



UK regions: a framework for growth

**A perspective from our
Chief Economist**



January 2020

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Executive summary

Regional inequality in the UK is not just a recent phenomenon. London's dominance can be traced back to over a century ago, and it is an issue which successive governments have been grappling with for some time. But despite efforts to accelerate economic growth beyond London, the gap has been widening since the 1980s.

There are no quick fixes, even when we have well-meaning governments that do their best to try and bolster weaker regions. This report therefore proposes a focused approach to regional strategy in order to accelerate progress, which covers three key elements:

- Greater emphasis on maximising agglomeration benefits across the UK, by linking more economic areas together to create sufficient critical mass, with world class cities acting as the engine of each agglomeration area
- Regional strategies that incorporate the full range of interventions needed to accelerate economic growth, using the framework we developed, with emphasis on creating places where people can live better and not just produce more efficiently
- Strong co-operation between different layers of government and local communities, through devolution, continued dialogue, and the augmentation of local capabilities.

All this will require significant additional funding. Public funding will be constrained, and there is a need to consider new and sustainable ways of funding, and ensure that money is spent well.

The report outlines a framework to drive stronger regional growth under three pillars:

— **Building a fertile business environment**

Through investment in transport, it will be possible to connect larger commutable areas to core regional business and cultural hubs, as well as increase the capacity on busy routes to ease local congestion. Digital connectivity, availability of office space, access to funding, and innovation support are also part of this pillar

— **Creating regions that are magnets for people**

No location will be successful if it does not attract people to live and work in it, or provide its existing population with the means to prosper. Places need to be planned as attractive locations to live, with adequate housing supply and cultural and recreation offerings. Studies show that human capital plays a bigger role than physical capital in facilitating the catch-up process that fosters regional growth. As the pace of new technology adoption accelerates, investment in post-school upskilling will become ever more important, with workers increasingly expected to embrace a lifelong approach to learning. But primary and secondary school outcomes must also be addressed, as well as pre-school education

— **Securing an enabling governance**

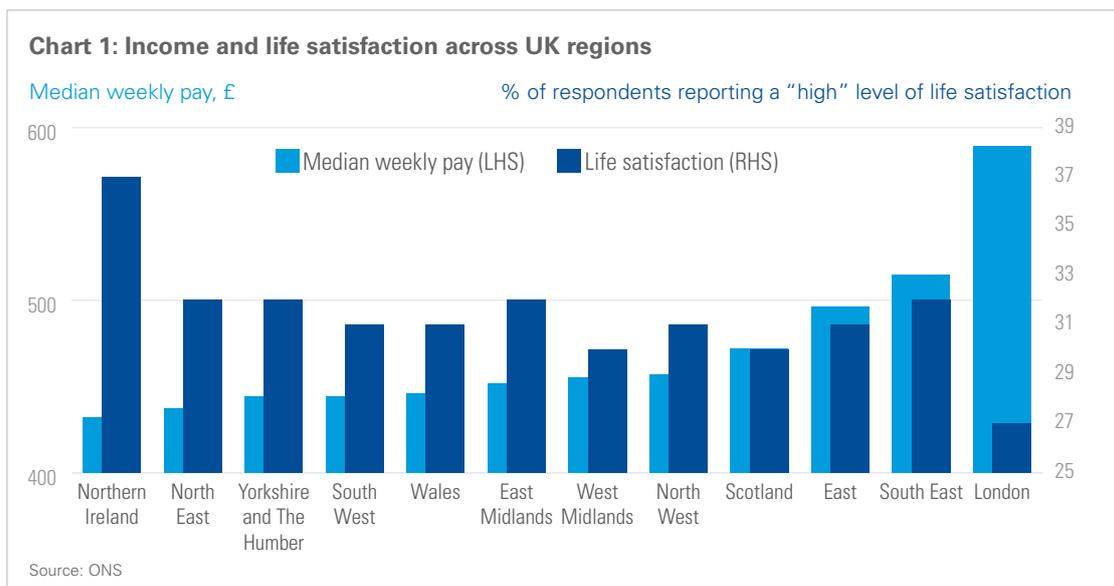
Solid strategies pursued by local leaders on the ground, within well-established governance structures, are crucial in driving regional growth. Far-sighted vision, flexibility to try new things, and outstanding execution are all paramount.

Each agglomeration area will have a different set of priorities that it will need to address based on our framework, but there are a number of areas in particular where the Government can help make a difference:

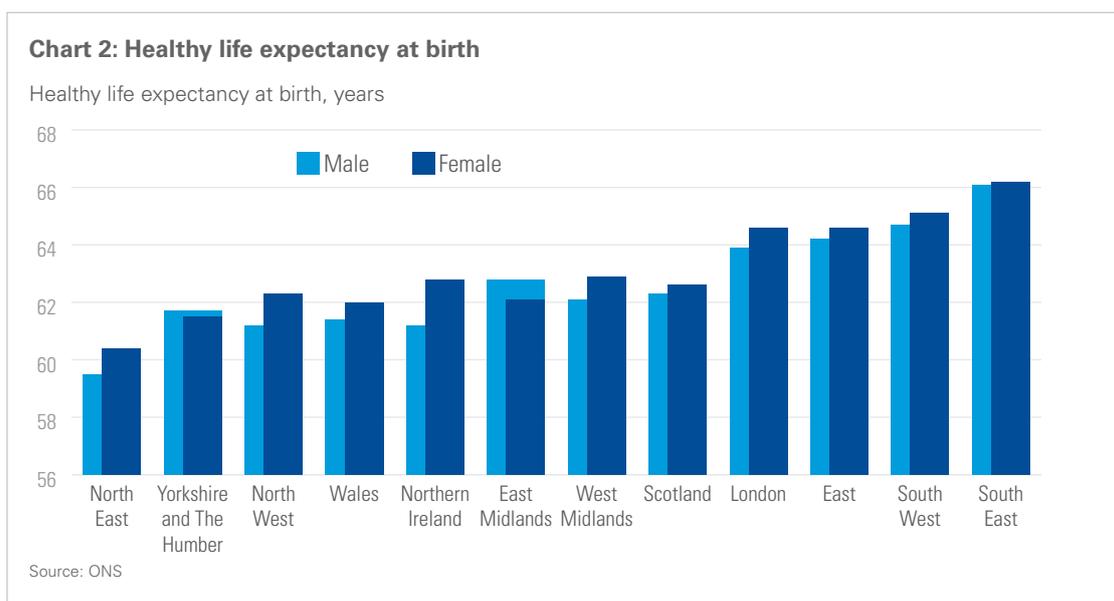
- Transport strategy needs to support larger agglomeration areas and factor in emerging technologies and commitment to zero carbon
- Digital technology can be used to extend agglomeration areas and provide remote places with access to market, while increasing the attractiveness of a place to residents, but Government needs to be more ambitious in its coverage targets
- Local universities have a central role to play in helping improve productivity of local businesses and should be encouraged to set up centres of innovation to support local start-ups
- Additional funding is needed to support local intervention programmes to lift the performance of schools and improve pre-school education offerings
- Increase funding for permanent sport and cultural facilities at the centre of each agglomeration area and divert more state funded cultural initiatives to the regions
- Investment in housing and in other elements of our framework needs to deploy spatial planning in order to maximise returns.

Introduction

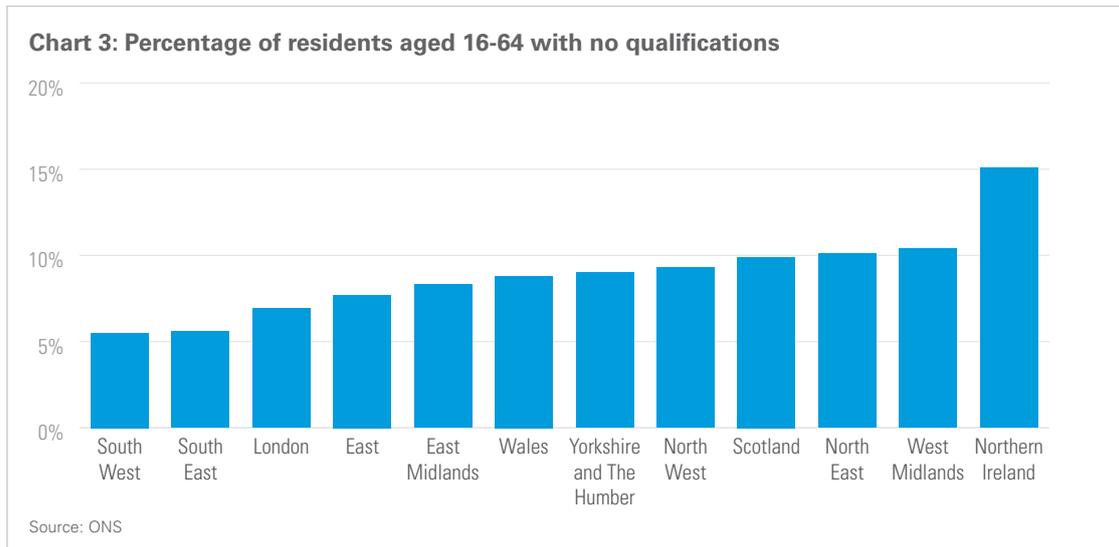
While parts of London and the South East are among the world’s wealthiest and most productive areas, other regions of the UK perform much worse. Despite this, however, London ranks bottom place among UK regions for life satisfaction. Chart 1 shows the magnitude of the imbalance.



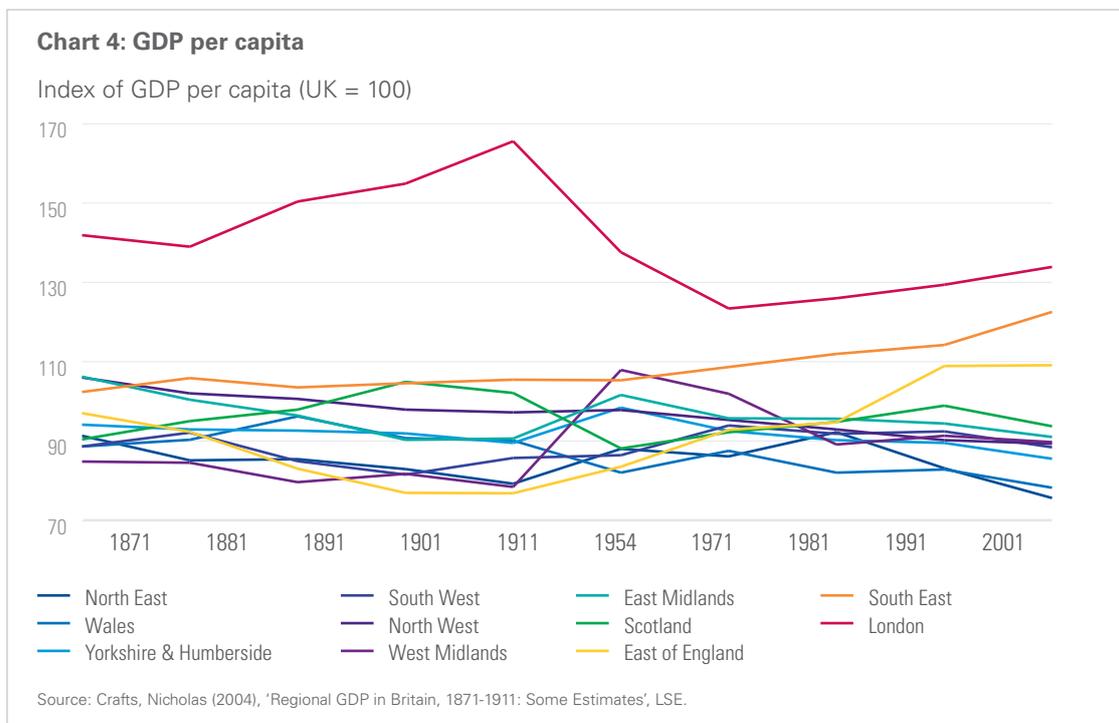
Other metrics identify similar disparities, with Chart 2 highlighting the gaps between healthy life expectancies around the UK. In the South East, men and women can expect to live healthily for 66.1 and 66.2 years respectively; these figures fall to 59.5 and 60.4 in the North East.



Regional gaps are also evident in skills and education outcomes, illustrating the inequality of opportunity facing local people. As Chart 3 shows, while only 5.5 percent of residents aged 16-64 in the South West have no qualifications, the figure is 15.1 percent in Northern Ireland.



Regional inequality is not a wholly new phenomenon in the UK, but the gap has certainly been widening since the 1980s. Chart 4, based on estimates of GDP per capita going as far back as 1871, shows London consistently far ahead of other regions in the UK. At its peak in the early 1900s, London's dominance was more pronounced than at any other time subsequently. The gap then closed during the middle of the 20th century but from the 1980s onwards, regional inequality once again began to increase.

