The East Midlands in 2010: Executive Summary

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Introduction

The East Midlands in 2010 is the updated evidence base that supports the Regional Economic Strategy (RES), 'A Flourishing Region'. It presents a statistical portrait of the East Midlands that identifies key challenges and issues that the RES must address in order to create and sustain a 'flourishing region'. The East Midlands in 2010 reflects the latest data and research available to East Midlands Development Agency (*emda*).

The recent recession presents a particular challenge for a publication of this sort. Lags in the production of official statistics inevitably mean that many key data series do not yet reflect the full impact of the recession. For this reason, official data series are supplemented by more qualitative sources of economic intelligence where appropriate.

In developing this updated evidence base, *emda* has tried to be as comprehensive as possible in describing the condition of the East Midlands, while maintaining a strong focus on material of direct relevance to the RES and the policy levers available to regional partners. In all cases we have tried to use the most robust official data available to us, supplemented where appropriate by credible research and evaluation evidence from elsewhere. Wherever data availability has allowed, we have presented the performance of the East Midlands in a national and international context. It is our firm belief that a comparative perspective is essential if we are to truly understand the condition of the East Midlands and the magnitude of the challenges to be faced as we strive towards the ambitious vision articulated in the RES.

In analysing a region as sizeable and diverse as the East Midlands, a difficult balance must always be struck between presenting a coherent regional picture and satisfying legitimate demands for local detail. For the first time this year, we include sub-regional profiles produced in collaboration with county and unitary authorities within the region. These give The East Midlands in 2010 a more spatial character. We have also introduced new content that seeks to describe the 'spatial economy' of the region.

In light of the complex and interrelated economic, social and environmental challenges that the region will face, the evidence base is necessarily broad in its scope – with many elements providing essential context for the analysis of these challenges. Throughout, the focus is on factors that either influence or are influenced by the economic sphere, but our working definition of this sphere is broad and encompasses many factors relating to wellbeing, quality of life and the environment.

Demography

The East Midlands has a relatively small population (4.4 million, or 8.6% of the total English population), but has experienced significant population growth, both in recent years and over the longer term. In fact, since 1981 the East Midlands population has increased each year, irrespective of economic conditions. Between 1998 and 2008 the population of the East Midlands increased by approximately 300,400 residents.

This represents a 7.3% increase, compared to a 5.4% increase in England. The East Midlands is the only one of the northern or midlands regions to have experienced population growth in excess of the national average.

The region remains one of the most sparsely populated regions in England, and much of the recent population growth has been in more rural areas. For example, the population of Lincolnshire grew by 11.5% while that of Northamptonshire grew by 11.3%. The most densely populated areas of the region have only experienced modest rates of growth (Derby City grew by 3.6% whilst Leicester City grew by only 1.6%).

In the future, the East Midlands is projected to experience the fastest population growth of any English region. Between 2006 and 2016 the population of the East Midlands is projected to increase by 10.5%, to 4.8 million. This compares to average projected growth for England of 7.8%. This growth is expected to be concentrated in the south and east of the region and in the more rural areas. Northamptonshire and Lincolnshire are both projected to grow by more than 12%. Significant growth in rural areas to the south and east, and slower growth in the cities and the more urbanised north of the region suggests that the region's population could become increasingly dispersed.

Although areas in Northamptonshire are projected to experience significant growth in their working age population, much of the growth in Lincolnshire and other more rural areas will be driven by the pensionable age group. The age profile of the East Midlands is already slightly older than in England, but because the East Midlands is projected to experience the fastest growth of all English regions in the pensionable age group (15.6% compared to 10.1% in England overall between 2006 and 2016), this difference will become more significant over time. However, the region is also projected to experience the fastest population growth of all English regions in the working age group (10.1% compared to 7.7% in England).

Between 2006 and 2016 the aged dependency ratio will increase significantly, from 30.8 to 32.3 in the East Midlands. This compares to an increase from 29.9 to 30.6 in England. At the same time, changes in child and total dependency ratios will be very slight in the region. However, it is important not to overstate the ageing population as a region-wide phenomenon. Strong growth in the working age population means that aged dependency ratios will fall in the three cities and in the south of the region. Population ageing is therefore a challenge that is likely to affect coastal Lincolnshire and parts of Derbyshire much more than the rest of the region.

In other parts of the region, the consequence of recent and forecast population changes is increased ethnic diversity. Overall, numbers of people who would categorise themselves as belonging to Black and Minority Ethnic (BME) groups have grown faster than people who would categorise themselves as 'White'. In 2001, the number of East Midlands residents in BME groups was 276,100. In 2007, this was estimated to have increased to 398,700, a growth rate of 44.4% over the five year period (compared to an average growth of 5% for the population as a whole). Growth in the ethnic minority population has accounted for the largest share of overall population growth in some parts of the region, such as Leicester. Ethnic minority groups tend to have a much younger age profile than average.

