

Institute for Public Policy Research



STATE OF THE NORTH 2017

THE MILLENNIAL POWERHOUSE

Luke Raikes
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SUMMARY

In 2030 the northern powerhouse will be run by the millennial generation. For the first time they and their successors will make up the majority of the electorate, and will form the overwhelming majority of the workforce: millennials (aged 22–37) and ‘Generation Z’ (aged 21 and younger) will be a political and economic force for change in the North and across the country.

They have already made their political presence felt: frustrated by Brexit in 2016, they clipped the government’s wings in 2017, denying the Conservatives their majority and tipping the government into an escalating crisis.

They will inherit a North rich in assets but poor in opportunity. Previous generations have hoarded economic power in central government: England has no regional government, unlike almost every other developed country. And central governments of all political colours have failed to invest in the North’s strengths: instead they have left this once-thriving region with creaking infrastructure and people, young and old, without the chance to thrive in a rapidly changing world.

This new generation must unlock northern potential much more effectively than their predecessors. They will have to meet significant new challenges, and seize new opportunities that arise. There are five big challenges which this generation will need to meet as they gradually take up the reins.

1. **Demographic change:** A growing, diversifying and ageing population. They will live in a more ethnically diverse and urban future, but will need to find a way to support a population that will live longer in poor health and at great cost.
2. **Brexit: An uncertain future ahead.** Brexit will have had a major and longlasting impact on the North’s economy, especially in areas which are already struggling or stagnated.
3. **Globalisation: A new wave of global growth.** Globalisation will continue to present severe challenges; whatever form it takes in the decades ahead, it will not have an equal impact on people or regions.
4. **Technological change: Towards ‘digital capitalism’.** Technological change will give rise to particular challenges for the North: automation is likely to have an acute impact, digital infrastructure will need investment and digital skills will need to keep up.
5. **The environmental imperative: Greening the economy.** The North will need to play its part in mitigating global climate change, and has the assets and expertise to lead on this agenda.

To meet these challenges the North’s millennials need to push for devolution. In the 21st century, the country and the world will need the North’s assets more than ever before. Without devolution they will continue to be wasted, as they were throughout much of the 20th century.



INTRODUCTION

THE MILLENNIAL NORTH

The past 18 months have highlighted a widening chasm in British politics. Both the Brexit referendum and the 2017 general election have revealed a growing divide between the generations and the geographies of the country: younger people, and those concentrated in our globally connected cities, voted for one future; older people, and those concentrated in smaller towns and places isolated from globalisation, voted for another (Jennings and Stoker 2017).

The north of England occupies a particular place in this story. In the referendum's aftermath, commentators rushed to sneer at northerners for voting Brexit against their economic interests (Cox et al 2016). There are clear reasons why a large number voted to 'take back control', but to treat the North as a homogeneous whole is to ignore its very diverse interests.

The North must face up to this and many other challenges. Many long-term failures led to the Brexit vote. The UK economy is clearly broken in a number of ways, as IPPR's Commission on Economic Justice recently set out (CEJ 2017). To observers of our economy, and to those with daily experience of its sharp end, this fact has been clear for some time.

Moreover, this will have been particularly clear to people living in regions outside of London, who have now lived and worked in a broken local economy for decades: 'That's your bloody GDP, not ours' as one Newcastle heckler said when confronted with the downside of the EU vote (Harford 2016).

But this report doesn't spend time unpicking why and how this situation came to be. There is an already large body of work which describes a century of centralisation and the neglect of northern potential by Whitehall.

In this, our fourth annual *State of the North* report, we look forward to 2030: to the challenges which are already impacting on the lives of northerners, and will dominate the next decade of our lives.

Because by the year 2030, for the first time, the millennial generation and their successors will make up the majority of the North's electorate and the vast majority of its workforce (author's analysis of ONS 2016a). As the first chapter of this report shows, the political implications could be dramatic, and their political empowerment may be a significant progressive force. Many of the new generation came of age during a recession, and will lack the income, assets or opportunities of their parents' generation. They will have to tackle unprecedented environmental, social and economic disruption, all the while caring for an ageing population who are set to live longer, but in poorer health and at high cost. Fairly or unfairly, the challenges of the 2020s will be inherited by northern millennials.

It is also the millennials who will inherit the northern powerhouse, and define what it means for them. As we enter a new and disruptive era, this report looks forward to the year 2030, and analyses how prepared the North is to face five major forces.

This report also shows how people and organisations within the North are starting to adapt. With case studies from around the North, we consider the kind of businesses and innovations that will be needed and in which millennials are already finding their place. Finally, we consider how devolving political and economic power to the North will enable millennials to adapt to these changes.

FIVE CHALLENGES FOR THE NORTH'S MILLENNIALS

The world is changing rapidly: the 21st century is already proving highly disruptive, much like the two preceding centuries. It is now clear that the North's potential was underutilised in the 20th century: northern people have not prospered as much as they could have done; northern assets have gone unrecognised and underplayed in an overly-centralised nation (IPPR/NEFC 2012).

If the North is to fare better in the 21st century than it did in the last century then its people and institutions need to adapt quickly to the disruption that's already reverberating through communities.

This report considers how well prepared the North is for the five challenges of the 2020s set out by IPPR's Commission on Economic Justice (CEJ 2017):

- 1. Demographic change: A growing, diversifying and ageing population.** The population is growing, urbanising and becoming more diverse. But it is also ageing – and often doing so in poor health. This will be a draw on resources, and may cause skills challenges in the labour market.
- 2. Brexit: An uncertain future ahead.** The economic repercussions of the Brexit vote have already been felt: the uncertainty has proved a drag on economic growth, the value of the pound has plummeted – and this is before the UK actually leaves. The nature of the UK's future relationship with the EU is still not clear, but it will have significant negative consequences – this will be most acute in sectors that trade with the EU, depend on its regulatory framework, or rely on its migrant labour, but will have indirect effects across the whole economy.
- 3. Globalisation: A new wave of global growth.** Globalisation has provided opportunities and prosperity for many, but has generated rising inequality within developed countries and a whole host of downsides – not least rising in-work poverty in countries like the UK. Its nature is also changing: global trade and investment is slowing, Asian and African markets are growing rapidly, while digital flows and trade in services are increasing; competition may emerge for UK firms that trade in services, but some manufacturing may reshore.
- 4. Technological change: Towards 'digital capitalism'.** Technological change is nothing new, but has accelerated since the Industrial Revolution. Digitalisation, artificial intelligence, machine learning and advanced robotics are of particular focus for economists, and are starting to have a profound impact on the labour market, although a number of factors will temper their immediate consequences.
- 5. The environmental imperative: Greening the economy.** Average global temperatures are set to rise 3–4 degrees Celsius or more, which is likely to have severe effects – ranging from extreme weather to population displacement and conflict.

These challenges are not unique to the North, but the North will be affected by them in very different ways, and in some cases might surprisingly hold parts of the solution. This report now presents our analysis, and some case studies, which show small-scale but important adaptations to these.

1. DEMOGRAPHIC CHANGE: A GROWING, DIVERSIFYING AND AGEING POPULATION

1.1 TODAY'S MILLENNIALS AND GENERATION Z WILL BE THE MAJORITY IN 2030

In the year 2030, the millennials and their successors will outnumber the rest of the electorate, and they will dominate the workforce of the country. By 2030, millennials will be aged 35 to 50, and will be well established in their careers, while their successor Generation Z will have come of age. Together, these groups will make up more than half (50.8 per cent) of the North's electorate, and more than two-thirds (72.3 per cent) of the working-age population¹ (author's analysis of ONS 2016a).

This new generation has been studied in depth – and often derided in the media (Cossett 2017). As a generation, the evidence suggests that their

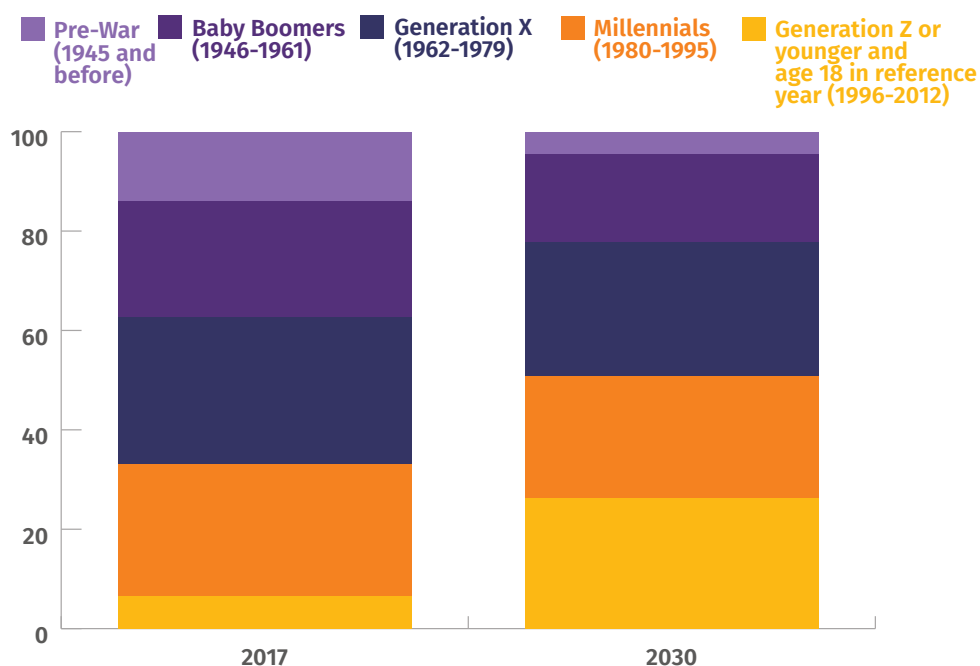
attitudes tend to be progressive, but this doesn't actually set them apart from the Generation X or Baby Boomer generations that preceded them – rather, all three generations are significantly more liberal than the pre-second world war generation (Ipsos MORI 2017). Notably, however, millennials' attitudes towards immigration do appear to diverge from all previous generations, with a far smaller proportion regarding it as an issue (ibid).

Many, however, face challenging circumstances compared to the generation before them. Most came of age during the recession or its aftermath, and their lower incomes, higher tuition fees and higher house prices mean they are asset-poor, indebted, and often trapped in the private rented sector or living with their parents (ONS 2016b, 2016c). Mental health problems, stress, depression and anxiety often result (NHS Digital 2016).

¹ Taken as those aged 16–64 for consistency, although this definition will be less useful by 2030.

FIGURE 1.1

Millennials and Generation Z will make up 50 per cent of the North's electorate by 2030
Population of the North aged 18+ by generation



Author's analysis of ONS, 'Population projections' (ONS 2016a)

1.2 CHANGING DEMOGRAPHICS WILL HAVE A PROFOUND POLITICAL IMPACT – NOT LEAST IN THE NORTH

Millennials have already become a powerful political force. In the 2017 general election this group were decisive in denying the Conservative party a parliamentary majority. The 2017 election came almost 12 months after the Brexit referendum in which millennials – of all social classes – voted decisively to remain, while the 55 and older age groups (again in all social classes) tended to vote leave (Skinner and Gottfried 2016). This election saw the governing party’s parliamentary majority diminish rather than provide the stable majority on which it was relying to deliver Brexit, and the government has since struggled to win essential votes in parliament.

The general election also saw Labour once again dominate the politics of the North. The mayoral and local elections that preceded the June vote saw Labour slide backwards and the shock victory of the Conservative candidate in Tees Valley. But the general election saw the reassertion of two-party politics and Labour benefited most in the North. More than half (52.9 per cent of northern votes went to the Labour party (9.8 percentage points more than in 2015 and Labour’s highest share since

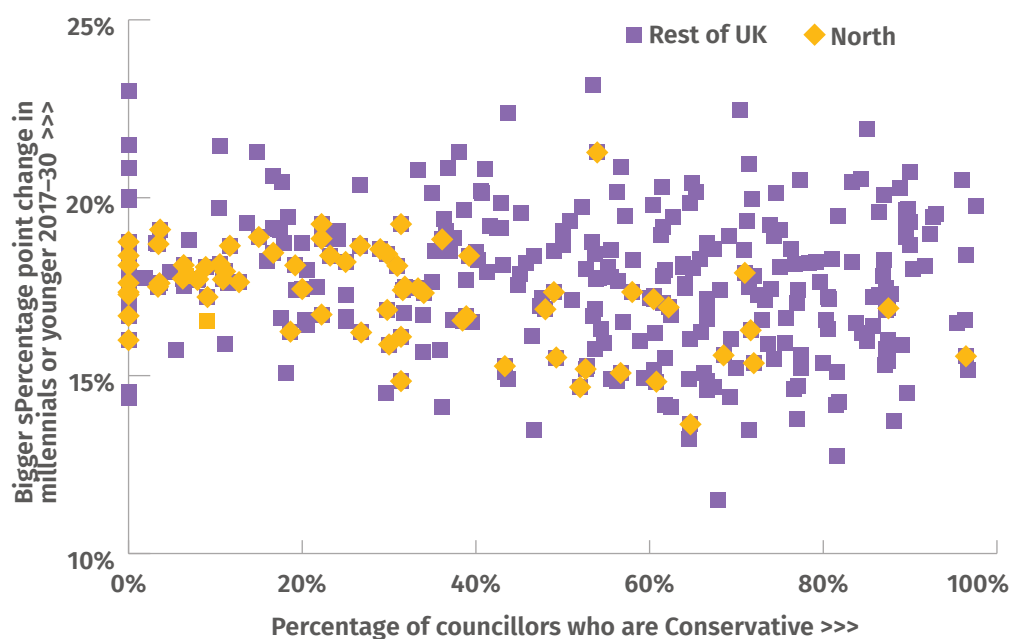
1997, when it was 54.9 per cent) increasing the number of northern Labour seats from 110 to 117 (but still lower than the high points of 139 in 1997 and 2001) (author’s analysis of Electoral Calculus 2017). The Conservatives also increased their share but are still far behind at 37.4 per cent of votes, leaving the Liberal Democrats with 5.1 per cent and other parties with 4.3 per cent (ibid).

