CIOB
THE CHARTERED INSTITUTE OF BUILDING

The Real Face of Construction 2020

SOCIO-ECONOMIC ANALYSIS OF THE TRUE VALUE OF THE BUILT ENVIRONMENT

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Contents

Foreword 2

Executive Summary 4

What is construction and why does it matter how we measure it? 6

Assessing the impact of construction 11

Industry trends in the short and long term 19

Challenges and opportunities 24

The regional perspective - a national comparison 28

Regional Profiles 33

Regional Policy Focus 59

Recommendations 61

Endnotes 64

Foreword

Caroline Gumble
Chief Executive Officer,
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I'm delighted that the CIOB is able to publish this report and help make the case for our sector – often overlooked but vital to our economy and important to our society. The construction industry affects everyone, influencing productivity and wellbeing, creating the homes, hospitals, schools, workplaces, and infrastructure essential for a good quality of life.

> This report seeks to showcase the true value of the construction industry and wider built environment...

What is often less well understood is the role construction plays in the UK's economy, even among those within the industry.

Construction, when defined as an industry, is what happens on construction sites.

The value added by, for example, architects, engineering consultants and quantity surveyors is counted within services. Those making materials and components come under manufacturing.

This matters hugely as the work that the construction industry does can often be taken for granted.

Combine this narrow definition of the UK construction industry with the amount of change that's taken place within the industry over the past century – more components are assembled off-site, more work is carried out in design offices, more materials have been developed for use in construction and contractors tend to rent their equipment rather than owning it. But this value added to the economy now falls elsewhere, outside construction and within manufacturing or services meaning it doesn't fall into what statisticians define as construction.

This report seeks to showcase the true value of the construction industry and wider built environment, outlining the economic contribution but also looking at the context in which we work and beyond purely economic terms.

We have also analysed each economic region of Great Britain, highlighting how the construction sector has performed in recent years, as we have witnessed significant events in our industry. Additionally, we have made observations where policy makers should pay increasing attention and should be seen as an aid to guide policy makers and those attempting to understand this highly complex but extremely exciting and innovative industry.

Executive Summary

The construction industry is recognised as a vital cog within the economy. But it is far more than just an economic driver. As humans have developed, construction has shaped a built environment that has increasingly influenced how we live, the quality of our lives and the world we live in.

> While the influence of construction ranges well beyond its economic impact, its contribution to the UK economy is substantial.

Buildings and structures constructed today will last decades, centuries even. They have lasting consequences, shaping not only our present but also our future and the future of generations to come. Good buildings and structures are a source of pride and pleasure. Poor buildings scar the environment and damage the reputation of the industry.

Great power is entrusted to the construction industry and in those who determine the quality of our built environment. With this comes a huge responsibility to the public good.

The CIOB's *Real Face of Construction report*, published in 2014, sought to highlight some of the often-overlooked ways in which construction, shapes all our futures. Furthermore, it looked at how construction also shapes the lives of those who work within the sector.

This report seeks to take these themes on and provide recommendations for improving the industry and its social, environmental and economic impact.

While the influence of construction ranges well beyond its economic impact, its contribution to the UK economy is substantial.

The construction industry, as it is defined, accounts for about 6% of the economic output of the UK. However, the narrow definition used for the industry ignores the work of architects, engineers and quantity surveyors. It ignores the manufacturers dedicated to the industry and many other firms that feed into the working of the sectors such as builders' merchants and plant hire firms. A broader definition of the industry to include these would suggest an industry nearly double of that recorded.

Construction provides jobs for 2.3 million people, about 7.1% of the UK total, with hundreds of thousands more employed within other related businesses. Construction jobs also pay well. The average full-time male construction worker can expect to be earning around 5% more than the average full-time male working across all industries. And those within the bottom quarter of construction earnings can expect earnings more than 11% higher than those with the bottom quarter of earnings across all industries. Furthermore the sector provides far more opportunity for social mobility than other industries.

Meanwhile, the highly durable products that construction provides add significally to the wealth of the nation. More than three quarters of the nation's stock of its vital capital assets are the products of construction. These total £3,620 billion, about half of which are houses that not only provide shelter, security and a sense of community for households, but also a critical source of wealth.

The performance of the industry has been hampered in the years following the EU referendum, with the uncertainty causing businesses to hold back investment. However, this has not been the case in all regions, many of which have maintained momentum and growth.

But the industry faces major challenges. Not least it has an ageing workforce and has relied heavily on overseas labour in recent years. Fears that it may face labour shortages in the years ahead have focused minds on how to increase productivity. This has been a constant cry for decades, not just in the UK but worldwide.

However, if we are to improve the performance of the construction sector it is essential that we have appropriate measures that are meaningful, help us gauge progress and the value and impact of policy measures.

The issues are complex, but fundamentally the measures we have in place to measure construction are too limited and can easily point us to the wrong conclusions. Some of these issues are discussed in the following pages and it is hard not to conclude that the measures at our disposal need to be greatly improved.

Firstly, we need a measure of the industry that embraces all the aspects of the design and construction process, not just the assembly on site. Our recommendation is that we should have a set of what are described as satellite accounts. These would pull together data into a coherent and easily comprehensible form that would better describe how the wider construction industry is performing. This would include all the contractors, consultants and dedicated suppliers to the industry, whether they are classified as in the construction sector, the service sector or manufacturing.

A second recommendation on how we measure industry performance is to push forward with post-occupancy evaluations. It may seem absurd to those outside the industry that it is not a matter of routine to test the performance of buildings against the aspiration of the initial design. Moreover, it is a concern that lessons from both good and bad outcomes are not being routinely fed back into the industry to promote innovation and overall improvement in performance.

Thirdly, we see a need for further research into the value generated by construction and the built environment, particularly where this is not captured in the market. If we are to judge the public good of what we build, we need more understanding to guide us.

Allied to the generation and sharing of information, we recommend that more attention is paid to encouraging clusters of construction related businesses. The potential for clusters of related businesses to generate growth and innovation is well documented and we argue that such clusters should be supported for construction. We see this as particularly important in the context of increasing focus on offsite production and the push for greater innovation.

Concerns over the lack of innovation and how the construction industry operates to deliver the built environment are perennial. There is a string of government and industry reviews stretching back decades. One growing area of concern is that the business models used by the industry's enterprises to capture the value they create are flawed and dysfunctional. Greater attention is being given to finding more appropriate models and to improving the regulatory conditions within which they can flourish, not least through the work of the UK government sponsored Construction Leadership Council which we support.

At the heart of the CIOB is the advancement of skills and knowledge through members and those aspiring members. Education and training are essential to the future of the sector. But that training needs to be pertinent, thorough and one that focuses on local needs.

Ultimately though, this publication updates key data that helps to define and understand the industry and its recent performance both at a national and regional level. The report also draws on research looking at the public's attitude to the industry and its aspirations for the built environment.

If the industry is to deliver greater public good, it is crucial that we have a strong understanding of where, when and how that might be delivered and what resources are available to get the most productive outcome.

The potential for the construction industry to provide far more and far better outcomes is clear. But it needs to operate in a more conducive environment. It needs to work to a clearer vision. And it requires smarter and more focused attention from policy makers, armed with better information and understanding.

This report is intended to be a small contribution to that end.

What is construction and why does it matter how we measure it?

The primary function of the construction industry is to create, repair and improve the built environment. That seems straightforward. But when we seek to define what it is, things get more complicated, because like most industries they are intertwined within the economy.

The convention for statistical and measurement purposes is broadly to define construction according to its standard industrial classification (SIC) code. For construction (section F) this amounts to work done by building (SIC 41), civil engineering (SIC 42) and specialist construction firms (SIC 43) on sites. From this, surveys are carried out of firms falling into these categories to estimate how large it is and how it is changing. Defined this way and measured by the economic value it adds (gross value added) for the purposes of the National Accounts, construction's contribution to the UK economy in 2018 amounted to about £116.3 billion, which equates to 6.1% of total gross domestic product.[1]

There is another measure of construction which is more widely used known as construction output, which in broad terms includes the value of the materials used as well as the work carried out by construction firms. To add to the confusion, this measure is made across Great Britain, not the UK.

Leaving aside these quirks, there is a big question that is increasingly being asked, which is whether this is an appropriate way to define construction. Certainly, there is growing concern that such a narrow and limited measure provides figures that are as likely to hinder the policy debate as help it. It is a matter that needs attention.

To understand the concern raised by the accepted measures, it may be sensible to flip the question. We might ask what firms and other organisations are needed to create and maintain our built environment, to produce materials and products and distribute them, to provide professional services such as engineering and architecture, or to provide the finance and other skills for development? This provides a very different answer. Examining it this way, the construction sector is far larger, nearer double the size when we add in the large inputs to the construction process from manufacturing, mining and energy, which amounts to a contribution of about £60 billion to GDP, professional services more than £25 billion, finance and real estate contributing around £8 billion and distribution another £5 billion.[2]

What becomes clear is how much construction firms buy from other construction firms, which is not surprising given the level of subcontracting. But they also buy large amounts from other sectors, some of which were mentioned above, such as materials suppliers, professionals and plant and equipment suppliers.

If construction firms directly employed the professionals, or owned the firms that produced their own materials, or owned all their plant and equipment, the output of the construction sector would be far larger. But they do not. So, the value added by most architects, engineers, quantity surveyors and other professionals working directly within what we might think of as the construction sector is counted within services. Nor are many plant hire firms or building materials suppliers.

> What becomes clear is how much construction firms buy from other construction firms, which is not surprising given the level of subcontracting.

Also, many firms not classified as construction businesses undertake significant amounts of construction. Publicly owned companies, such as Network Rail or Transport for London, and utilities companies, employ construction professionals and undertake large amounts of construction-related work. Many in-house teams in organisations, such as housing associations or retailers, also carry out construction work – from facilities management, to repair and improvement, to new building works.

Further to this there are self-builders and those who conduct DIY. All this is in effect construction work, so even if it is excluded from any assessment of the industry output, it needs to be recognised in terms of the contribution to the built environment and its contribution to the wider welfare of the nation.

This matters greatly. If policy makers and experts do not have access to the full picture then bad decisions and, in turn, bad policy based on incomplete data is likely to be made.

Let us ask the question: do we know that a rise in construction is down to real changes in work carried out on the ground or restructuring of the industry? In honesty, we do not. We just assume it, because generally, year to year, the industry structure does not change significantly. However, if to gain some advantage, construction firms suddenly directly employed more architects and engineers to do design work, or bought rather than leased their plant, or integrated elements of materials manufacture into their businesses, this could swell the activity attributed to the industry in the statistics even if work on the ground had fallen slightly. This may seem fanciful. But in 2015 there was a reclassification of a firm into construction which added an estimated £2 billion or so to the annual output of the industry. With nothing else materially changing, the industry was suddenly larger than before.[3]

Perhaps more importantly, if we pulled the activities that most people might think of as construction into our definition of the construction industry, its contribution to the UK economy would stretch well beyond the 6% attributed to it within the statistics, perhaps double, perhaps even more depending on how we defined the sector. In the CIOB's 2014 report 'The Real Face of Construction' it was noted that calculations based on official sources by construction economist, Dr Stephen Gruneberg (then at the University of Westminster, now at UCL) suggested that construction was equivalent to 15.3% of GDP.[4]

This matters hugely. Not least because an industry seen as twice the size would grab far more attention in the political arena, but also because the definition used for industrial classification and hence most of the statistics do not match what many in the industry would consider to be the construction sector. Misunderstanding can easily lead to poorly implemented policy.

