks and functions undertaken by businesses (and therefore occupations and salaries), levels of specialisation and the markets served (and associated prices paid) within each sector, vis-à-vis the national average. Indeed, if productivity performance of each sector in the Midlands matched the national average (but the Midlands' sectoral composition did not change) the productivity gap would almost completely close. However, if the Midlands economy matched the national sectoral structure[193], the productivity gap would actually widen because the Midlands would lose its comparative advantage derived from higher employment shares in its highly productive sectors (e.g. automotive).

10.6 The IER evidence also points towards challenges in starting and growing a business in the Midlands, with parts of the region having some of England's lowest incidences of High Growth Firms, and low levels of in-firm productivity. Our business interviews for the IER corroborated the data and literature, with many businesses in the Midlands identifying barriers to growth and challenges in raising their productivity.

[193] i.e. if the proportion of jobs in each sub-sector in the Midlands mirrored the benchmark, but Midlands productivity within sectors remained constant

10.7 **Four factors were highlighted consistently across the evidence base (including documentation, data, Local Area Profiles and business consultations) as the key challenges holding back economic growth and productivity in the Midlands. These were: (i) skills; (ii) infrastructure; (iii) access to growth finance; and (iv) barriers to R&D collaboration, commercialisation and knowledge diffusion/technology adoption.** Other issues that were raised consistently include the supply of modern premises, utilities, digital connectivity, inadequate business support, and more generally, outdated perceptions of the Midlands, which hamper efforts to attract talent and investment. The need for strong and effective leadership and a more compelling narrative to communicate the Midlands offer were also highlighted to the IER team.

Key reflections

10.8 The Midlands is home to a very rich manufacturing heritage, and an impressive concentration of world-class science and innovation assets and expertise. However, this does not appear to translate into productivity figures for the manufacturing sector as a whole, as we might expect. The motor vehicles sector is a star performer, where jobs are over-represented and productivity is high (in absolute and relative terms). Textiles, non-metallic mineral products and other manufacturing/ repair sectors also perform relatively well. That said, productivity is relatively low within some of the region's priority sectors that are in/affiliated to its key strengths, such as other transport equipment (which includes aerospace manufacturing) and pharmaceuticals.

10.9 There are also productivity challenges in the business-related service sectors, some of which account for a substantial share of jobs (e.g. financial and insurance, business support services) and/or are an important aspect of a competitive economy (e.g. other professional services, media and engineering services). Moreover, there has been a sizeable productivity deficit in the Midlands' financial and business services relative to England excluding London and the Northern Powerhouse comparators over the last 25 years.

10.10 These issues matter, not only for the economic growth, competitiveness and resilience of the Midlands economy on a global stage, but also for people who live in the Midlands and their ability to secure well-paid jobs.

10.11 The evidence presented in this IER highlights the importance of improving within sector productivity, and suggests the need for a shift in the narrative within the Midlands around sectoral performance and prospects. It also raises challenging questions for policy-makers, particularly around which sectors are driving productivity at present (and any associated risks) and **where to target future efforts to maintain and/or improve productivity to make the greatest difference to the Midlands' economic performance.** For example, if the Midlands could retain its above average productivity in sectors such as automotive, whilst improving productivity in (comparatively) less-productive ones such as ICT and professional services, overall productivity performance in the Midlands could match or exceed the England minus London average.

10.12 This also presents **a challenge in improving the productivity performance of the wider business base, and developing more sectors with 'higher than average' productivity that are likely to offer quality (highly paid and sustainable) employment for significant numbers of people**. This is crucial in the context of inclusive growth and wellbeing agendas, and the prosperity of places across the Midlands (notably the region's towns). Relatively modest improvements in the productivity of large employment sectors could make a considerable difference to overall productivity performance, as well as the lives of those working in these sectors.

10.13 This emphasises the importance of striking an appropriate balance between: i) continuing to invest in, champion and enhance the excellent science, innovation and knowledge-economy assets, capabilities and ecosystems present across the Midlands today, particularly in terms of positioning the region as part of a UK solution to international challenges and innovation-led growth opportunities, and; ii) increasing the competitiveness of the wider Midlands business base and foundational economy through improved skills, leadership and management, technology adoption and the development of a more modern infrastructure offer etc.

10.14 The IER has highlighted a number of factors that are holding back productivity and growth in the region. Some of these are fairly fundamental issues – such as transport, utilities, broadband, and energy supply – which are symptoms of under-investment in the region over a prolonged period of time. The Midlands needs to tackle these as a priority so as to create a more level playing field vis a vis its competitor regions. Other challenges are not necessarily unique to the Midlands – such as access to skills, growth finance for business, and industrial digitisation - but they are important.