The millennials’ political domination is coming and could have profound consequences both for the North and for the country as a whole. The impact of this generation was already felt in the 2017 general election, but looking forward to 2030, the picture for the Conservatives looks increasingly challenging. Political attitudes cannot be forecast, but we do know that those currently aged under-47 are more likely to vote Labour and that, while over an individual’s life course attitudes have tended to become more conservative, the turning point appears to be getting older (YouGov 2017). We also know that Conservative voters tend to own assets, have less liberal attitudes, and have higher incomes (ibid). Given that the dominant age group in 2030 is likely to hold fewer assets and have a lower income than previous cohorts then they may well be less inclined to vote Conservative.

FIGURE 1.2

Conservative party representation could be under threat from the new generation as it ages

Per cent Conservative representation in local authorities and and percentage point population shift towards millennials and younger voters 2017–2030



Source: Author’s analysis of ONS, ‘Population projections’ (ONS 2016a) and Wikipedia, ‘Political make-up of local councils in the United Kingdom’ (Wikipedia 2017)

1.3 AN AGEING POPULATION WILL BE A SIGNIFICANT CHALLENGE

Millennials will have to care for an increasingly ageing population. People are tending to live longer, but will spend more of their lives with health problems – these problems will also be more expensive to treat (OBR 2017). Policymakers need to generate opportunities for older people to live more productive lives (Round 2017). There is no avoiding the fact, however, that there are severe cost implications associated with higher levels of poor health and frailty, and that these costs will be borne by a relatively smaller working population: the total cost of social care in England is expected to increase by 104.3 per cent by 2030 compared to 2015,² and the OBR forecasts the cost of healthcare

to rise from 7.3 per cent to 8.0 per cent of GDP by 2030 (Wittenburg and Hu 2015, OBR 2017).

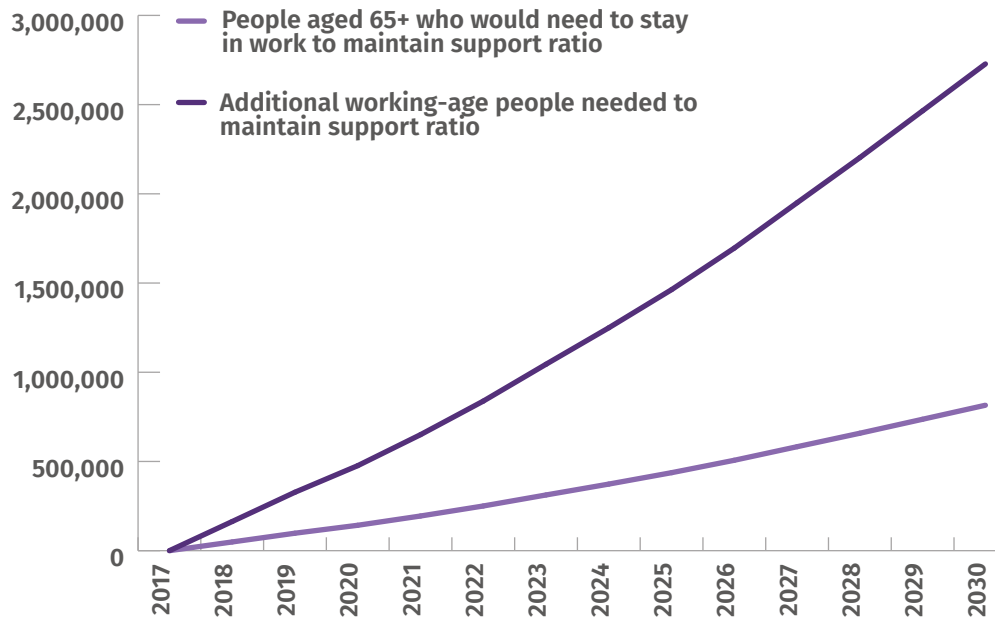
For the North, more so than elsewhere in the country, the challenge will be severe. Northern millennials and Generation Z will make up almost three-quarters (72.3 per cent) of the North’s working-age population, and the ratio between the whole working-age population and those aged 65 and over (65+) will fall dramatically from 3.35 in 2017 to 2.60 in 2030 (author’s analysis of ONS 2016a). In order to maintain the same ratio between the working-age population and those aged 65+, in 2030 there would need to be 2.7 million more working-age northerners in 2030, 800,000 more people aged 65+ in work, or some combination of the two (ibid).

² Base case assumptions, see: <http://eprints.lse.ac.uk/64772/>



FIGURE 1.3

The North’s workforce will need to expand somehow to support an ageing population
Number of additional 16–64-year-olds OR extra over-65-year-olds required to maintain current support ratio (16–64/65+)



Source: Author’s analysis of ONS, ‘Population projections’ (ONS 2016a)

1.4 THE NORTH WILL BE MORE ETHNICALLY DIVERSE AND DIVERSITY WILL SPREAD OUT FROM THE URBAN CENTRES

As well as getting older, the North is also getting more diverse. The UK is urbanising, but is doing so in a very different way to other countries. Urbanisation in the UK relies on international rather than internal migration: forecasts indicate that net internal migration will be negative in London and all of the English core cities³ between 2017 and 2030 (that is there will be more UK resident moves out of these cities than in), while net international migration is positive, as is the balance between births and deaths (ONS 2016d).

Urbanisation and population diversity are inextricably linked and the North's population is expected to urbanise and diversify further by 2030. In addition, 72.6 per cent of northerners will live in an area that's currently classified as urban,⁴ with this population increasing by 5.3 per cent – faster than the population rise in areas currently classified rural (4.0 per cent). However, although previously it has been the centres of city-regions that have become more diverse, the expectation is that this diversity will become more common in neighbouring towns, and by 2030, 15 per cent of the North's population are forecast to be non-white (an increase of 4.1 percentage points from 2016) (Rees et al 2015).

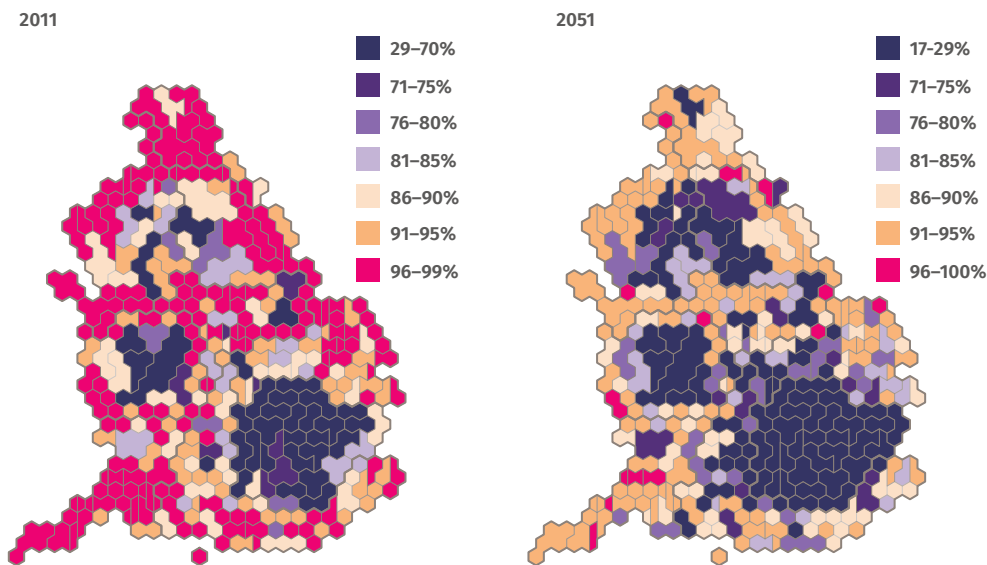
3 The city districts alone, as opposed to their wider functional economic area.

4 Including areas classified as large urban, major urban or outer urban.

FIGURE 1.4

The non-white population will be more prevalent in outlying suburbs and satellite towns

Share of white population in local authority populations in England in 2011 (left) and projections for 2051



Source: Rees et al, 'Ethnic Population Projections for the UK and Local Areas, 2011-2016' (Rees et al 2015), Griffith and Halej, *Trajectory and transience* (Griffith and Halej 2015) and Lawrence, *Future proof* (Lawrence 2016)

1.5 DEMOGRAPHIC CHANGE: CASE STUDIES

Newcastle City Futures

Across the UK and the developed world people are living longer – but they are not living better. As this report has already noted, this means there will be far fewer people of working age for each person retired, while the projected different sets of health needs will be expensive to treat.

‘Future Homes’ is working collaboratively with older people to develop new housing solutions for an ageing population. It brings together a number of agencies, drawing on expertise on the social aspects of ageing from Newcastle University, and working to engage extensively with communities and the private sector. The project demonstrates new solutions for addressing the impacts of demographic change on the housing market, and has been awarded a £1.12 million Homes and Communities Agency (HCA) grant to build four ‘demonstrator units’ in the city (NCF 2017). It is part of the wide-ranging Newcastle City Futures project which analyses how the city could change over the next 50 years.

This project offers a number of lessons. First, it shows the importance of radical cross-sectoral working to resolve such all-encompassing challenges: the approach is highly collaborative throughout and is backed by civic agencies. Newcastle City Futures was initiated in 2014 by Newcastle University, is part-funded by the Government Office for Science Future of Cities Foresight Project, and Newcastle city council took this forward in 2015 by establishing the City Futures Development Group. Furthermore, it shows how important a university can be in resolving public policy challenges such as these. This collaboration can support the long-term and creative thinking which cities need, but which may be difficult for private and public sector organisations which are preoccupied with day-to-day challenges (Goddard and Tewdwr-Jones 2016).

Sheffield community languages

The North's cities have diversified and these trends are set to continue and spread out into the suburbs and satellite towns into the 2020s. One study recently found Manchester to be the most linguistically diverse city in Europe, but all of the North's cities contain a wide range of different languages (Gopal et al 2013). There are opportunities for northerners to learn new languages – a skill which employers find lacking (UKCES 2016). There are also clear challenges for those moving in, who need to learn English in order to gain and progress in employment.

Languages Sheffield has been highly effective in developing citizens' language skills. Sheffield is one of England's most culturally diverse cities, with more than 120 languages spoken in the city, the most common being Chinese, Indian, Pakistani and Polish (Branagan 2009). Languages Sheffield is a social enterprise and registered charity which brings together businesses, the public sector and providers of language education within the city from nursery to higher education as well as in 'complementary' language schools teaching community languages. Its mission is to promote language learning throughout the life course, and the use of local community languages. It does so by:

- providing support, training and advice to language teachers across the city region, and running diverse events, courses and competitions to promote language learning
- partnering with a local school, Sheffield Children's University and the local authority in the HOLA project, which promotes multilingualism as a cultural and economic resource for the city, and won a European award for innovation in language pedagogy in 2012 (Secondary Education 2012)
- delivering an eight-week introduction to interpreting for 14–18-year-olds – the Young Interpreter's Course – in collaboration with the Worker's Educational Association (Languages Sheffield 2017).

This innovation hasn't occurred in isolation; it has been enabled by an ecosystem of organisations across sectors and support from the local authority. Sheffield city council published its first 'Languages Strategy' in 2004 (updated in 2009), and was the first city in Europe to have its language policies profiled by the Council of Europe (Extra and Yagmur 2012). Sheffield was selected as one of the 'pathfinders' for language teaching at key stage 2 (KS2), and by 2008/9 languages were taught throughout KS2 at 83 per cent of the city's primaries, with 99 per cent of KS2 pupils receiving at least one year of language teaching and some schools introducing languages at KS1 (Languages Sheffield 2012).



2. BREXIT:

AN UNCERTAIN FUTURE AHEAD

2.1 THE NORTH IS A TRADING REGION, RELIANT ON INWARD INVESTMENT

The UK's trading position has been cause for concern for a number of years, but it has different dimensions. Trade in goods is very weak, in part because the UK has lacked the industrial strategy and interventionism that has served other countries so well (most famously Germany), while monetary policy has also taken its toll (Kitson and Michie 2014). Supply chains tend to be highly integrated with the EU as manufactured goods pass across borders multiple times on their way to completion (Los et al 2017). Trade in financial and professional services is very strong. The UK has successfully marketed itself as the EU's services hub, and used its 'passporting rights' to great effect. Foreign direct investment (FDI) is also a top priority: central government often relies on foreign companies to invest, whether in the multinational businesses that are based here, or in strategically important 'public' infrastructure – from housing and transport to nuclear power plants. The value of UK FDI stock is estimated at more than £1 trillion, and half of this from other members of the European Union, followed by the United States (UKTI 2015, Dinghra et al 2016).