Figure 1 provides an illustration of the differences between what many in the industry might view as construction and what is included in the industrial classification.

But there are other, subtler ways in which the definition matters and will increasingly matter in the future.

Figure 1: Comparing the industrial classification of sectors with the perception held by those working within the industry[5]

	Office for National Statistics			
	ONS definitions		Industry view	
Contracting firms	Yes	✓	Yes	✓
Consultancy firms (architects, engineers, quantity surveyors, project managers, etc.)	No	✗	Yes	✓
Building materials	Not in national accounts, but in construction output	✗ ✓	Yes	✓
Building materials firms	No	✗	Yes	✓
Plant hire firms	Only if supplied with operator	?	Yes	✓
Developers	Some in national accounts, not in construction output	?	Many seen as in construction	?
Facility Maintenance firms	Depends if it has a construction Standard Industrial Classification (SIC)	?	Much, if not most	?

Figure 2: The changing importance of industrial sectors within the UK economy[6]

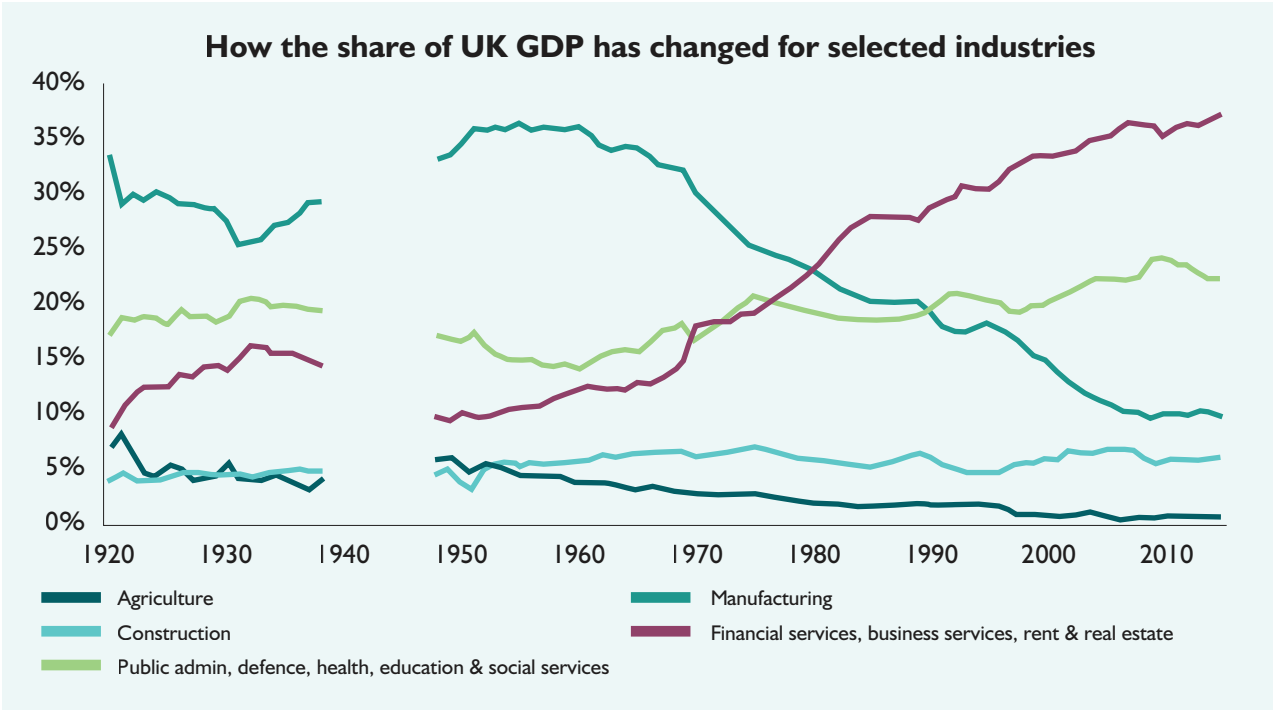


Figure 2 shows, despite being highly volatile in the short-term, construction as defined over time has been a relatively stable element of the overall UK economy, at about 6%. This underlines its enduring importance within the economy and indeed society.

Over the years, more and more of what we might think of as construction, or which might have been counted as construction, has shifted off site. More elements are prefabricated in factories and design undertaken in offices represents more of the value added. These contributions to the creation, maintenance and improvement of the built environment are no longer reflected in construction's share of economic activity.

Figure 3 maps construction activity as measured by Gross Value Added (GVA) over 25 years. It has slightly underperformed against output in the wider economy over that period. However, other activities that might be regarded as construction in the broader sense have grown faster than the rest of the economy.

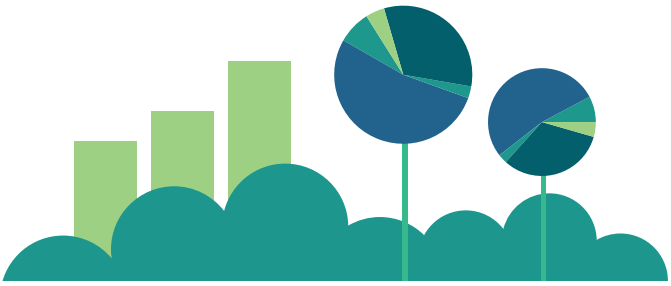
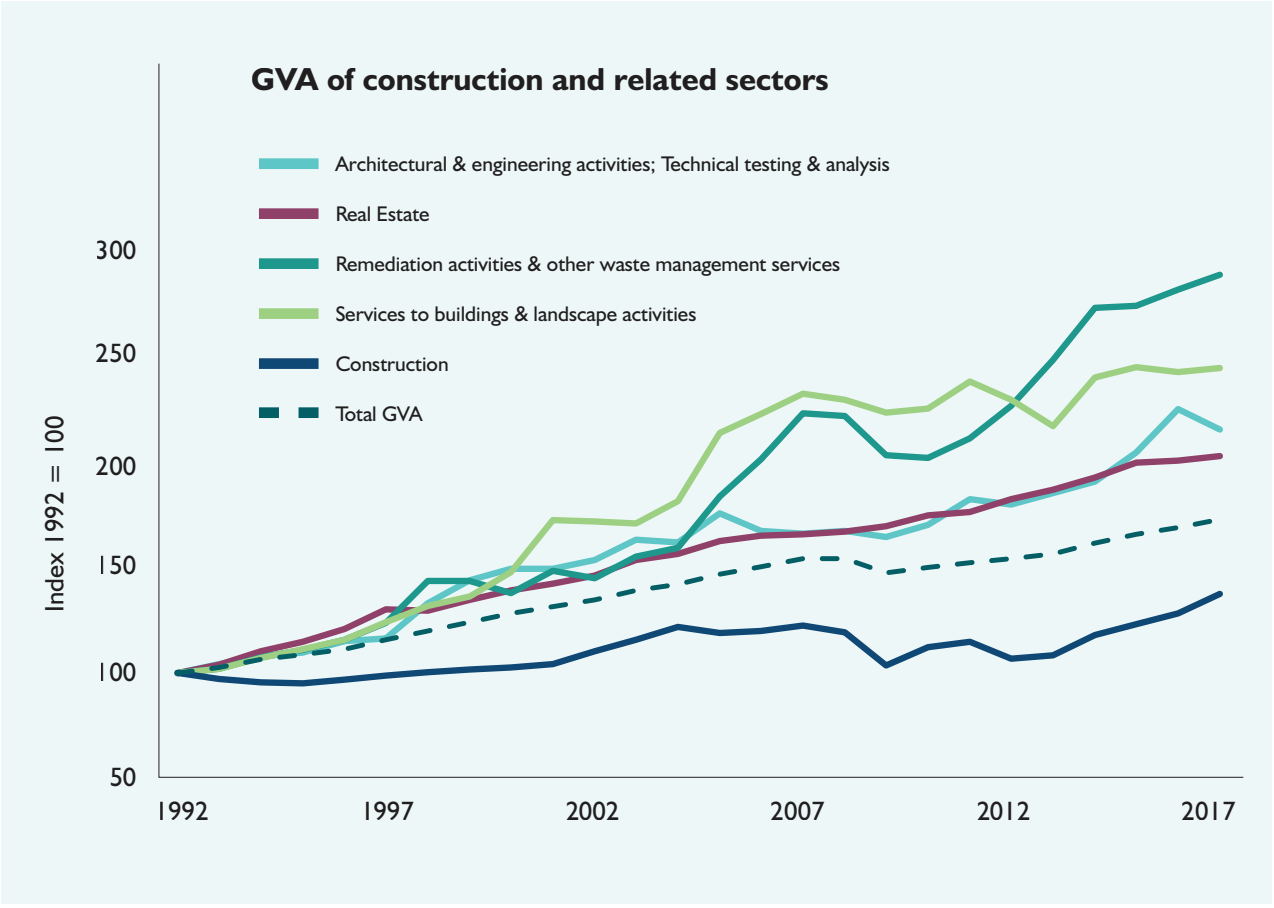


Figure 3: The recent growth of activities related to construction over the past 25 years[7]



What the chart (Figure 3) implies is that the broader construction sector, as we might describe it, is growing faster than the construction sector defined within the statistics (SIC 41, 42 & 43). This trend is likely to continue, if not accelerate, with greater emphasis on off site activity to reduce work and people working on site, as the industry seeks to improve its productivity, quality and health and safety.

Importantly, the activities outside of those defined as construction, which contribute to the broader industry are often those activities which can produce more value added per person employed and offer most opportunity for productivity gains. But the improved productivity these might provide will not be reflected in the productivity data for construction.

This, ironically, suggests that the construction sector may well be gaining a growing reputation for being a laggard in innovation and productivity precisely because the broader sector is heeding the calls for higher productivity and placing greater emphasis on design and planning and constructing more elements off site.

This does not excuse poor levels of productivity within the industry or in any industry, but a holistic view is necessary.

If only from a policy perspective, it is essential that influencers, policy makers and other voices determining the future of construction appreciate that the sector needs

This does not excuse poor levels of productivity within the industry or in any industry, but a holistic view is necessary.

to be considered as a broader industry and not as simply the assembly element of the overall process of creating, maintaining and improving the built environment.

For this very reason the CIOB is calling on the Office for National Statistics (ONS) to produce what are described as satellite accounts.[8] The accounts would pull together the important elements that make up the broader construction sector into a more holistic form.

The data within such accounts would better track the impact of policy changes in a way more connected to the overall industry, as it is understood to those within it, rather than its various elements. They would provide a much clearer view of important trends within the broad industry and better reflect the process of creating, maintaining and improving the built environment.