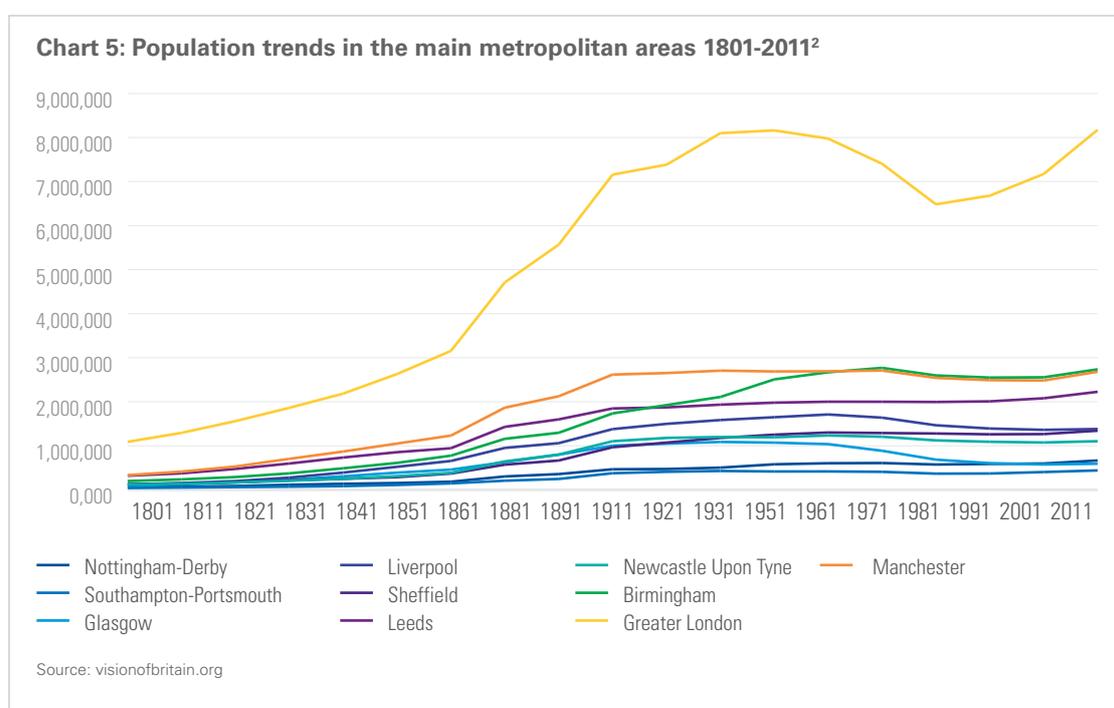


The example of the West Midlands is instructive. In the 1950s, its GDP per head rose sharply to overtake the South East and become second only to London. This reflects the impact of the car manufacturing sector, which propelled the region forward – and then back again as the industry went into decline.

The same story of growth and relative decline is evident in population data for the UK's major cities. Chart 5 shows historical population trends in the UK's 10 biggest urban areas. By the early 1800s, London was already the most populous city in the UK, with more than a million residents, but other cities were also experiencing rapid population growth. Manchester reached the million mark in the middle of the 19th century and a peak population of 2.7 million by the 1930s. In the 1950s, Birmingham caught up with Manchester, amid a period of strong economic growth in that region.

For most cities, the post-war years were characterised by gradual decline; by the start of the 1980s London had lost 1.5 million residents and a similar fate befell Manchester, Birmingham, Liverpool and Glasgow¹, albeit to varying degrees. Leeds is the only city that continued to grow, though it did so slowly.

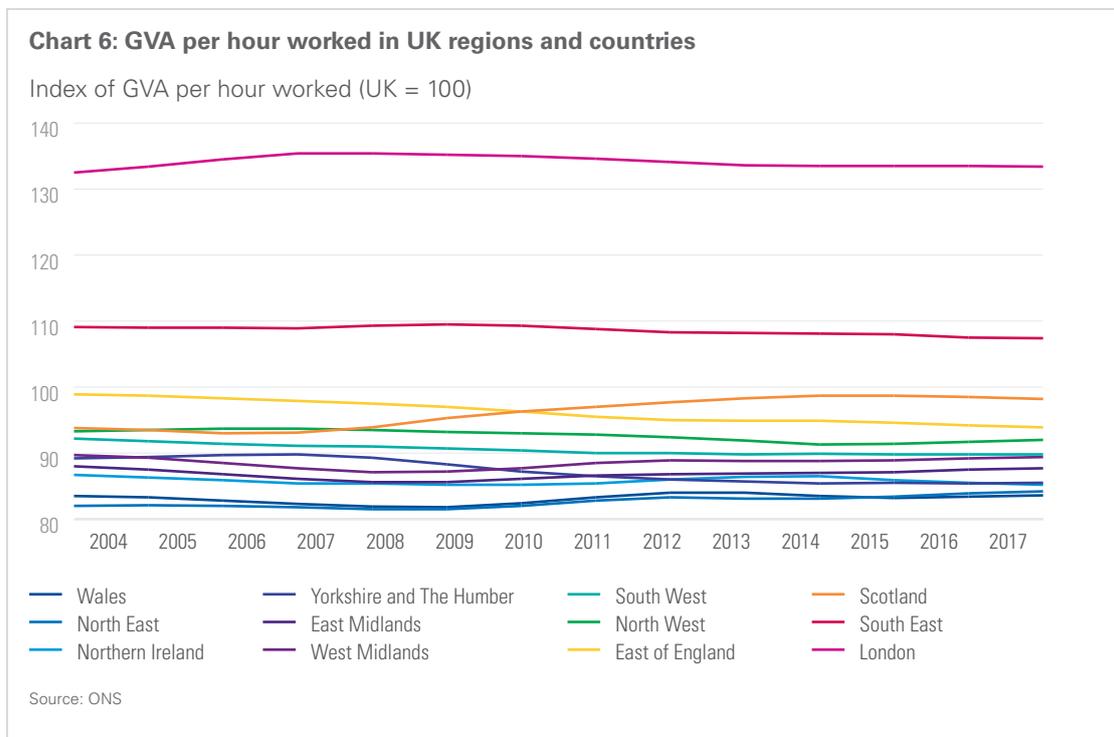
A recovery has taken place since then in London, Birmingham and Manchester; the decline has been arrested and populations have recovered lost ground.



However, while these cities have found ways to begin reasserting themselves in the new UK economy, much more can be done. As Chart 6 shows, in terms of GVA per hour, which takes into account commuters into London, the gap between London and other regions has remained largely unchanged since 2004. Such is the dominance of the capital, only the South East region of England is also able to outperform the UK average.

¹ Population decline in Glasgow was exaggerated by the redrawing of local government boundaries in the early 1990s, which reduced the size of Glasgow City local authority area considerably.

² Metropolitan areas data is used for all the reported cities except Glasgow, Southampton & Portsmouth and Nottingham & Derby: in these cases data is reported on the Unitary Authority level. Nottingham & Derby also includes Erewash district.



Significant efforts have already been made to accelerate growth outside London. Attempts have also been made to better capture agglomeration benefits in other parts of the country, including the close coordination of plans across several regional authorities. An earlier initiative involved the collaboration of the three northern Regional Development Authorities (RDAs) to form “The Northern Way” in 2004, which was intended to address the needs of large cross region projects and the promotion of the North of England abroad. Since the abolition of RDAs by the Coalition Government in 2010, the **Northern Powerhouse** concept has been established, aimed at boosting the economies of the North West, North East and Yorkshire and the Humber regions through investment in transport, skills, innovation and culture.

Transport has so far been the core focus of the Northern Powerhouse, most notably through the establishment of the statutory sub-national transport body **Transport for the North (TfN)**, which aims to influence transport investment in the region, working closely with central government. This includes the development of a Strategic Transport Plan (STP) which identified £70bn of investment in strategic connectivity across the region. The STP includes important interventions such as the Northern Powerhouse Rail programme to radically improve journey times and service frequencies between the North’s major cities and economic areas, enabling those economies to function as a single agglomeration.

The **Midlands Engine** was announced in 2015, also with a strong focus on transport projects to connect the major cities in that region through the sub-national transport body **Midlands Connect**, while other sub-national transport bodies exist or are in the process of being set up, including England’s Economic Heartland and Transport for the South East. HS2 is the biggest transport infrastructure project currently planned in the UK, connecting London with Birmingham and on to Manchester and Leeds, and the Oakervee review of the project is due to publish its recommendations shortly.

Despite all these efforts, more investment will be needed to lift growth prospects outside London. This report outlines a framework that can be used to help accelerate regional growth and offer better economic opportunities for people across the UK. Sustained regional divides and the lack of economic opportunity in some regions are the common denominator in many issues facing the UK, from low productivity growth to the political and social fissures affecting our country.

The report therefore seeks to support policymakers as they develop strategies to enable the regions to fulfil their potential. It examines how to maximise agglomeration benefits with a range of targeted interventions to increase business production, while at the same time improve the quality of life for residents. Both of these angles are essential components of regional policy.

The first section of the report looks at the need to maximise the benefits of agglomeration and support a handful of strong and dynamic cities that can become the centre of economic opportunities for residents in each agglomeration area. The report then looks at the framework of interventions we developed to accelerate growth, with examples from the UK and elsewhere of successful policies to consider emulating and some failures where lessons can be learned. Finally, it discusses the role that different parts of government should play and what they will need in order to be able to step up to the challenge.

Creating larger agglomeration areas with solid cores

- There is a need to maximise agglomeration benefits further in the UK by better linking more economic areas together
- Agglomeration areas will need strong cities at their centre that can drive growth and accommodate dynamic business clusters in order to succeed
- More investment is needed to create a multi-layered regional transport network that will provide effective connections between the cities at the heart of the agglomeration area and the satellite towns, suburbs, and rural neighbourhoods that they support.

In a world where resources are limited – both in terms of the availability of public funding and government’s capacity to oversee investment – close attention must be paid to where different interventions are made in order to maximise the benefits for all. Research by the OECD (2018) and others highlights the importance of creating larger well-connected areas that can capitalise on the agglomeration benefits that accrue from the concentration of businesses and people. They also find that at the heart of a successful agglomeration often sits a well-functioning city as its core. That means the UK can maximise the impact of future interventions by creating larger economic areas with sufficient critical mass to capitalise on agglomeration benefits, and by developing strong cores at their centre to drive growth.

Such an approach requires well-functioning links between the city cores and their less dense surrounding suburbs and rural areas, as well as smaller ‘satellite’ towns in each agglomeration area. Efficient local transport infrastructure that creates an easy commuting distance increases the potential size of an agglomeration area, facilitating the interaction between more businesses and increasing their labour pool, while providing residents with greater access to employment opportunities and services.

The impact of the industrial revolution shaped the size and form of UK’s towns and cities over centuries. The North and Midlands in particular, which specialised early on in manufacturing and mining, have had businesses disperse extensively across relatively small-scale centres. Now that the UK economy has shifted towards services, larger urban centres have become more optimal for business, and there is a need to consolidate business activity in a smaller number of larger cities supported by larger agglomeration areas.

The ongoing transition towards a knowledge-based service economy involves a shift that is happening at an ever-faster pace. While the industrial revolution took place over the space of centuries, the current transition has been compressed into decades. Moreover, new technologies such as electric and autonomous vehicles, as well as the impetus to address the challenges posed by climate change, will trigger further changes in coming years.

Chart 7 outlines the relationship between the core area, surrounding residential suburbs, smaller satellite towns and rural neighbourhoods. A strong core provides a vibrant community of firms that includes suppliers, customers and peers. This community often acts as a catalyst for innovation and rising productivity, as new ideas are transferred across firms creating knowledge spill-overs. The core area represents the largest and most densely concentrated centre of economic activity in the region, large enough to benefit from economies of scale and to promote growth in a modern service-based economy. Each agglomeration area requires at least one core area to drive its growth, but it is possible to have more than one centre, with each potentially hosting different clusters of specialities.

In order to maximise the benefits of agglomeration, it is the effective reach of each core to a large number of people, regardless of whether they are in situ or connected through an efficient transport network, which matters most. The population or geographical size of the area immediately around the core is less important. Core urban areas must have efficient transport links with residential suburbs, where the majority of core workers will live, as well as with smaller satellite urban centres that will rely on the core for specialised services, employment opportunities and more.



The core areas are important not just for their production capacity but also as centres for the principal cultural and educational assets of the agglomeration area. Education and cultural institutions in the core must reach out to engage and cater for the broader agglomeration area. In this way, the transport network's extension out from the core facilitates both social and work commuting patterns. This makes it even more valuable, with the benefits of efficient transport links extending beyond economic growth to broader social welfare and improved quality of life across the agglomeration area.