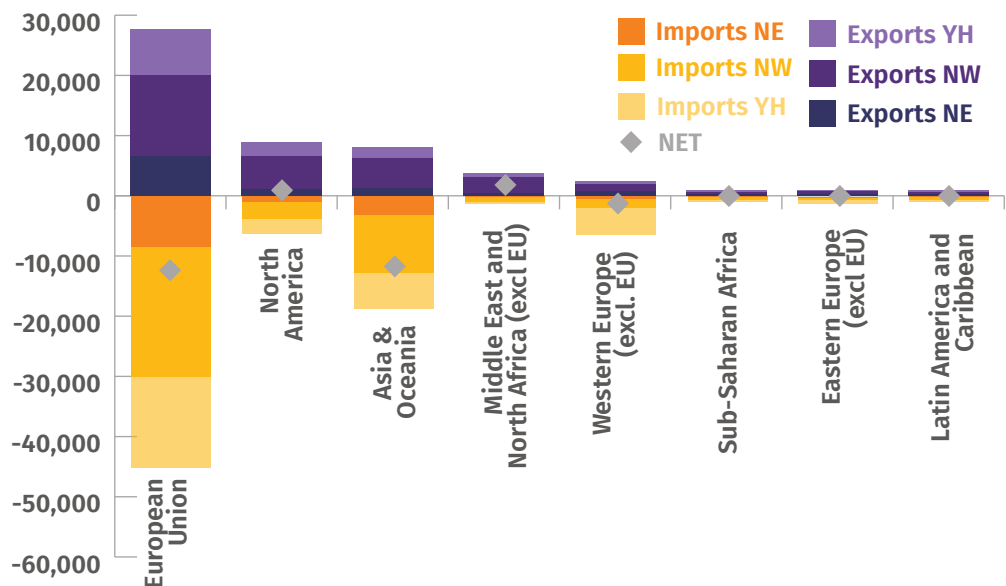
The North's performance varies with regard to each of these trade dimensions.

- Trade in goods is relatively strong in some areas but the balance of trade is still negative. The North exports £27.6 billion of goods to the EU (19.3 per cent of total UK exports to the EU) and imports £41 billion (17.3 per cent of the UK total) (HMRC 2017). The North has strong trade links with Asia and Oceania, and there is a positive balance of trade with North America, and the Middle East and North Africa (ibid).
- Trade in services is weaker but still significant. The UK services trade is dominated by London and the South East, but the North exports £12.7 billion in services, of which £3.9 billion is to the EU (10.7 per cent of the UK total) and just under half of which are service exports in the manufacturing sector (ONS 2017a).
- The North doesn't benefit from the FDI powers that Wales and Scotland have, but in 2016/17 FDI generated 15,000 new jobs (19.9 per cent of the UK total), and the North East has the highest proportion of jobs dependent on FDI (DIT 2017).

FIGURE 2.1

The North is a trading region, with strong trade links to the EU, Asia and Oceania and North America

Trade in goods by region, 2016 (£m)



Source: HMRC, 'Summary data tables' (HMRC 2017)

2.2 THE NORTH FACES A SEVERE BREXIT CHALLENGE DUE TO ITS INTER-DEPENDENCE ON EU MARKETS

Taking into account all of the trade relationships reveals a stark pattern for the country. The impact of Brexit cannot simply be deduced from the level of trade: trade flows are complex and involve a great deal of ‘re-importing’ and ‘re-exporting’. A research team funded by the ESRC and UK in a Changing Europe⁵ led by the City-REDI Institute at the University of Birmingham,⁶ has undertaken in-depth analysis of the potential impacts.

As figure 2.2 shows, the economies of northern regions are relatively more dependent on trade with the EU: 10.2 per cent of the North’s GDP is dependent on final consumption and investment demand in the rest of the EU, compared to 9.5 per cent nationally (this is 10.4 per cent for Yorkshire

and Humberside, 10.3 per cent for the North West, and 9.6 per cent for the North East) (Los et al 2017). This is particularly high in East Riding and Northern Lincolnshire (12.8 per cent), Lancashire (12.1 per cent), Cumbria (13.2 per cent), Cheshire (11.6 per cent) and North Yorkshire (10.8 per cent). Prosperous areas in the South are less vulnerable, such as inner London (7.2 per cent) and outer London (7.6 per cent). The patterns reported here using GDP measures are also closely replicated when local labour income measures are used (ibid). This means that many northern regions are more than 50–60 per cent more dependent on EU markets for their prosperity than London.

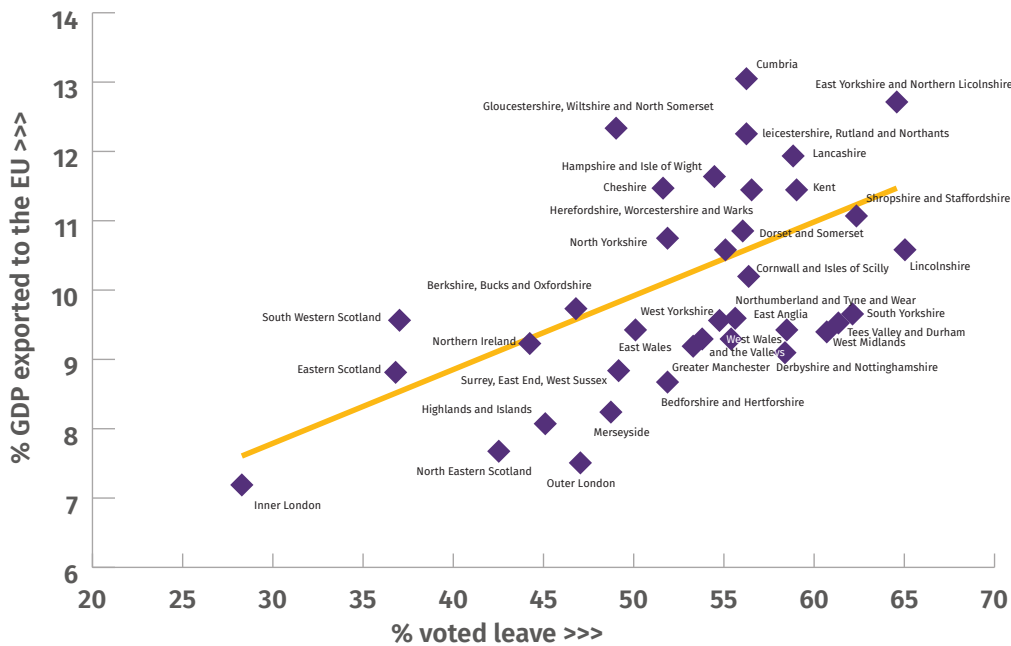
When the wider Brexit-related risk exposure is considered (rather than just EU economic dependency) an even worse situation emerges for the North. The overall Brexit-related risk exposure is 12.4 per cent, which is slightly above the UK average, but is again more acute in some of the areas listed above (Chen et al forthcoming).

5 <http://ukandeu.ac.uk/brexitresearch/the-economic-impacts-on-brexit-on-the-uk-its-regions-its-cities-and-its-sectors/>
 6 Also involving researchers from the University of Sheffield, the Universities of Groningen and Rotterdam in the Netherlands, and the Netherlands Environmental Assessment Agency (PBL).

FIGURE 2.2

Many of the North’s subregions are interdependent with the EU

Percentage who voted ‘leave’ and percentage of region’s GDP exported to the EU by NUTS 2 areas



Source: Los et al ‘The Mismatch between Local Voting and the Local Economic Consequences of Brexit’ (Los et al 2017)

2.3 THE NORTH IS LESS DEPENDENT UPON MIGRANT LABOUR

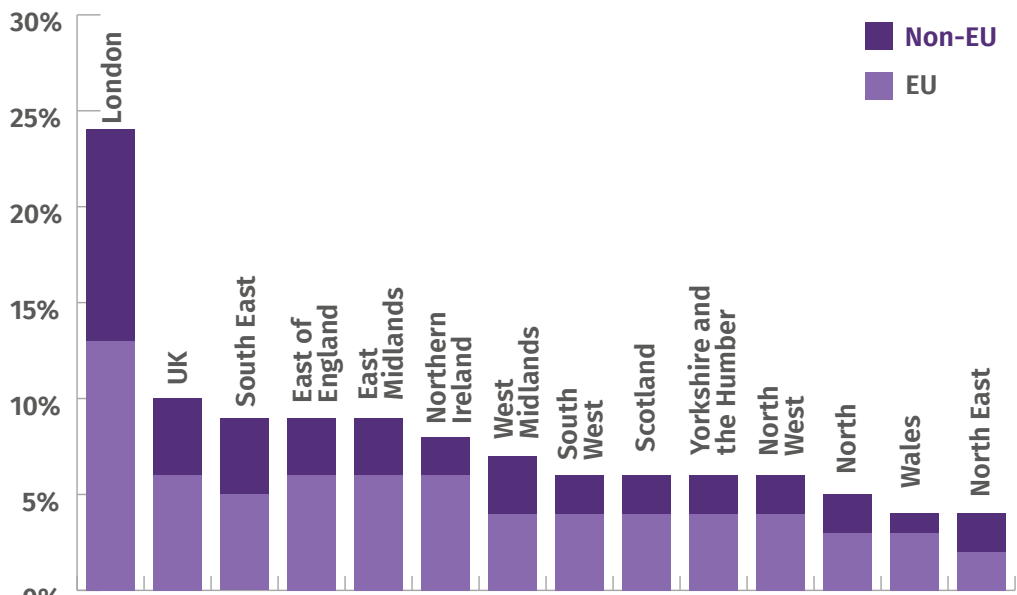
The UK has always relied on migrant labour to prosper. The evidence is that migrants from the EU tend to have a net positive contribution, though there are major evidence gaps and the estimates vary (Vargas-Silva 2017). That said, it cannot be denied that some individuals and communities have concerns about immigration, and this in large part led to the Brexit vote.

The North has seen an increase in migration from the EU, but on aggregate the North's labour force is less reliant than in other regions. Only 225,000

of the North's workforce (3.4 per cent) are EU migrants – far less than the UK average; only Wales has a smaller proportion, while for London the figure is almost four times higher at 12.8 per cent (ONS 2017b).

This does mean that the North will be a little more sheltered from the migration consequences of leaving the EU, but there are likely to be challenges in particular industries and areas: the manufacturing industry is especially reliant, with 7.4 per cent of workers from the EU, rising to 9.5 per cent in Yorkshire and the Humber, and 6.5 per cent of in the North West (ibid).

FIGURE 2.3
The North's economy is generally less dependent on EU migration
Percentage of workers by nationality



Source: ONS, 'International immigration and the labour market' (ONS 2017b)

2.4 SOME PLACES ARE MORE RESILIENT THAN OTHERS

Brexit has made economic resilience a top priority for policymakers. As the deadline for leaving the EU approaches, the UK economy – wracked with uncertainty – appears precarious, and as of August 2017, the pound was worth 14.6 per cent less against the euro and 10.8 per cent less against the dollar than it was in May 2016 (ONS 2017c, ONS 2017d). Last year’s *State of the North* report identified the key elements of a resilient local economy: its business base, labour force, entrepreneurialism and governance (Cox et al 2016).

The resilience of northern economies varies: some areas are able to adapt, others are cause for major concern. Figure 2.4 summarises the different prospects of the North’s local enterprise partnership (LEP) areas by presenting their relative performance against a range of relevant

indicators. They can be grouped as follows (adapted from Cox et al 2016).

- 1. Resilient or prosperous:** areas that are relatively well prepared, with a diverse economy and strong labour market, such as Cheshire and Warrington, and York North Yorkshire and East Riding (YNYER).
- 2. Dynamic but vulnerable:** Greater Manchester, Leeds city-region, Lancashire, North Eastern and Liverpool city-region have a diverse or diversifying economic base, but have some structural flaws, especially compared to similar city-regions in the EU.
- 3. Dependent or vulnerable:** the Humber, Tees Valley, Sheffield city-region and Cumbria are areas that have not yet diversified, are reliant on a single industry or small group of industries, and still have significant structural issues to overcome.