Migration has contributed to a more diverse and younger population in the East Midlands, and international migration has acted to slow population ageing in areas such as Lincolnshire. In most cases, internal migration from elsewhere the UK significantly exceeded the volume of international migration. However in a small number of districts with large resident student populations, such as Nottingham, Leicester, Derby and Broxtowe, the reverse is true, with international migration accounting for the largest share of net-migration. According to the most recent data, growth in international migration appears to be levelling off. In their projections, the ONS suggest that international in-migration will equal out-migration by 2012. There will be an increasing contribution of natural change to overall population growth. As the region's birth rate has increased, and the number of deaths has fallen year-on-year, natural change has accounted for an increasing share of population growth compared to migration, and is forecast to continue to do so. However, the two components cannot be separated, as migrants, being younger and thus more likely to start families, are a key driver of the increasing positive contribution of natural change.

These trends will have implications for economic activity, service provision, the kinds of dwellings required, and the kind of infrastructure required to support this growing population in the region.

Housing

Over the long-term, trends in the number of households in the region have closely followed demographic trends, growing year-on-year, and have shown little sign of being affected by changes in the economic cycle. In terms of projections for household trends, as in the case of population, the East Midlands is projected to experience the fastest rate of growth in the number of households of the nine English regions between 2006 and 2016, at a rate of 15.6% compared to 12% nationally. This is equivalent to 289,000 households and increases the number of households in the region to 2,138,000 households by 2016, or 8.9% of the total for England. The fastest rates of growth in the number of households will be in the south of the region, in central Lincolnshire, and in other more rural districts, such as South Derbyshire. The number of households is projected to increase by over 20% in the West Northamptonshire Housing Market Area (HMA), and by 19% in the Central Lincolnshire and North Northamptonshire HMAs. This is likely to result in a significant increase in the demand for housing – especially as a larger majority of stock in the East Midlands is owner-occupied compared to the national average.

Migration is an important factor in driving the increase in the number of households, but the changing balance of household composition will also become increasingly important. Linked with an ageing population in some areas, there will be an increasing number of one-person households. By 2031, one person households are expected to account for 36.6% of all households, whilst married couple households will continue to fall, also to 36.6%. The number of one person households is expected to equal the number of married couple households by 2031, and this will have significant implications for the type and size of housing required in the region. Moreover, recent data suggests that, although the East Midlands is experiencing relatively rapid rates of growth in the number of households, it is currently achieving below average rates of increase in the number of new dwellings built each year.

Although trends in the number of households do not appear to have been affected by past recessions, the number of dwellings has been far more sensitive to the economic cycle. Between 1998 and 2008, the rate of growth in East Midlands dwelling stock was the second fastest of the nine English regions, but in the final year of this period, dwelling stock increased by only 0.7%, the smallest annual increase for the period 1991-2009. This suggests that the recession has had an impact on additions to the region's dwelling stock, due to the collapse in the housing market and associated fall in construction activity.

House prices have been consistently lower in the East Midlands than nationally, but recent data suggests that they have fallen more rapidly than elsewhere during the recession, and are now recovering more slowly. Regional house prices increased year-on-year until 2007, before falling in 2008. This decrease was faster in the East Midlands than in England overall, at -3.3% compared to -1%. Quarterly data from the Nationwide Building Society show that prices in the fourth quarter of 2009 were 2.5% higher than the first quarter in the East Midlands, but this increase is below the UK average rate of increase, of 3.4%.

In the East Midlands, affordability ratios have almost doubled over the 10 years for which data is available. In 1997, the average house price in the lower quartile of the house price range was 3.3 times average lower quartile earnings. By 2001 this had increased to 3.7, and then the year-on-year changes increase markedly, with the region's affordability ratio reaching 7 by 2007, before decreasing to 6.6 in 2008 as house prices began to fall. However, although the house price data may suggest that affordability issues may have eased, increasing difficulties in accessing finance in the last two years means that housing has remained out of reach for many. Affordability remains a significant challenge for those parts of the region that are forecast to experience the most rapid growth in demand – principally in the south of the region.

However, high house prices are not always the principal cause of poor affordability. In East Lindsey, poor affordability is due to low wages, linked to a poor supply of quality jobs. In this case, improvements in the labour market are required to address affordability pressures – illustrating the importance of addressing housing market issues through economic development as well as housing supply.