Assessing the impact of construction

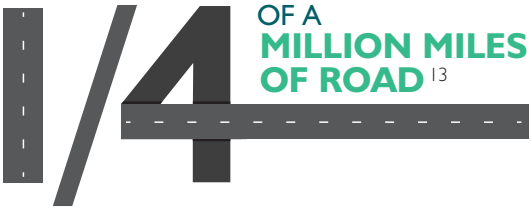
Construction is the largest provider of the fixed assets that underpin the UK economy. In 2017, under half of the gross fixed capital formation, the creation of vital assets, resulted from the construction of dwellings and other buildings and structures. In monetary terms, this totalled about £132 billion.[9]

Because the products of construction activity are very durable, more than three quarters of the nation's stock of economic assets result from construction. The ONS capital stock figures show dwellings and other buildings and structures accounted for £3,620 billion of the nation's £4,670 billion of capital assets in 2017.

The remaining quarter or so, valued at £1,050 billion, was held in transport equipment, machinery, ICT, equipment and weapons, intellectual property and cultivated resources.[10]

A few simple statistics illustrate the scale and reach of Britain's built environment. In the UK we have:

More than
28 MILLION HOMES[11]



1/4 OF A **MILLION MILES OF ROAD**[13]

About
2.4 MILLION
OTHER TYPES OF BUILDINGS
including schools, hospitals, shops and offices[12]

46  **AIRPORTS**[15]

120 
CARGO HANDLING PORTS

10,000 MILES OF NATIONAL RAIL

with hundreds of miles more in our cities, including the Metrolink, which is currently being extended as well as the stations that serve these.[14]

400 
NON-CARGO HANDLING PORTS AND HARBOURS[16]

260,000 MILES OF WATER MAINS

350,000 MILES OF SEWERS[17]

The statistics on page 11 ignore the coastal and flood defences, canals, pedestrian bridges and cycleways, service networks that connect our utilities and a host of other vital parts of the infrastructure that makes life better for the nation's citizens. This illustrates how construction fundamentally underpins the effectiveness and workings of the economy.

But these figures underplay one essential aspect of construction, particularly residential construction. Construction adds value to land, which is not accounted for in the statistics.

If we look at the national balance sheet and the nation's net worth, land accounted for about half –£5,423 billion in 2017.[18] Most of that land value lies under housing and is created by building homes. Importantly, land tends to have its greatest value where the built environment is most successful.

Construction does not just create physical assets. It fundamentally alters the environment that people live in. In creating the built environment and altering the natural environment, construction has a critical role to play in sustainability.

For most people the impact of construction is likely to be taken for granted – this may be positive or negative depending on what is being built. But the built environment that construction creates has a far-reaching impact on every aspect of our lives. It profoundly shapes our health, wealth and general welfare.

Impact of construction on land

To understand the value generated by construction it is essential to understand its relationship with land, or perhaps more pertinently, its relationship with location. It is often argued, especially when it comes to housing, that the price of land determines the value of a house. That is to misunderstand the dynamic.

The value of land is derived from the existing building and the community value that already exists. Without nearby buildings the land would have limited value. So, it is safe to suggest that construction gives value to land.

The main mechanism for pricing land is the residual land value model. With this model the asset values of nearby buildings are assessed to establish a gross development value (GDV) – that is the likely sales value of a proposed development. From this value the estimated cost of build is subtracted along with any other costs such as marketing and fees and professional assistance. The developer then considers the lowest margin acceptable and what remains (the residual) is what that developer is willing to pay for the land needed for the proposed development.

Clearly land near high-quality infrastructure and other amenities will be more valuable than land, however attractive, far from urban populations. To illustrate this, we need only check what can be bought with £1.2 million. In the picturesque Scottish Highlands, it buys 4,000 acres. In the leafy suburbs of Surbiton, Surrey, it buys a plot with planning permission of a third of an acre.[19]

Equally there is the need to recognise that by improving buildings, transport and other amenities within a community, then it can add to the land value. However, it is tricky to extract the total value, outside of taxation, and the added social value felt from the construction of a new urban rail link, for example, by existing landowners and homeowners. These spillovers or 'positive externalities' are commonplace in construction and represent a transfer in the value added away by investment in the built environment from those financing the construction to those who may benefit without contributing to the cost.

Transport for London (TfL) commissioned a study to evaluate the increase in land value generated by its investment. The study took a sample of eight prospective TfL projects that cost around £36 billion (including Crossrail 2, the Bakerloo line extension and the DLR extension to Thamesmead) and found they could produce land value uplifts of about £87 billion over a 30-year period.[20]

The increase in the value of land that results from development tends to take a long time and is highly dependent on how successful the area becomes over time. This makes it hard to predict and capture by private sector promoters who have relatively short investment horizons. This ultimately makes it difficult to understand the impact of construction on land value.

But these buildings and structures shape people's lifestyles, their health, their wealth, their chances for physical and social mobility, the crime they may face, relationships in their community and their job prospects, indeed all aspects of their lives. There is growing evidence that these

impacts are far greater than once imagined. The economic costs associated with a poorly performing built environment, which are often hidden, ignored or unrecorded, are increasingly being counted. These costs can be substantial relative to the benefits of construction that might provide improvements.

Focusing simply on health, there is an increasing body of research demonstrating how investing in a better built environment has a positive impact on both the economy and wellbeing of its users. It does not make the economy more effective just through boosting the nation's industrial efficiencies but through improving the health and wellbeing of its citizens. Poor health costs both the NHS, the wider welfare systems and the wider economy dearly.

A 2015 briefing paper produced by the BRE suggests that a £10 billion investment in improving some of England's 3.5 million worst homes would save the NHS £1.4 billion in first year treatment costs alone. It puts the wider cost of poor housing at £18.6 billion a year.[21]

Other research by Public Health England points to the pivotal role a poor built environment plays in rising obesity, which it estimates cost the NHS in England £6.1 billion a year and £27 billion across the wider society – that is equivalent to about 1.5% of GDP.[22] It has been working with the Local Government Association, the Town and Country Planning Association and other organisations to find ways to improve the built environment to help reduce obesity.[23]

Reducing these costs and channelling the released funds more productively has the potential to boost the economy and greatly enhance lives.

The economic impact of major projects

It is not feasible to provide an overarching figure for the economic impact or wider impacts of all the projects delivered by the construction industry. Values change over time and the way that we use buildings also changes.

However, it is common practice to value the impact of individual projects, particularly larger infrastructure projects, where so much of the value spills over into the wider economy.

Taking one ongoing major construction project that injects economic momentum into an area as an example is the more than £1 billion Manchester Airport which is investing in a 10-year transformation programme. This will more than double the size of the existing Terminal 2.[24]

Assumptions are essential in assessing the balance of costs and benefits. These can and should be challenged. There will be both costs and benefits that are missed or miscalculated, the analysis forms the basis for decision making.

According to the airport's analysis there are huge benefits to the local area from the investment. It is all part of a vision to become a top 10 European airport and one of two primary international gateways in the UK, which serves the Northern economy.

Listed among its impact on the local area it includes:

- **22,500 people employed at Manchester Airport**
- **220 direct destinations served by Manchester Airport**
- **10% growth in point-to-point long haul growth in past three years**
- **£1.7 billion contribution to the UK economy each year**
- **13th in the world for number of different destinations**

An internationally respected airport is seen as a major draw for firms looking to invest in an area, especially for those trading globally. The expansion would provide capacity for 55 million passengers a year. The number of passengers in 2018 was 28.3 million, according to Civil Aviation Authority figures, so the major expansion would put it on par with Gatwick, which last year carried 46 million passengers.[25]

Clearly the economic benefits of major projects such as the expansion of Manchester Airport are impressive. However, these need to be set within a context of potential negatives. In the case of airport expansions these are most likely to be concerns over the environmental impact of air travel.

It is important to recognise that decisions over many projects, particularly major projects, are inevitably political and hence engagement with the public is essential. Not considering the wider impacts on local communities leads to a situation where misunderstandings about projects and negativity can arise. An example of how policy makers could garner public attitudes to projects can be found on page 16 - engaging the public.

Looking more immediately at what construction provides, it is a major employer providing well-paid jobs. In 2018 it provided employment for 2.3 million of the 32.2 million people in work[26] and in doing so put an estimated £74 billion into the pockets of the workforce. This figure includes about £28 billion earned by the large numbers of self-employed that work in construction.[27]

These figures, however, do not include the engineers, architects, surveyors and a host of others who work within the broader construction sector which are not directly classified within the industry.

Analysis by the Department for Business Innovation & Skills in 2013 (now known as the Department for Business, Energy & Industrial Strategy), suggested that the broader construction sector employed about 44% more people than the narrowly defined construction industry. In today's terms that would add a further one million workers who earn a living as a result of construction projects.[28]

In terms of employment the construction sector does more than just provide incomes. While the industry may not score highly on the number of highly paid employees, the median earnings for a full-time male employed in construction is more than 5% above the median across all employees in the UK. Indeed, median full-time male earnings are above that for manufacturing. And the lower paid employees appear to do even better than their peers across the overall economy. Earners in the first quartile are more than 10% better paid.

Figure 4: Comparing full-time male annual earnings for construction employees with full-time male annual earnings in other sectors or all within regions[29]

	25%	Median	75%	Mean
National comparisons, (% difference)				
All Sectors	11.3	5.3	-0.8	-4.6
Manufacturing	10.5	6.3	4.8	4.4
Services	12.9	5.9	-2.4	-6.9
All sectors by region				
North East	9.2	-0.7	-7.3	-9.8
North West	15.0	11.0	3.7	-0.4
Yorkshire & Humber	20.9	12.4	6.8	6.6
East Midlands	17.6	13.2	4.9	4.7
West Midlands	14.1	10.1	-1.6	0.1
East of England	13.9	12.5	8.8	9.2
London	8.5	2.1	-11.3	-15.0
South East	13.9	8.5	5.1	4.5
South West	4.2	2.5	0.0	-4.0
Wales	4.1	3.3	-5.5	-2.9
Scotland	2.7	-2.1	-7.0	-6.9

Note: The figures compare annual male earnings for full-time employees to reduce distortion created by gender pay gaps and the prevalence of part time workers. The comparisons are taken for earning at the mean (average), the median (middle data point), the 25th percentile and 75th percentile. So, the table shows that a full-time male construction employee on the 25th percentile earnings takes home 11.3% more than a full-time male on the 25th percentile earnings across all sectors and 12.9% more than the equivalent if they were in the services sector. Those in construction on the 75th percentile earnings in London earn 11.3% less than on the 75th percentile earnings across all sectors, but in the East of England they earn 8.8% more than those across all sectors.

This feeds into one much less obvious impact of construction. It supports social mobility. CIOB research of Labour Force Survey data on the proportions of those in management or professional roles whose main-earning parent was from a skilled trade of lower occupational group. In construction the proportion was 53%, topping all other main sectors of employment, which scaled up from professional, scientific and technical occupations at 32% (see Figure 5).