FIGURE 2.4

Parts of the North are resilient, but others are not well positioned for Brexit.
Performance of northern LEPs against key resilience indicators (green=good)

| | Sector diversity (HH)* | Knowledge intensive business services employment (LQ) | High tech employment (LQ) | Output from tradables | Working-age residents qualified to NVQ++ | Working-age residents with no qualifications | Graduate retention (in region of domicile) | Employment rate (16-64) | Unemployment Rate (16+) | Jobs Per Working Age Resident (16-64) | Per cent of residents working in area | % in employment who are self employed (16+) | Business Registration Rate (CAGR 2012-2017) | Business 3-Year Survival Rate | Startups Reaching £1M Turnover | Per cent of SMEs Investing in R&D | Extent Of Devolution | Planning and Development Spending Per Capita | Growth Deal Per Capita |
|-----------------------|------------------------|---|---------------------------|-----------------------|--|--|--|-------------------------|-------------------------|---------------------------------------|---------------------------------------|---|---|-------------------------------|--------------------------------|-----------------------------------|----------------------|--|------------------------|
| Greater Manchester | 0.016 | 1.03 | 0.82 | 28.7% | 34.6% | 9.8% | 81.7% | 70.5% | 6.1% | 0.73 | 89.6% | 13.6% | 6.3% | 73.4% | 6.9% | 15% | 1 | £24 | £193 |
| Sheffield City Region | 0.019 | 0.64 | 0.69 | 28.1% | 30.7% | 8.9% | 70.1% | 70.3% | 5.8% | 0.70 | 86.5% | 14.2% | 4.8% | 74.6% | 7.0% | 17% | 1 | £18 | £177 |
| Leeds City Region | 0.017 | 0.94 | 0.82 | 30.4% | 31.3% | 10.1% | 74.9% | 73.1% | 4.8% | 0.76 | 93.1% | 14.0% | 4.5% | 75.3% | 6.7% | 17% | 2 | £18 | £207 |
| North Eastern | 0.019 | 0.62 | 0.79 | 0.0% | 31.6% | 9.3% | 79.9% | 70.9% | 6.7% | 0.70 | 94.1% | 10.7% | 4.0% | 73.6% | 7.2% | 16% | 2 | £15 | £169 |
| Tees Valley | 0.022 | 0.65 | 1.07 | 30.4% | 30.8% | 9.5% | 77.8% | 68.9% | 6.4% | 0.68 | 86.5% | 11.4% | 5.2% | 77.7% | 5.4% | 17% | 1 | £23 | £156 |
| Cheshire & Warrington | 0.017 | 1.20 | 1.13 | 39.5% | 39.1% | 7.3% | 68.7% | 75.0% | 3.7% | 0.85 | 74.1% | 14.0% | 4.1% | 76.1% | 6.3% | 18% | 3 | £17 | £172 |
| Lancashire | 0.018 | 0.67 | 1.04 | 30.5% | 32.6% | 8.3% | 80.5% | 73.6% | 4.5% | 0.75 | 87.4% | 14.6% | 3.1% | 75.8% | 6.6% | 18% | 3 | £13 | £170 |
| Liverpool City Region | 0.021 | 0.75 | 0.68 | 28.5% | 32.0% | 12.2% | 83.4% | 68.4% | 5.3% | 0.65 | 84.0% | 10.5% | 5.8% | 72.3% | 6.4% | 19% | 1 | £13 | £173 |
| Cumbria | 0.020 | 0.49 | 0.64 | 35.8% | 31.0% | 6.9% | 72.8% | 75.6% | 4.0% | 0.84 | 95.9% | 15.8% | 2.2% | 78.6% | 2.4% | 12% | 3 | £18 | £96 |
| Humber | 0.017 | 0.65 | 0.66 | 33.1% | 30.7% | 8.3% | 72.8% | 72.8% | 5.7% | 0.71 | 89.1% | 11.4% | 3.3% | 73.0% | 6.8% | 12% | 3 | £26 | £123 |
| YNYER | 0.016 | 0.71 | 0.85 | 28.6% | 37.5% | 6.3% | 67.4% | 79.8% | 3.0% | 0.77 | 66.7% | 16.8% | 2.8% | 77.4% | 4.9% | 13% | 3 | £26 | £99 |

Author’s analysis of: BIS 2015a; DCLG 2016; HEFCE 2015a, 2015b; ONS 2013, 2017e, 2017f, 2017g, 2017h, 2017i; DCLG et al 2014

* Sector diversity is measured using the Herfindahl-Hirschman (HH) index

2.5 BREXIT: CASE STUDIES

Core Cities and Brexit

The interactions between European regions are an overlooked dynamic in the move towards leaving the EU. Many of the economic relationships on which the country relies are region-to-region. But these relationships are often overlooked in favour of relationships between nations. Nowhere is this more evident than the debate surrounding Brexit: central government has consulted with the devolved nations and London, leaving out the rest of England (70.8 per cent of the UK's population).

The UK's cities have started to take matters into their own hands. The leaders of the 10 UK Core Cities had been ignored by central government in the UK, and have instead gone directly to the EU chief negotiator Michel Barnier. They aim to discuss how they can better collaborate with cities across the EU, and the chair of the organisation, councillor Judith Blake, notably commented 'It should not be left to national politicians alone to determine Brexit. Cities have a big role in making Brexit work for everyone' (Jameson 2017). In a letter signed by 187 cities across Europe they presented the democratic and economic case for a greater focus on cities in the wake of Brexit, arguing that they are the closest level of government to citizens, and therefore better able to understand and respond to their interests (Core Cities 2017).

This approach may not be innovative as such, but it demonstrates the growing confidence of UK's cities. UK cities have had powers and resources stripped away by central government for over a century, before which cities were at the forefront of innovative public policy. Despite a small shift in power towards metro mayors, cities and regions still lack the power or the profile to cut across national boundaries in the way they will need to. But Brexit, and the way the government has neglected the interests of cities and regions outside London, seems to have provoked a new and welcome approach.

Manchester China Forum

China is now the world's largest economy according to some measures (World Bank 2017). It is growing rapidly and modernising quickly, with far-reaching consequences for countries the world over. It is an extremely valuable export market for UK companies and is a source for vital foreign direct investment into the UK. Even in benign circumstances, improving relationships with China would be important; but as we leave the EU this is even more vital. Like most economic policy, trade and investment policy is heavily centralised in the UK: Wales and Scotland exercise concurrent powers with central government's Department for International Trade (DIT), but again English regions are entirely left out, relying on small regional outposts of DIT, rather than holding any devolved power.

Greater Manchester's relationship with China has become a recent focus for policymakers in the city-region. The city has a strong base on which to build: Manchester has the largest Chinese community and student population outside London; there are 33,000 total visits from China to Greater Manchester and these visitors tend to spend three times more than visitors from the EU (£962 per person) (New Economy and MGC 2016). As part of Greater Manchester's internationalisation strategy, the Manchester China Forum was set up in 2013. It was developed with the support of the public sector, but is a business-led initiative which aims to:

- support the growth of Manchester's exports to China by 2018
- increase inward investment into Manchester from Chinese companies
- grow inward tourism from Chinese visitors
- increase Chinese student numbers in Greater Manchester's educational institutions
- increase student retention
- secure and sustain direct air routes between Manchester and China (MCF 2017).

This approach appears to be bearing fruit. New direct flights to Beijing and Shanghai have been developed, and Chinese investment in Manchester's housing and infrastructure appears to be surging (Fraser 2017).

The Manchester China Forum offers a number of lessons for policymakers. It shows how a local organisation can work across the public and private sector, and alongside national agencies to improve relationships with such an important trading partner. In addition, it has revealed the importance of regional initiatives such as the northern powerhouse, which are readily understood in countries such as China. But it also serves to highlight the weakness of England's regions on trade and investment compared to the devolved nations. While London and the golden triangle benefit from centralised policy, the other regions are often overlooked because they lack the institutions to champion their interests overseas. As the UK moves towards leaving the EU, central government will need to devolve far more power to the English regions in order to take advantage of all of the UK's opportunities for trade and investment.



3. GLOBALISATION: A NEW WAVE OF GLOBAL GROWTH

3.1 THE BENEFITS OF GLOBALISATION ARE NOT BEING EVENLY DISTRIBUTED

Globalisation has disrupted the world for centuries, and has come with many benefits and some significant costs. The evidence suggests that developed countries have become wealthier on aggregate, and that developing countries are catching up (CEJ 2017). But within developed countries, progress has slowed and in the UK inequality has started to rise again: the absolute number of people employed is at an all-time high, but much of this work is low-paid and insecure. This means that 8 million people, more than a fifth of the working-age population, live in a low-income household, and 58 per cent of these are working families – a number which has been rising since the early 2000s (DWP 2017)⁷. Even organisations such as the IMF and the OECD have remarked that economic growth needs to be more inclusive (Lagarde 2013, OECD 2016).

However, to achieve inclusive growth there must also be strong economic growth in the first place, and the North is lagging behind. Historically,

globalisation enabled northern industry to flourish but in more recent decades it has been the cause of serious structural problems. Since 2005 economic growth in the North has been slower than in the nation as a whole: in 2014 the North’s economy was only 3.4 per cent bigger in real terms than in 2005, while the country grew by 9.5 per cent over the same period (ONS 2016e). That said, parts of the North have seen strong growth: Cheshire grew by 14.0 per cent and Greater Manchester by 9.0 per cent (ibid).

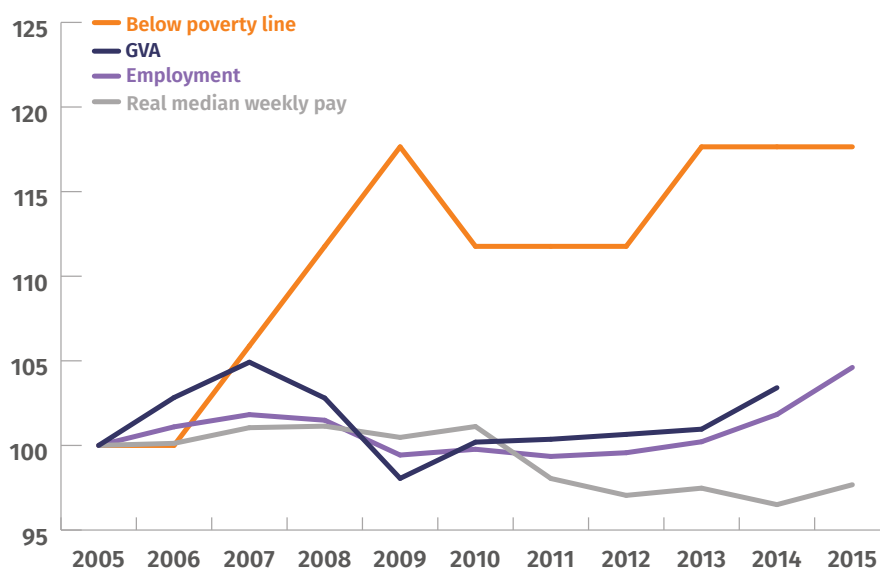
The North has felt the consequences of this low growth, and of the recession especially. Post-recession employment only started to rise significantly in 2013, and has grown slower than all areas except Wales and Scotland since 2007; real wages are 3.3 per cent lower than in 2007 (author’s analysis of ONS 2016f and ONS 2017j). As a result, there are now 2 million working-age people living in households below the poverty line, 300,000 more than there were in 2003/4–2005/6 – an increase of 17.6 per cent – and from 20.0 per cent to 22.7 per cent of working-age people (DWP 2017). In the North East, this figure increased by a third (33.3 per cent) – the largest increase in the country alongside the West Midlands (ibid).

⁷ Calculated as 60 per cent of contemporary median household income, after housing costs.

FIGURE 3.1

Output and productivity have risen, but pay and employment have lagged behind, and relative poverty has risen

Real GVA, pay, employment and number of families below the poverty line, benchmarked (2005=100)*



Source: Author’s analysis of ONS 2016e, 2016f, 2017j, 2017k, 2017l and DWP 2017. Note: * 60 per cent of median income

3.2 THE NORTH HAS THE SEEDS OF OPPORTUNITY IN KEY SECTORS AND PLACES

Some sectors are more likely to succeed in a globalised world than others. Much attention has been focused on two sector groups in particular: knowledge-intensive business services, and high-tech manufacturing. These are very different sectors, but are important because they appear to show greatest prospects for productivity growth, are highly dependent on human capital and high-skilled workers, and also have spillover effects in the wider economy (Bakhshi et al 2015, Chapain et al 2010).

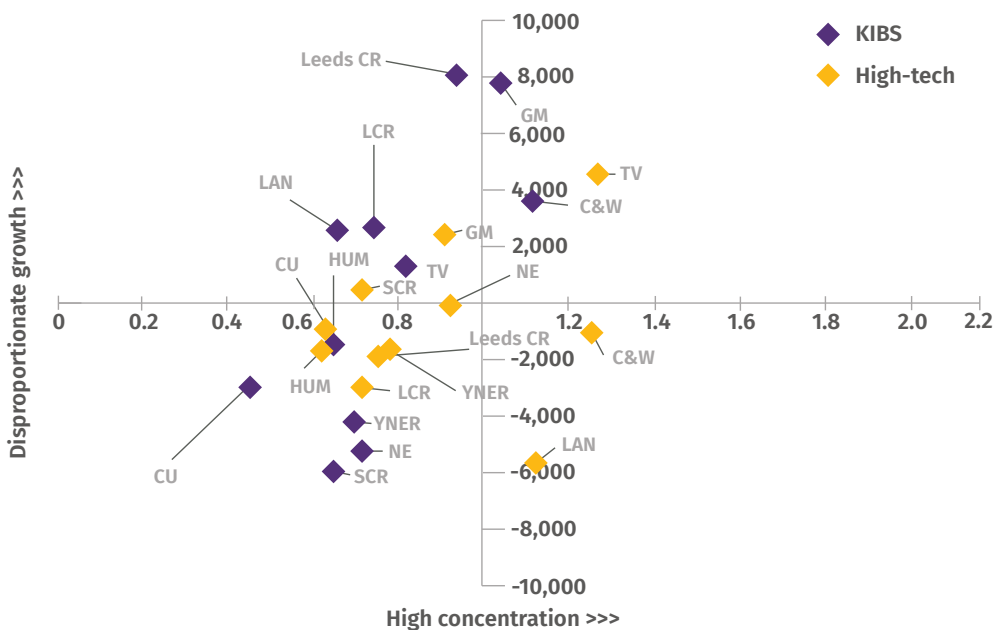
These two sectors can be quite interdependent, but play out differently across the North's geography.