Housing stock in the East Midlands is less likely to be overcrowded than elsewhere in England, and residents are more likely to be satisfied by their accommodation. However, achieving 'decent' homes remains a challenge. 'Non-decent homes' are a particular problem in the private rented sector in the East Midlands as 58% of households in private rented accommodation are living in 'non-decent' dwellings, compared to 47% nationally. In addition, residents in older houses (of which the region has a higher than average number) are considerably more likely to be in 'non-decent' dwellings than in England, at 45% compared to 39%. Older dwellings are more likely to be 'non-decent' in the East Midlands, with 65% of dwellings built before 1919 classed as 'non-decent' in the region compared to 58% nationally. Households already in a vulnerable situation, such as lone parent families and unemployed households, are also more likely to live in 'non-decent homes'. Improvements in the condition as well as the size of the region's housing stock are key priorities for tackling social exclusion.

The Government have put significant emphasis on the need to improve the design quality of new housing, in order to support low carbon, community cohesion and regeneration objectives. The Centre for Architecture and the Built Environment (CABE) found that 55% of new developments in the East Midlands demonstrated 'poor' design standards, compared to 29% nationally. No new development was assessed as 'good', whilst only 3% were assessed as 'very good'. This was the worst assessment of the nine English regions, and represents a significant challenge for policy in the future.

Economy and productivity

The global economy entered recession in 2008, following the contraction in activity in the money markets that began in August 2007. The UK has experienced the worst recession for more than 30 years, but recovery is underway with growth of 0.4% reported in the final quarter of 2009. Overall, the UK economy contracted by -4.8% in 2009. The recovery has continued into 2010 and the UK economy grew by an estimated 0.3% in the first quarter.

These developments in the global economy have had, and will continue to have, an impact on the English regions. The impacts of the recession have not been uniform across the English regions. Data from the Purchasing Managers' Index (PMI) suggests that the East of England was the first region where output began to contract and the first region to reach its low point in October 2008. This data suggest that other regions reached the low point of the cycle in the first quarter of 2009. Since then the PMI suggests that all of the English regions were growing again at the start of 2010.

Raising productivity is a key objective of policy makers in developed economies. Productivity in the UK has improved in recent years and the gap closed on key competitors. Productivity in the UK, as measured by Gross Domestic Product (GDP) per hour worked, has surpassed that in Japan but remains behind Germany, the USA and France.

Productivity in the East Midlands is below the UK average and close to the EU average. Whether measured by output per filled job or output per hour worked, productivity in the region is around 7.5 percentage points below the national average.

In addition to comparisons of output, attempts have been made to quantify regional wellbeing. It has been noted that whilst most developed nations have experienced increases in GDP there has been little discernable increase in overall reported levels of wellbeing. This can be partly attributed to the role of expectations, whereby if people expect a certain level of growth then they are only able to maintain their level of wellbeing if the pace of growth is maintained. The Regional Index of Sustainable Economic Wellbeing (RISEW) is a tool developed to measure economic wellbeing in the UK. The most recent data shows that in 2007 RISEW per capita in the East Midlands was £11,700. This is above the average of £11,300 for England.

Levels of investment remain relatively high in the East Midlands. In 2006, the level of investment by UK owned companies was 0.3 percentage points higher than in 2002 but 0.3 percentage points below the UK average. There has been less volatility in the level of investment by foreign owned companies than by UK owned companies. In 2006, the level of investment by foreign owned companies was 2.2% of gross value added (GVA), which is the highest level of investment recorded. The East Midlands is currently ranked second on this demonstrating that the region is able to offer a favourable business environment. In line with national trends the region has experienced an increase in investment in the service sector and a fall in investment in the manufacturing sector. The global nature of the recent recession is affecting levels of investment and this is expected to be reflected in future data releases.

In terms of innovation, the East Midlands performs relatively well. Universities in the East Midlands have a tradition of scientific excellence and research breakthroughs. Research strengths in the region include biological sciences at Leicester and the built environment at Loughborough. In the private sector, Business Enterprise Research and Development (BERD) has been consistently higher in the East Midlands than the UK average between 1997 and 2007, but this is concentrated in a few large multinational firms. In 2007, BERD in the East Midlands was equal to 1.4% of GVA and it is 0.1 percentage points greater than the national average. It is unclear how the recession will impact on R&D expenditure. For some it will be viewed as an item of expenditure that can be cut back, while for others it is an essential means of competing in their markets.

Co-operation agreements are a key part of the innovation process allowing information on innovative activities to be shared, developed and used more widely. The East Midlands, at 12.2%, has the highest level of co-operation agreements of any region. Although the region has high levels of innovative activity and co-operation agreements between economic agents it still struggles to turn this activity into commercial gain as measured by turnover. In the East Midlands the proportion of turnover generated in firms who introduced products or processes that were new to market, new to the firm or significantly improved was 34%. This is 7 percentage points below the leading region of the South East.