10.15 **The spatial variation in productivity performance across the Midlands is also striking.** Three LEP areas - Coventry and Warwickshire, Greater Birmingham and Solihull, and Leicester and Leicestershire - perform strongly and have done so for the last two decades. Other parts of the region have faced greater productivity challenges, but also have an important role to play in the regional economy, including providing high quality environments to attract talented workers/ innovators/entrepreneurs and visitors to the region. Recognising the distinctive but inter-related functions of places is certainly not a new policy imperative and LEPs were established to do just this. However, in a polycentric region that is characterised by many "second tier" cities and towns – and in a context where agglomeration and critical mass matter for productivity – **ensuring effective connectivity and relationships between places is critical.**

10.16 The IER has identified how a pan-Midlands approach could add real value in realising opportunities and tackling some of the challenges highlighted above. For this to be most effective, **there needs to be greater clarity on the levers and powers available – and crucially within the region, agreement on a division of responsibility between the different "tiers" of government.**

10.17 The Midlands' GVA per head and productivity deficit is a longstanding challenge, and one that is expected to persist under the "business as usual" projection developed in this IER. The transformational scenario serves to illustrates the scale of the challenge - and opportunity - ahead. To fully close the productivity gap (i.e. match the UK productivity level by 2030), the Midlands' productivity performance would need to increase at a rate of 2.4% p.a. This is extremely ambitious given growth over the past decade, which has averaged 0.4% p.a. **Closing the gap will require a significant shift in direction**. Moreover, other parts of the country will not be standing still. They will also be seeking to drive improvements in their productivity performance and "level up" at the same time as the Midlands. **Nevertheless, this IER process has highlighted that there is no shortage of ambition or commitment from partners across the Midlands.**

Key policy implications for the future

10.18 Perhaps as expected given the scale and diversity of the Midlands, a wide range of issues have emerged during the course of this IER process, which has sought to shine a spotlight on both the strengths and weaknesses of the Midlands economy. These issues can be grouped under the following six broad thematic areas:

- Investment in the Midlands' **strategic transport network in order to** strengthen economic relationships (in terms of supply chain links, labour market flows and enhanced access to key science and innovation assets) and in turn, unlock increased agglomeration benefits. Improvements to the region's main East – West transport corridors are key to this.
- The creation of a more **integrated and collaborative science and innovation landscape across the Midlands**. There is scope to better connect key assets and, capabilities, and to facilitate stronger networks between different technology areas and across the Midlands' leading clusters and innovation ecosystems. Innovation within the business services sector and the absorptive capacity of the wider business base should be priorities, alongside continued efforts to strengthen and join-up innovation activity within advanced manufacturing and digital tech areas of the economy.
- Partners across the Midlands should support the region to adopt a leadership position when it comes to embracing the **industrial digitisation** agenda. Linked to this, they should explore opportunities for piloting new approaches designed to tackle the region's **skills deficit**.
- Targeted and tailored support should be made available to the Midlands Engine business base (including service-based firms) to raise awareness of the **international business opportunities** in a post BREXIT world.
- The Midlands should leverage the opportunities presented by the Commonwealth Games, City of Culture and other high-profile events to transform outdated perceptions/image of the Midlands and create more of a "buzz" about the region. This will help to attract and retain talent in the Midlands, including graduates.
- There should be a strong focus on improving ***within* sector/firm productivity** levels, business growth and business formation across the Midlands. A particular emphasis should be placed on creating more technology-rich High Growth Firms.

10.19 In our view, the six themes that have emerged from the evidence, provide a useful framework for any future discussions with Government and partners. These themes are particularly important in relation to devolution, imbalances within the region and the "levelling up" agenda. Governance structures may vary in different localities, but all areas need the strategic capabilities and delivery structures necessary to access devolved powers and resources when Government makes these available. Furthermore, a clear division of responsibility between the authorities involved in these governance structures is imperative if strategic planning and delivery is to be effectively coordinated.