This geographical approach will encourage the use of public transport. De Vos J. (2015) showed that despite a shared historical background, language and income level, differences in planning have led to very different travel patterns in the Flanders region of Belgium and in the Netherlands. The more compact city-centric approach taken in the Netherlands encourages increased use of public transport and cycling compared to the more dispersed settlement pattern in the Flanders region of Belgium, with commuters in the Netherlands almost twice as likely to use public transport as in Flanders.

Areas outside the highly concentrated urban cores will be more heavily focussed on providing less specialised services and cultural amenities for local residents.

As noted in Kolko (2010), access to consumers is a key factor in explaining location patterns for some services, particularly those that must be consumed in-person and are sensitive to travel costs, such as hairdressing, vets, and restaurants. Connections to rural areas would ensure both sufficient provision of local services through access to satellite centres, and improved access to the more specialist business, educational, health, and cultural offerings located in the core of the agglomeration area.

Some areas will remain too geographically remote to link to an established agglomeration area, even as new transport technology becomes available over the coming decades. These areas could still benefit from the development in communication technology (see case studies in the next chapter), which can open up markets for local businesses, and it may be possible to establish a successful business cluster there. Tourism and leisure-based services could also be viable depending on the location's endowment.

Significant investment will be required to adapt the UK's economic geography to the needs of a services-based agglomeration economy. It will also entail greater cooperation between neighbouring regional authorities. However, doing so will help boost UK's productivity, rebalance regional economies, and provide better opportunities throughout the country

A framework for growth

As the government seeks to promote stronger growth momentum across the regions, it is important that funding is well targeted and the extra spending does not go to waste. The current environment of low interest rates, coupled with political consensus that more spending is needed to bolster regions outside London, provides a window of opportunity to step up investment in order to secure a more prosperous future for local communities.

But with UK public debt already relatively high, there is limited room for further borrowing, and many conflicting priorities after a decade of austerity, including the need to transition to zero carbon and handle the consequences of an ageing population. In practice, the largest city region investment programmes – in London and Manchester – have for some time depended on substantial amounts of local funding. This trend towards local funding may need to accelerate, especially in London and the South East. There will also be a need to draw on new taxes that tap into the value created by the investment, for example on residential property.

The challenge facing regions that have seen their fortunes decline should not be underestimated. There are rarely quick and easy fixes for long term regional economic decline. As Duranton and Venables (2018) highlight, earlier interventions have often failed because only some elements of what is required to reignite regional growth were addressed in isolation. Policymakers must prioritise the right areas but at the same time ensure their approach does not leave other important elements behind. It is also important to assess the fuller impact of investments when prioritising interventions, including how projects of different types (for example transport and housing) interact.

For this reason, the framework we have developed to help accelerate economic growth in regions outside London rests on three pillars:

- Building a fertile business environment
- Creating regions that are magnets for people, and
- Securing an enabling governance

Each pillar represents an important structural component of the blueprint for the success of a region. We look at each in turn and what it may entail.

1. Building a fertile business environment

- Transport strategy to support larger agglomeration areas and factor in emerging technologies and commitment to zero carbon
- Digital technology can be used to extend agglomeration areas and provide remote places with access to market, while increasing the attractiveness of a place to residents, but Government needs to be more ambitious in its coverage targets
- Local universities have a central role to play in helping improve the productivity of local businesses and should be encouraged to set up centres of innovation to support local start-ups

Fostering a fertile business environment is key to lifting the entrepreneurial momentum of regions. Such an environment helps local companies grow and attracts new businesses to the region. The benefits of a growing local business community are in turn shared by local residents through better employment opportunities and increased funding for local amenities.

In order to thrive, businesses need a stable yet stimulating environment, with supportive infrastructure, local innovation and access to capital.

i. Upgrading regional infrastructure

An effective multi-layered regional transport network

Improving transport infrastructure has traditionally been one of the main policy tools for supporting regional economies. As the focus of regional policy needs to further centre on maximising agglomeration benefits, the focus of transport policy needs to adjust, so it can support a handful of core regional hubs with an efficient multi-layered network of regional transport links. As we highlighted in the introduction section of this report, a number of regional transport initiatives are already in place in the UK, but much more will need to be done to link larger commutable areas to core regional business and cultural hubs, as well as increase capacity on busy routes to ease local congestion. Funding the required investment will be a challenge, but without a significant investment in regional transport links, there will be no glue to hold these larger agglomeration areas together.

KPMG framework for growth



New technologies are expected to transform the transport sector and have wider implications for the way businesses and consumers behave in the future. KPMG (2019) highlights how electric and autonomous vehicles, along with the adoption of Mobility as a service, could herald an era where the costs of transport and logistics are significantly reduced. The shift to renewable energy, as part of the drive for zero carbon, will also have an impact. These trends should be incorporated into longer term regional transport plans.

Transport connectivity within regions and the quality of local transport infrastructure affect the level of productivity of the local economy. An effective economic area is highly sensitive to travel time, and transport policy needs to enable the creation of a larger functional economic area within each region. Chatman (2013) shows in a study of US urban areas that a 10 percent increase in transport capacity³ leads to an increase in average wages of between 0.23 percent and 0.26 percent and to an increase in the level of GDP of between 1 and 1.5 percent for the metropolitan area.

In urban environments, this puts the emphasis on efficient, high capacity public transport that can cope with high volumes of traffic during rush-hour. Research on travel patterns in **Birmingham** shows the extent to which congestion affects the effective size of the city during peak hours. Forth (2019) shows that while the area reachable within 30 minutes by public transport covers 1.7 million residents outside of peak time, this falls to 900,000 in peak time due to the effects of congestion on buses, on which the city depends. By contrast, cities that use more extensive tram and underground systems show less variation due to congestion.

Congestion creates considerable costs for transport systems that rely on road transport. Moya-Gomez (2017) uses data from TomTom devices and shows the impact congestion has on road networks. It finds that accessibility⁴ in eight major European cities drops by between 25 percent and 35 percent in the morning rush hour. London, Paris and Rome suffer the greatest levels of congestion and despite a smaller population Barcelona has greater levels of accessibility than London.

³ Defined as bus and rail seats/density or rail service miles per capita

⁴ Estimated as an index based on travel time to other destinations and the population size within the city area.

Switzerland provides an example of a highly efficient transport network that covers a broader spectrum of geographical densities. According to Desmaris (2013), this is courtesy of a series of reforms focussing on the governance of the rail industry, including the 1996 Railways Act, and the Railway Reform 1 and 2 in 1999 and 2005. The introduction of a net cost contract allowed the regulator to fix the costs of service provision while allowing room for the operator to generate profit by increasing productivity and lowering the cost of operation. The level of current public spending on regional rail transport fell by 20 percent between 1993 to 2011, while service provision increased by 52 percent between 1995 and 2011 in terms of passenger-km. The drop in current spending has been matched by a significant increase in investment in rail infrastructure, rising from 200m CHF in 1995 to 1,500m CHF in 2010, all the while keeping the overall funding envelope on rail transport, which includes both national and regional rail, roughly unchanged.

In addition, the local authorities situated in Switzerland's cantons became entirely responsible for organizing the provision of regional services in their region. A strict control of service required high service levels with a stable 90 percent punctuality for trains and a 97 percent rate of successful connections for passengers in 2018. The Swiss approach is also innovative for the way that the timetable of regional and rural services have been organized along the lines of a pulse-timetable, according to Petersen (2016). This allows multiple services to coincide their arrival time at key points in the network, which facilitates quick transfers for onward travel for passengers. The pulse system is aligned across the entire network, with services running at 30- or 60-minute intervals, connecting with bus services in more rural areas and increasing the overall efficiency of the regional rail and bus network.

In rural areas with dispersed populations, where traditional transport links may prove unviable, there are still both economic and social justifications for keeping lower density populations connected to basic social and business services. The emphasis may need to be on developing flexible services that can respond to demand, with technology enabling new types of flexible services. Powell (2018) describes the current situation in many rural areas as a "poverty of access" due to the limited scope and operation of public transport there, which can lead to wider social impacts such as social isolation, exclusion and lack of access to essential services.

Bwcabus is an example of one of the demand responsive transport schemes that is currently in place in the UK, which offers a flexible bus service to rural areas in **Wales** where regular services are not available. Bwcabus offers the option of pre-booked travel with no fixed timetable. Results suggest that the scheme has increased accessibility for areas covered, with the average journey time to employment centres falling to 27 from 52 minutes according to the Campaign for Better Transport (2018).

Similarly, **South Staffordshire** offers a bookable "Connect" bus service for residents who do not live near a regular bus route or those who find using one difficult. The service charges a fixed fee of £3.00 for a single trip and £5.00 for a return. South Staffordshire Rural Transport Partnership (2013) reported that 18,000 trips were made using this service in its first year of operation, 2012-13, by 1,600 registered residents.

Other forms of flexible transport provision may include an option to car-pool or a car-club, which offer access to a private vehicle. Carpooling is an important component of transportation in France. One commercial operator, Blablacar has set up an online marketplace that has now expanded to 22 countries and 80 million users. In the UK, uptake has been slower for a variety of reasons, including a concern about the potential insurance implications. Co-wheels car club is currently the largest UK organisation offering an alternative to car ownership, although many other app-based schemes exist, including some that cover electric vehicles. According to Co-wheels' own information, it has now launched car clubs in 60 locations across the UK.

Enhanced digital connectivity

Telecommunications is an essential component of a successful infrastructure strategy. With a large portion of economic activity shifting online, access to a fast and reliable internet network is imperative for businesses seeking to connect with customers and improve their productivity. In addition, the possibilities unlocked by the broadband network for teleworking improve access to workers in more remote regions of the UK, as well as the provision of services such as home diagnosis by medical specialists. Telecommunications technology may therefore extend agglomeration areas in some circumstances beyond places that current transport infrastructure can link, while also providing more remote areas a viable access to market and the potential to develop small clusters of industry.

The overall impact of access to broadband was examined by the What Works Centre for Local Growth (2015), which found that broadband provision can affect productivity and employment among others. However, the study also showed that these effects may not be large and can in some cases have a negative impact on local business, with the overall economic impact tending to be more significant in or close to urban areas.

Other evidence is more positive. Superfast **Cornwall** was set up to deliver superfast broadband internet access (>30Mbps) to 80 percent of households in Cornwall, with funding provided jointly by ERDF (£53.5m) and BT (£78.5m). SERIO (2015) found that local businesses have increased their internet usage, with 79 percent reporting that the scheme enabled them to save time or money. In addition, it is estimated that the uptake of superfast broadband created an additional 1,079 net new full-time positions in businesses in Cornwall.

A survey carried out by Munday (2019) in **Wales** shows that 38 percent of rural businesses are likely to secure a majority of sales through online channels compared to 32 percent of urban businesses. The same survey also shows that in 2018, 52 percent of SMEs reported that access to superfast broadband had a positive impact on their profits and innovation; 24 percent of SMEs also reported a positive impact on their employment levels.

Access to a reliable and fast broadband connection should be prioritised particularly in regions where the costs of increasing connectivity through transport are high. This means that public support may be required in more remote regions, where the size of the market is insufficient for the private sector to expand the reach of the existing network. The R100 Programme in **Scotland** has an aim of rolling out superfast broadband to 100 percent of properties. The Government's current targets for the availability of full fibre in the **UK** are to have 15 million premises connected by 2025, with coverage across all parts of the country by 2033, while for 5G networks its target is for the majority of the population to have coverage by 2027. Given the role digital connectivity needs to play in the UK economy, it would be good to see targets brought forward by the Government. The DCMS pointed out in 2018 that the UK was far behind internationally, with only 4 percent of premises with full fibre connections, compared to 7 percent in Germany, 71 percent in Spain and 99 percent in South Korea.

Since 2014, the European Union has supported the Rural Broadband Project in **Greece**, which aims to provide broadband coverage to remote areas with no internet infrastructure due to low commercial viability. An EU (2018) evaluation found that the project improved the productivity in remote areas through the availability of tele-working and cloud computing. Local residents and businesses saved on travel expenses, which contributed to both quality of life and energy efficiency. The introduction of e-government, e-health and e-skills to remote areas has also enhanced the productivity of the public sector.

In addition, the European Network for Rural Development (2019) highlighted that broadband access helped foster small business growth in the agricultural sector and allowed these firms to compete more efficiently in world markets. The application of new technology such as precision farming and big data in the production and marketing process became possible, opening up new opportunities for productivity improvement in agriculture.

Fibre-to-the-home (FTTH), the broadband network connection that uses optical fibre from the operator's network to connect right into the home, provides additional benefits. These include higher speed, higher reliability and less downtime for users.