Innovation and enterprise are both facilitated by entrepreneurs who are able to create new products and processes, helping drive economic growth. Entrepreneurship, as measured by Total Entrepreneurial Activity (TEA), in the East Midlands was 5.3% in 2008, 0.2 percentage points below the UK average, though this is not a statistically significant difference. In the East Midlands there were 47 business births per 10,000 population in 2008, below the UK average of 54. However, the three year survival rate of businesses in the East Midlands is 65.4%, 0.7 percentage points higher than the UK average.

Survey evidence suggests that the recent recession has had a large and negative impact on the ability of firms and individuals in the UK to access finance. Banks' ability and willingness to lend has been reduced significantly and the cost of many types of finance has increased. This will have an impact on the rate of business births.

The East Midlands is home to around 148,000 businesses, 6.9% of all businesses in the UK. The manufacturing sector accounts for a relatively large proportion of the East Midlands economy, at 20.5% of regional GVA compared to the UK average of

13.7%. Manufacturing sub-sectors such as Transport Equipment and Food & Drink are significantly more productive in the region than nationally. This regional specialism in production activities has been in decline over the past two decades and the service sector has generally grown more quickly. This is in line with national trends. In the past two decades the service sector has been both the largest and fastest growing sector in the UK and East Midlands. In the East Midlands 69% of regional GVA can be accounted for by the service sector, compared to 76% in the UK.

Whilst the East Midlands has experienced relatively strong economic growth over the last decade, the recent recession has had a large negative effect on many industries that are more significant to the East Midlands economy than nationally e.g. construction and manufacturing. Some commentators believe that manufacturing, and high tech manufacturing in particular (in which the East Midlands performs well) will experience a relatively strong recovery, and there are some signs of this. In the first quarter of 2010 it is estimated that the manufacturing sector grew much more quickly than the service sector. The economic landscape will become clearer as published official statistics begin to capture the effects of the recession.

Labour market

The East Midlands is the only region out of the five northern and midlands regions to exceed the national average employment rate and to have a lower unemployment rate. This is despite the impacts of the recession, which has meant that unemployment has increased and employment decreased in every English region. In January-March 2010 the employment rate in the region was 73.3%, compared to 72.0% for the UK. However, there are pockets of severe employment deprivation in the three cities, coalfield and coastal areas of the region. The East Midlands unemployment rate is below the national average, at 7.4% compared to 8.3% in the UK for January-March 2010. The claimant count rate in the East Midlands is also slightly lower than the UK figure, at 4.0% compared to 4.1% in April 2010.

The East Midlands is ranked sixth out of the nine English regions in terms of the proportion of the adult population qualified to Level 4 and above, at 27.0% compared to the English average of 30.5% in 2008. The proportion of the working age population without a Level 2 qualification is the second highest out of the nine English regions, at 33.0% compared to 30.6% in England. However, the scale of the up-skilling of the East Midlands workforce in recent years has been significant. The proportion of the East Midlands workforce qualified to Level 4 and above increased by 6.4 percentage points between 2001 and 2008. The national figure increased by 5.5 percentage points over the same period. However, the demand for these higher level skills appears to be lagging behind the increased supply. It is still the case that almost two-fifths of employees in the region think that their highest qualification was above that required for the job they do and this proportion has increased over time in line with the trend for England.

The higher the qualification level, the more employable an individual becomes. However, in the context of a higher regional employment rate compared to the UK, higher qualifications appear to have less impact on employability in the region than nationally. The employment rate of those with a Level 4 and above qualification was 11 percentage points higher in the East Midlands than the average of all qualification levels. In the UK, the difference was 12.2 percentage points. In addition, it appears that those without any formal qualifications are more likely to be employed in the East Midlands than in the UK. The employment rate of those without any formal qualifications was 51.7% in the East Midlands and 47.4% in the UK.

Employer demand for low level qualifications suggests that in the East Midlands – and this may be more the case in some sub-regions than others – a number of businesses tend to compete on the basis of price and even though the qualification level of the workforce has increased, employers' demand for skills lags behind. This is especially challenging in those peripheral areas where the concentration of low-skilled labour may have a stronger negative effect on productivity, such as the coastal areas of Lincolnshire.

The occupational composition of the region shows that the proportion of employees in upper tier occupations (managers, professionals and associate professionals) is 39.1% in the East Midlands, 3.9 percentage points below the UK figure of 43.0% in 2008. At the same time, the proportion of employment in lower tier occupations associated with lower skill requirements (elementary occupations and process, plant and machine operatives) is 21.8% in the East Midlands, 3.3 percentage points above the UK figure (18.5%). Although upper tier occupations are expected to grow more significantly in the region than in the UK, these are projected to account for a lower share of regional employment compared to the national average in the next decade.