- Knowledge-intensive business services tend to be concentrated in or around the North's two biggest cities: Greater Manchester and Leeds city-region account for 47.3 per cent of the North's total employment in this sector, and employment here is growing disproportionately. Research suggests that Leeds and Manchester provide a twin hub for business services in the North (Raikes and Cox 2016).
- High-tech manufacturing is concentrated in the process industries of the Tees Valley, biopharma in Cheshire and Warrington and aerospace industries in Lancaster; however, disproportionate employment growth has also been observed in Tees Valley and Greater Manchester (author's analysis of ONS 2017i).

FIGURE 3.2

Only a handful of the North's subregions have strong specialisms in 'new economy' sectors, but the picture is skewed by London and the South East

Location quotients and regional shift (from shift-share analysis**) in knowledge-intensive business services and high-tech manufacturing*



Source: Author's analysis of ONS 'Business register and employment survey' (ONS 2017i)

Notes: *A value greater than 1 indicates a greater specialism than national.

** Values greater than 0 indicate employment change 2010-15 that is disproportionate given wider trends.

3.3 SPECIALISMS WILL BE IMPORTANT BUT WON'T PROVIDE THE JOBS NEEDED

The Northern Powerhouse Independent Economic Review (IER) took a bottom-up view of the North's economy and set out those sectors in the North that are particularly specialised: advanced manufacturing, digital, health innovation and energy (SQW and TFN 2016). It also set out three enabling capabilities that support them: logistics, financial and professional services, and higher and further education (ibid).

Forecasts suggest that the four prime capabilities are set to grow in productivity and output by 2030 under the transformational scenario modelled by Cambridge Econometrics for Transport for the North:

- advanced manufacturing productivity is set to grow by 3.4 per cent annually

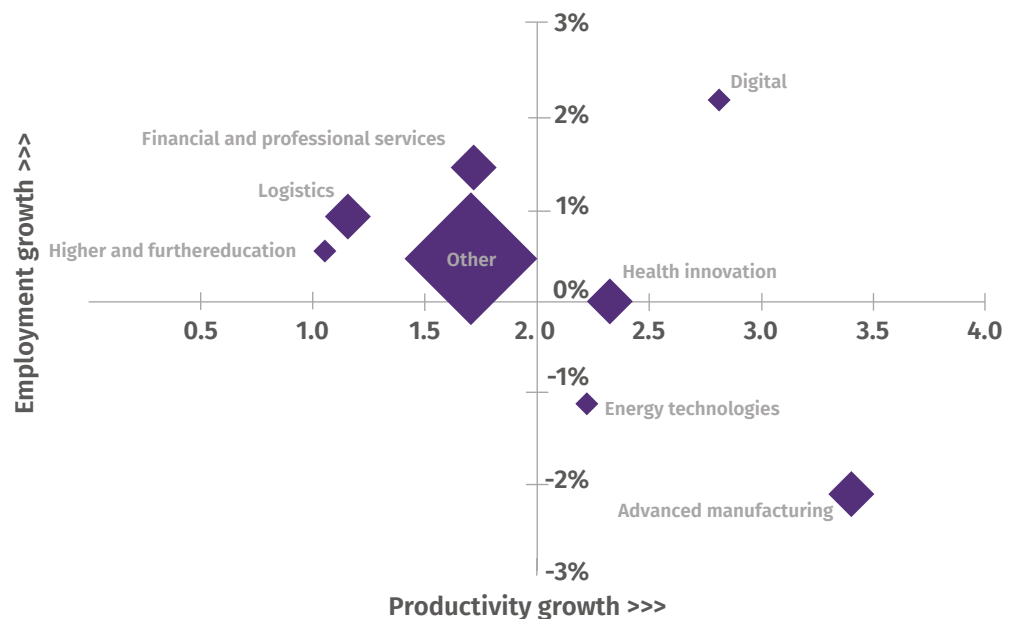
- health innovation productivity is set to grow by 2.3 per cent annually
- digital productivity is set to grow by 2.8 per cent annually
- energy productivity is set to grow by 2.2 per cent annually (author's analysis of Cambridge Econometrics 2016).

These industries alone, however, will not provide the jobs many northerners will need. Of the four prime capabilities, only the digital sector will see any significant employment growth – increasing by 46,000 jobs by 2030 – while advanced manufacturing and health innovation are set to shrink in jobs (ibid). The vast majority of people will continue to be employed in other sectors, where rises in both productivity and jobs are likely to be much smaller.

FIGURE 3.3

The four prime capabilities will become more productive, but of these only the digital sector will increase in employment

Forecast productivity growth (x axis) and employment growth (y axis) for the North's prime capabilities 2017–2030 (CAGR; size=jobs in 2030; axes cross at national averages)



Source: Author's analysis of Cambridge Econometrics, 'Northern Powerhouse Transformational Scenario Results by Capability' (Cambridge Econometrics 2016)

3.4 THE EVERYDAY ECONOMY NEEDS INTERVENTION

The vast majority of people work in the ‘everyday economy’ sectors, which aren’t at the frontier of innovation or trade. This includes sectors such as retail, wholesale, leisure and social care (Jacobs et al forthcoming). While there are many high-quality employers and well-treated employees in these sectors, a significant number of people face poor employment practices, low pay and poor progression opportunities. Too many businesses see little competitive advantage in workforce development, and remain stuck in a ‘low-skill equilibrium’ – with low demand for skills from employers matched by low supply from the workforce (Green 2015). This is not only bad for workers’ pay and conditions, but also means lower productivity. Because these sectors aren’t usually traded, they tend to be insulated from both the benefits and costs of globalisation:

they don’t grow as quickly because they can’t tap into new markets overseas, but are protected from international competition – and the direct consequences of Brexit (Jacobs et al forthcoming).

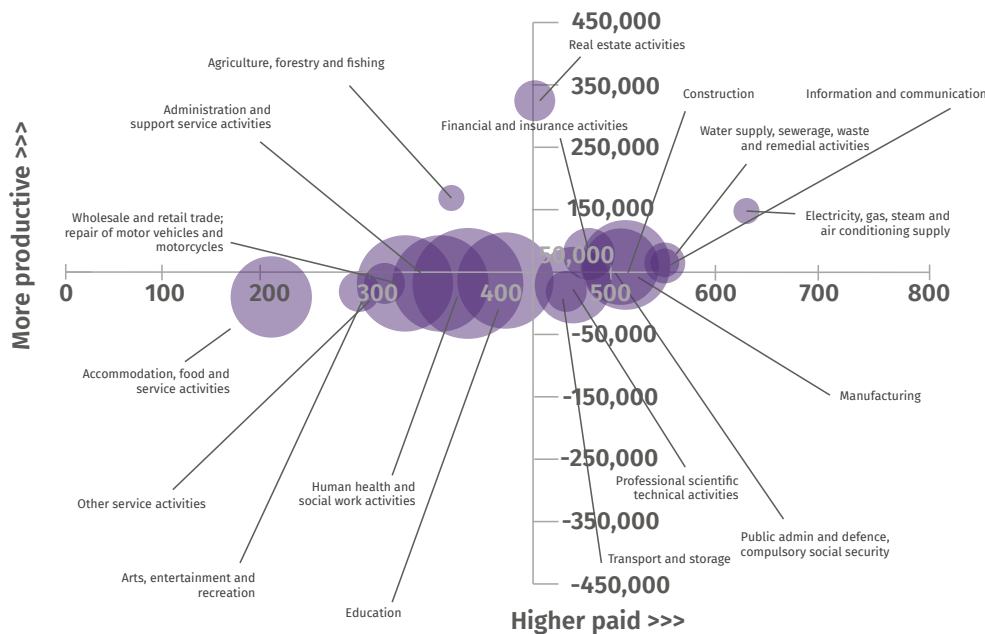
The vast majority of northern workers are employed in sectors such as:

- wholesale and retail trade employs 1.1 million people in the North, and weekly pay is £326 (£340 nationally)
- accommodation and food service activities employs 498,000 people in the North where weekly pay is £195 (£233 nationally)
- arts entertainment and recreation employs 196,000 people in the North, and weekly pay is £280 (£306 nationally) (author’s analysis of ONS 2016f, ONS 2016g and ONS 2017l).

FIGURE 3.4

Low wage and low productivity sectors will need to improve

Weekly pay (x axis) productivity in GVA per worker (y axis) and employment (size) in the North compared to national averages (axes)*



Source: Author’s calculations of ONS, ‘Annual survey of hours and earnings’ (ONS 2016f), ONS, ‘Regional Gross Value Added (Income Approach)’ (ONS 2016g) and ONS ‘Subregional productivity: Labour productivity (GVA per hour worked and GVA per filled job) ONS 2017l

Note: * Mining and quarrying excluded due to small sample size.

3.5 GLOBALISATION: CASE STUDIES

Alderley Park

Health innovation is a vital sector for the UK: it not only produces life-saving treatments, but generates growth and jobs for local and national economies. The UK holds a comparative advantage – one which it will need to embrace and develop as the country moves towards leaving the EU. The North's health innovation strength is well documented: it is one of four prime capabilities, with both the biopharma and medtech sectors clustering in various locations across the North, and their supply chains extending across the region too (Raikes 2016a). This is underpinned by a number of assets: the North's leading hospitals and universities often work with the private sector and organisations such as the Academic Health Science Networks, often facilitated and promoted by organisations like the Northern Health Science Alliance (NHSA).

Alderley Park has been one of the UK's leading sites for biopharma since the 1950s, in recent years hosting AstraZenica's (AZ) lead centre for cancer research. In 2014, however, AZ decided to move 1,600 R&D jobs to Cambridge, although retaining their manufacturing presence in the area. An important asset was almost lost and required intervention. Local stakeholders were quick to step in: Manchester Science Parks (MSP) (a joint venture including Manchester city council and the University of Manchester, alongside major local companies) purchased the site and set out a plan to develop it.

Investment has been brought in and coordinated from both local and central governments, and has been a catalyst for a highly innovative cluster of firms: Greater Manchester, and Cheshire and Warrington LEPs invested £50 million in funding; central government has designated the site an enterprise zone, invested via the Medicines Discovery Catapult, and made it the location for the world-leading Antimicrobial Resistance Centre. The cluster can also capitalise on its connectivity with Manchester and Liverpool and the research-intensive universities and hospitals located for example in Corridor Manchester. There are now 150 small firms incubated on the site.

This example shows how effective industrial strategy can be when it is coordinated between tiers of government. This government's industrial strategy green paper promises a strong focus on 'place'. Alderley Park bolsters the case for devolved powers to regional and local government so that this focus can be realised.

Lightweighting

Advanced manufacturing remains an important sector for the UK, and there are a number of important clusters across the North. The North has both a history and a pedigree in manufacturing, and also retains significant assets which underpin this sector's growth: new institutions (such as the Graphene Institute and the Henry Royce Institute) and universities are undertaking ground-breaking research.

Lightweighting is just one of the North's innovations in this area. This uses new techniques, such as weaving carbon fibre and industrial textiles into metal, in order to reduce their weight, and is used in automotive, marine, nuclear and aerospace industries (LCR LEP 2016). This technology also leads to fuel efficiency in cars, which is not only a commercial opportunity for northern manufacturers but also contributes towards mitigating climate change.

Intervention has been effective, and local actors have proven crucial. Liverpool city-region LEP has acted as a champion for the sector, and worked with local stakeholders such as universities and businesses to support its development. Broader central government initiatives such as the northern powerhouse and industrial strategy agendas have been welcomed for raising the profile of manufacturing in the region and improving recruitment and retention (Lawrence and Blakeley 2017). More specifically, the High Value Manufacturing (HVM) Catapult set up three technology and innovation centres in the North to accelerate commercialisation. The Advanced Manufacturing Supply Chain Initiative (AMSCI) has also had a positive impact on lightweighting via its influence on supply chain development for the automotive and aerospace sector in the West Midlands and Liverpool city-region (ibid).

This holds a number of lessons for northern companies adapting to globalisation. It demonstrates the value of an industrial strategy with coordination between public and private sectors, and the different tiers of government: local and central government each play complementary roles in supporting these firms and work with private sector partners in order to do so. This example also shows how important it is to understand the regional and pan-regional dimension to sectors and their supply chains, which in this case stretch across the country. Industrial strategy will need to work across such geographies and supply chains in order to be effective.