FTTH infrastructure also has a longer life time and comes with lower operating cost than existing copper networks, with its higher capacity making it more future proof as consumer demand for services goes up over time. Sweden and the Netherlands are two of the leading countries for FTTH penetration, where consumers have been migrating to FTTH since 2007.

Xiong (2013) investigated the socio-economic impact of FTTH deployment in Sweden and concluded that fibre penetration has had a significant impact on the population's behaviour, with the increased attractiveness of municipalities with FTTH. It highlights the importance of telecommunications infrastructure not just for attracting businesses but also people (which is covered by the second pillar of our framework below).

FTTH can enable the provision of higher quality healthcare at greater convenience to the elderly in small towns. FTTH Council Europe (2018) reviewed the experience of **Hudiksvall** in Sweden, which was selected as one of the pilot communities for the EU Connected for Health project. The widespread availability of FTTH in Hudiksvall enabled various new e-Health services, as it offered connections with high reliability and low latency, which are important for applications such as video communication, digital alarm and night supervision.

Nuenen in the Netherlands provides an additional example where fast broadband access in remote rural areas brings about efficiency gains through the application of "precision farming" or "smart farming" technologies. With access to FTTH, Nuenen farmers were able to use cameras and sensors to continuously observe livestock, often at multiple locations, and monitor soil conditions.

Revitalised urban spaces

Shortages of office space represent a significant constraint in some areas of the UK and can choke off growth in vibrant areas of the country. While private sector developers can usually provide office space efficiently, regulatory restrictions may have negative effects. Estimates by Cheshire (2008) suggest that, back in 2005, rent costs in Birmingham and Leeds were 268 percent and 217 percent respectively above the cost of office construction as a result of local building restrictions. This compared particularly poorly with international competitors such as Amsterdam or Brussels, which had rent costs of only 192 percent and 84 percent above construction costs respectively. In the West End of London, the mark-up on construction costs was found to exceed 890 percent.

The existing system of planning regulations performs an important public function by preserving the cultural and natural heritage of the UK. However, local governments could designate specific locations for a more flexible planning approach and use these as engines for local growth when appropriate.

The Isle of Dogs Enterprise Zone in London, which led to the development of **Canary Wharf**, is a successful example. Planning in the zone was the responsibility of the London Docklands Development Corporation – an appointed body representing business interests – while further simplification of the planning regime was made possible due to the enterprise zone designation. This, together with heavy investment in public transport infrastructure, contributed to the area developing as a significant financial services centre.

Many local authorities grapple with the need to regenerate large swathes of land in the city centre in order to make way for a new dynamic core that will service the region.

Birmingham Bullring, which was completed in 2003, provides an example of a city centre regeneration led by the retail sector. The rebuilding of an older 1960s era shopping centre along modern lines provided a substantial boost to the city centre of Birmingham and enabled a wider scheme to create a modern pedestrianised central business district at the heart of the city. The initial success of the scheme propelled Birmingham to third place in nationwide rankings of retail destinations, up from 13th place before the scheme's opening. Today, the central business area of Birmingham provides for around 4,700 full-time-equivalent jobs, although significant challenges persist in areas outside of the regeneration zone.

The Barracks Row Main Street Programme (BRMS) in **Washington D.C.** offers an example of a broader urban renovation programme that included business support services to promote sustainable economic development. The Eighth Street suffered from a high concentration of poverty and local disinvestment before the 1990s. To revitalize the area, local businesses joined forces to form Barracks Row Business Alliance and initiated the Barracks Row Main Street Program, which provided a comprehensive package of technical and financial assistance to revitalize the commercial district through design improvements. Central to the Program was the close cooperation among all stakeholders, including government, bankers, merchants, property owners, community leaders, residents and others. A design committee worked with businesses and building owners to help improve their building façades. BRMS also opened a small business resource centre, which assisted entrepreneurs and existing businesses with seminars and business support services, such as computer, email, fax and copier capacity. Consultants were hired to help merchants better merchandise their stores and attract new customers. The upgrading of commercial property attracted new businesses and created the condition for sustained growth of the area. 47 new businesses were opened between 1999-2005. Two new buildings were constructed in the same period and several national chains, including Kinkos, Radio Shack, Curves, opened for business in these buildings. The area became a bustling commercial centre in Washington D.C. where people feel safe visiting and shopping.

In **Manchester**, initial regeneration efforts began in the 1980s with collaboration between the city authorities and the private sector. By the 1990s the city was experiencing a shortage of office supply, which led to an initial wave of construction activity. Further impetus was provided by an IRA terrorist bombing in 1996, which destroyed a large area of the city and caused significant damage. A substantial redevelopment followed, focused on restoring retail space, and was completed by 2000. Together with other initiatives undertaken by the city of Manchester, this supported a 39 percent increase in jobs between 1998 and 2008 following decades of decline.

ii. Igniting local innovation

Innovation is a vital component of future growth, key to improving productivity and future standards of living. Rodriguez-Pose (2015) points to the importance of promoting innovation within regions, due to the benefits from local knowledge spill-overs and co-operation between local firms, and the need to attract highly skilled workforce. It is therefore important to have a regional ecosystem that supports innovation across the public and private sector, through formal and informal networks as well as spaces specifically designed to foster collaboration.

Local universities often play a central role in supporting early innovation efforts. As a framework for university and business cooperation, Lester (2005) outlined four possible roles that universities can play in nurturing the knowledge economy:

- seeding new industries that previously did not exist in the region, mainly through the spinning off new firms or the licensing of research;
- encouraging the relocation of businesses that can benefit from the university's research base;
- supporting the diversification of existing industries into related technological areas; and
- promoting upgrading of technology in existing industries.

Many local authorities acknowledge the potential benefits of capitalising on the innovative capabilities of local universities and businesses, but there is no one-size-fit-all approach that will suit all regions. Jensen (2007) noted that there are two modes of innovation. The Science, Technology and Innovation (STI) mode is based on the production and use of codified scientific and technical knowledge while the Doing, Using and Interacting (DUI) mode, relies on informal processes of learning and experience-based know-how. It is important that local authorities take a more nuanced approach to evaluate the nature of local industries and the research capabilities of local universities and consider the best way to facilitate their collaboration. It is quite likely that the UK only requires one or two STI centres. The US, for example, has sufficient with just two; Silicon Valley and Boston.

Most UK regions should therefore encourage DUI type innovation, which looks at ways to adapt existing technologies to local businesses. KPMG (2017) explored this issue in an earlier report. Public funding for university research should be used more actively to encourage universities in DUI institutions to collaborate more with local businesses and make their research more applicable to the local business community.

Isaksen (2010) looked into two cases of highly innovative industrial clusters in **Norway** and investigated how the different innovative patterns of the industries led to different depth and modes of cooperation between universities and businesses. The marine biotechnology industry in Tromsø primarily follows the STI mode. The role of the University of Tromsø is therefore as a source of new technology and related spin-offs. The equipment manufacturing industry, in contrast, mostly follow the DUI mode. The equipment suppliers in Agder have become world leaders in some niches, almost without research cooperation with universities. The benefits of cooperation mainly stem from the recruitment of skilled candidates and applied research projects with technical universities, which are closer to a role in promoting upgraded technology.

The Italian region of **Puglia** is part of one of the most deprived areas of Italy – the so-called Mezzogiorno – but has nevertheless been successful in adopting innovation. Capriati (2007) notes that aerospace facilities were historically located in the area, which required high level of skilled workers according to ARTI (2015). Subsequently, a number of large aerospace companies were established locally, taking advantage of the facilities and specialised labour force. The cooperation between private firms and the universities has been strengthened by the creation of an ‘innovative zone’ called DTA (Distretto Tecnologico Aerospaziale), which incorporates the spin-offs from private sector cooperation with Università di Bari, Università del Salento and Politecnico di Bari. According to the DTA (2019), the area specialises in the production of aerospace technologies such as unmanned aircraft, specialised software systems and new composite materials, and had 38 firms and about 5,200 workers in 2015 according to ARTI (2015). Recent regional projects aim to capitalise on the success of the area and increase its international competitiveness by increasing international collaboration to help promote the region’s activities abroad.

Pittsburgh undertook its office space augmentation plans in close cooperation with Carnegie Mellon University (CMU), a leading research institution in computer science in the Pittsburgh region. It recognised that CMU was a local driver of innovation and saw the importance of commercialising its knowledge within the broader economy.

By the early 2000s, CMU’s research was generating significant interest from technology businesses, and local political and business leaders sought to facilitate closer cooperation between businesses and the university. Carnegie Mellon News (2002) reports that the city realised it would be of mutual benefit if businesses could be permanently based closely to the university, rather than flying in and out. The Regional Industrial Development Corporation of Southwestern Pennsylvania invested in the Robert Mehrabian Collaborative Innovation Center in 2003 with support from State grants. The centre provides 136,000 square feet of dedicated office and laboratory space, where companies and CMU researchers can work collaboratively. The venue became a major success, with Google, Apple and the Walt Disney Co. all establishing their first Pittsburgh offices there.

The city of Pittsburgh has also generated long-term growth momentum by continuously fostering new businesses and opportunities through start-up accelerators. Holstein (2017) noted that although entrepreneurship is important to sustainable growth, there are market failures, such as asymmetry of information, perception of high risk and limited access to financing, that inhibit start-ups and increase their failure rate. The city of Pittsburgh tackled these obstacles through a network of incubators and accelerators, both publicly and privately funded, that offered affordable and tailored services to start-up companies. An example of a state-funded accelerator is AlphaLab, which helps early-stage technology start-ups bridge the gap between technology and product. Aside from seed funding, participants benefit from an extensive set of business services that are often costly for start-up companies to purchase from the market. These include working space, mentorship from AlphaLab’s network of entrepreneurs and investors, and educational sessions on topics such as design, financing, marketing, and accounting. AlphaLab became one of the most successful accelerators in the US, attracting US\$140 million in additional funds from private investors in 2014 alone. AlphaLab has graduated 52 new businesses in its first eight years, all contributing to local employment and future economic growth.

In the UK, there are also examples where universities have played an anchor role in local development. Andrew (2019) discusses the approach behind the MIT Regional Entrepreneurship Acceleration Programme in cooperation with **Leeds** University, which looks to bring all components that drive innovation into close geographical proximity and build up a network of services that support an innovation-driven entrepreneurial system, including academic research, accelerator programs, risk capital, mentoring and advice.

Newcastle Helix (formerly Science Central) offers another example of how close cooperation with university has assisted young companies. It provides office space for start-up businesses as well as a space where businesses can collaborate with academics from the University.

The project has grown from an earlier vision of a partnership between the city authorities and the University of Newcastle, with the initial phase of Newcastle Science Central designed to address the gap in the market of office space for start-up businesses. The overall site continues to develop; the ambition is to provide 4,500 jobs as well as space for 450 homes on the site.

Breach (2019) looked at **Sheffield's** Advanced Manufacturing Research Centre (AMRC), which was founded in 2001 as a collaborative venture to accelerate technology adoption, involving universities and business, and became part of one of the government-backed innovation centres, branded as 'catapults' in 2011. The centre provides a space and facilities where firms can engage in innovation and the trialling of technologies. By pooling resources and providing access to skilled staff from the University of Sheffield, the AMRC reduces the costs of engaging in R&D. Any research produced at the AMRC is not patented and is freely shared among member firms, accelerating technology diffusion and adoption. AMRC employs up to 500 researchers across sites in South Yorkshire, Broughton and Preston and maintains collaborations with over 110 industrial partners, including Boeing, Rolls-Royce, BAE Systems and Airbus.

iii. Facilitating funding

Access to finance is essential if firms are to grow. The What Works Centre for Local Economic Growth (2016) found that programmes aimed at improving firms' access to finance had at least one positive outcome on firms in 17 out of 27 cases. In 14 of these cases, they led to improvements in firms' performance, such as increased sales or employment. However, the study also found some evidence that loan guarantees increase the risk of default, while the effectiveness of targeting SMEs over larger firms was inconclusive. The review also noted that very few studies reported the costs of policy programmes, making it impossible to assess whether these types of interventions represent value-for-money.

Case study evidence points at schemes that provide SMEs with access to funding jointly with the provision of business advice as particularly effective. In **England**, the Growth Hubs have been established around the LEPs to help provide advice to businesses. While their main role revolves around providing a sign-posting service, and not funding, some evidence points that some Growth Hubs have been reasonably effective. The evaluation of the Heart of the South West Growth Hub in 2019 suggests a return on investment of between 1.2 and 3.5 percent, reaching up to 9.2 percent of businesses in the area covered by the LEP.