Key gaps in the evidence base and priorities for future research

10.20 In the process of developing the IER, and in discussion with partners across the region, we have identified various topics that warrant further research in the future:

- At present, the evidence on **inclusive growth across the Midlands** is patchy. Methodologies vary and some issues span administrative boundaries. A more comprehensive understanding of the main challenges and opportunities would be helpful in the context of the Government's "levelling up" agenda.
- The IER team found limited evidence on **economic linkages and flows, particularly in terms of supply chains, finance and innovation linkages** within and across the Midlands' key sectors. This is a long-standing evidence gap that hinders the work of partners as seek to target their interventions.
- Further research into the challenges and potential solutions to **attract and retain talent** in the region is needed. Making the region 'sticky' for graduates is particularly important, including what attracts and encourages long term settlement of graduates in the Midlands, compared to the nature of demand.
- There is scope for further research into the **productivity of sectors, especially in under-performing manufacturing sectors and business services** (and on the latter, linking this to trade barriers/opportunities in non-physical goods).
- There is limited evidence available currently on the **nature and extent of industrial digitisation** across different sectors in the Midlands, and the barriers to adoption across the business base.
- Finally, further work is required to support efforts to **sharpen and modernise the image/ profile** of the Midlands.

ANNEX A: REFERENCES

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ANNEX B: DETAILED SECTORAL PRODUCTIVITY AND JOBS DATA

			Midlands productivity in (GVA per job)	Midlands productivity relative to England minus London
Productivity in Midlands exceeds Englands minus London average	Jobs over represented (LQ<1)	Motor vehicles Textiles etc Non-met. mineral products Other manuf. repair Warehousing & postal	125,212 66,142 57,902 47,853 36,536	121% 104% 104% 105% 105%
	Jobs under represented (LQ<1)	Water transport Electrical equipment Recreational services Arts	480,613 84,449 29,965 25,470	142% 126% 123% 104%
	Sub-total			
Productivity in Midlands broadly in line with England minus London average (+/-3%)	Jobs over represented (LQ<1)	Mining & quarrying Food, drink & tobacco Wholesale trade	123,111 55,128 46,268	100% 100% 99%
	LQ broadly in line with national average (+/-3%)	Food & bev. services Education Residential & social Health	20,223 33,252 17,686 35,536	101% 100% 100% 97%
	Jobs under represented (LQ<1)	Construction Public Admin. & Defense Real estate Retail trade Air transport	47,459 52,910 113,618 26,046 110,053	100% 100% 98% 97% 97%
	Sub-total			

			Midlands GVA (£2016m)	Midlands GVA (% of total)	Midlands jobs (000s)	Midlands GVA (% of total)	LQ in jobs
Productivity in Midlands exceeds Englands minus London average	Jobs over represented (LQ<1)	Motor vehicles	7,563	3.2%	60	1.1%	196%
		Textiles etc	1,963	0.8%	30	0.6%	154%
		Non-met. mineral products	3,973	1.7%	69	1.3%	144%
		Other manuf. repair	3,049	1.3%	64	1.2%	110%
		Warehousing & postal	5,921	2.5%	162	3.1%	114%
	Jobs under represented (LQ<1)	Water transport	68	0.0%	0	0.0%	6%
		Electrical equipment	1,008	0.5%	13	0.2%	80%
		Recreational services	2,790	1.2%	93	1.8%	90%
		Arts	873	0.4%	34	0.6%	81%
	Sub-total		**27,290**	**12%**	**52%**	**10%**	
Productivity in Midlands broadly in line with England minus London average (+/-3%)	Jobs over represented (LQ<1)	Mining & quarrying	665	0.3%	5	0.1%	126%
		Food, drink & tobacco	5,278	2.3%	96	1.8%	131%
		Wholesale trade	11,406	4.9%	247	4.7%	117%
	LQ broadly in line with national average (+/-3%)	Food & bev. services	5,565	2.4%	275	5.2%	98%
		Education	15,236	6.5%	458	8.7%	98%
		Residential & social	5,146	2.2%	291	5.5%	100%
		Health	13,887	5.9%	391	7.4%	102%
	Jobs under represented (LQ<1)	Construction	15,357	6.6%	324	6.1%	89%
		Public Admin. & Defense	10,052	4.3%	190	3.6%	90%
		Real estate	8,658	3.7%	76	1.4%	94%
		Retail trade	12,131	5.2%	466	8.8%	95%
		Air transport	289	0.1%	3	0.0%	36%
	Sub-total		**103,671**	**44%**	**2,821**	**53%**	