4. TECHNOLOGICAL CHANGE: TOWARDS ‘DIGITAL CAPITALISM’

4.1 AUTOMATION IS LIKELY TO BE A CHALLENGE

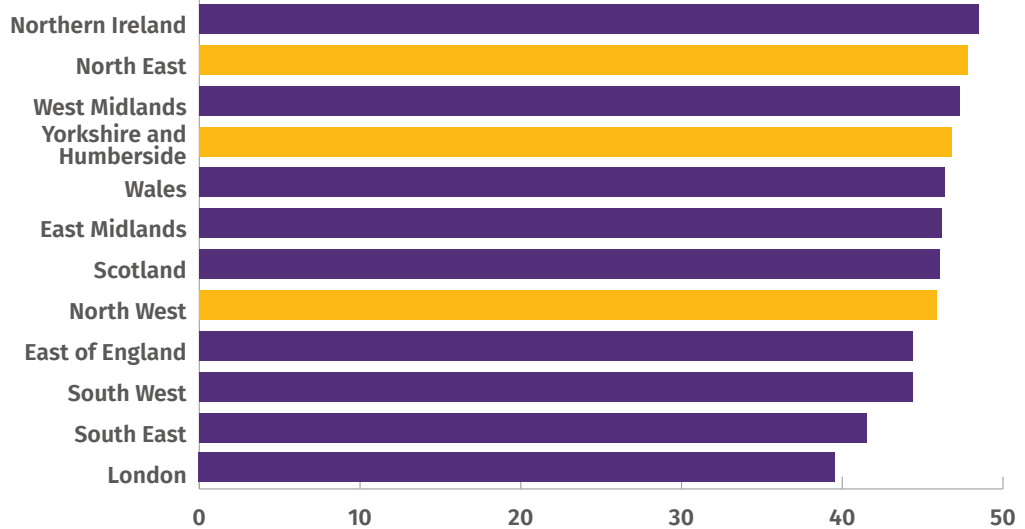
Automation has always been at the heart of technological progress and economic development. It may be more visible in the form of robotisation of manufacturing, but it also encompasses machine-learning, and is now well established in the service sectors too: legal secretaries have been replaced almost entirely by technology; accountants are having to adapt quickly (Deloitte 2016, Manyika et al 2017). While automation is already making inroads into more cognitive tasks, the risk still tends to be highest for lower-skilled low-pay work.

UK-wide an estimated 15 million jobs could technically be automated in the next 10–20 years, concentrated in low-paid occupations and largely in administrative, clerical and production tasks (Haldane 2015). Analysis suggests that

there are in fact very few jobs (an estimated 5 per cent) which can be totally automated and history suggests that technological advances tend to create more jobs than they destroy, but disruption is likely and inequality may rise as a result (Manyika et al 2017, CEJ 2017).

The North appears to be at higher risk of automation than other regions. As set out in Dromey et al (2017), and summarised in figure 4.1, the North East is the most at risk, with 47.8 per cent of jobs in threatened occupations, followed by Yorkshire and Humberside (46.8 per cent), while the North West has better prospects (45.9 per cent).

FIGURE 4.1
Many northern jobs will soon be automated
Percentage of employment in occupations at high risk of automation



Source: Dromey et al, *Another lost decade? Building a skills system for the economy of the 2030s* (Dromey et al 2017), analysis of ONS Labour Force Survey, and Frey and Osborne, *The Future of Employment: How susceptible are jobs to computerisation?* (Frey and Osborne 2013)

4.2 THE NORTH HAS MANY DIGITAL ASSETS

The UK has a strong digital sector, with a major international cluster in London and smaller but important clusters across the country. The digital tech sector contributes £97 billion in GVA to the UK economy, and employs 1.6 million people (Tech City 2017). London is dominant on the international stage: in 2016 there was more digital tech investment in London than any other European city (ibid). However, 68 per cent of UK investment went outside London, with high levels of investment going to Edinburgh, Cambridge, Bristol and Bath, Oxford, Manchester and Sheffield (ibid). Wages in this sector tend to be higher, and employment is forecast to rise: this sector will be an important generator of good-quality jobs for the UK (ibid).

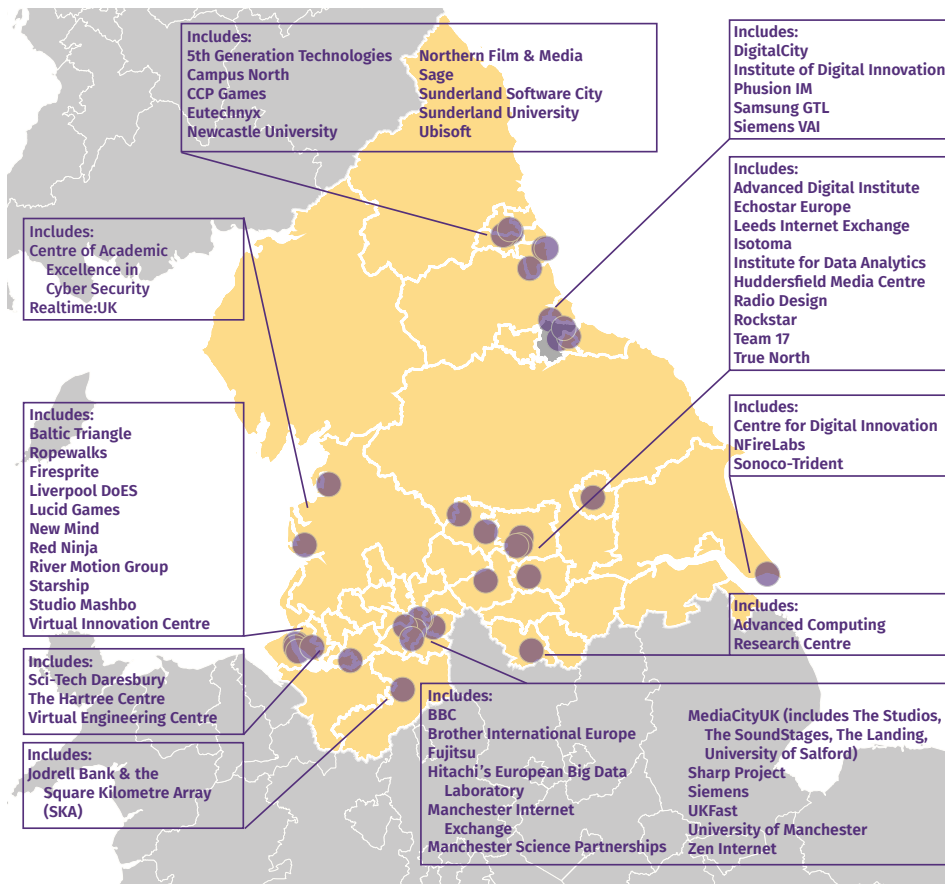
The North specialises in digital tech, and has a number of thriving clusters across its geography. The digital tech sector contributes £9.9 billion to

the North's economy (5.2 per cent) and employs 283,500 workers (Tech North 2017). Sunderland has the highest rate of digital tech business startups in the country, while Newcastle, Leeds, Liverpool, Manchester and Middlesbrough all have higher birth rates than the national average (Tech City 2017). The Northern Powerhouse Independent Economic Review concluded that the North's digital sector is particularly focused on 'high performance computing, cognitive computation, data analytics, simulation/modelling, and machine learning' (SQW and TFN 2016). As set out in Blakeley (2017) there are a number of important clusters: data analytics in Leeds, media and communications in Salford, and animation and software development in the North East (SQW and TFN 2016). The digital tech sector has the ability to transform the North's other sectors and create whole new offshoots such as medtech and fintech, and is an enabler of innovation across the wider economy (TechCity 2017).

FIGURE 4.2

The North has a number of digital assets, clustered in major cities but also in some of its smaller towns

North's digital asset map



Source: Independent Economic Review, *Northern Powerhouse Independent Economic Review* (SQW and TFN 2016) reproduced from Blakeley, *Paying for our progress* (Blakeley 2017)

4.3 DIGITAL SKILLS WILL BE VITAL

Digital skills are essential but education and training provision often struggles to keep up. Digital literacy has long been a fundamental requirement for almost all jobs: the school curriculum has tried to adapt, as have many college and university courses. But the sector moves so quickly that course planning struggles to keep up: there is a longstanding and widening ‘digital skills gap’ which needs to be addressed (Blakeley 2017)

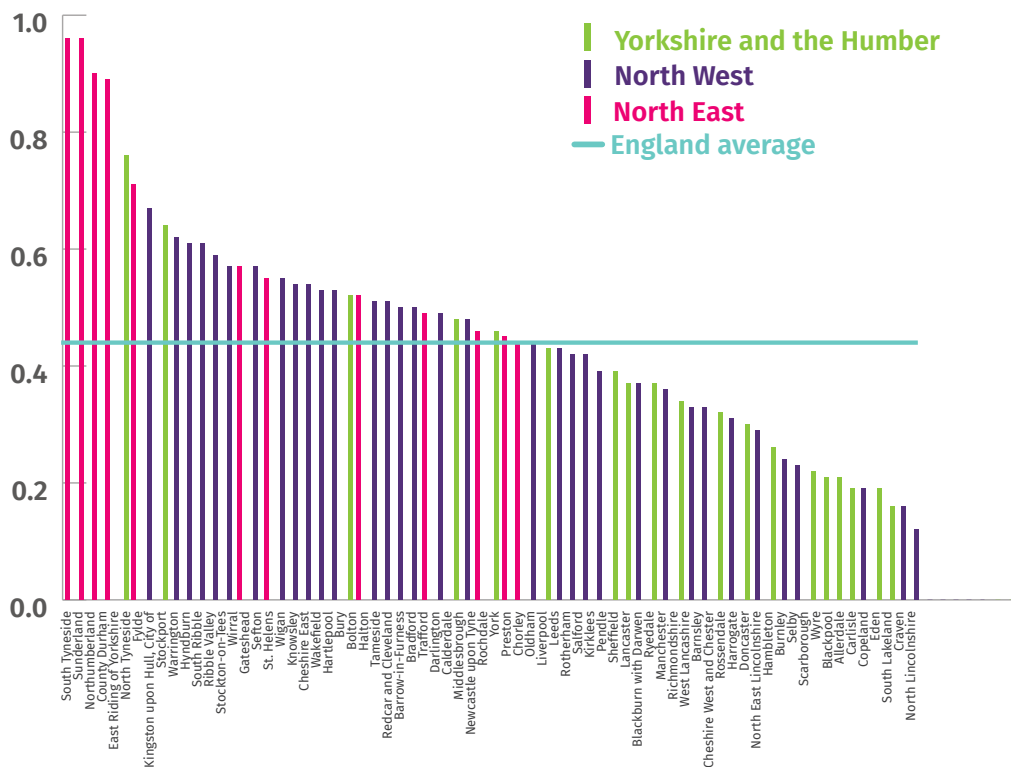
For the North, this gap threatens to drag on productivity. Alongside transport and digital infrastructure, the digital skills gap is possibly the

biggest threat to the North’s digital tech sector. Further education provision is relatively strong and there is no digital skills gap at this level within the sector (the North East performs particularly well), but there is a digital skills gap at the higher education level (ibid). Demand is highest in Cheshire and Warrington and Greater Manchester while salaries are highest in the North East (ibid). Many of these digital strengths reflect developments that took place 10 or 20 years ago, which underlines the need for the North to keep innovating now, in order to meet future demands.