Access to bank lending

The OECD (2018) has shown the extent to which restrictions to accessing finance from banks could hamper growth for SMEs. BBB (2016) and Hatfield (2017) note that the majority of **UK** businesses outside London rely on banks for their funding. The British Business Bank (2016) reported that around 100,000 of SMEs' debt loans applications were rejected every year in the UK, leading to £48 billion of unmet demand for finance. However, recent evidence indicates that the expansion of challenger banks has made funding much less of an issue for SMEs in the UK. The British Business Bank, which was also set up to improve access to finance across smaller UK businesses, reported a 27 percent increase in the stock of committed finance to £6.6bn in its 2019 annual report. While the scale and scope of activities of the British Business Bank continue to increase, it is still relatively small compared to Germany's KfW, which held €486 billion in assets in 2018. But this could be increasingly as much an issue of lack of demand rather than insufficient supply in the UK (as well as a later start).

In many European countries funding for SMEs is a more significant problem. An example of a successful intervention can be found in the Italian region of **Tuscany**, which in the early 2000s felt compelled to reorganise its local economy in order to preserve regional competitiveness and maintain a higher growth rate than the rest of the country (6.3 percent versus 5.4 percent in the period 2000-2006). The regional business landscape included a range of low-productivity activities, mainly craft manufacturing, tourism and food and beverage production. While the region previously benefited from a thriving textile sector, it lost its competitiveness. A detailed strategy was developed to improve the region's competitiveness, facilitate access to finance for SMEs, and attract foreign direct investment, as well as to foster innovation. As part of the strategy, the region developed a series of tools to facilitate firms' access to financial resources via co-operation with local banks. Special guarantee funds (Fondo di garanzie per gli investimenti and Fondo speciale rischi per la prestazione di garanzie e cogaranzie) were used to foster internationalisation activities such as the promotion of regional brands, green field investments abroad, and the acquisition of foreign companies, as well as to encourage firms to use venture capital.

In order to facilitate credit access for SMEs, a special scheme – SMOAT (Sistema di microcredito orientato e assistito) – was established. This consisted of a hybrid public-private loan scheme which allowed those SMEs experiencing difficulties in accessing credit – typically innovative or young businesses – to apply for loans. The scheme⁵ provided an average of €15,000 of subsidised-rate loans to SMEs that could not provide the normally required guarantees.

⁵ The scheme was inspired by the Nobel Laureate Muhammad Yunus (Grameen Bank founder) regione.toscana.it/-/responsabilita-sociale-delle-imprese#nota01

The regional government guaranteed between 60 to 80 percent of the loan, as well as providing mentoring, business advice, and assistance in the creation of broad business networks (which it encouraged firms to take part in). The scheme is based on trust and requires detailed due diligence work before loans are provided, which can be costly. Nevertheless, MIPAAF (2015) reported that the scheme provided 103 new loans to firms and individuals which wouldn't have been able to access credit in the first year of its running, totalling €1.5m. While project-specific insolvency rates are not available, in Italy, insolvency rates for the microcredit sector are generally lower than more standard types of loans, ENM (2019) reports, due to the more personal nature of the financial commitment.

Germany has a relatively SME-friendly credit market. According to BIS (2016) only 9 percent of German SMEs report having difficulties in securing the credit they need. In line with other European countries, the share of bank lending as a source of finance for German SMEs is very high. The KfW group, a publicly-owned bank, is the main provider of publicly backed loans for SMEs. The system integrates sectoral and local policies, as different programmes target specific sectors or types of companies – such as start-ups or high tech enterprises – but loan applications are processed by locally based banks. The ERP regional development programme provides subsidised loans to SMEs which are based in a selection of less developed areas. The scheme provides around €410m of long-term loans at favourable interest rates for SMEs that have been in operation for more than three years. A separate programme supports younger businesses.

Initiatives by government to eliminate information asymmetries can help address some of the difficulties facing smaller companies when trying to access credit, while also providing the authorities with more granular data on local SMEs that can be used to improve policymaking. Kuwahara (2019) looked at how **Japan** established the Credit Risk Database (CRD), which collates credit risk scoring, financial data and statistical information on member SMEs, and offers them a range of tools and support with their financial planning, as well as facilitating the matching of SMEs with credit and financial institutions.

The OECD (2017) examines other examples of assistance with funding requirements, including initiatives by the Business Development Bank of Canada and Banque de France. The former supplements financial support with consulting services to SMEs in **Canada**, while in **France** the latter created a network of regional agents who provide advice on emerging financial problems to local small firms.

Public intervention in this area can help untap the potential of high-growth SMEs, providing an additional impetus to the local economy thanks to the more productive environment they create.

Increased role for venture capital and private equity

Heavy dependency on one source of financing makes SMEs more vulnerable to credit retrenchment when the economic environment turns, with the OECD (2018) identifying the lack of diversification in SMEs' finance as a risk factor for many economies. Here, again, the UK enjoys a relatively mature venture capital and private equity industries compared with the rest of Europe.

Van Der Schans (2012) highlights how different types of finance reflect different financing needs. Equity finance and venture capital allocate a higher share of risk to the investor compared to bank loans, which can be more beneficial for high-risk businesses such as young, innovative and growth-oriented firms. Encouraging venture capital to become more involved in local financing could help revitalise the local business environment. Alternative sources of capital, including private equity, are relatively popular in the UK. Compared to the rest of Europe, BVCA (2018) found that the UK's share of private equity investments was high at 13.9 percent of the total global volume in 2018, compared to 25 percent for all the rest of Europe and 43 percent for North America.

However, interviews conducted in the UK by Brown (2014) show that owners of small businesses are reluctant to look for external sources of funding, which impacts their investment decisions. At the early stage of a business, venture capital brings down the cost of debt compared to bank lending, at the expense of a reduction in management's independence. The latter is one reason for SMEs' reluctance to turn to VCs: the implied external control by the venture capitalist is weighted over the potential additional benefits to the business in the form of best practice knowledge transfers.

The popularity of venture capital and equity finance among SMEs is also undermined by due diligence costs and a lack of awareness. While bank lending activities follow almost the same pattern of firms' distribution across the UK, most of the venture capital and equity finance activity in the UK is concentrated in London, which is the destination of 64 percent of equity investments' volume, followed by the North West, Wales and the North East according to BVCA (2018). There is a role for locally tailored programmes aimed at making more information available at the local level. These could increase access to non-bank lending significantly and close the gap vis-à-vis businesses located close to financial centres like London.

Economic zones

Special economic zones, also known as Enterprise Zones, can support the creation of a sustainable cluster of companies, provided the economic zone remains an attractive location even after temporary tax concessions are taken away. The location and the initial conditions of the economic zone are all important factors in the success of the policy, and there are important lessons to learn from earlier zones.

An evidence review by the What Works Centre for Local Economic Growth (2016) found that in the majority of cases, programmes targeting specific areas through enterprise zones had a positive impact on employment and increased the number of businesses in the area. In addition, in half of all cases the presence of enterprise zones increased wages and reduced poverty. However, the What Works Centre also noted that studies pointed to displacement as a source of increased employment in the intervention areas and that there was little evidence regarding the net impact of these policies on wider areas.

The first round of 25 enterprise zones established in the **UK** in 1981-84 highlighted the importance of existing economic endowments for the effectiveness of the policy. Tyler (2012) found that zones identified as “high need” – defined as areas that suffered from low existing market opportunity, poor infrastructure and high costs – saw an average impact on employment of 24.3 new jobs per hectare. Geographically, these were relatively remote, non-urban areas. In contrast, zones identified as “low need”, which included areas with good access to urban areas, but outside of inner cities and with higher levels of existing economic opportunity benefited on average from 43.3 new jobs per hectare. The state of existing infrastructure was an important factor in the performance of the zones, and in many cases substantial upfront investment was necessary to integrate them into the local economy. The study also noted that strictly inner city locations with enterprise zones performed worse than the best-performing accessible zones; these areas saw an average job creation level of 30.3 jobs per hectare. Historically, during this period inner cities tended to be more deprived areas experiencing higher levels of need leading to poorer growth outcomes.

More recent attempts to deploy special economic zones in the UK have had mixed results. The UK government announced the creation of a further 24 zones in 2011, expecting to generate an additional 54,000 jobs. However, the results have so far been disappointing with Swinney (2019) estimating that only 17,500 net new jobs were created between 2012 and 2017.

Evidence from the **US** also points to the mixed effectiveness of enterprise zones. The United States Federal EZ program was introduced in 1994 with the aim of boosting the economies of selected distressed urban areas, using a combination of grants and tax credits for businesses. Hooton (2018) investigated the long-term impact of the US Federal EZ Program on the economy of the targeted areas and found that although enterprise zones can help build economic momentum, the impact is generally not powerful enough to reverse the underlying growth trajectory of the targeted areas. In other words, such zones can help growing areas grow faster and slow the decline in declining areas, but are unlikely to reverse a negative trend. If local authorities in troubled areas have more ambitious policy objectives, enterprise zones could therefore be part of a broader package of development measures for the region.

The use of economic zones to accelerate development has been applied in many other countries, including **France**, where the “Zones Franches Urbaines” were established in 1997. The zones were located in depressed urban areas and provided exemptions from employer social contributions, taxes on corporate profits, business taxes and property taxes for businesses choosing to locate in the zones. An assessment by Mayer (2012) shows that the zones were successful in attracting businesses, with firms 31 percent more likely on average to locate in the zones. However, as in the earlier British example, the impact was smaller in less attractive and more deprived areas. The policy also led to many smaller businesses setting up, with fewer average employees. Additionally, due to displacement effects, the impact at a higher, municipal level was lower.

It is important to ensure that enterprise zones are not seen only as an opportunity for businesses to take advantage of tax incentives. An effective enterprise zone must also foster a self-sustaining business ecosystem in the long run. KPMG (2014) documented how the Incheon bio-industry cluster in **South Korea** started with businesses attracted by tax breaks and grew into a business eco-system. The Incheon Special Economic Zone was set up in 2003, offering a basket of policy support for FDI, including tax incentives, financial assistance, easing of labour standards and administrative support. A US company, VaxGen, was first attracted to the zone, landing a joint venture with local investors called Celltrion in the Technology Park in Songdo. The US parent soon divested, but the company trained a cadre of local workers equipped with the specific skills required to work in biopharmaceuticals, such as isolating protein. The availability of skilled staff enabled Celltrion to continue to expand by securing new contracts with global pharmaceutical companies such as GfK. As its business and workforce grew, other pharmaceutical companies were also drawn to Songdo to benefit from a more compact supply chain and the abundance of skilled workers.

Today, Songdo has become a major player in the bioindustry space. Samsung Biologics, for example, says it invested in Incheon because it had to follow the talent in order to compete in the biopharmaceutical sector.

Tax concessions

In the UK, the administration of business rates is the responsibility of local authorities. Rates are set by the UK government for England, and by the Scottish and Welsh governments in Scotland and Wales. In Northern Ireland rates are partly set by district councils and partly by the Northern Ireland Executive, which creates some variation across local districts in the rate of tax. Scotland currently has a Non-Domestic Rates Bill going through Scottish Parliament and voted just before Christmas to reintroduce local rate setting – as opposed to being set centrally by Scottish Government. In England, while there are a number of reliefs from business rates, including those for small businesses and businesses located in enterprise zones before 2017 among others, the rate of tax is not currently a policy lever available to local policymakers to influence growth in the local area.

The business rates system is in transition to arrangements where revenues are retained by local councils in England and Wales. Currently, 50 percent of the tax intake is retained locally and this will gradually increase to 100 percent (75 percent and full 100 percent retention of business rates are already being piloted in some devolved and pilot areas, such as Greater Manchester and Cornwall).

The ultimate goal of the new system in England and Wales is to align growth in tax revenues with growth in economic activity in local areas, strengthening the incentives for local government to promote business growth in their area by allowing them to reap the rewards.

However, the overall system of business rates continues to be complex and costly, and has itself drawn calls for more substantive reform by bodies such as the CBI (2019). The present system does not fully capture gains in quality; instead, it tends to reflect the growth in the number of taxed properties due to infrequent revaluations, which can lead to large swings in the tax burden for business when revaluations do happen.

2. Creating regions that are magnets for people

- Additional funding is needed to support local intervention programmes to lift the performance of schools and improve pre-school education offerings
- Ensure a national vocational training system can deliver at local level in collaboration with local businesses
- Increase funding for permanent sport and cultural facilities at the centre of each agglomeration area and divert more state funded cultural initiatives to the regions

Investment in housing and in other elements of our framework needs to deploy spatial planning in order to maximise returns

No location can be successful if it cannot attract people to live and work there, or provide its existing population with the means to prosper. An agglomeration-based framework can be more attractive to workers, as larger and well-connected cities can offer the wealth of opportunities that workers with highly specialised skills require. This in turn enables the growth and development of highly productive firms that can make use of these skills. At the heart of this is a labour matching issue similar to the one present in the Mortensen and Pissarides (1994) model of unemployment, with larger cities being able to offer prospective high skill workers the highest probability of finding a vacancy to match their skill-set.