			Midlands productivity in (GVA per job)	Midlands - GVA (£2016m)
Productivity in Midlands below England minus London average	Jobs over represented (LQ<1)	Wood & paper	95%	1,580
		Machinery	95%	2,950
		Metals & metal products	94%	5,302
		Electricity & gas	92%	6,005
		Land transport	90%	4,346
		Other services	90%	6,365
		Air/spacecraft & related machinery)	87%	2,114
		Agri., forestry & fishing	82%	1,741
		Printing & recording	67%	658
		Motor vehicles trade	64%	4,667
	LQ broadly in line with national average (+/- 3%)	Business support services	94%	11,399
		Water, sewerage & waste	89%	2,679
		HQ & mgt consultancies	89%	2,382
		Chemicals	54%	1,190
	Jobs under represented (LQ<1)	Other prof. services	96%	3,226
		Legal & accounting	94%	3,981
		Accommodation	92%	1,334
		IT services	92%	8,041
		Financial & insurance	86%	8,198
		Electronics	85%	888
		Arch. & eng. services	83%	3,166
		Media	70%	781
		Coke & petroleum	63%	136
		Pharmaceuticals	39%	453
	Sub-total			**83,583**

			Midlands GVA (% of total)	Midlands jobs (000s)	Midlands GVA (% of total)	LQ in jobs
Productivity in Midlands below England minus London average	Jobs over represented (LQ<1)	Wood & paper	0.7%	29	0.6%	121%
		Machinery	1.3%	50	1.0%	138%
		Metals & metal products	2.3%	105	2.0%	146%
		Electricity & gas	2.6%	34	0.6%	142%
		Land transport	1.9%	134	2.5%	115%
		Other services	2.7%	155	2.9%	107%
		Air/spacecraft & related machinery)	0.9%	30	0.6%	122%
		Agri., forestry & fishing	0.7%	66	1.2%	114%
		Printing & recording	0.3%	22	0.4%	113%
		Motor vehicles trade	2.0%	128	2.4%	120%
	LQ broadly in line with national average (+/- 3%)	Business support services	4.9%	445	8.4%	101%
		Water, sewerage & waste	1.1%	37	0.7%	103%
		HQ & mgt consultancies	1.0%	106	2.0%	97%
		Chemicals	0.5%	19	0.4%	99%
	Jobs under represented (LQ<1)	Other prof. services	1.4%	78	1.5%	69%
		Legal & accounting	1.7%	92	1.7%	90%
		Accommodation	0.6%	63	1.2%	79%
		IT services	3.4%	124	2.3%	77%
		Financial & insurance	3.5%	108	2.0%	84%
		Electronics	0.4%	16	0.3%	72%
		Arch. & eng. services	1.4%	77	1.5%	92%
		Media	0.3%	25	0.5%	70
		Coke & petroleum	0.1%	1	0.0%	59
		Pharmaceuticals	0.2%	4	0.1%	49
	Sub-total		**36.0%**	**1,948**	**37.0%**	

ANNEX C: CAMBRIDGE ECONOMETRICS' SECTOR DEFINITIONS

Figure C.1: Cambridge Econometrics 45 sectors defined in terms of the 2007 Standard Industrial Classification (SIC2007)

Sector	SIC2007
1 Agriculture, forestry & fishing	01-03
2 Mining & quarrying	05-09
3 Food, drink & tobacco	10-12
4 Textiles etc	13-15
5 Wood & paper	16-17
6 Printing & recording	18
7 Coke & petroleum	19
8 Chemicals	20
9 Pharmaceuticals	21
10 Non-metallic mineral products	22-23
11 Metals & metal products	24-25
12 Electronics	26
13 Electrical equipment	27
14 Machinery	28
15 Motor vehicles	29
16 Other transport equipment	30
17 Other manufacturing & repair	31-33
18 Electricity & gas	35
19 Water, sewerage & waste	36-39
20 Construction	41-43
21 Motor vehicles trade	45
22 Wholesale trade	46
23 Retail trade	47

Sector	SIC2007
24 Land transport	49
25 Water transport	50
26 Air transport	51
27 Warehousing & postal	52-53
28 Accommodation	55
29 Food & beverage services	56
30 Media	58-60
31 IT Services	61-63
32 Financial & insurance	64-66
33 Real estate	68
34 Legal & accounting	69
35 Head offices & management consultancies	70
36 Architectual & engineering services	71
37 Other professional services	72-75
38 Business support services	77-82
39 Public Administration services	84
40 Education	85
41 Health	86
42 Residential & social	87-88
43 Arts	90-91
44 Recreational services	92-93
45 Other services	94-95