Given the resources both spent financially and in terms of the policy on trying to rebalance life opportunities in what is seen to be becoming a less fair society, the role of construction as a ladder for social improvement should not be overlooked.

Figure 5: Illustrates the proportion of those in occupations classified as managerial or professional within each industrial group whose main-earning parent was in an occupation classified as skilled trades, or caring, leisure and other service, or sales and customer service, or process, plant and machine operative, or elementary. This provides a broad indication of social mobility.[30]

The industry also contributes significantly to the public purse. The list below provides estimates for some of the contributions generated by construction in 2017 that boosted the finances of the exchequer. The sums will have risen since. Most, but not all, of the contributions will be paid directly by firms and individuals in the industry. While this sum of more than £30 billion is substantial, it ignores taxes paid and contributions made by those within the rest of the broader construction sector and others outside construction who benefit, through the multiplier effect, from the economic activity construction generates.

- £7.0 bn PAYE[31]
- £6.6 bn VAT[32]
- £4.4 bn Corporation tax[33]
- £0.4 bn Stamp Duty Land Tax (paid on new homes)[34]
- £0.4 bn Aggregate tax[35]
- £6.0 bn National Insurance[36]
- £6.0 bn Planning obligations and CIL (largely from house builders)[37]

It is clear from the data that construction makes both a powerful and widespread positive impact on the UK economy. Much of its contribution is largely hidden within external benefits to others within our interconnected economy that are not priced. However, its impact and value to the overall economy is far greater than the published numbers might suggest.

Connecting the costs and benefits

Connecting the costs and benefits of construction is less straightforward than many may expect, particularly when it comes to social and environmental benefits.

For instance, the connection between the quality of our built environment and health and wellbeing is well established. However, finding ways to pay for improvements in buildings that connect the costs to the potential savings made from the benefits, such as lower health costs, often proves difficult. With potential savings to the nation's annual health bill of many billions of pounds to be made, much thought is being given to this challenge and ways are being found.

A common obstacle is the mix and distances between the organisations involved. One, albeit relatively small, idea that epitomises the potential benefits while illustrating the challenge in making these connections is the "boilers on prescription" scheme.

After seeing noticeable improvements in the health of some of its residents after boiler installations, Gentoo, a housing association in the North East, and Sunderland Clinical Commissioning Group launched a "boilers-on-prescription" project in 2014 targeted at vulnerable households. They spent an average of £5,000 on energy efficient boilers, double glazing and insulation. The results suggested a 60% fall in GP appointments, 30% fewer A&E attendances and 25% fewer A&E admissions. In addition, there were direct savings in lower energy costs for the households from reduced energy consumption.[38]

Gentoo and Sunderland CCG conducted a second similar study which also found positive results and there have been other similar pilot schemes around the country, many of which received funding after the government in March 2015 released £1 million to scale up local 'warmth-on-prescription' projects.[39]

The data from these pilots is patchy and to what extent further benefits can be drawn from spreading similar schemes is unclear. But the results do suggest huge potential for reducing costs and improving welfare. By projection, this suggests that there are huge gains to be made from many other opportunities where better connections can be made between beneficiaries of construction "externalities" and those who might foot the bill.

One major problem that needs to be addressed is the almost inevitability of a lack of sufficiently sustained coordination needed to embed change. A consistent guiding hand would seem essential to steer a coherent policy that can bind the interests of the diverse organisations that are likely to be involved. The constant change in government priorities makes this an extremely tricky problem to solve; particularly while clear and consistent evidence is still lacking.

Engaging the public

If we wished to sum up the purpose of the construction industry, we might suggest that its role is to create and reshape the built environment in a way that improves the lives and the futures of the people it serves.

This, in turn, suggests that there is a strong case for building a better understanding of how the public sees construction in terms of what it does, what benefits and drawbacks it brings, where the built environment might be most lacking and where the industry's efforts could best be directed.

With this in mind, the CIOB, Royal Institution of Chartered Surveyors (RICS), Royal Institute of British Architects (RIBA) and the Construction Products Association (CPA), in 2017, commissioned ComRes to undertake research into the public's appreciation of, and attitudes towards infrastructure, construction and building.[40]

The polling found that, generally, people are very positive about construction. When asked what best described their personal view towards infrastructure, construction and building projects, one fifth (20%) were "very favourable" and more than a third (38%) were "fairly favourable". This contrasted with the 2% who were "very unfavourable" and the 7% "fairly unfavourable".

Among other benefits, the public fully accepts the notion that improving the UK infrastructure would improve productivity, with 81% agreeing versus just 10% disagreeing.

However, a frequent complaint levelled at construction and development is lack of consultation. This was supported by the research. 77% of respondents agreed with the statement "the local public is not consulted enough on major projects" compared with 15% who disagreed. This suggests a need for the public to be more engaged and their needs to be better understood. Not that this is easy. The public has an imbalanced view of construction when we compare its view with what actual work is undertaken. When quizzed on what they associate with construction, they heavily emphasised roads, despite this sector accounting for a relatively small proportion of overall construction. Commercial building, educational building and leisure construction projects account for significantly more than roads in terms of activity, yet these were far less front of mind for the public.

This suggests that it is not only important that the industry and policy makers take on board the views of the public, but also that they appreciate where the public lacks understanding of construction and the built environment and where possible seek to correct misconceptions, honestly and openly. Not doing so is likely to lead to miscommunication and confusion and generate poorer outcomes.

It is also important for policy makers to note how opinions differ within the public at large, regionally and by other demographics.

One result that emerged from the survey that deserves attention in this regard, and indeed more investigation, was the differences in attitudes to newer versus older buildings. When asked for their level of agreement on the statement "I feel more comfortable in newer buildings than old ones", there was a marked difference in views across the age groups.

On balance the survey found people seem to feel more comfortable with older buildings – 42% agreeing with the above statement and 47% disagreeing. Dig deeper and those aged 18-34 are far more comfortable with new buildings, 57% agreeing with the statement versus 32% disagreeing. But this proportion is reversed for those aged 55+.

How we interpret this result is important if we are to make the right decisions over how to reshape the environment. Is it that the older generation just happened to be a generation that preferred older buildings, or is it that, as people age, they prefer older buildings?

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If today's younger adults as a generation prefer newer buildings and will continue to do so as they get older, then it might be appropriate to account for these preferences, rather than assume that they will prefer older buildings as they age.

How we interpret people's desires matters. It is important that they are properly thought through and that we do not rely on stereotypes and presumption, particularly as most buildings in the UK will stand for many decades. This clearly links to a further difficult question of whether we are building for the present or the future – a future which will always be uncertain.

It is not just age that separates the public views on the built environment. Perhaps not surprisingly, adults living in urban areas tend to be more positive about infrastructure, construction and building than those in rural areas. Asked about construction locally to them, 55% of urbanites were positive with 13% negative, while the proportion of those in rural areas that were positive was 48% with 19% negative.

Interestingly both urban and rural dwellers were more positive about construction at a national level, with positive scores of 59% and 54% respectively. This does suggest a tinge of nimbyism, with the negatives of construction appearing to weigh more heavily with the people the closer it is to their home.

When asked about what positives and negatives respondents associate with construction, the highest negative was for road or travel congestion. 39% referred to this factor from a provided list of positives and negatives. This to some degree may reflect the strong association of construction with roads mentioned earlier.

On the positive side, 38% referred to the local economic benefits construction brings and 34% noted the job opportunities created.

When it comes to where most people would like to see more construction locally, it is on road repairs. Given a choice of picking five from a list of 13 options, 60% cited "Road repairs and maintenance e.g. potholes". Even among households with no car, mending local roads came out top of the list. The next most popular was "Improvements to transport and connections" at 37%. "Higher quality internet and digital connections" was cited by 24%. This was interestingly below the 32% citing "Improvements to shopping areas / the high street" and 34% citing "Improvements to the local economy". "More homes for local people" scored 32%.

When asked on which construction activity government should spend more (or less) money, road repairs came out top again. 67% said more should be spent with just 4% saying less. This was the same score as the survey gave for hospitals and doctors' surgeries. For most funding options suggested – schools and colleges, social housing, local roads, rail capacity, major roads, cycleways, improvements to existing housing – more respondents said spend more than said spend less. However, on private housing and airport capacity people felt the government should spend less, despite the large economic advantages of these projects which we outlined earlier (see the economic impact of major projects box on page 13).

When asked to prioritise potential future investment in the built environment, the emphasis shifted from roads. Hospitals and doctors' surgeries topped the list of priorities at 59%. Social housing was selected by 38%, schools and colleges 37%, followed by green energy 32%. Both local and major roads scored 27%. Broadband came in at 20% with airport capacity at 11%.

Within this selection of preferences, for both the more immediate and the future improvement of the built environment, there were regional variations, with London tending to be the furthest from the UK average. So, for instance, it was more favourable towards rail and less to road. And it scored much higher than average on social housing.

While the survey does provide a good guide to preferences of the public, it also raises further questions that need to be addressed.

- Why are young people happier with new buildings than older people? What are the implications?
- Why and how is public opinion about construction different in London than elsewhere and what does this tell us?
- Why does the top priority among the public appear to be mending potholes? How should this affect spending?
- Why is mending potholes the top priority even among households with no car? What does this tell us about the need for good roads?
- Why does the public appear to have a very skewed view of construction? How can this help us understand the industry's supposed poor image?
- People seem to be overwhelmingly in favour, if not neutral about construction projects? Why then is there a view that people persistently object to new construction?

What this suggests is that, while stated public opinion provides a guide to priorities, it would be unwise to follow public opinion as expressed without caution, deeper investigation and greater engagement.

Mending potholes does appear to be a big issue for the public and this strongly suggests that greater spending is deserved. But while it may be a political winner and a top tip for local politicians seeking votes, it is clearly not the most important issue for consideration in how we deliver a better built environment.

While it is important to understand and respect aspirations of the public, delivering the best outcomes most efficiently and effectively also requires careful assessment of the prevailing economic context, both nationally, regionally and locally. Construction suffers greatly from volatility, with boom and bust repeatedly stressing and tearing at the fabric of the industry. So, timing activity in a way that better balances demand and aspirations with the resources available will lead to better overall value. It is therefore essential that policy makers are alert to trends within the industry.

Industry trends in the short and long term

It would be a mistake to purely focus on the short-term economic environment or on one or two emerging trends if we want to assess the likely path of construction over the coming decade. Why? Because construction appears perched on the cusp of significant change – potentially a paradigm shift.

Over most periods, what determines the future shape of construction has been the prevailing economic winds or a dominant trend. What makes the present very different from most points in construction's past is the multitude of forces - of varying intensities - that are pulling in various and unpredictable directions. The outcome is highly uncertain. It is hard to gauge into what new norm the industry might settle. What seems increasingly assured is that a fundamental change is imminent.

There is always an ebb and flow in overall levels of work, sometimes dramatic. And the mix of types of work that the construction industry undertakes and the balance of activity between the regions is in constant flux, as the attention of the industry continuously shifts to meet ever changing demand.