The earnings profile for the region appears more evenly distributed than in the UK, which is principally due to the more depressed earnings of those in the top deciles of the earnings distribution. The reasons for this are interrelated, covering a range of factors that include the different sectoral and industrial composition of the regional economy. Although the average earnings of higher skilled occupations is lower in the region than in the UK, the median weekly pay for elementary occupations is slightly higher in the East Midlands.

Residents in rural districts of the East Midlands tend to perform better on measures of employment and workforce qualifications. The employment rate of the most rural districts was 79.3% in 2008, 3.4 percentage points above the regional average. The Rural 50 districts have a significantly higher proportion of the workforce qualified to Level 4 and above at 31.2%, compared to the regional average of 27.0%. Earnings of residents living in rural districts are also higher compared to their urban counterparts. This suggests that many better paid, higher skilled individuals choose to live in rural districts and commute to work elsewhere. In contrast, many local labour markets in rural districts provide comparatively low paid, low skilled employment such as the Lincolnshire coast and the coalfield areas.

There is a danger that the recent economic downturn may put some businesses under pressure to retain low cost, low value-low skill business models. This would further constrain opportunities to move towards high skill and high value added business strategies which ultimately may mean the region does not fully benefit from economic recovery later. Therefore, it is important that employment and skills strategies are joined up with innovation and enterprise policies to achieve sustainable economic growth.

Deprivation and economic inclusion

Area-based analysis shows that the most deprived areas of the East Midlands (as measured by the Index of Multiple Deprivation) are concentrated around the three cities of Leicester, Derby, and Nottingham, the former coalfield districts of Mansfield, Ashfield, Bassetlaw, Chesterfield and Bolsover, and the Lincolnshire coast.

The economic challenge facing the former coalfield areas is well established. Communities in the coalfield areas tend to have higher numbers of people on incapacity benefit and in other forms of inactivity. In addition, due to the recession, some groups where intergenerational unemployment is already an issue may face further difficulties in getting into work or maintaining their labour market position.

Deprivation in the Lincolnshire coastal areas is partly related to access to services and employment. The problems of deprived localities in inner-city areas (Nottingham, Leicester) and former coalfield areas (Mansfield, Bolsover, Chesterfield) are different. The labour market challenges posed by a highly stable, largely homogeneous population experiencing intergenerational unemployment in a former coalfield area are quite different from those of an ethnically diverse, younger and more transient population living in an inner-city area.

The extent of labour market participation varies significantly by gender, age, ethnicity and disability. Labour market participation of young people, women, ethnic minorities and disabled people are below average. The employment rate for women in the East Midlands is considerably lower than that for men, at 72.3% compared to 79.2% in 2008. The employment rate for those with a disability is 38.6%, which is less than half the rate reported for those without a disability (80.8%). The working age employment rate for ethnic minorities in the East Midlands is 63.4%, significantly below the rate for those who are white (77.2%).

Educational attainment is one of the routes which leads to sustainable employment. However, participation in education and educational achievement varies significantly not only by the ethnic background of pupils but also by local area. In the East Midlands educational attainment of pupils from Mixed and Black ethnic minority groups is generally lower than average. In addition, comparing the East Midlands to England as a whole, educational attainment is weaker in every ethnic group (White, Mixed, Black and Chinese) apart from pupils with an Asian background, who perform relatively better in the region than in England. Participation and achievement is generally lower in the cities.

Although moving into work has been identified as the main factor associated with movement out of income poverty, concerns about “in-work” poverty have been raised because of the low-skill, low-pay nature of much employment. This highlights the challenges of the quality of jobs, depressed earnings, the generally skewed employment toward the lower end of the occupation scale, and its long lasting social impact on the life chances of the regional population. It may be the case that some sub-regions are more affected than others, such as Lincolnshire where the concentration of low-skilled, low-paid labour may have a stronger negative effect on the wellbeing of its residents.

The spatial pattern of child poverty shows that the proportion of children living in households receiving out-of-work benefits is highest in Nottingham, Leicester and some wards in Derby. The labour market participation of parents is crucial in avoiding intergenerational poverty, but many parents work in low paid employment. In 2006, 51% of poor children lived in working households (i.e. lone parent who worked, couples where one or both worked) in the East Midlands compared to 53% in England. The corresponding figures for the East Midlands and England in 2003 were 30% and 40%. The recession is likely to have an impact on these figures. The Government has set a target to end child poverty by 2020, which is a challenging target for both the East Midlands and UK as a whole.