But workers and business owners will only want to live in places that also provide high-quality amenities, including health, education and upskilling opportunities, as well as a rich environment of leisure activities, and good housing stock.

i. The role of education

Several empirical studies agree on the key role played by human capital – more significant than the one played by physical capital – in facilitating the catch-up process that fosters regional growth. A focus on the quality of school education can lead to improved economic performance, as noted by Hanushek (2012), which showed the high correlation between GDP growth rates and educational achievement. Gitto (2015) showed that, across Italy, the main driving force for increasing regional growth was human capital investment in underdeveloped regions, while physical capital investment was likely to be more effective in richer regions.

Pre-school education is also crucial, and possibly most important. The rate of return to human capital investment generally declines as an individual ages, meaning the economic return of investment in pre-school intervention is higher than in-school programs, with remedial programs in the adolescent and young adult years more costly in producing the same level of skill attainment in adulthood. Heckman (2006) noted a wide range of evidence of the impact early childhood intervention can have on key metrics of education outcomes and income at later stages. The Sure Start scheme has demonstrated the importance of early years interventions, but the significant reduction in funding due to austerity cuts has made it less effective in the UK.

While the UK is among the most developed countries in the world, UNICEF (2018) ranks the country in 16th place for the inequality of educational achievement (where the first indicates the most unequal among 38 developed countries considered). Children living in higher income areas, such as London and the South East, reach higher school attainments on average and are less likely to drop out earlier from school. Early school dropouts were lowest in London in 2017 (6 percent)⁶, which was the richest region in terms of GDP per-capita, while the highest dropout rate was Yorkshire and The Humber (13.6 percent), which was the UK's fourth lowest region in terms of GDP per-capita.

While poverty and material deprivation clearly influence educational outcomes, central and local governments can play a pivotal role in supporting schools in each region. **London** provides an example of an effective regional intervention, helped by significant funding, which managed to level gaps with the rest of the country. Baars (2014) outlines how London's poor, deprived and hard-to-access areas had worse performance than the most advantaged ones. Students from those areas were more likely to leave education early, and their attainment was lower than pupils from richer neighbourhoods as well as deprived areas outside London. But in the early 2000s a set of interventions, named Keys to Success, took place in London schools: these included a large investment in the refurbishment of buildings and facilities, increased support and training for teachers, the introduction of professional management and advisors for school, the development of plans for boroughs with specific concerns and providing them with additional funding. More efficient use of data, including the Family of Schools database, and the implementation of in-house accountability systems have proved successful in identifying school-specific interventions.

Baars (2014) pointed out that one of the first issues to confront was the lack of skilled teachers, as shortages were significantly higher compared to the rest of the country.

Improving teachers' working conditions, providing additional training (for example, the "Improving Teacher Programme") and strengthening their commitment and responsibility towards achieving the "zero tolerance of failure" policy have been successful initiatives to improve teacher-pupil communication and engagement. However, while vacancy rates relative to other regions have decreased, partly thanks to these interventions, there are still substantial teacher shortages in London.

Kidson (2014) pointed out that London's schools went from being the worst performing to the best performing nationally thanks to Keys to Success, and subsequently this model of intervention was replicated in two other areas which were experiencing similar problems: Greater Manchester and the Black Country. Replicating the model has not been straightforward, as the success of the interventions in London also reflected a receptive environment; Kidson noted that it was evident early on that the other two areas wanted to distance themselves from London model.

This was especially the case in the **Black Country**, where the program overlapped with another local initiative, Black Country Education and Skills Strategy, leading some stakeholders to question the imposition of a London-based strategy over one that involved local ownership. The local version of the programme was tailored to local needs and aspirations, including a different funding allocation between primary and secondary schools and different selection criteria for intervention areas.

Hutchings (2010) concluded that despite the programme's success in terms of reducing the number of underperforming schools and increasing the number assessed as 'good' and 'outstanding', as well as improving the attainment of disadvantaged pupils overall, tensions between local authorities and central government have undermined the success of the policy. For example, in the Greater **Manchester** area, interventions were targeted at all schools, rather than focussing on the most needed as in London. That served to increase the number of beneficiaries, but limited the effective involvement of some schools, due to the extended nature of the intervention.

James (2011) found teacher quality and leadership to be the most important factor in pupil outcomes for every age class considered, on the basis that it is these attributes that drive student engagement. According to the Sutton Trust (2009), students from the most deprived background require most attention, as they are likely to perform more poorly than similar individuals coming from more advantaged backgrounds. Angrist (1999) considered the teacher/pupil ratio to be an important factor, especially during early years of education, with smaller classes reaching better attainments than larger ones.

⁶ According to Eurostat NUTS 1 regional data on early leavers from education and training, and GDP per inhabitant.

The literature is not in full agreement on the importance of investment in school buildings. Both Neilson (2011) and Martorell (2015) found positive evidence in America. In the UK, most of the research points towards a small impact, although Edgeton (2011) argued that most of the studies have been conducted in relation to pupil and teacher perceptions, rather than on objective metrics, which may underestimate the full effect. Barrett (2014) found that UK primary school design is likely to affect pupil learning outcomes, based on quantitative assessment, with light, air quality and adequate temperature found to be important. Moreover, improvement in school buildings helped unpopular schools to increase their enrolment level after some years, decreasing the proportion (not the number) of deprived pupils in the school, and exposing them to positive peer effects. Thomson (2016) argues that school buildings do not have an impact on students' outcomes in secondary schools in the UK, except perhaps in the long run.

The importance of early learning in influencing students' attainment later in life should not be underestimated. Pre-school classes are considered to be important to stimulate learning and to prepare children for compulsory schooling. The Swedish public education system provides a good example. Although the OECD (2015) detected a relative decline in students' outcomes through the PISA tests since 2012, pupils' proficiency in literacy and numeracy remains above the OECD average. Education in Sweden starts relatively early in pre-schools, at the age of three, and while this is not compulsory, roughly 90 percent of three year-olds are enrolled in these programmes.

Compulsory schooling starts from the age of seven in **Sweden** and ends at 16, and the education system is very inclusive, providing active tutoring and special schools for disadvantaged or disabled students. Schools are often the access point to the labour market, as upper-secondary vocational schools (Yrkeshögskolan) give students the opportunity to attend practical training at local businesses. The success of the national system is also illustrated by the fact that the proportion of early school leavers in Sweden is about 4 percent below the EU average, with most students continuing their studies after the compulsory period.

Post-school education

As the pace of new technology adoption accelerates, post-school up-skilling will become ever more important, with workers increasingly expected to embrace a lifelong approach to learning, as KPMG (2019) highlighted in its recent report. There is tension between the benefits of national vs local schemes. While for mobility purposes, it is important for workers to have transferable qualifications that they can take with them to different places, it is also important to have programmes that are well tailored to local needs, and we highlight below some case studies of national schemes that work relatively successfully to meet local needs.

Latest surveys point to continuing skill shortages in several sectors and regions. The Open University Barometer (2019) found that 68 percent of UK employers were unable to fill vacant positions with suitable candidates. Educational attainment of the workforce varies substantially across UK regions. Recent ONS data shows the highest concentration of tertiary-level educated workers in Greater London (60 percent of the local workforce) and the lowest in North East region (36 percent).

The What Works Centre for Regional Growth (2015, 2016) has concluded two evidence reviews into worker skills and training, focussing on apprenticeships and on-the-job training. On apprenticeships, it finds some evidence that skills levels were improved, with most studies showing apprenticeships increased wages, and apprenticeships at Level 3 or higher (post school and degree-level equivalent) delivering higher lifetime wage gains relative to lower level apprenticeships. On employment training, the study found positive impact on participants' earnings in around half of evaluations, with shorter programmes more effective for less formal training, and longer programmes generating employment gains when the content was skill intensive.

De Grip (2011) found evidence that work-related training led to a rise in productivity. These gains were often underestimated due to the positive impact they have on other workers who weren't directly trained. Rouse (1998) pointed out that the cost of training may therefore limit the incentives for private companies to undertake such programs, especially in industries where labour is very mobile, and that there is therefore a role for government to provide some of the funding.

The dual system of vocational training in **Germany** highlights the positive impact active participation of all stakeholders can have on outcomes. At its centre are the regional chambers of commerce and industry; as membership of these bodies is compulsory for German companies, this captures the bulk of employers. Germany's Federal Ministry for Economic Affairs and Energy (BMWi) summarises the key elements of the scheme as a combination of theoretical and practical training provided jointly by vocational schools and companies; nationally standardised content is developed with heavy involvement from practitioners and is continuously updated. One interesting feature of the German system is that, while attention is paid to local needs, there is an emphasis on adherence to national standards, which is essential to ensure labour mobility. If, for example, training is provided by a company that is too specialised to cover the full curriculum, apprentices receive training at additional companies to supplement their experience. BA (2013) observed that one of the most common pathways for career are the Ausbildung: vocational training courses which last from one to three years.

These are potentially open to everyone, although availability of training depends on the number of opening positions at the employers. The federal office for employment, Bundesagentur für Arbeit, coordinates demand and supply.

The **Flanders** region in Belgium provides an example of an ongoing programme to encourage lifelong skills training, managed at the regional level by the local public employment office (VDAB). SMEs have been able to apply for funding (of up to €40,000 a year) to cover the costs of training and to help close the skills gap that hinders business growth, as outlined by the OECD (2015). Among other measures, the OECD (2019) also notes additional training incentives that have been introduced for workers since 2018, which ensure that every worker in the private sector has 125 paid annual leave hours for education and training. This focus on learning appears to be bearing fruit, as Bourdeaud’hui (2017) finds that the number of workers who reported that their training opportunities were not problematic reached 82.5 percent in 2016, up from 77.4 percent in 2004.

Ireland offers an interesting model to support life-long learning with Skillnet, a national agency established in 1999 aimed at incentivising network cooperation in professional training according to OECD (2015). The agency provides courses and in-place training to firms belonging to its networks, which are either place or sector based. Courses are normally organised by Skillnet itself in collaboration with education providers and representatives of firms, but there is a strong incentive for firms to approach Skillnet with specific requests for training that could increase their productivity or adopt new technologies. Indecon (2018) points out that the agency provides up to 50 percent of the cost of training in order to ensure they are accessible to all.

Sweden takes a centralised approach to skills provision. The national government funds major programmes for skills development. These are uniform across the territory in order to ensure labour mobility, and are promoted by the local offices for employment (Arbetsförmedlingen). Lifelong learning opportunities are provided by Komvux, institutes where adults can complete their secondary education, and Yrkeshögskolan, post-secondary institutes that provide vocational training in co-operation with employers. This approach ensures a high level of skills across the adult population; overall, the OECD (2015) reports that 16 percent of working age population attain the highest levels of numeracy and almost 19 percent attain the same levels in literacy compared to a 12 percent average across other OECD countries for both indicators. Still, despite these positive outcomes, some regional stakeholders have complained that the centralised nature of the programme makes it difficult to address local needs. Eriksson (2017) also highlighted how this approach improved the performance of Sweden’s three major cities but widened the gap with the rural and more peripheral regions.

ii. Improving regional living environments

A focus on cultural as well as other leisure amenities can impart a unique identity on a local economy, as well as increase its ability to attract and retain talent by raising the overall quality of living in the area. It is important to emphasise the long-lasting benefits that cultural facilities can bring to local residents.

Sport and culture

Some evidence suggests that temporary sports events have benefits that are short-lived and relatively small. An overall evaluation of sports and cultural interventions by the What Works Centre (2016) found overall impacts on employment to be small, although the evaluations were skewed towards sports events and facilities rather than cultural ones. The findings show that the development of new permanent facilities has a positive impact on property prices, while KPMG (2014) highlighted the benefits cities can gain from sport franchises, such as Manchester United and Liverpool FC.

Temporary events, such as sports competitions are primarily geared towards attracting increased numbers of visitors, rather than on creating spaces and facilities for local residents. The critical point for cultural investments is in ensuring a lasting legacy that improves the attractiveness of a place from the perspective of potential residents.

There is a potential successful pathway to economic development through investment in cultural amenities as many examples around the world demonstrate. The cultural and creative sector has a unique role in the local economy due to its close links with the wider creative and knowledge economies, as well as its importance in making the area attractive to newcomers and visitors.

Critically, cultural amenities increase the attractiveness of a region to workers with higher levels of education and skills and can therefore improve economic performance. As evidence of this, Falck (2010) shows that in **Germany**, proximity to opera houses tends to increase the concentration of workers with a tertiary education by increasing the attractiveness of the area. It is possible to tentatively generalise the results of this study to cultural amenities more generally. Far from showing a unique significance of the importance of opera, this study makes use of historical coincidence to establish a causal link between culture and economic outcomes. The construction of baroque opera houses in pre-industrial Germany provides a natural quasi-experiment on the impacts of culture on economic development. In this case, the decision about whether the opera was built depended on the aspirations of the local rulers that had little bearing on the economy at the time. However, once established, the towns and cities playing host to these opera houses were those that would attract more productive workers centuries later.