But there are signs that the changes that lie ahead will be of a different scale than have been experienced for a very long time. Among the bigger forces that look set to prompt radical change we can list:

- A dramatic demographic shift will see a massive swelling of the numbers of older people and consequently a significant rise in the retired relative to the working population. This will add to already rising welfare demands and encourage a transformation of the built environment to better meet the needs of a rapidly ageing population.
- Potential labour shortages, especially post-Brexit, along with economic and political pressure to raise productivity are already pushing the industry to increase offsite construction (See box on labour market trends on page 22).
- The construction market has become increasingly globalised and this trend looks set to continue. This presents major opportunities, especially short-term, but it will raise competitive challenges and threats to UK business creating an incentive to innovate (see box on international trade on page 26).
- Digital technologies and wider technological change will influence what is constructed, how it is constructed and, through its ability to monitor performance constantly, how the built environment is managed and maintained. It will also influence what is built in the future in the light of the lessons learned from closely monitoring performance.
- Increasingly urgent national and global pressure to address climate change will mean decarbonising construction. This will mean adopting different construction processes and ultimately delivering different buildings and structures. It will also mean looking at different sources for materials.
- There is continuing concern among economists that the developed world is likely to continue to experience a period of persistently low levels of economic growth relative to past decades. The debate over "secular stagnation" continues with some economists suggesting low growth rates are the new normal. Historically, low growth has been associated with sluggish growth and recession in construction. How the industry will perform in a persistent low-growth economic environment is uncertain.

All these trends, along with the uncertainty around Brexit, are occurring against a UK political mood that is inducing eagerness among policy makers to quell concerns over persistent regional and social inequalities.

Furthermore, growing cracks in the way the industry operates are drawing ever more public and political attention. Growing political and public concern with the construction industry is likely to support rather than resist the growing forces prompting radical change.

Public and political disquiet over the quality and safety of what is built is already evident in the aftermath of the Grenfell disaster and in the lengthening list of complaints levelled at house builders. This disquiet arises at a time when there is growing political desire to emphasise social value rather than simply lowest price in public sector procurement. This means taking into account not just the economic costs, but the positive and negative impacts on society and the environment. This desire for social value has been written into legislation under the Public Services (Social Value) Act 2012.[41]

Added to this is growing unease over how the industry operates, which has intensified of late with the collapse of Carillion and Interserve falling into administration. These have been added to a list of corporate failures and near collapses of several of the UK's leading contractors; heightening concerns that the industry's business model is not fit for purpose.

How these major forces will combine to shape the industry's future is not simply down to chance. The decisions made by the industry itself, government policy and, perhaps to a lesser degree, public interventions will influence the outcome. These in turn will be shaped by the short-term economic and political backdrop.

Demographics and the ageing population

Concerns over demographic change have been growing over recent years. They are exceptionally pertinent to the construction sector as they have profound implications for the built environment. Put brutally, how we reshape the built environment to match rapid changes in the population profile will have a huge bearing on the cost to the nation. Importantly, it will have a huge bearing on the cost of looking after the rising number of elderly citizens and the quality of life they enjoy.

The impact will be less gradual than many might suspect. Figure 7 tracks the old age dependency ratio, the number of people above pension age compared with the number of working age. Despite much concern over the ageing population, the reality is that this ratio has been stable for more than 40 years. It rose sharply after WW2 from about 200 per 1,000 to about 300 by the early 1970s. But with baby boomers increasingly swelling the ranks of workers and more recently with positive inward migration, the rise in those of pension age has been balanced by more people of working age. Since 2012, changes to the pension age, initially for women, has and will continue to slow growth in this ratio.

But as Figure 6 indicates that a step change is imminent, despite the changes to pension age. In a decade from now, the shift in the balance of "pensioners" to "workers" looks set to be profound, a rate of change not experienced for about 50 years. The projections suggest that within the next 20 years the number in pension age for every 1,000 in working age will have risen by about 20% from around 300 to 360. By the year 2060 the number will be close to 400.

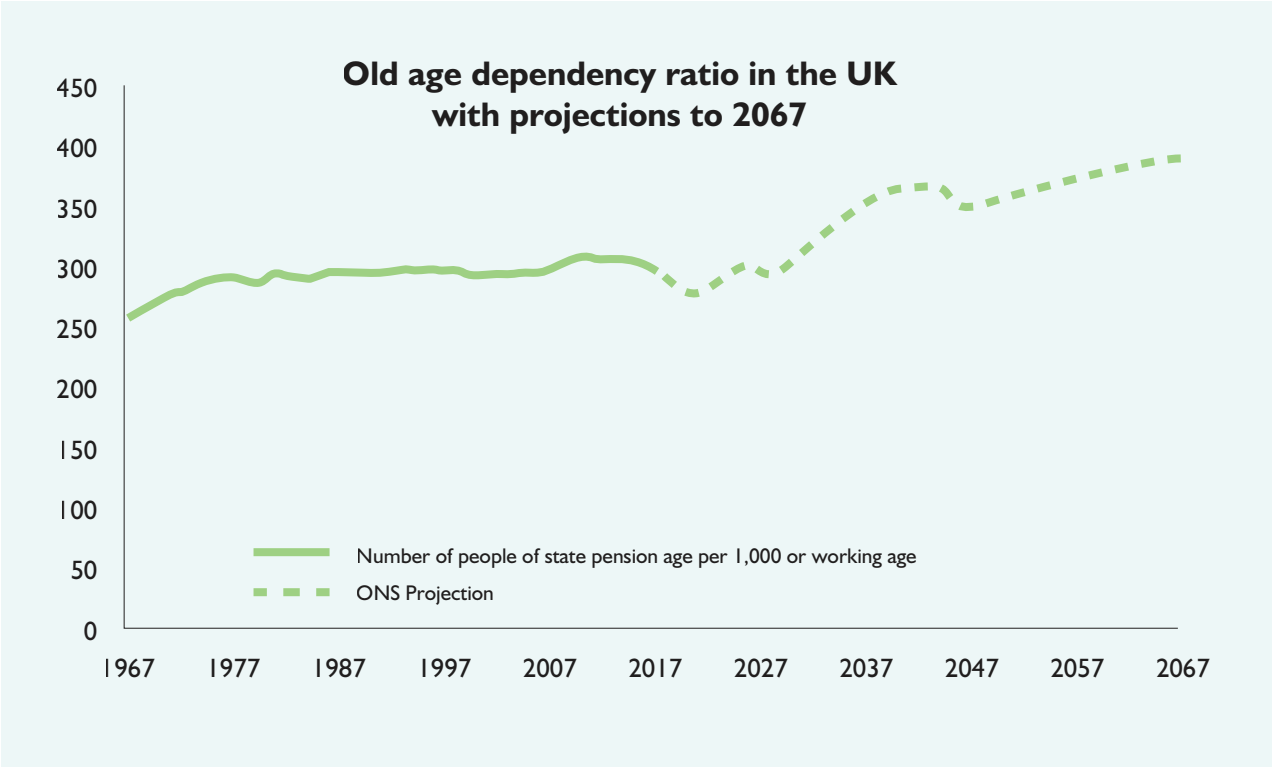
Given increased pressure to restrict immigration these may prove an underestimation, as migrants tend to arrive for work and so boost the working age population. However, if life expectancy dips below current projections, they may be underestimated. Either way, they present a huge challenge.

Leaving aside the likely increase in the burden that will fall on the working population to support older people, the homes, the transport, the services, indeed most of our communities were created for a much younger population.

There are further complications. In recent decades young adults have disproportionately moved into the cities, leaving some, mainly rural, communities even more unbalanced and adding tensions in planning and restructuring built environments to match these very changed communities. ONS figures for England show that in West Somerset there are almost 700 people of pension age for every 1,000 of working age. In Tower Hamlets, London, there are fewer than 100 people of pension age for every 1,000 of working age.[42]

While longer life may be an aspiration, it comes with potential burdens. These can be eased by a better built environment, but this needs to be planned and implemented well in advance.

Figure 6: Old age dependency ratio, the number of people aged state pension age and over per 1,000 people aged 16 to the state pension age[43]



The most evident and immediate short-term political issue in the UK is Brexit. This is likely to have an impact not just on labour supply, but within the materials sector, which has become – from a UK perspective – more European both in terms of its industrial structure and in standards and regulation. Indeed, it is now more global than ever, with a growing influence of international materials players and materials sourced more widely. Brexit may disrupt trends in the UK manufacturing base, given that many plants in the UK are owned by international firms, many based within the EU. Secondly, being outside the EU may result in less certainty over pricing, particularly if the exchange rate between the Euro and Sterling track more erratically.

Labour market trends

Over the next decade or so we should expect to see a big loss of construction workers as a cluster in their late 40s and early 50s (see figure 7) reach retirement age, which for many in manual trades is before the state pension age. Their immediate successors are fewer in number. The dip we see in those in their early 40s can be traced back to the 1990s recession, when jobs had been lost and recruitment was low.

There is apparent encouragement in the bulge among those in the late 20s and 30s, but this group has been swelled by recruitment in London, which, as we see, has a remarkably different age profile. What we do not see in Figure 6, but is important to note, is the number of migrant workers in London, where there is the highest concentration of construction workers born outside the UK. About half of London's construction workforce is non-UK born, with 37% of the workforce hailing from other EU countries.

This has been a major source of new recruits to the industry in recent years. This presents a triple problem for the industry if it wishes to maintain its workforce at near current levels. Firstly: how can it hold on to older workers longer? Secondly: how many of the current workforce from overseas will leave the UK post Brexit? Thirdly: where will recruits come from if not from Europe?

Huge recruitment efforts are being made, such as recruiting from those leaving the services, seeking to increase the number of women and supporting ex-offenders back into work within construction. But in the face of a serious and imminent labour crisis for the industry, firms are working to reduce the need for labour – to make it less labour intensive. This in part is fuelling an appetite for increased use of factory-based prefabrication – offsite construction.