Health status has a reciprocal relationship with employability as healthy individuals are more likely to seek, obtain and remain in employment. In addition, work can also have a valuable social role and beneficial consequences for health. Health deprivation and health inequalities are the result of complex interactions between a wide range of social, environmental and biological factors. Parts of Nottingham, Mansfield and Bolsover are the most health deprived areas in the region, where wider determinants of health such as poverty, poor educational outcomes, unemployment, poor housing, and the problems of disadvantaged neighbourhoods are also concentrated.

The difficulties of reconciling family and work pose another barrier to employability. Access to childcare services and flexible working arrangements are the main instruments by which these barriers can be reduced. Barriers to childcare may hinder labour market participation, especially for lone parents. In the East Midlands, 10% of non-working parents reported that they could not find free or affordable childcare which would make working worthwhile. In the East Midlands, 6% of non-working parents reported that they could not find childcare for the hours or days when they would need to go out to work. Barriers to transportation and key services can be an issue for those living in remote rural areas and the Lincolnshire coast.

Crime has a damaging effect on the quality of life of people living in a community. Recorded crime related to offences against property and possession is higher in the East Midlands than the English average, at 63 recorded offences per 1,000 population in the East Midlands compared to the English average of 60 in 2008-2009. These crimes are concentrated in Nottinghamshire and in Northamptonshire while violence against the person was the highest in Leicestershire. In spite of this, the East Midlands is a place where people generally like to live.

Active and cohesive communities are more likely to reach consensus on their local problems and the sense of belonging to the neighbourhood is greater. In 2007 the proportion of residents participating in formal voluntary help, informal help and civic activities in the East Midlands was 43%, 64% and 38%, similar to the English averages. In addition, the proportion of East Midlands residents who had a strong sense of belonging to their community increased from 65% to 78% between 2003 and 2007.

Transport and infrastructure

The East Midlands has developed and maintained its transport infrastructure over the last decade, which has helped to support growth in the resident population and business stock. The East Midlands remains well connected to surrounding regions facilitating personal travel as well as trade. Key infrastructure, such as East Midlands Airport (EMA) and strategic road and rail links, mean the East Midlands remains at the centre of the UK's transport network and linked to the wider global economy.

The East Midlands experiences net out commuting with around 198,000 people commuting out of the region to work, greater than the estimated 108,000 people who commute into the region. The region continues to experience a relatively low use of public transport as a method of travelling to work compared to other regions and a relatively high dependency on private transport (mainly private car). The dependency on private vehicles is largely a function of the region's rural nature.

Although commuting accounts for just 15% of all trips by purpose in the East Midlands, the concentration of these journeys causes many of the disbenefits associated with congestion. It is estimated that congestion costs the East Midlands £935 million per annum, a significant cost to the regional economy. Whilst it is not cost effective to eliminate congestion there are substantial savings to be made through strategic planning and policy decisions that can alleviate the worst of the impacts.

The East Midlands is ranked fifth out of the nine English regions in terms of the number of cars owned per household. Car ownership per household in the East Midlands was 1.3 in the period 2007-2008, which is above the national average. Whilst this, in itself, is not particularly noteworthy it holds more significance when viewed in conjunction with the traffic increase on major roads. Between 1998 and 2008 the region has experienced the third highest (behind the South West and North East) increase in traffic on major roads of any English region, an increase of around 11%. This, together with the greater projected increase of the population in rural areas over the next decade, leading to an increasingly dispersed population in the region, is likely to increase the demand for use of the road network further.

The freight industry continues to play an increasingly important role in the East Midlands economy, supported by a strong road, rail and air transport network. Whilst this brings many economic benefits, there are significant environmental impacts which arise from the freight industry. East Midlands Airport has developed its capacity in recent years helping support the region's freight industry and is now the UK's primary freight hub outside London. Developments at EMA have also supported the business and resident population of the region. EMA will continue to play a key role in the economy of the East Midlands.

Around four fifths of businesses in the East Midlands use computers and 94% of these have a broadband connection. This puts the East Midlands in a strong position to benefit from the economic potential that Information and Communications Technology (ICT) brings to both businesses and individuals. Developments in ICT have increased the opportunity of working from home, which brings a number of economic benefits. Currently, around 18% of the population has the ability to work from home if required, the highest percentage of any northern or midlands region. The region, like the UK, has moved from almost no broadband to near universal availability of first generation broadband in less than five years. However, the situation regarding investment in Next Generation Access (broadband available through fibre optic cables) is much less clear with no firm plan for when this investment will take place.

There is little up to date regional data on utilisation of employment land and this is an area where further work is clearly required. There are wide discrepancies in land values and property rents across the region. These values are invariably higher in the region's major urban areas. The region is a key distribution centre, with a significant share of the country's warehouse space. This is a function of the region's location at the heart of the country's transport infrastructure.