FIGURE 4.3

The North has some high concentrations of digital skills provision – especially in the North East

ICT/digital apprenticeship starts per 1,000 16–64-year-olds



Source: Department for Education and Education and Skills Funding Agency, ‘Apprenticeship geography and sector subject area PivotTable tool’ (DfE/SFA 2017)

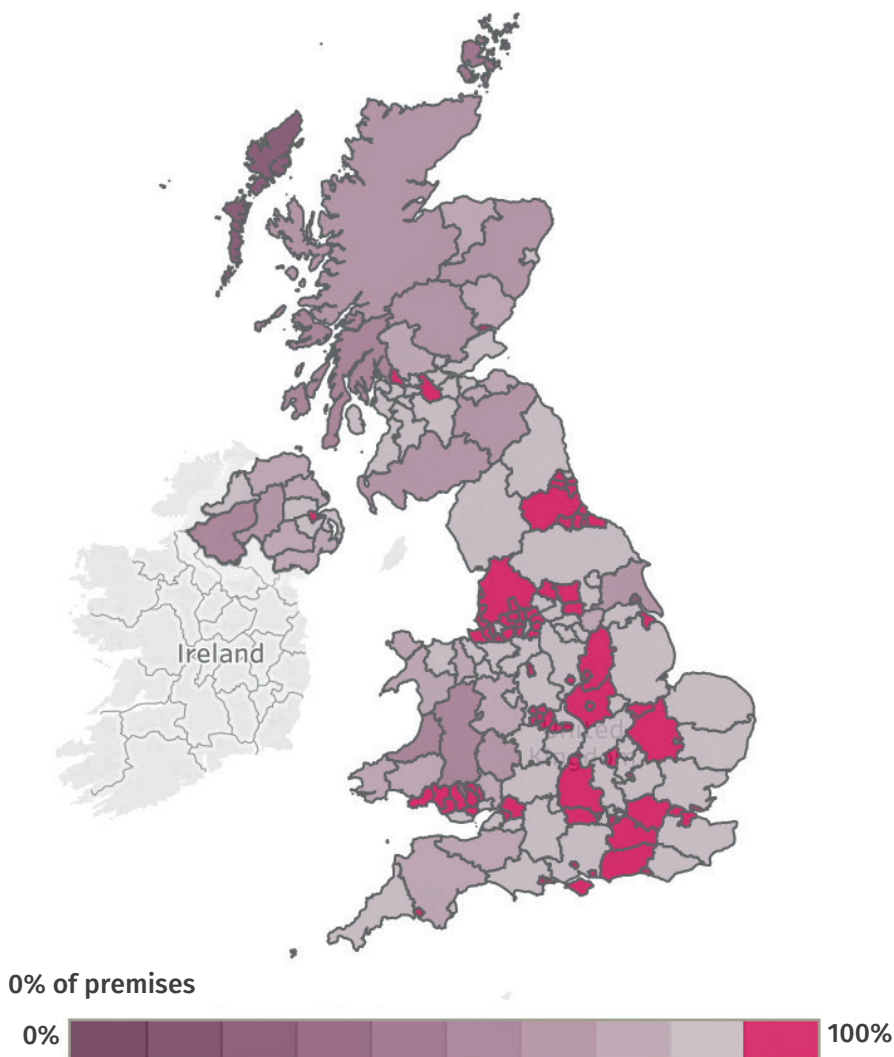
4.4 DIGITAL INFRASTRUCTURE MUST IMPROVE

Digital infrastructure is now a vital component of any modern economy. Superfast broadband isn't the only consideration (mobile infrastructure and data centres are also crucial), but it has been a priority for successive governments. This is with good reason: research suggests that it enables flexible working, can help new businesses to get off the ground and improve the performance of existing firms; estimates of economic impact show that for every £1 of business investment in broadband, between £14 and £16 of economic uplift can result, depending on whether the economy is in a city, town or rural area – the benefits are in fact lower in London (£10 for every £1 spent) (Regeneris 2012).

The North's major cities are well connected, but rural areas are still being left behind. Across the UK, 90 per cent of businesses can access superfast broadband speeds; this is more than matched by most of the North's major city centres and the majority of their city-regions (Ofcom 2016). However, Sheffield has a rate of only 86 per cent and much of the rural North is behind: 83 per cent of premises in Cumbria and North Yorkshire have access, and Northumberland has a rate of 86 per cent (ibid). The economies of the rural North are much more diverse and dynamic than is often supposed, and will need better infrastructure if they are to be as entrepreneurial as a post-Brexit North will require (Round 2017).

FIGURE 4.4

Internet connectivity is a major issue outside of the major cities and satellite towns
Per cent of premises with superfast broadband



Source: OFCOM, *Connected Nations 2016: Interactive Summary* (OFCOM 2016)
© OpenStreetMap contributors

4.5 TECHNOLOGICAL CHANGE: CASE STUDIES

Data Mill North

The digital sector is one of the North's strengths, with notable clusters in Greater Manchester and Leeds city-region. In the five years to 2015, the number of digital tech businesses in Leeds, and employment in the sector both grew by 29 per cent, (Tech City 2017). Leeds' digital sector is also notable for the way in which it complements the other sectors in which the city-region excels, such as fintech and medtech, and makes good use of infrastructure and assets.

Data Mill North was launched in 2014 to bring together open data from across the North's various sectors, increasing transparency and helping people and organisations to make more innovative use of that data (Lawrence and Blakeley 2017). It initially started life in 2014 as Leeds Data Mill, funded by Leeds city council. It has brought together 350 datasets from 43 organisations in the North. It seeks to put open data to better use, by providing an online portal, and facilitating innovation labs (ibid). It has enabled products to be developed with a range of purposes, such as monitoring energy uses across schools (Schools Energy Explorer), understanding the social housing landscape (Social Housing: Best Choice), and various interactive maps monitoring things such as pedestrian casualties or economic activity (ibid).

Data Mill North shows how, with a bit of local government support, innovation can quickly snowball to create added value and civic benefit. The initiative capitalised on the strength of Leeds city-region's wider digital economy – the cluster of assets and firms, and the culture which make it such a vibrant place for digital firms to prosper. To be effective, there needs to be a place-based industrial strategy, to work with local and regional institutions, coordinate investments in digital infrastructure, work with schools, colleges and universities to develop a pool of digital skills locally, and facilitate interventions such as the seed funding which led to the creation of Data Mill North.

Digital degree apprenticeships

The digital sector is fast moving, which is reflected in employer demand for skills. The sector evolves so quickly that courses (which need to be planned then delivered over a number of years) are often redundant by the time they are completed. Businesses are struggling to find the skills they need across the country but especially in the North, and rely heavily on immigrant labour to plug the gap (Blakeley 2017). Tech Partnership estimated that 134,000 new entrants per year are required to meet demand for specialist IT and digital technology talent (SHU and Apprenticeships 2016). This 'digital skills gap' will grow if policymakers fail to adapt to this and IPPR North has set out a number of innovations which could help (Blakeley 2017).

One such solution, developed by Sheffield Hallam University, is the 'Digital and Technology Solutions Professional' degree apprenticeship. This course combines the advantages of a BSc honours level education with practical and applied learning. It was designed by leading employers such as IBM, Lloyds Banking Group and John Lewis, and has a strong workplace learning element (SHU and Apprenticeships 2016). The programme is funded through the apprenticeship levy.

This is an exciting model for employers in fast-moving sectors such as digital. Local enterprise partnerships, universities and colleges across the country are struggling to align the skills supply from colleges and universities with employer demand. Many initiatives appear to have failed, given the challenge of matching up employer demand with the preferences of learners and the incentives of providers. This model appears to offer a collaborative solution. It also offers lessons for education and skills more broadly: the division between vocational and academic education is broken down with this model, which awards a BSc honours degree but has a strong vocational element and is funded via the apprenticeship levy. It may be that, in order to adapt to technological change, globalisation and the rise of knowledge-intensive sectors, classroom-based education and workplace-based training will need to merge further.



5. THE ENVIRONMENTAL IMPERATIVE: GREENING THE ECONOMY

5.1 THE NORTHERN ECONOMY IS RELATIVELY CARBON INTENSIVE BUT IS CUTTING CARBON EMISSIONS FAST

The UK is signed up to the Paris Agreement on climate change which aims to limit global warming to well below 2°C and to attempt to limit increases to 1.5°C. This will require major reductions in emissions: by 2050 the UK must reduce its greenhouse gas (GHG) emissions to 80 per cent of 1990 levels, and while it has met previous targets, the committee on climate change (CCC) concludes it is unlikely to meet them in future (CCC 2017).

Because the northern economy has a high concentration of energy-intensive firms, it tends to emit high quantities of CO₂. The North emits

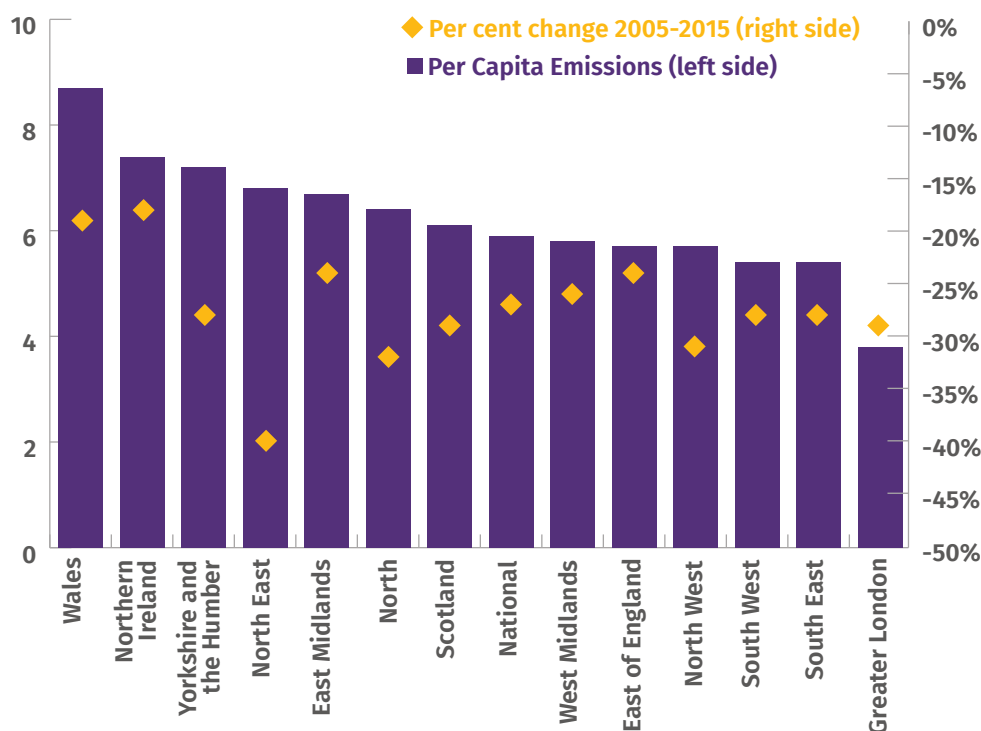
disproportionate amounts of CO₂; 6.4 kt CO₂ per capita compared to 5.9 kt CO₂ per capita in the UK (BEIS 2017a). This is largely due to industry and commercial usage, which in 2015 accounted for just under half (49.1 per cent) of northern emissions, compared to 42.0 per cent nationally (ibid).

However, CO₂ emissions have fallen faster in the North than in any other region. Northern CO₂ emissions fell by 31.8 per cent in the 10 years to 2015 and by 40.2 per cent in the North East (ibid). This has been driven by a 38.0 per cent fall in emissions from the industry and commercial sector during this period (ibid).

FIGURE 5.1

Northern emissions are high, but have fallen more quickly than in any other region – especially in the North East total

CO₂ emissions in kt CO₂ per capita in 2015 and percentage change in total CO₂ emissions 2005–2015



Source: Department for Business, Energy and Industrial Strategy, '2005 to 2015 UK local and regional CO₂ emissions' (BEIS 2017a)

5.2 AIR POLLUTION: LESS OF A HEALTH PROBLEM BUT ACUTE IN SOME AREAS

Particulate matter is a major health concern across the world. It has been estimated that the combined impact of particulate matter and NO₂ is equivalent to 40,000 deaths per year (RCP 2016 via Laybourn-Langton 2016). The EU is requiring member states to reduce emissions, and the UK government is implementing a number of changes to make this happen. Several UK cities have levels of pollution that are highly damaging – this is an especially acute problem in London, but isn't isolated to the capital.

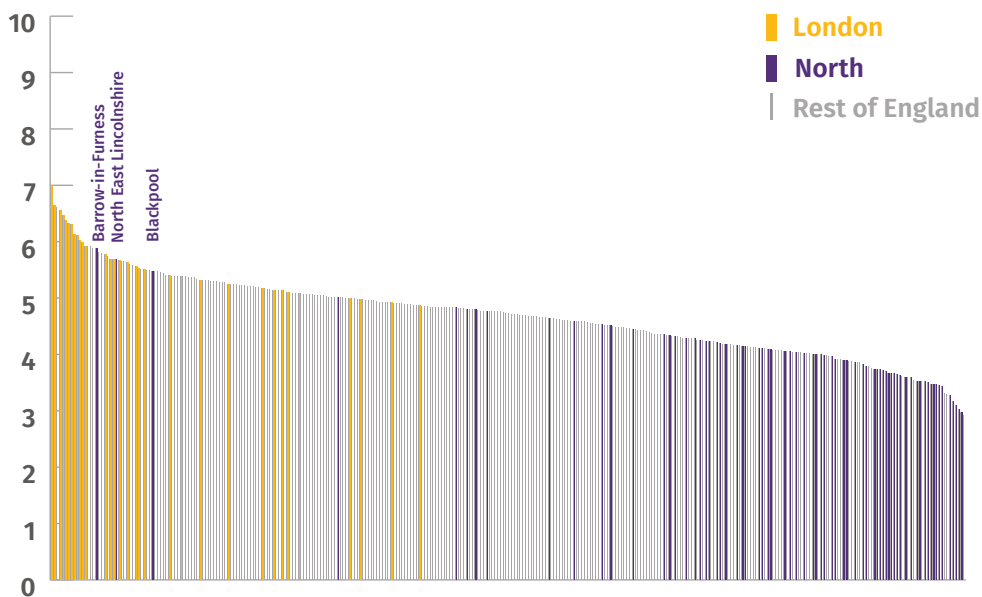
matter generally, although some areas have high concentrations. The worst areas for particulate matter in the North are Barrow-in-Furness, where 5.9 per cent of deaths were attributable to air pollution; North East Lincolnshire (5.7 per cent) and Blackpool (5.5 per cent), and while the major cities have less of a problem the fact that they are more populous does make them a priority too (PHE 2017). Generally, however, the North has cleaner air and some areas have the lowest levels of particulate matter in the country – Allerdale, Copeland, Craven and Northumberland are four of the bottom five for deaths attributable to particulate matter (ibid).