Figure 7: Age distribution of construction workers across four broad regions[44]

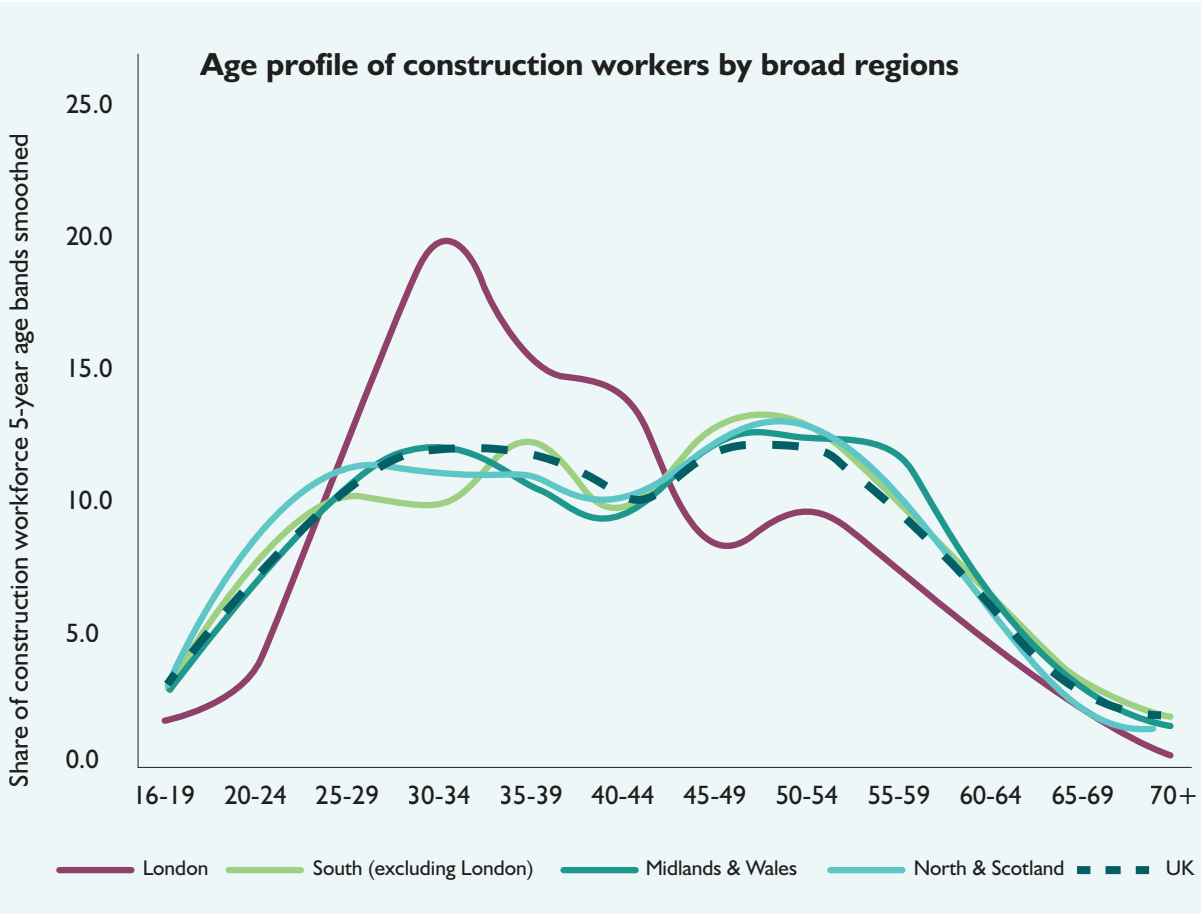
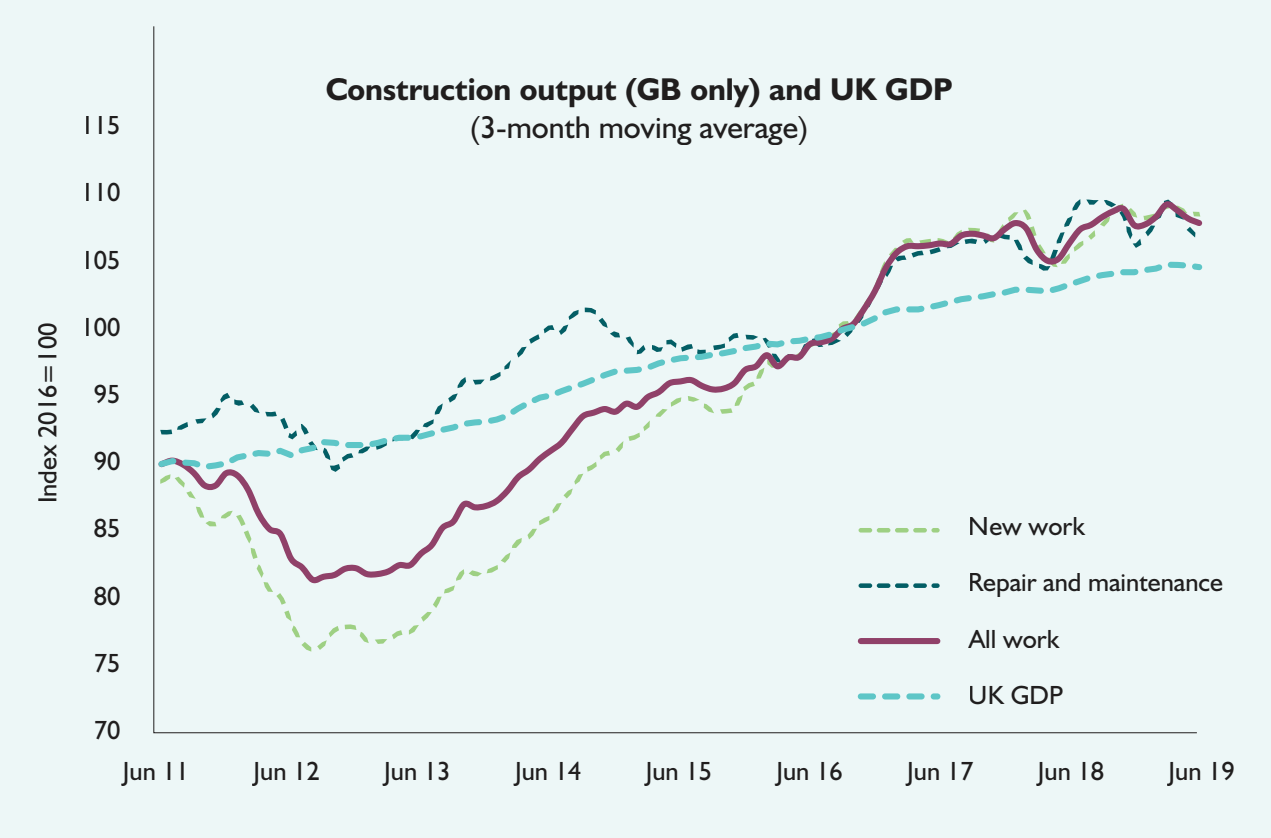


Figure 8: Construction Output (Great Britain only) and UK GDP [46]



Panning out from Brexit to take a more general view of the short-term economic outlook, things look far from reassuring. The Treasury's regular collation of independent economic forecasts, in August 2019, suggested that over the next five years economic growth as measured by GDP would remain at between 1.2% and 1.7%.[45] This is sluggish in historic terms.

Figure 8 provides context for understanding short-term trends in construction activity. It shows how much more volatile the industry is than overall economic activity, comparing the path of GDP with that of all construction work.

Compared with the other major sectors of the economy, services, production and agriculture it is by far the most volatile if we ignore seasonal effects. Figure 8 shows that new construction work is more volatile than repair and maintenance and, in the case of housing, improvement.

Having seen rapid growth between 2013 and 2015 the expansion eased rapidly. There are signs of fragility in the latest data. Brexit is blamed for creating uncertainty, which normally is toxic to investment decisions. The continued uncertainty has lowered expectations for private sector investment in construction for the next few years. The dip in early 2018 was the hit the industry took from the bad weather.

Much of the growth has come from the housing sector and increasingly from infrastructure. And this is expected to continue.

This is reflected in the forecasts for construction output, which are also not bright. The Construction Products Association (CPA) expects construction output to grow at less than 1% in both 2020 and 2021.[47] However, there are downside risks relating to Brexit and uncertainty over major infrastructure projects, which could damage growth further. The forecast by the CITB's Construction Skills Network looks out to 2023 and its view is of the industry averaging growth of 1.3% over five years.[48] This would be a long period of low growth.

The suggestion from these forecasts is that any reshaping of construction in the short to medium term will have to be done against a very mixed economic background and against significant uncertainty as the UK seeks to negotiate its way outside the EU and develop new and lasting trade relations across an increasingly intertwined global economy.

Challenges and opportunities

The construction industry faces huge challenges in the short, medium and long-term. A convergence of major forces looks set to prompt change on a scale not witnessed since the end of WW2 in what is built, how it is built and who builds it.

It may be a cliché, but it remains true that with challenges and change come opportunities.

Importantly for construction, which for decades has seen itself dogged by a poor image, the scale of the challenges it faces provides a once in a century opportunity to represent itself in a new light.

The challenges it faces, although intimately interlinked, broadly split into two parts. Firstly, there are internal challenges relating to how the construction industry is structured and how and what it delivers. Secondly there are external challenges relating to how it adapts to meet major economic, environmental and social change and the shift in expectations that these create.

Looking at how the industry currently functions, major forces – including the march of technology, expectations of labour shortages, rising demand for better quality buildings and growing pressure to reduce the impact of climate change – are encouraging moves to transform the process of construction.

There are many paths the industry might choose to tackle these multiple challenges, but one route that is gaining favour is a shift towards greater offsite manufacturing. The potential is there for offsite production to improve quality, raise labour productivity, reduce carbon emissions and embed more technology. When and where it will provide success commercially is not yet clear.

Across many industries, one solution to generating improved performance has been to cluster businesses which helps to stimulate innovation, create greater opportunities for networking and sharing of ideas and open up greater scope for collaboration. This helps make regional companies far more effective in their local market as well as in the wider UK and overseas economies. If the UK construction industry is to move towards more prefabrication and offsite manufacturing, clustering will make increasing sense.

Business clusters

There is growing interest among policy makers internationally in how clusters of similar businesses can raise productivity, increase international trade, forge stronger links between business and academia and create a beacon of growth for other related industries within local, regional and national economies.

Indeed, the Government's Industrial Strategy published in 2017 stated: "We must promote growth through fostering clusters and connectivity across cities, towns and surrounding areas."[49] A sentiment also promoted by both the European Union and the Organisation for Economic Co-operation and Development.

Clusters are not new. For centuries, related business have tended to locate near to each other. This is evident in the Medieval naming of London streets, such as Bread Street, Milk Street or Poultry. Nottingham became famous for lace making, Northampton has a long history of boot making and Luton is known for hat making. Intriguingly, despite globalisation and internet communication, clustering still occurs and is still seen as a driver of knowledge building and innovation.

There has been growing interest over the past 20 years among both academics and policy makers in the economic impact of clusters, in large part prompted by the publication in 1990 of Michael Porter's ***The Competitive Advantage of Nations*** and his 1998 publication ***Clusters and the New Economics of Competition***.

In the latter, Porter argues: "A cluster allows each member to benefit as if it had greater scale or as if it had joined with others without sacrificing its flexibility.

"Clusters affect competition in three broad ways: first, by increasing the productivity of companies based in the area; second, by driving the direction and pace

of innovation, which underpins future productivity growth; and third, by stimulating the formation of new businesses, which expands and strengthens the cluster itself. A cluster allows each member to benefit as if it had greater scale or as if it had joined with others formally – without requiring it to sacrifice its flexibility."[50]

Regarding offsite manufacturing and prefabrication, this is not the first time the industry has sought to embrace these methods. Similar forces have prompted the industry into increasing prefabrication in the past, most notably in the period following WW2, but also in the 1970s when many English house builders adopted timber-frame housing in a major way. They both left scars. The Ronan Point collapse in 1968, along with failings in many system-built public housing estates built in the 1960s and 1970s, and the World in Action exposé in 1983 of poorly constructed timber-framed homes have undermined public confidence in prefabricated system building. In a post-Grenfell world these experiences should provide cause for vigilance, caution and the need to focus on quality.