Recent economic conditions will inevitably put pressure on funding for transport and infrastructure. This issue will affect all regions in the short to medium-term.

Environment

Global and national evidence presents a compelling case for the contribution of economic activity to climate change. The Stern Review suggests that even if current rates of emissions are stabilised, the world is still likely to experience a temperature increase of at least 2°C by 2050.

Recent projections suggest that climate change outcomes in the East Midlands will be quite close to the national average, with mean summer temperatures increasing by 1.4°C and winter temperatures increasing by 1.3°C by the 2020s and by 2.5°C and 2.2°C respectively by the 2050s. Winter precipitation could increase by 5% whilst summer precipitation could decrease by -6%. Recent projections of sea level rises are more modest than previous estimates, but the East Midlands coastline could still experience a rise of 9.7cm on 1990 levels in the 2020s. This could lead to increased risk of coastal flooding in Lincolnshire, which is not only a consideration that could constrain development planning, but is also a threat to the region's coastal areas of Special Scientific Interest and areas of high quality agricultural land.

In the East Midlands, greenhouse gas emissions have decreased over the long-term, but there has been an upward trend since 1999. In 1990 total Global Warming Potential emissions totalled more than 60,000 kilotonnes of CO_2 equivalent. During the 1990s this fell to around 33,000 kilotonnes. Between 1999 and 2007 there was an upward trend, from 32,800 to 40,700 kilotonnes of CO_2 equivalent. This increase is due to two factors. Firstly, the East Midlands is a major producer and exporter of energy, with Fuel & Power Production accounting for 87.2% of all greenhouse gas emissions in the region in 2007. End-users have also contributed to this increase, particularly through emissions attributed to road transport. Latest figures show that the East Midlands had an above average volume of emissions attributed to road transport, and that these emissions have remained stable in recent years whilst decreasing in other regions.

Other trends reflecting the impact of human activity on the environment have been more positive in the East Midlands. With the exception of Nitrogen Oxide, technological improvements have significantly reduced emissions in the major air pollutants in the region, such as Sulphur Oxide.

The East Midlands has experienced the greatest improvements of any region in the proportion of its rivers assessed as ‘good’ in terms of both biological and chemical quality. Pollution incidents that have had a ‘major’ impact on water quality have also fallen in recent years, although the water and waste industries have consistently been responsible for the largest number of incidents.

The region also has the highest proportions of municipal waste recycled or composted in England. However, the region still has to achieve significant improvements in order to manage waste more sustainably. An above average proportion of all waste continues to be disposed of in landfill sites. In 2006, 12.3 million tonnes of waste went to landfill in the East Midlands, 56.1% of the total, which is above the average for England of 55%. At the same time, 42.6% was recovered or recycled, which exceeded the average for England, at 37.5%.

In terms of resource efficiency – measured by the amount of waste generated for every unit of economic output – the East Midlands remains relatively inefficient, and this represents a key challenge for regional policy. In 2006, 330.5 tonnes of waste were generated for every million pounds of GVA, considerably higher than the average for England of 244.2 tonnes per million pounds of GVA.

It is important to view the environment in terms of assets and opportunities as well as constraints. The Stern Review estimated that markets for low-carbon energy products could be worth at least $500 billion per year by 2050. The energy resources provided by the East Midlands coal mining past are an example of an opportunity for innovation and enterprise that the region can build on (e.g. abandoned mine methane). However, recent statistics on renewable fuels suggest that the East Midlands, as a significant energy producer, continues to contribute a relatively small share of the national renewable energy capacity. The East Midlands has approximately 180 Megawatts of renewable energy capacity, from hydro, wind, landfill gas and other sources. This is almost double the installed capacity in 2002, but is the fifth lowest share of the nine English regions, producing 9.2% of the total for England.

Other environmental assets include the region’s biodiversity and the quality of its landscapes. Natural habitats can provide a range of benefits as ‘ecosystem services’. Along with the intrinsic value they provide in enabling people to encounter wildlife and appreciate the landscape, these services enable the environment to absorb some of the causes and effects of climate change. Grasslands and forests in particular play key roles in the capture and storage of carbon emissions. However, the East Midlands has the lowest proportion of land covered by woodland of all regions other than London, at 4.7% compared to 8% in England overall. Across the East Midlands intensive farming, industrial activity and aggregate and mineral extraction has had significant impacts on the condition of the region’s landscapes, with 26% of landscapes assessed as ‘diverging’ from their natural character, compared to 19% in England overall. Intensive farming and the continued loss of habitats, such as hedgerows, have contributed to the continued decline of farmland bird species in the region. However, on areas designated for statutory protection, such as Sites of Special Scientific Interest (SSSIs), the East Midlands performs significantly better.