Peckham Levels, a car park in London which was converted by the local council into a cultural and creative hub and workplace, is one of the most direct modern examples of the close connection between culture and the knowledge-based economy. According to LGA (2019), the scheme now supports 450 jobs in the local area and has helped to regenerate the area by providing a flexible space for arts and local businesses.

Liverpool, which used its 2008 designation as the “European Capital of Culture”, and Newcastle-Gateshead, which narrowly missed out that year, are two standout UK examples of the role of the arts in regeneration. In both cases, inner city areas faced the problematic legacy of industrial decline. In Liverpool’s case, the city used the programme to undertake a substantial level of investment in the city centre in the run up to the capital of culture year and a programme of events during 2008. Evaluating the impact of the investment 10 years later, Garcia (2018) showed that 44 percent of residents were more interested in arts and cultural activities thanks to the ECoC year and 27 percent reported increased participation in cultural events. While 26 percent of Liverpool residents said they were “interested in going to museums and galleries” in 2007, the figure in 2018 was 74 percent.

In the case of **Newcastle-Gateshead**, investment was focussed on regenerating the riverside area, which included building a new concert venue and musical education centre in Sage, Gateshead, as well as the Baltic centre for contemporary art, located in a converted flour mill, and numerous other venues. Despite suffering sharp cuts of nearly 50 percent in local public funding in 2012, the cultural venues in Newcastle-Gateshead retain a large economic footprint in the city, with ERS (2016) reporting it directly sustained 1,277 full-time jobs in the North East region.

In **Bilbao**, the regeneration of the city was led by the construction and opening of the Guggenheim museum (GMB) in 1997. However, in that case, regeneration took place alongside a substantial investment in urban transportation, including a Norman Foster-designed underground railway and a new airport terminal which was opened in 2000. Plaza (2009) highlighted the role that the GMB played in attracting and coalescing a creative sector in addition to increasing the numbers of visitors to the city.

For agglomeration centres in the UK to be successful in attracting people to live in their areas, government will need to provide core funding for sport and culture at a scale that matches London. Partially state funded cultural bodies should also be encouraged to put up more events in the regions, while the National Lottery could look to fund more initiatives outside London as part of its goals.

Green and blue spaces

Linking urban development to green and blue areas has become more pertinent in recent years. Mattijssen (2017) outlined how urban green infrastructure improves cities’ liveability thanks to the wide range of benefits that it provides, from aesthetic factors to tangible public health benefits, and as a counteract to climate change issues such floods and ‘Urban Heat Islands’. Recent studies on the effects of Urban Green Infrastructures (UGI) on local economies highlight the need to find locally tailored solutions, as UGI-city interaction vary across different historical land-using patterns, cultures, and climate areas.

Looking at the environmental benefits alone, Elmqvist (2015) reviewed quantitative studies on the impact of green and blue investments in 25 North American and Chinese cities. It shows that interventions aimed at restoring local ecosystems in big metropolitan areas provide an average value of US\$10,492 a year for each hectare covered by the intervention. This is because natural environments act as pollution and water-flow regulators.

Living in proximity to a green or blue area is generally associated with better health outcomes for all age groups. Gascon (2015) finds the majority of empirical studies show a positive correlation between the distance to green or blue area and symptoms of depression and psychological distress in adults; as distance increases, so does the chances of those symptoms occurring. Similar results were found for children, where proximity to green or blue areas was likely to reduce behavioural disorders. Flouri (2014) found that, in the UK, these positive effects were stronger for children from poorer backgrounds.

Boscoincittà in **Milan** is a green project that started back in the 1970s as a collaboration between the city government and a local NGO, creating a park within the urban area of the city. The initial project included 35 hectares, which were later expanded to 120 thanks to the success of the original initiative. Buijs (2016) outlines how the project inspired similar initiatives in other areas of Milan as well as in other Italian cities. The park is formally owned by the city government, but it devolves the running of the park to NGOs, which monitor the local biodiversity and run a range of community activities there, including courses on biodiversity and agriculture for children, and sport activities for children and retired people.

Aarhus in Denmark has focused attention to the development of green areas in recent years, reforesting the area surrounding the city in order to allow all houses access to woodlands within 500 meters. Hansen (2015) affirms through interviews of local stakeholders that the reforestation of 320 hectares in the period between 2009 and 2012 is perceived as one of the biggest achievements in the city in the past 10 years.

The city's river, which was dried in the 1930s for hygiene reasons, has been restored with two meadow lakes, in order to reduce the discharge of nitrogen and phosphorus surplus in the Aarhus bay, caused by the local agricultural sector. Aarhus river has now become an important recreational area for the city life.

Good homes for all

An adequate supply of affordable and attractive housing is an important component in an area's attractiveness to workers. In dense urban environments, where agglomeration benefits are highest, space is available at a premium. As shown in a model by Helpman (1998), while the forces of agglomeration act as a gravitational force, concentrating activity in smaller areas, the cost of housing is a counter force pushing activity outwards from the centres of agglomeration.

Poor access to housing can create a number of problems for a region looking to grow and develop, as it hinders ability to attract new workers and causes hardship for residents on fixed incomes who face rising rent costs. It can also adversely affect the efficiency of the labour market, as workers may become less mobile throughout the region.

It is important to consider where housing is located as part of local planning, ensuring it is close to existing and new transport networks, to help reinforce agglomeration benefits. Analysis undertaken by KPMG showed that developments located in well-connected areas which have higher levels of accessibility could generate up to 50 percent more positive economic impact in terms of employment and productivity than developments with relatively lower levels of accessibility. The analysis also found that these potential benefits can be eroded by up to 10 percent due to the congestion effects associated with the increased resident population and broader economic activity it supports, unless this is offset by additional public transport capacity, which highlights the importance of spatial planning.

Housing policy should address the root cause of the shortage and the appropriate solutions will differ from region to region. Generally, market forces should be sufficient to ensure adequate quantities of housing but a shortage of available sites, the lack of supporting infrastructure, or the presence of costly brownfield land, can all hinder development. In addition, planning restrictions are an important factor in constraining the growth of cities by limiting the available development space.

Clarke (2014) describes how releasing green belt land in areas experiencing high demand is a potential option, as was done in **Cambridge** between 2006 and 2013 with nearly 500 hectares opened up for housing development. Rising demand for housing initially forced development to leapfrog the existing boundaries of the green belt, leading to increasingly unsustainable commuting into the city. The new policy aimed to create a green belt 'swap', extending the green belt to other areas in order to make up for the space used up by development, but this has not yet taken place.

In England, 12.4 percent of land is designated Green Belt, all of which is located in areas surrounding the major cities, according to MHCLG (2019). A careful policy that opens up selected areas for housing development while boosting green areas in the city could ease congestion, reduce the pressure on transport infrastructure and improve quality of life for residents.

In the context of rapid economic growth, the pressure generated by rising costs of housing have severe adverse impacts for local residents, whose incomes do not keep pace. This means that areas of deprivation can co-exist even within highly dynamic economies. Regeneration and renewal of deprived areas and the provision of social housing become essential components of local policy. The role of these policies, however, is directed at helping local residents in deprived areas deal with some of the by-products of economic success rather than to act as a catalyst for growth.

Still, as Robertson (2014) notes, while the main purpose of housing policy is to improve residents' wellbeing, decades of policies to alleviate conditions for those in need in some neighbourhoods of **Glasgow** have achieved little, which the city recognised and turned the housing for the 2014 Commonwealth Games Athletes Village into affordable housing, while setting an ambitious strategy for 50,000 new affordable homes in 2015 which is making a difference. It is therefore important to consider policies that can simultaneously achieve the goals of creating affordable housing and creating desirable spaces that can improve the lives and wellbeing of residents. One such project, Goldsmith Street in **Norwich**, was awarded the RIBA Stirling prize in 2019, making it the first ever council housing scheme to win the prestigious architectural prize. According to RIBA (2019), the 100 housing units all adhere to Passivhaus environmental standards, with high levels of energy efficiency as well as an attractive space for residents. The estate includes shared urban spaces as well as an enhancement of pedestrian and cycle access to the city centre. The scheme demonstrates what can be achieved with housing regeneration schemes and provides lessons for the rest of the UK.

In **London**, Pattison (2016) shows the importance of policies to support housing in areas where overall housing is in high demand, as in the regeneration case of Aberfeldy Estate in Poplar. The first stage saw improvements made to the connectivity of the estate, by improving the links with public transport. The addition of two pedestrian road crossings in key areas of the estate made the area more accessible and facilitated a second stage development, which resulted in higher density housing replacing the existing stock. This made it possible to preserve the number of affordable housing units while adding additional units for sale and rent on the open market, as well as commercial units and space for community, health and faith centres.

3. Securing an enabling governance

- Clear direction for growth, grounded in the area's assets and needs is required for each agglomeration area
- Large transformation projects must engage and seek buy-in from the full range of local stakeholders
- Strong local project management capabilities and access to adequate specialised advice are important to secure the success of large projects.

Local governance is a crucial element of the framework for regional growth. The core strategy pursued by local leadership and the quality of local governance are possibly the most important ingredients in establishing regional economic success.

The quality of leadership has been extensively analysed by Brady (2010) and others, in the context of national development, but has received less prominence in the context of regional growth strategy.

i. The need for vision

The vision for the region should be ambitious, grounded by the region's fundamental assets and needs, and taking into account opportunities to fill gaps in the global economic landscape. The vision for the core regional hub is likely to be developed first; this will then serve as a catalyst for the development of the wider region.

Singapore provides a prime example of the importance of vision in achieving and maintaining a successful growth policy. While many aspects of its governance would not be emulated in the UK, the way it pursued its vision, which enabled the level of GDP per capita to increase from US\$2,600 in 1960 to US\$80,000 in 2017⁷, provides a good case study. While the leadership of Lee Kuan Yew in delivering the development programme should not be underestimated, it was in maintaining the goals of development and continually experimenting with practical policies that the results were achieved. Low levels of political risk and economically liberal policies helped attract the foreign investment necessary to achieve the vision. Initially a centre for trade, Singapore first transformed itself as a centre of industrial manufacturing by carving out a niche of value-adding activity before goods were re-exported. In the 1980s Singapore's strategy shifted towards a modern knowledge-based economy, and later focused on innovation and R&D activities, while maintaining the trade-friendly policies that underpinned its success.

The city of **Denver** prospered in the 1970s on the oil and gas industry but was badly hit by the collapse of oil prices in 1986. By the time Mayor John Hickenlooper came into office, the city was in urgent need of neighbourhood revitalisation. Clarke (2015) recounts how Hickenlooper brought in outsiders with professional expertise in neighbourhood revitalisation from the East Coast and the Midwest to identify areas where the city had fallen behind. His team identified the critical problem that the city's neighbourhood development programs were shaped by the design of federal funding, which spread modest resources among multiple small-scale efforts. Such programs had greater emphasis on bolstering low incomes in poorer households than business investment, and could not reach the critical mass of investment needed to keep the city up to speed with other more prosperous cities.

Hickenlooper shifted the priority of the city's neighbourhood development from distribution to a strategic investment plan. His team reorganised neighbourhoods into districts defined as business, community amenities, and other specialised local functions. Rather than spreading federal funds to a large set of neighbourhoods, his team used federal funds to leverage private investment in an initial pilot set of five core neighbourhoods, using a targeted District Development Plan. At the same time, the city promoted poverty de-concentration by creating mixed-income communities. Investments made under Hickenlooper's term helped drive Denver's transformation to its status today as one of the best cities to live in America.

Goldman (1983) outlines how, as in many other manufacturing cities in the US, **Buffalo**, the second largest metropolitan area in New York State, faced an economic and demographic crisis during the period of deindustrialisation from the 1960s to 1980s. When Buffalo badly needed a turnaround, the state and the city jointly led a series of revitalisation initiatives aimed at unleashing Buffalo's economic potential through a combination of public investments and tax breaks. Shibley (2013) highlights two important components to their vision. First, Buffalo needed to diversify away from traditional manufacturing industries that had lost their competitiveness in the evolving global economy, into high growth industries in the new economy. As outlined by the Western New York Regional Economic Development Council (2017), Buffalo City targeted public investment to support tradable service sectors – tourism, and health and life sciences. With the former, the objective was to further exploit the city's proximity to the Great Lakes and to Canada. With health and life sciences, the city aimed to develop the research capacity of 21 colleges and universities. In addition, rather than completely giving up on its traditional strength in manufacturing, Buffalo invested in upgrading it to advanced manufacturing.