Notably, while the UK has its own specific prompts to shift activity from the construction site to the factory, interest in prefabrication is growing worldwide. A recent report on offsite construction from the US-based Boston Consulting Group (BCG), which follows on from a report undertaken with the World Economic Forum,[51] illustrates this point, taking examples from the UK, US, Germany and Japan. It states: "The offsite revolution is sure to be highly disruptive. Construction sites will be less complex, need far fewer workers, and use different materials. Stakeholders all along the value chain will feel the impact, especially general contractors, equipment manufacturers and producers of light-side building materials. Companies that join the revolution promptly could turn this disruption into a constructive opportunity."[52]

But for all this could be dismissed as evangelising, there are reasons to take note of the trend and the challenges and opportunities that might flow. Successes in developing ways to more closely integrate the construction sector and to produce more offsite are highly likely to be transferable across the globe, particularly in developing nations with a hunger to create built environments that equal or exceed those of the more advanced nations. This suggests, although does not promise, further efficiencies and opportunities through economies of scale. There is huge potential for those who deliver more integrated construction and offsite production, not just because of the size of the market but because there may well be first mover advantages as global standards and expectations are met.

There is huge potential for those who deliver more integrated construction and offsite production, not just because of the size of the market but because there may well be first mover advantages as global standards and expectations are met.

Delivering permanent change in construction will rest on developing new skill sets and on forming deeper relationships across the wider construction sector, linking the spectrum from design and production of the whole building or structure through to design and production of the manufactured elements. Also, new business models will need to be developed that both fit the new business arrangements that will form and are resilient to the volatility that can occur within the construction sector.

The BCG report suggests two broad sets of business models are emerging. The vertically integrated "end-to-end provider" and the asset-light "ecosystem coordinator", which choreographs a set of independent specialist partners.

Looked at from a regional perspective, the closer integration between manufacturing and construction, which prefabrication suggests, should favour areas with an underlying skills base in the manufacturing sector. This would provide them with two clear economic benefits. Firstly, it would tap into their existing skills base and provide a fresh source of employment to compensate for the long-term decline in manufacturing jobs. Secondly, it would create new industrial groupings that straddle manufacturing and construction sectors, both at a trade and professional level, which would not only appeal to UK clients but also have significant appeal in international markets. Blended into this mix would be new skills and outputs created by advances in digital and information technologies.

But however well construction eventually deals with the challenges in terms of adapting to pressing forces, it must also face the challenges posed by what is likely to be radical shifts in what it builds. Climate change, demographic

change, industrial change, new technologies and new forms of transport will mean that the mix of products it produces and the work that it does must adapt.

This is not a new challenge for construction. The ebbs and flows of work within the various sectors, commercial, residential, infrastructure, industrial and the wider public realm, are constant as both demand and the capital budgets available swing markedly and the balance of work switches from new build to repair, maintenance and improvement. The industry structures and business models have adapted to these fluctuations. Indeed, many of the current problems over lack of capital investment and fragmentation are a result.

The changes ahead, though, appear to be significantly greater than the industry has faced for many decades. The shift in the uses of buildings is likely to be great. We already see the impact of the digitisation of the economy in the decline of high streets and bricks and mortar retailing. The full impact of this transformation in retail is still to come and the impact on other building uses, such as commercial is yet to be realised, though we see rapid increases in construction of both product and data warehousing.

More pressing perhaps is the need to decarbonise the built environment, both in the construction phase and over the lifespan of buildings and structures. In parallel with this, there is an urgency to adapt the built environment to a demography never seen before, more dominated by older people, and to reshape it to foster wellbeing and greater social cohesion – reducing the financial burdens on the public purse created by poor design and poor delivery. This all needs to occur with a built environment in the UK that has arguably the largest legacy, with the oldest housing stock and a higher proportion of more highly developed towns and cities than elsewhere in the world. Much of this legacy is highly valued, which presents tough constraints.

These challenges may appear exceptionally pressing within the UK, but most of these trends are global. For the broader UK construction industry, particularly the professions, they represent not just a challenge but a huge opportunity to gain even stronger footholds in international markets. As a globally respected player in architecture, engineering and construction, the UK has an opportunity not only to be among the leaders that are creating new, low-carbon, healthier buildings and structures, but to also lead in the field of transformation of the legacy created by earlier phases of construction.

There is unlikely to be a better opportunity than now for the UK to cement its role as a global force in construction. Worldwide, construction activity is expanding very rapidly as the world's population grows, becomes ever wealthier and more urban. In 1960 the world's rural population was twice the urban population.[53] Since 2007 there are more people on the planet living in urban communities and the trend continues to grow in this direction.

International trade

The days when the major nations dominated the global market for construction have passed. It is not just the spectacular growth of China that has shifted this balance. International Monetary Fund (IMF) data shows that the emerging and developing markets are channelling more of their national efforts into investment, a huge part of which is expanding and improving their built environments.

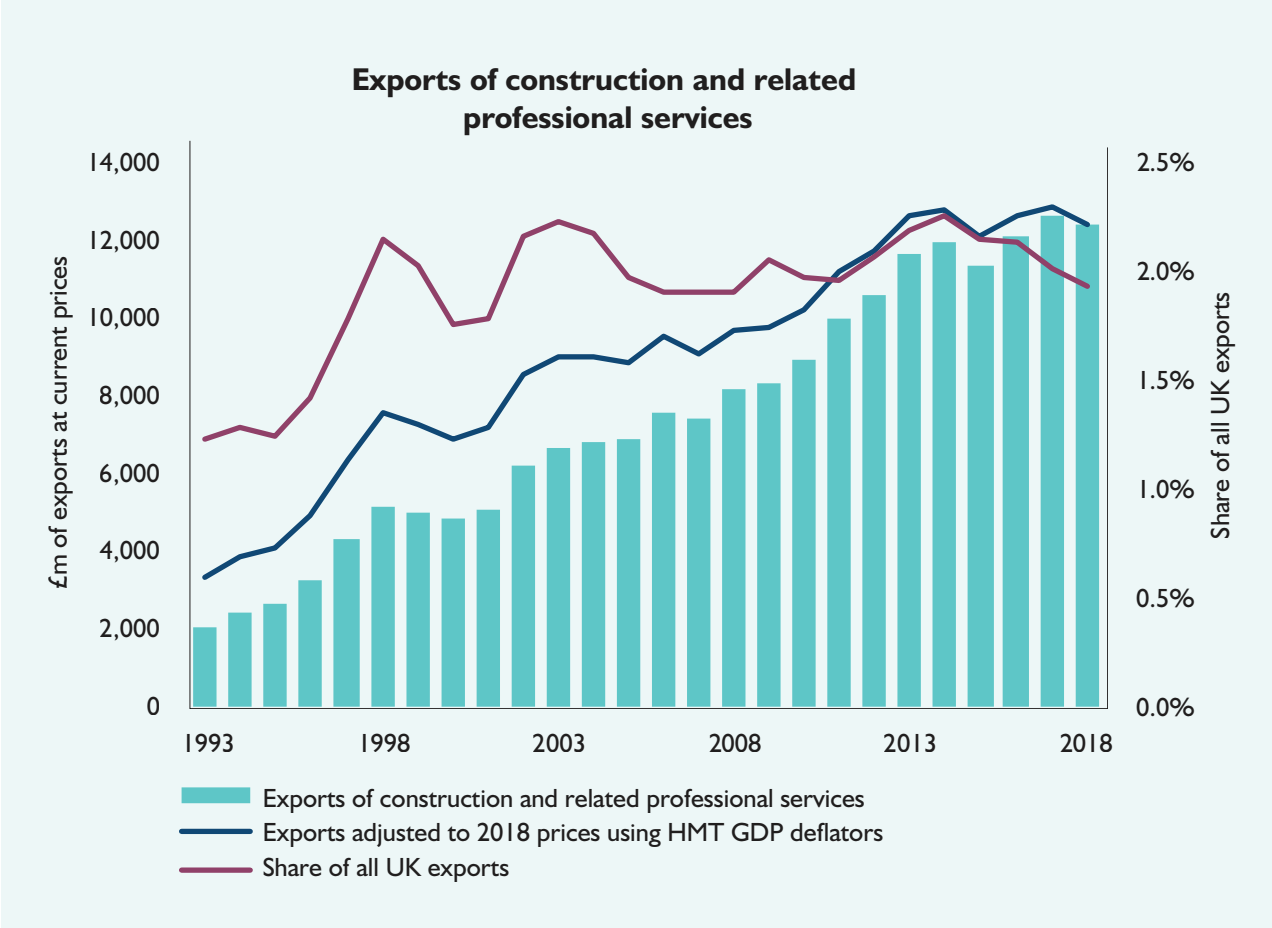
Figures from the IMF indicate that in 1992 the share of GDP that went into investment in nations defined as "Emerging market and developing economies" was about 26% compared with 24% for the "Major advanced economies (G7)". 25 years later, in 2017, those figures stood at 32% compared with 21%.[54] And these emerging economies are far bigger than they were.

Both in terms of growth and scale the markets outside of the major advanced nations are where the action increasingly lies. However, for firms within the more established economic powers this presents huge opportunities. They have established skills and an infrastructure to deliver the most advanced construction expertise. This represents a massive window of opportunity in nations, such as the UK, to establish a large international footprint within the global construction sector – be it in fields of management, design and engineering, product or process innovation or education.

Importantly, exports of services such as architecture and engineering have grown rapidly over recent years, as Figure 9 indicates. The share of UK exports has increased from 1.3% to 2.0% over the 25 years to 2018.

This provides a solid base from which to capture a share of the rapidly expanding international market. The Chinese Belt and Road Initiative (BRI), sometimes

Figure 9: The growing path of overseas activity by UK's construction related professional services firms[55]



referred to as the new Silk Road, epitomises the excitement in the global market and the potential transformational power of construction. The reasons for the excitement are made plain in a report undertaken by the economic consultancy CEBR and sponsored by the CIOB.

The report's summary encapsulates the potential impact of this one initiative alone: "Although currently the BRI has about $2 trillion [£1.6 trillion] of projects already on the drawing board, we believe that as it succeeds it will expand to encompass many other projects. Ultimately over the next quarter century we expect it to involve as much as $8 trillion [£6.3 trillion] of spend.

"We estimate that the Belt and Road Initiative is likely to boost world GDP by 2040 by $7.1 trillion [£5.6 trillion] per annum. This raises world GDP by 4.2% of likely GDP in 2040 (or 8.3% of GDP in 2019)."[56]

Adding further fuel to drive global construction activity is the significant investment planned by China under its Belt and Road Initiative (BRI). This unprecedentedly ambitious project is set not only to reshape the global construction industry but reshape global infrastructure. It provides a potential catapult for UK firms to build global reputations and a substantial international client base.

What emerges from even a cursory inspection of the future possibilities are tough challenges for the UK construction sector to embrace. But with them are huge potential opportunities and a chance that will occur only once in many generations to expand its influence across the globe.