The region currently has the highest proportion of SSSIs assessed as being in ‘favourable’ or ‘recovering’ condition in England, at 96.2% in March 2010. This means that the region has exceeded the PSA target of 95% by 2010.

The East Midlands is geologically rich, and is England’s principal producer and exporter of aggregates and other minerals. It is also the country’s principal manufacturer of concrete. In addition to this significant asset, the region also has a relatively benign geology, with limited risks of earthquakes or other geological hazards (such as radon), although shrink-swell clay is a problem in some parts of the region. However, it also has to be noted that much of the extraction that makes the East Midlands England’s most important region for aggregate production takes place in areas of natural beauty, such as the Peak District.

Interaction with the historic environment can be of key importance in creating and maintaining a shared relationship between individuals and their surroundings. The East Midlands has a number of important heritage sites, containing 10.7% of Grade I listed buildings and 11.6% of registered battlefields in England. However, a comparatively high proportion of listed buildings in the East Midlands were at risk in 2009, at 4.6% of all Grade I and Grade II listed buildings, compared to 3.1% in England overall. More positively, recent evidence on heritage suggests that East Midlands residents have a greater level of interaction with their historic environment than elsewhere, with above average visits to heritage sites.

The spatial economy

The East Midlands has a complex structure, with no single dominant centre (as in Birmingham in the West Midlands for example). Agglomeration economies occur when there are significant concentrations of businesses and people. They tend to be self-reinforcing as dense areas of economic activity attract yet more businesses and people. This suggests that, over time, economic activity will be concentrated in urban areas. This is often supported by the planning system, which focuses on the development of brownfield urban sites before encouraging more peripheral development. However, there are limits to the extent to which this can take place as costs such as congestion and increased land values can drive activity elsewhere.

In their work on large urban settlements in the East Midlands, Atherton and Johnston (2006) suggest that there are a small number of settlements in the region that can be categorised as regional agglomerations. These are Derby, Leicester, Northampton and Nottingham. However, agglomeration economies, and the benefits they bring, can also occur on a smaller scale outside of the largest urban centres, for example in Lincoln, which serves a large rural hinterland.

In a subsequent piece of work Atherton and Price (2009) looked at a number of smaller ‘secondary’ centres in the East Midlands and examined the role that they play. They found that there are a number of these settlements that act in a similar way to the larger urban areas, providing a service centre function to often large rural hinterlands. These settlements include Chesterfield, Buxton, Market Harborough, Grantham, Wellingborough and Newark. An implication of this finding is that these centres need to develop in an appropriate way, so that they can continue to fulfil this function.

The fact that there are a number of large and small service centres in the East Midlands that draw in people from large hinterlands suggest that commuting and other travel flows are significant and this is borne out in the data. Analysis of commuting flows suggests that they are significant, both within and without the region. In 2001 the East Midlands was a net exporter of workers with around 90,000 more commuting out of the region than commuting in. By 2006 this had increased to over 100,000. There are significant flows between the East Midlands and Yorkshire and the Humber (Sheffield), the West Midlands (East Staffordshire), the East of England (Peterborough) and the South East (Milton Keynes). This means that the impact of economic development and other interventions will flow across regional borders.

Within the East Midlands commuting flows are greatest into the larger urban areas, and Nottingham and Leicester in particular. In these two cities in-commuting is equivalent to 54% and 43% of total employment respectively. The other side of the coin is that outflows are greatest from those districts that are close to these areas (for example Broxtowe or Rushcliffe). These areas close to the urban centres have also experienced significant population growth, partly as a result of ‘city flight’.

The data shows that commuting has increased since 1991, with more people travelling further to work. Commuters tend to be more highly skilled, highly paid and work in more specialist roles. This group of workers are likely to be part of a labour market that is regional or even national. As the workforce grows and becomes more highly skilled, commuting is likely to increase as a result of the need to match the demand for and supply of skills.

Although a number of key centres have been identified in the region, and descriptive analysis of available data might suggest it, there is no evidence that the region can be considered to be polycentric in strict functional terms. The available data on business stock, population and commuting suggest that Nottingham and Leicester stand alone as regional centres, with little interaction between them (for example commuting flows between these two cities are relatively small). Northampton also stands somewhat apart from the rest of the region and this is likely to become even more pronounced in the future as a result of greater linkages with the South East through the Milton Keynes-South Midlands growth area.

The most complex relationship among the region’s major centres is between Nottingham and Derby. Nottingham attracts twice as many commuters from Derby as it sends. In many ways Derby is closely linked to the South Yorkshire conurbation but in terms of a market for highly skilled workers it is part of the same labour market as Nottingham. As Nottingham is the larger centre and develops further, its existing position may be enhanced.