Thankfully the North fares relatively well in this regard: there are low levels of particulate

FIGURE 5.2

Air pollution levels are low, although there are some areas with high concentrations

Fraction of mortality (age 30+) attributable to particulate air pollution in England's local authority districts and unitary authorities, 2015



Source: Public Health England, 'Data for County & UA in England' (PHE 2017)

5.3 RENEWABLE POWER GENERATION IS STRONG AND IMPROVING

Shifting towards renewable energy generation is essential for the country’s future. Renewable sources currently produce a record 29.8 per cent of UK electricity (BEIS 2017b). The UK, however, is slipping behind other countries in meeting its targets, and the government has signalled it may abandon these post-Brexit (Swinford 2017).

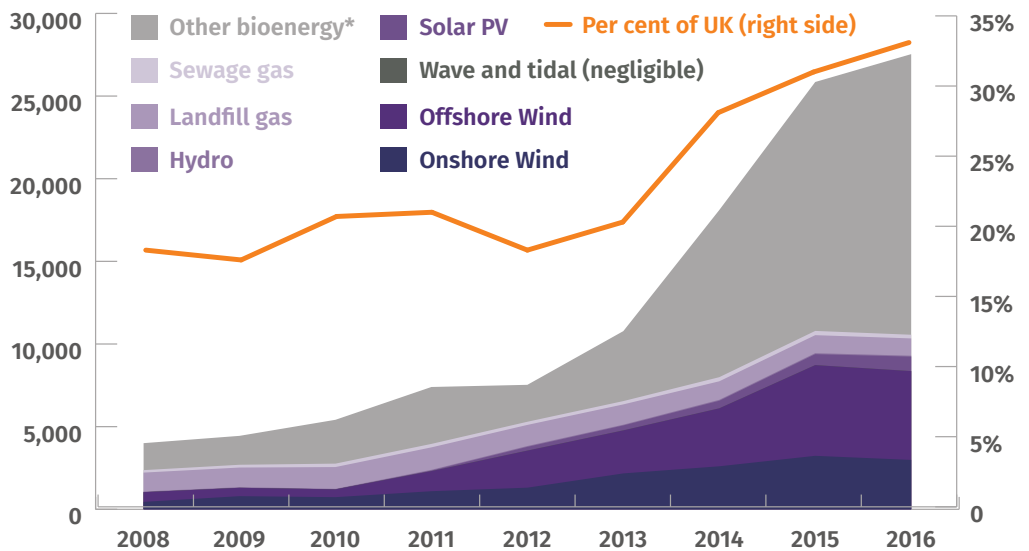
The North is already playing a significant part in powering the nation’s low-carbon future. In 2008 the North generated 27,500 GWh in renewable energy – a third (33.1 per cent) of the UK total; and in 2016 the North is generating more than five times

as much renewable energy as it was in 2010 (BEIS 2017c). A significant proportion of this generation is now biomass and there is a lively debate about the extent to which biomass drives carbon reduction (See Baxter and Cox 2017). The North’s energy sector has a number of assets which if fully utilised could generate £15 billion per annum and 100,000 green jobs in the North, transforming the UK’s energy economy (ibid). As well as building on technical innovations and smart grid opportunities, this includes making use of salt caverns which could store hydrogen, deep minewater heating systems and the waste heat that industrial clusters generate – opportunities which are unique to the North’s geological assets (ibid).

FIGURE 5.3

The North generates a significant amount of electricity from renewable energy and has increased this generation dramatically in recent years

Generation of electricity from renewable sources in the North (GWh and as a percentage of UK total), 2016



Source: Department for Business, Energy and Industrial Strategy ‘Regional Statistics 2003–2016: Generation’ (BEIS 2017c)

5.4 THE NORTH'S ECONOMY WILL BENEFIT FROM A FOCUS ON LOW-CARBON INDUSTRIES

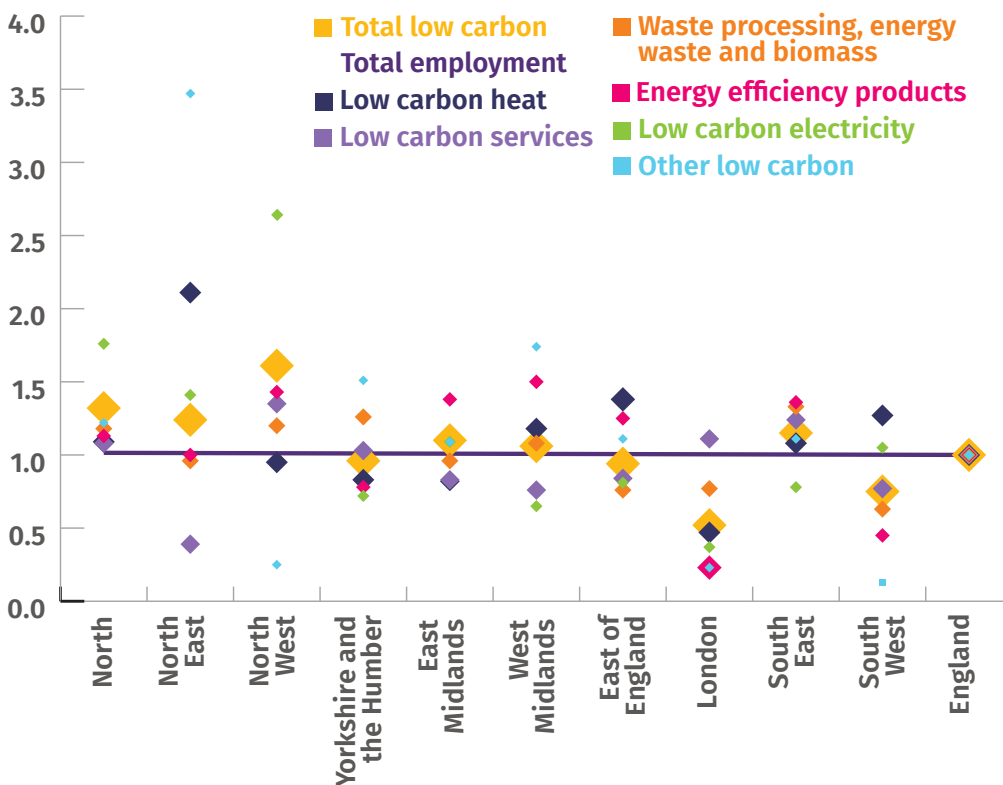
The low-carbon economy is a small but thriving economic sector in the UK. The sector employs 234,000 people nationwide, generates £43.1 billion of turnover and includes a number of sectors from offshore wind to low-carbon and financial and advisory services (ONS 2017m).⁸ The sector could deliver both the reduction in emissions and the jobs growth that is needed: forecasts for the committee on climate change (CCC) suggest that the low-carbon economy will grow from around 2 per cent of UK total output in 2015 to up to around 8 per cent by 2030, and

around 13 per cent by 2050 – a much higher rate than GDP is expected to rise (REE 2017).

The North has a number of specialisms in these sectors. Location quotient analysis reveals that the North has a higher than average concentration of all sectors in the low-carbon economy, but especially in low-carbon electricity in the North West and the North East (author's analysis of BIS 2015b). As set out in Baxter and Cox (2017), these strengths are underpinned by the North's unique local assets, and specialisms in complementary sectors such as advanced manufacturing and data processing.

⁸ For a full definition see <https://www.ons.gov.uk/economy/environmentalaccounts/bulletins/finalestimates/2015results>

FIGURE 5.4
The North has specialisms in many low-carbon economy sectors
Location quotients of employment by low-carbon sectors and region



Source: Author's analysis of BIS, 'Data tables: size and performance of the UK low-carbon economy' (BIS 2015b)

5.5 THE ENVIRONMENTAL IMPERATIVE: CASE STUDIES

Leeds City Gate

Shifting from natural gas to hydrogen gas could make a major difference in the fight against climate change. Various forms of gas have been used for 200 years in the UK: initially this was locally manufactured town gas, but when natural gas was discovered in the North Sea there was a nationwide gas conversion programme, meaning that now more than 80 per cent of the UK population use this network (Northern Gas Networks 2016). Natural gas, however, is predominantly methane, producing about 180 gm/kWh CO₂ equivalent.

The H21 Leeds City Gate project has investigated the feasibility of converting Leeds' gas network from natural gas to 100 per cent hydrogen. It would follow a similar process to the previous conversion from town gas to natural gas. It aims to avoid the need for the complex installation processes associated with renewable energies, and deliver heat at the same cost. An in-depth study has been conducted into the feasibility of this conversion, and the North has the assets required: it would be produced in the Teesside, stored in salt caverns in the Humber or North West, and then transported to Leeds (ibid). The network would also open up the possibility for hydrogen-powered vehicles and decentralised energy generation (ibid). The study concludes that it could reduce emissions from heat by 73 per cent (ibid).

If the Leeds City Gate project is successfully piloted, then its implications could be far-reaching. If it demonstrates a successful model of heat supply, and is up-scaled successfully across the UK it could make a significant contribution towards the UK's commitment to reduce CO₂ emissions in line with the Climate Change Act. It would also have economic benefits – especially in the North – by creating a new hydrogen economy and supporting a supply chain in which there are many northern companies. This isn't the only northern innovation in hydrogen fuel: ITM Power in Sheffield is producing hydrogen with renewable energy for fuel cells. There is clearly an important opportunity for the North to lead on low-emission fuels.

Battery storage on offshore wind

The North's offshore wind generation makes a significant contribution to the renewable energy supply. It accounts for 19.5 per cent of northern renewable generation, and almost one-third (32.7 per cent) of the UK's offshore wind power is generated in the North (BEIS 2017b).

Battery storage could help overcome one of the major drawbacks of wind energy. Critics often suggest that wind energy is costly and intermittent, arguing that supply is often disrupted, potentially causing blackouts or disrupting the normal power grid frequency. These myths have been challenged in recent months: costs are falling consistently, for example via including cost for difference (CFD) auctions; while new battery storage technologies are being developed to manage intermittency.

Integrating battery storage into offshore wind turbines is an important step and Ørsted (formerly DONG Energy) has been the first to do so. Their 260MW Burbo Bank wind farm on the Merseyside coast has integrated batteries with offshore wind farms for the first time (Ambrose 2017). This integration is a small first step – only 2MW of power will be stored in this way – but the expectation is that further innovations will follow, and enable one of the primary obstacles of wind farm generation to be overcome (ibid).



CONCLUSIONS:

THE INSTITUTIONAL CHALLENGE

By 2030 millennials will be the dominant political force in the North of England. The northern powerhouse will be their inheritance and is theirs to define. But they will need to tackle the five major challenges set out in this report:

- They will live in a more ethnically diverse and urban landscape, but will need to find a way to support a population that will live longer in poor health and at great cost. Millennials will need to mobilise actors across a range of sectors, and initiatives like Newcastle City Futures and Languages Sheffield must be beacons for new ways of working.
- Brexit will have had a major and longlasting impact on the North's economy, especially in areas which are already struggling with long-term change. The North will need to forge new links with cities and regions overseas, with or without central government support. The initiative of the Core Cities group and Manchester China Forum are small steps in the right direction as the North seeks a more autonomous voice in the global economy.
- Globalisation will continue to present severe challenges; whatever form it takes in the decades ahead, it will not have an equal impact on people or regions. In order to thrive, the sectors in the North that show greatest promise will need to be supported by an interventionist, place-based industrial strategy, as interventions in Alderley Park and Liverpool city-region's lightweighting sectors have demonstrated.
- Technological change presents both opportunities and challenges: automation is likely to have an acute impact; digital infrastructure will need investment and digital skills will need to keep up. Approached correctly though, the North's digital tech sector is well placed to grow. Initiatives like Digital Degree Apprenticeships and Data Mill North need to be up-scaled to enable the wider economy to thrive.
- The North will need to play its part in mitigating global climate change, but it has the assets and expertise to lead on this agenda for the whole nation. The North can do so by taking steps such as converting gas networks to hydrogen, or by integrating new battery technology with offshore wind.

In reality, however, these five challenges aren't separate but interconnected: a solution to one problem may also provide a solution to another; while addressing one issue alone could make other problems worse. And while the above innovations are important, they are yet to reach the scale required.

Over the past 13 years IPPR North has produced more than 80 reports addressing many of the issues set out in this report and too often they come back to a single problem: the lack of institutional capacity for northern businesses and leaders to address these problems for themselves. Too often, our city-regions and leading sectors depend upon central government policy to unlock their potential; too often government is too slow or too conflicted to act.


So perhaps the greatest challenge facing northern millennials and their successors will be to build new institutions and develop the capacity to act autonomously to address these five challenges. It would be an incredible missed opportunity if by 2030 millennials in the North are, just like their forebears, still having their economic future determined by their peers in London. New bodies like Transport for the North and the embryonic Council of the North are important, but are just the start.

By 2030, the North should be a leading federal state in a world-leading federal nation. It should be at the cutting edge of social and technological innovation, deployed to boost its thriving industries, support its ageing population, and helping the world to adapt to climate change. No small challenge for a cohort who up to this point have been dealt a bad hand. No small opportunity if they assert their desire to take back control.





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