Source: NTU

ANNEX D: PUBLIC SECTOR INVESTMENT CATEGORIES

Source	Dataset	Type of expenditure
HMT	Public Expenditure Statistical Analysis (PESA)	General public services Public order and safety Economic affairs (4 sub-categories) Transport Environmental protection Housing and community amenities Health Recreation, culture & religion Education Social Protection
NAO	Financial sustainability of local authorities	Local authority spending power
Infrastructure and Projects Authority	Analysis of the National Infrastructure and Construction Pipeline	Infrastructure and construction projects pipeline by sector and location
Gov.uk	Local Enterprise Partnerships funding from the Regional Growth Fund (RGF)	RGF by ME LEP and national comparisons
Gov.uk	Local Growth Deals	Distribution by regional LEP groupings
Gov.uk/National Archives	Growing Places Fund	Round 1 & 2 allocations by regional LEP groupings
House of Commons Library	Geographic Distribution of European Structural and Investment Funds (ESIF)	ESIF by LEP regional groupings
EU Open Data Portal	Horizon 2020 Funding	Distribution by regional groupings
UK Research and Innovation	Gateway to Research Funding	Distribution by LEP regional groupings
National Archive/PWC	Regional Development Agency Funding	RDA funding by region, as a proportion of regional public expenditure, per capita and by intervention type

Notes: Dates for data sources vary due to availability. Wherever possible timeseries is presented. HMT PESA is the preferred source for overall public expenditure by region but has limitations. Other sources are presented to provide a more granular sense of particular funding streams and the kinds of funding decisions that affect regions and localities.

Source: NTU

ANNEX E: GEOGRAPHICAL SCALES AND ECONOMIC DEVELOPMENT FUNCTIONS

E.1 The tables provide further detail on the appropriate geographical scales for discharging different functions and activities, to support Section 8.

Table E 1: Appropriate geographical scales for discharging different functions and activities

Function/ Activity	Pan-regional	Regional	Sub-regional	Local	Comments/rationale
1 Skills					
Advocacy	✓	✓			It is accepted that skills are key drivers of economic development and crucially contribute both to innovation (absorptive capacity) and productivity. In the Midlands Engine pan-region skills levels are lower than the England average. National policy and planning has a strong influence on skills policy. However, the delivery infrastructure is primarily local, albeit this varies with skill level and the degree of specialisation, with a positive association between skill levels and geographical scale. There is a role for sharing good practice and lobbying/ advocacy roles at regional and pan-regional levels.
Strategy/ planning			✓		
Delivery				✓	

Function/ Activity	Pan-regional	Regional	Sub-regional	Local	Comments/rationale
2. Innovation					Importance of regional/pan-regional networks (in and outside of HE) and policy to develop a regional innovation system. Also a considerable scale of investment may be required for special facilities. All of these factors tend towards a view that this domain is amenable to intervention at the pan-regional and regional scales, in order to capitalise on common/ linked strengths and collaboration opportunities. Some sectoral bodies exist at this scale (e.g. the Midlands Aerospace Alliance). The exception may be certain kinds of process innovation linked to managerial skills (especially for SMEs and micro-businesses) which may be applicable at sub-regional and local scales.
UKRI/ Higher Education					There is increasing focus on research collaboration/ partnerships at larger spatial scales – examples of specific regional groupings of higher education institutions (including networks of universities across the Midlands) (Harrison et al., 2017).
Advocacy	✓				
Strategy/ planning	✓				
Delivery	✓	✓			
Catapults					Large scale of investment and need for networks integrating specialist expertise – so larger spatial scale appropriate
Advocacy	✓				
Strategy/ planning	✓				
Delivery	✓	✓			
Enterprise Zones/ Incubators					This relates to those sector themed/innovation focussed incubation facilities (as distinct from more generic facilities regarded as aspects of generic business support). Simpler or more generic business incubators that provide managed workspace and some level of additional business support are often managed/delivered at the local level and are best seen as a form of generic business support (above). More specialised facilities tend to require higher levels of investment and often serve larger catchment areas – examples of the latter include BioCity and MIRA.
Advocacy	✓				
Strategy/ planning	✓	✓	✓	✓	
Delivery		✓	✓	✓	
Process Innovation					Significant link to managerial skills/capacities relating to job design and work organisation – may therefore be tackled at lower spatial scales. For SMEs and micro-businesses and for generic training, delivery at the local level may be particularly important, in order that opportunities are accessible.
Advocacy	✓	✓			
Strategy/ planning			✓		
Delivery			✓	✓	Significant link to managerial skills/capacities relating to job design and work organisation – may therefore be tackled at lower spatial scales. For SMEs and micro-businesses and for generic training, delivery at the local level may be particularly important, in order that opportunities are accessible.