⁷ Chained PPPs in 2011 US\$, from PWT 9.1.

Second, Buffalo recognised that in order to have a prosperous metropolis, it was necessary to build a vibrant downtown area attractive to a skilled workforce, entrepreneurs and visitors. Public investment and leveraged private investment targeted the central business districts, cultural districts and selected neighbourhoods to collectively bring up the standard of life and work for both businesses and residents, as documented in Hamlin (2016). Significant investment went into modern amenities, transport and communications, as well as common assets such as the waterfront and public parks. The City also brought new housing units to downtown and reopened Main Street to cars, which created the conditions for local businesses to prosper in the downtown commercial area. The Buffalo redevelopment experience is widely recognised as a success. Today health, tourism and advanced manufacturing have become new pillars of a much more diversified economy, offering a steady supply of jobs for the future.

The example of **Greater Manchester** is of a city-region determined to take its place as the UK's second largest centre and to become more prominent on the global stage. Its latest transformation can be traced to the 1980s when the local authorities in the Manchester city region embarked on a cooperative path through the Association of Greater Manchester Authorities (AGMA), leading to the establishment of the Greater Manchester Combined Authority in 2011. Successive devolution deals followed and led to the appointment of the Metro Mayor in 2015, consolidating the Greater Manchester region as a major centre in the north of England. Haughton (2016) reflects that further devolution has gone hand-in-hand with developing a local approach that has aimed to offer solutions to local challenges. This meant the region developed an enhanced decision-making and evidence-gathering capacity, which included an independent Manchester Independent Economic Review (2009) and more recently the Independent Prosperity Review (2019) as part of the city region's Local Industrial Strategy. The robust evidence base on which to develop policy led to the creation of the Greater Manchester Strategy, aimed at addressing the pressing issues for the development of the city. This strategy was renewed in 2013, and again in 2017.

ii. Effective execution of policy

A great vision is only the starting point. Even the most ambitious and relevant vision will fail to deliver transformation if it is not executed effectively.

Oklahoma City was hit by the collapse of oil prices in 1986, the subsequent fall in property prices and a local banking crisis, and an incomplete urban renewal program had left the downtown area bulldozed. In the late 1990s, Oklahoma City commissioned a series of urban improvement projects in the downtown area known as the Metropolitan Area Projects (MAPS). The projects aimed to bring the city back to life by making downtown a better place to live, especially for young people, so that talent and businesses would be attracted back to the city.

The MAPS program was a large-scale multi-phase initiative, covering a wide range of infrastructure projects, which was a challenge to manage. Case studies by the Chicago Fed (2003) and KPMG (2014) both noted two important steps taken by the City Council to ensure the successful execution of the projects.

First, the Mayor appointed a MAPS Citizens Oversight Board of 21 people, involving key stakeholders. The Board led a year-long public review process for the MAPS Master Plan, made decisions on initiating and awarding specific projects and scrutinized project finances. This helped build taxpayer support for the program and raised public accountability. Second, city employees in the Oklahoma City Department of Public Works handled the day-to-day management of the projects. A small team of six to eight people ran the projects on a day-to-day basis. The team reported regularly to the MAPS Citizens Oversight Board to explain whether the project was on track or behind (and why), provide updates on the contract costs and obtain guidance from the community.

Over the four phases of the MAPS program, not all projects were completed without delays or cost overruns, but the two bodies working closely together helped ensure that the outcomes of the execution of projects were transparent and broadly in line with what taxpayers had voted for.

The construction of the Holyrood parliament building in **Scotland** is an example of a project where priorities and tensions between quality, time and cost were not fully appreciated at the outset. Lord Fraser (2004) noted that unclear objectives, design changes and communication difficulties led to the project being drastically over-budget, costing the taxpayer £431m compared to initial cost estimates of £50m. Moreover, delays to the project meant that the new building was only ready to open in 2004, three years after its initial proposed opening date.

Compare this to the £1.34 billion project to deliver the Queensferry crossing over the Firth of Forth managed by Transport Scotland. While this project was completed eight months behind schedule, partly due to adverse weather conditions, it was built at a cost of up to 8 percent below the initial lower bound estimates of £1.45bn, as noted by the Audit Scotland (2018).

One of the most complex and expensive urban infrastructure projects in the US has been the Central Artery Project, later becoming known as “the Big Dig”, which aimed to improve the traffic conditions in **Boston** by replacing its elevated highways with underground tunnels. The positive impact of the project on traffic and the local economy is well documented by the Economic Development Research Group for the Massachusetts Turnpike Authority (2006). But its reputation was tainted by repeated accusations of poor execution, ranging from leaks and serious accidents to corruption and criminal offence. Beginning in 1983, the project was scheduled to finish in 1998, but was not substantially completed until December 2007. The initial budget of US\$2.8 billion rose to a final cost of nearly US\$15 billion.

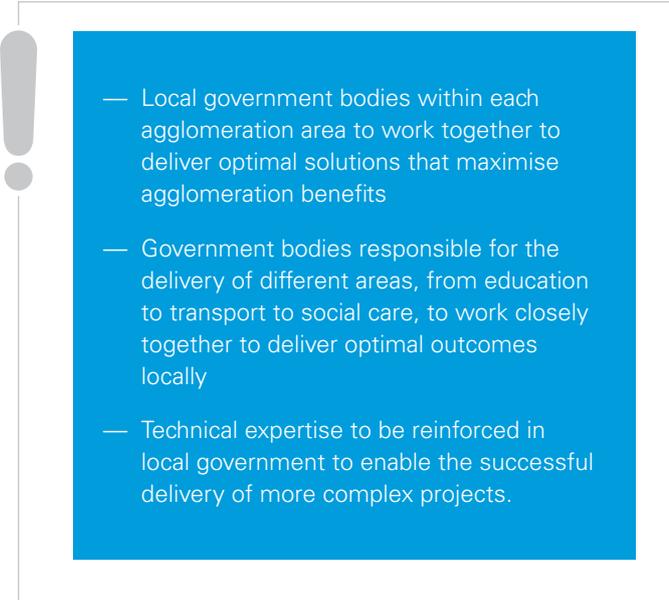
Haynes (2008) argues that one of the most important reasons for the timeline and budget overruns was the lack of oversight over private sector contractors by the State of Massachusetts officials. The State hired a private consultant, Bechtel/Parsons Brinckerhoff Quade and Douglas (B/PB), to manage the design and construction, and largely relied on the company not wanting to risk its international reputation on such a high-profile project. The State did not have sufficient in-house resources to manage such a large project, and therefore needed the contractor to take charge; but this meant public officials didn’t keep a close enough watch on the detailed financial records and project plan.

Fiedler (2015) documents the series of mis-steps that have undermined the construction of **Berlin** airport. Initially is not expected to start operating until October 2020. The total cost has more than doubled from an original figure of €2.4bn. The initial decision not to appoint a general contractor for the terminal building and delays to the start of the project meant that tenders for work came out and construction work started before the design was finalised. This led to hundreds of design changes, which increased the complexity of the project.

In addition, a rush to finish construction in order to meet deadlines introduced numerous faults that had to be resolved later, particularly to the fire safety system of the terminal building. In drawing on the lessons from this particular case, the importance of sufficient expertise in the management and project oversight stand out. Ultimately, the resources needed for the adequate delivery of such a complex infrastructure project were severely underestimated resulting in years of delays and cost overruns.

Effective policy requires a commitment of resources, expertise and efficient execution.

The role for local and central government

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- Local government bodies within each agglomeration area to work together to deliver optimal solutions that maximise agglomeration benefits
 - Government bodies responsible for the delivery of different areas, from education to transport to social care, to work closely together to deliver optimal outcomes locally
 - Technical expertise to be reinforced in local government to enable the successful delivery of more complex projects.

Travers (2006) points out the economic benefits arising from a single large scale metropolitan government unit that can both co-ordinate the various actors involved in local economies and exploit economies of scale in service provision. However, in practice, the structures of regional government vary widely: while many cities possess government institutions at the administrative city level, this is not the case for the larger economic regions, or smaller scale boroughs, which means that some degree of co-operation between agencies may be the best way forward. The functional region encompassing the economic city-region may sometimes also be too large as a single administrative unit, so a multi-agency co-operative approach is essential.

The UK possesses a highly centralised structure of government⁸, with many decisions taken far away from the local areas that they impact. In theory, there is benefit in placing local people in charge of the issues affecting them in setting out the priorities for growth and development. In practice, some progress has been made towards devolution in England. Following the abolition of the Regional Development agencies (RDAs) in 2010, Local Enterprise Partnerships (LEPs) were established to get local businesses together with local authorities, universities and higher education colleges to become more involved in local development. That was followed by the election of metro mayors in 2017-19 across eight city areas, and the city deals agreed with these combined authorities. It is thought that as these new authorities develop, more powers could be devolved to local decision-makers, but the pace of change and the final goal of the devolution agenda remains opaque.

The call for increased devolution of powers to the English regions has been advocated by the City Growth Commission (2014) and others for some time. But local governments can only take up the devolution challenge and deliver results if they receive additional funding to increase capacity and expertise to do so. Technical expertise needs to be strengthened across many regions to be able to deliver more complex transport and regeneration projects in relatively compressed timescales.

⁸ This is mainly the case for England, while significant powers are devolved to Scotland and to a lesser extent to Wales and Northern Ireland.

Once strong local governance is secured, the real work will need to start in earnest. Central government will need to provide sufficient funding for the regional transport infrastructure that will connect cores with the broader agglomeration area, as well as for cultural amenities and other services, and improved education and upskilling provisions. While the Government has committed to increasing spending in order to boost regional growth, the list of required interventions is long and some prioritisation will be necessary, even if spending is made in accordance with the function of the core, satellite, suburban and rural areas within our agglomeration framework.

As local government improves its collection of local data and harnesses its knowledge of the local economy, as is already demonstrated by Manchester's use of economic data and its Intelligence hub, it will be best placed to identify local gaps according to the framework for growth, establishing which areas need most investment using hands-on knowledge of the region. Building local databanks to store big local datasets will enable local governments to use AI in their analysis of policy. It is important that the strategy local government pursues takes into account the broad framework for growth, as a narrow focus on only a few elements will result in disappointing outcomes even with significant public spending in the region. However, it is inevitable that some prioritisation will be required; and the interventions that are most appropriate for each region will need to be determined incorporating local government's vision for the agglomeration area.

Some programmes may be best coordinated centrally. In particular, high school education curriculum and post-school skill training programmes, which focus on preparing the workforce for the future of work will need to have national reach in order to facilitate high mobility of workers across the UK. However, it would still be beneficial for local businesses to be involved in order to ensure that local skill needs are being adequately met.

As part of configuring the new geographical structure of each agglomeration area, local governments may need to ease planning restrictions in order to facilitate the creation of a strong core, easing the cost and availability of housing as well as office space. They can also play a central role in helping link venture capital and university research with local businesses.

As local governments work to reinvigorate their regions, they should not neglect the importance of culture and recreational spaces in improving the quality of life of the community and in providing it with purpose and pride. The aim must be to design places where people desire to live and to support their community beyond the provision of good employment opportunities alone. People should feel connected and supported by their local communities and cherish living in their region.

Conclusions and next steps

The task that lies ahead is to stimulate growth across the UK, providing opportunities to reap the benefits of technological change and increased productivity for all our communities. The challenge is immense and the newly-elected government cannot afford to waste time in rising to address it. Nevertheless, every intervention will need to be carefully planned to ensure valuable resources are not wasted and that the desired outcomes are achieved.

Some positive steps have already been taken, both in the nations and regions of the UK, with some highlighted in this report along with international examples to draw on. To take the next step, we must now embrace the concept of agglomeration more fully to maximise its benefits across the UK.

Regional planning will then need to go ahead in earnest in order to identify the right interventions within the context of our framework:

1. Creating a fertile business environment – covering key areas of business infrastructure such as transport and telecommunications, as well as initiatives to boost innovation;
2. Building magnets for people – including investment in education and skills, as well as in housing, cultural and leisure amenities;
3. Enabling governance – through both a winning vision for the region, and an effective ability to execute policy

We look forward to working with each of the UK's nations and regions to support them on their journey.

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Report authors:

Yael Selfin

Chief Economist, KPMG in the UK

T +44 (0)20 7311 2074

E Yael.Selfin@KPMG.co.uk

Dennis Tatarkov

Senior Economist, KPMG in the UK

T +44 (0)20 7311 2210

E Dennis.Tatarkov@KPMG.co.uk

Andrea Stochino

Associate Economist, National Institute of Economic and Social Research

Weiye Kou

Economist, KPMG in the UK

kpmg.com/uk/en/macroeconomics

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