Function/ Activity	Pan-regional	Regional	Sub-regional	Local	Comments/rationale
3. Transport					The primary challenge at the pan-regional level is East-West connectivity – although it is also important for the Midlands economy that good North-South links are maintained. Good fit between regional/pan-regional scale and challenge/levers. Delivery at multiple spatial scales reflecting the nature of infrastructure and patterns of movement.
Major Infrastructure (road and rail)					Focus on inter-regional connectivity
Advocacy	✓				
Strategy/ planning	✓	✓	✓		
Delivery		✓	✓	✓	
Local infrastructure					Major focus of planning and delivery at sub-regional/local scale. Examples include planning of some bus services, the Nottingham tram (NET) and the West Midlands Metro.
Advocacy	✓				
Strategy/ planning		✓	✓		
Delivery		✓	✓	✓	
Service provision					Major focus of planning and delivery at sub-regional/local scale. Examples include planning of some bus services, the Nottingham tram (NET) and the West Midlands Metro.
Advocacy	✓	✓			
Strategy/ planning			✓	✓	
Delivery					

Function/ Activity	Pan-regional	Regional	Sub-regional	Local	Comments/rationale
4. Enterprise					
Generic business support					Largely delivered by local/sub regional organisations – little case for pan-regional intervention beyond general advocacy. Subsidiarity principle also suggests best left to local intervention and delivery.
Advocacy	✓	✓			
Strategy/ planning			✓	✓	
Delivery			✓	✓	
Business Finance					General investment readiness type interventions at local level (see above as a form of generic business support). Regional venture capital/investment fund schemes require more specialist (fund management) expertise and scale – hence are likely to be appropriate subjects of pan-regional intervention.
Advocacy	✓	✓			
Strategy/ planning	✓	✓			
Delivery	✓	✓			
Supply chain development					Where there is evidence that supply chains span regions, there is a strong case for pan-regional initiatives designed to support them. Otherwise the regional level might be more appropriate – albeit there are likely to be variations by sector.
Advocacy	✓	✓			
Strategy/ planning	✓	✓			
Delivery	✓	✓			

Function/ Activity	Pan-regional	Regional	Sub-regional	Local	Comments/rationale
5. Internationalisation					
Trade promotion					While pan-regional and regional scales are appropriate for advocacy and strategic planning functions, delivery can happen at multiple geographical levels – for instance, Chambers of Commerce play a historic local role here with activities including trade missions, export documentation, etc. In the context of Brexit, this domain is likely to be increasingly important.
Advocacy	✓	✓			
Strategy/ planning	✓	✓			
Delivery			✓	✓	
Inward Investment Promotion					Destination marketing can be aimed at international or domestic audiences. Delivery is at multiple scales. There was a historic pan-regional 'British Midlands' campaign and there are a range of regional and local initiatives also
Advocacy	✓	✓			
Strategy/ planning	✓	✓			
Delivery	✓	✓	✓	✓	
Destination marketing					Destination marketing can be aimed at international or domestic audiences. Delivery is at multiple scales. There was a historic pan-regional 'British Midlands' campaign and there are a range of regional and local initiatives also.
Advocacy	✓	✓			
Strategy/ planning	✓	✓			
Delivery	✓	✓	✓	✓	

Function/ Activity	Pan-regional	Regional	Sub-regional	Local	Comments/rationale
6. Digital Infrastructure					
Full-fibre broadband					Key issue for Industry 4.0 and (polycentric) connectivity. Broadband is known to be a particular problem in the region's rural areas also in some (pockets) of the region's major urban centres – hence may be a need for local advocacy to highlight issues where they arise.
Advocacy	✓	✓	✓	✓	
Strategy/ planning	✓	✓			
Delivery		✓	✓	✓	
5G					Key enabler of data heavy digital services.
Advocacy	✓	✓			
Strategy/ planning	✓	✓			
Delivery			✓	✓	

Function/ Activity	Pan-regional	Regional	Sub-regional	Local	Comments/rationale
7. Environment, climate change and energy					
Advocacy	✓	✓			Some challenges require intervention/ planning at large geographic scale – e.g. the Environment Agency uses river catchments to consider water resources/flood defence.
Strategy/ planning	✓	✓	✓		
Delivery	✓	✓	✓	✓	

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