The regional perspective – a national comparison

Construction shares common themes across the UK. It is fragmented as an industry with large numbers of small firms and a high number of people classed as self-employed.

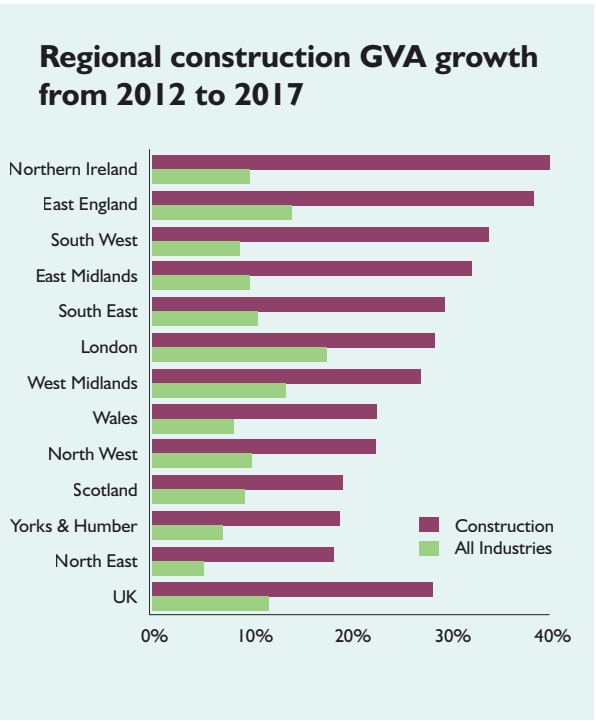
The industry is volatile and tends to exaggerate wider economic activity both nationally and locally. Its reflection of the local economy should not be a surprise given the close ties between housing, a major sector for construction, and the economic prospects of households.

But there are numerous obvious and subtle differences in the structures, activity and performance of construction regionally. These are important to note if policy makers at a regional and local level are seeking to maximise the benefits the industry can bring and avoid potential pitfalls.

The recent past has highlighted one of the more obvious regional differences, the north-south divide in growth as Britain emerged from recession. Looked at nationally, construction made a stuttering start to its recovery. But since 2012 the sector has grown more than twice as fast as most other sectors in the economy. In part this reflects the far deeper decline it suffered when the economy dived after the Global Financial Crisis.

Using the gross value added (GVA) measure, in real terms construction grew by 28% between 2012 and 2017 compared with 11.6% growth for all industries. Indeed, over that period it was the fastest growing main sector of the economy and, while growth rates varied between regions, it expanded far faster than the broader economy in every region.

Figure 10: The fast pace of construction growth between 2012 and 2017[57]

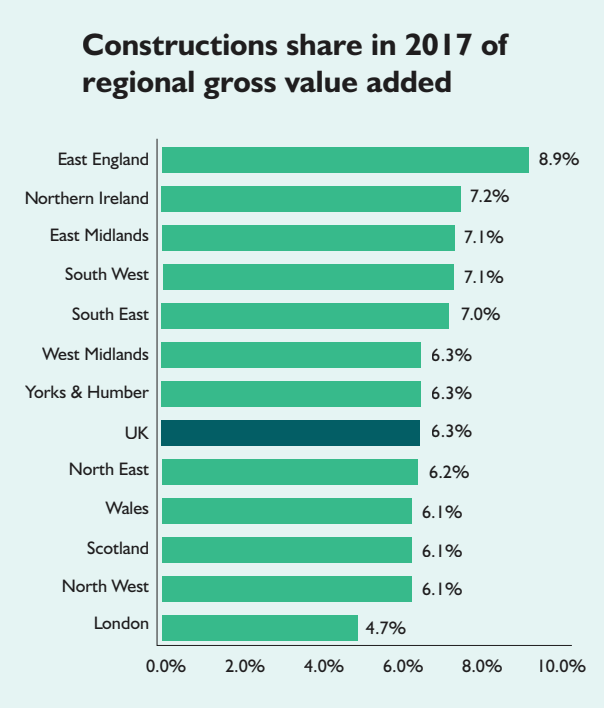


But when we look at the regional pattern of construction's economic growth it is not quite what many might have expected. Figure 10 shows the percentage growth regionally between 2012 and 2017 in GVA, which measures the activities of firms based in each region. It underlines how much more growth was enjoyed by construction firms compared with firms across all industries. It also reflects the volatility of construction activity – after a punishing dive into recession it has seen faster growth coming out.

The chart shows that the fastest growth regionally was in the East of England and not in London as many might have expected. This partly reflects a strong expansion in construction activity on the ground, but it also reflects how much of the work firms in the East of England region undertake not just in their own region but in London.

It is important to note that while construction activity, by definition, happens at a given location, the benefits spread to neighbouring areas where firms are based – GVA being linked to the location of the firms. This is very noticeable in the southern regions of England where high levels of construction on the ground in London provides work for numerous firms within a wide radius.

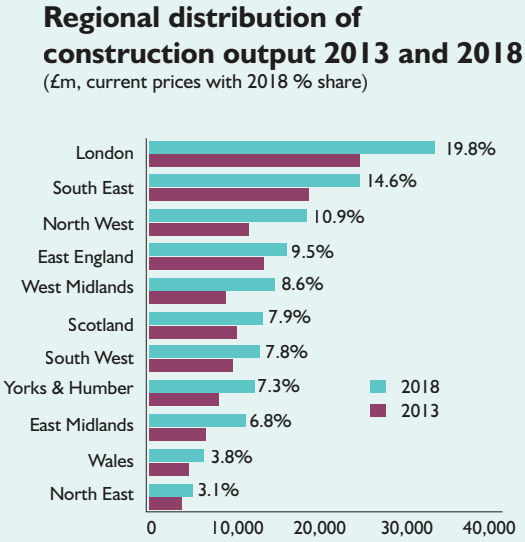
Figure 11: The scale of construction activity within each UK region[58]



We see this reflected in Figure 11 in construction's share of all industrial activity. Across the UK in 2017 construction accounted for 6.3% of the economic activity of all industries. This share is echoed across most regions. But in the East of England it is 8.9% and in London 4.7%. These figures may be indicative rather than precise, but they clearly show a significant difference.

The dominance of other high-value sectors in London may partly explain its low figure on this measure. The high figure for East of England strongly suggests firms in the region are doing a lot of the work in London. This would be particularly true in East London around the London Olympic site, where there is a large amount of regeneration underway. The East Midlands and the South East are also likely to be beneficiaries of the opportunities for work offered by activity in London.

Figure 12: The regional distribution of construction output[59]

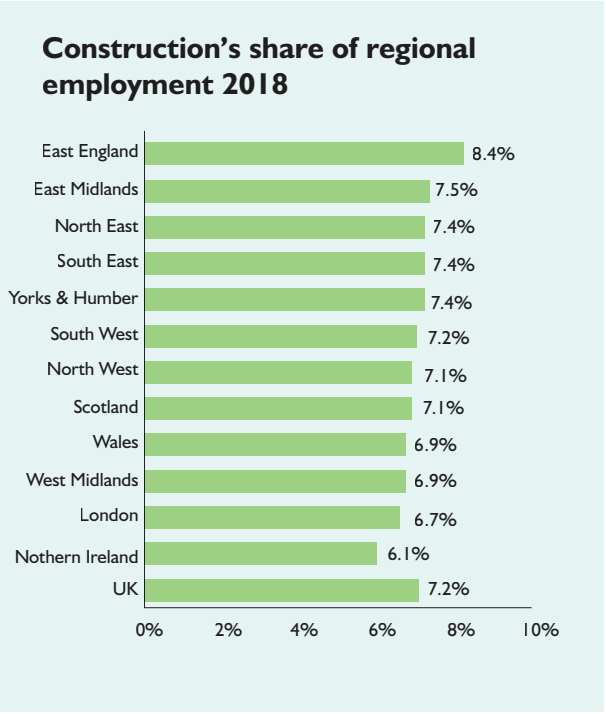


Note: Construction output data covers Great Britain only. Northern Ireland is under a different set of stats that is not comparable and has therefore not been included.

It is very clear that London offers significant amounts of work. The way the data for regional construction output are produced provides an estimate of the level of work on the ground, rather than where the firms who do the work are located, as in the case of GVA. Looking at Figure 12, both London and the South East dominate the share of the work on the ground. London alone accounts for about 20% of activity, which also shows the change in regional construction output between 2013 and 2018.

The greater South East, including London, the South East and the East of England, accounts for 45% of all construction output in Great Britain. The regions of the Northern Powerhouse, mainly North West, North East and Yorkshire & Humberside, also represent a large slice of construction. Combined they account for about 21%, with the North West making up about half. Indeed, in 2018 the North West overtook the East of England in terms of activity on the ground.

Figure 13: The importance of construction as an employer in each UK region[60]

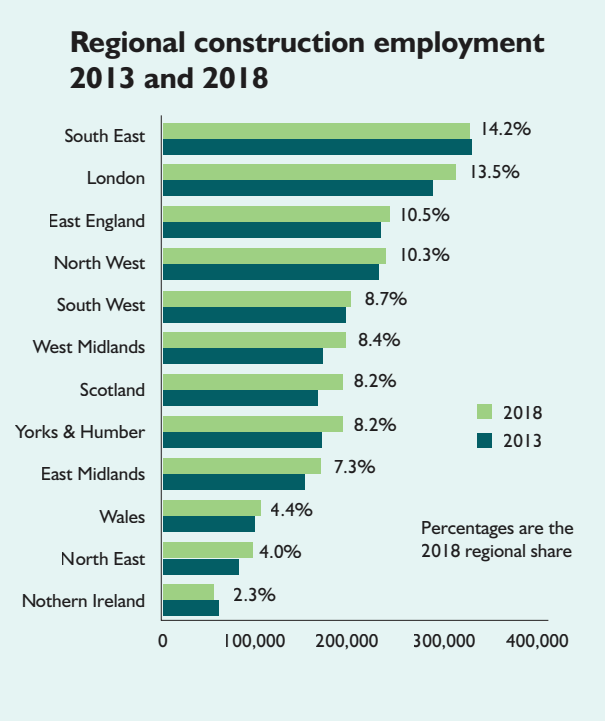


When we look at the share of jobs construction represents in each region, the pattern in Figure 13 broadly echoes the pattern seen for construction's share of regional GVA. The East of England taking the top spot and London at the bottom within Great Britain. This again illustrates how London's construction activity influences economic activity in neighbouring regions. Finer analysis of the Labour Force data shows that more than 15% of construction workers in the East of England worked in London and more than 11% of those in the South East.

Because construction is site-based rather than located at fixed locations such as factories, there is a significant porosity between regions when it comes to firm's workloads and employment.

However, when we look at the distribution of employment it should be no surprise that the South East, London and East of England have the lion's share of jobs. More than 40% of construction employment comes from the greater South East, as is illustrated in Figure 14. Again, we see how the jobs generated by activity in London spread to neighbouring regions, especially the East of England which has a higher share of jobs (10.5%) than output on the ground (9.5%, see Figure 12).

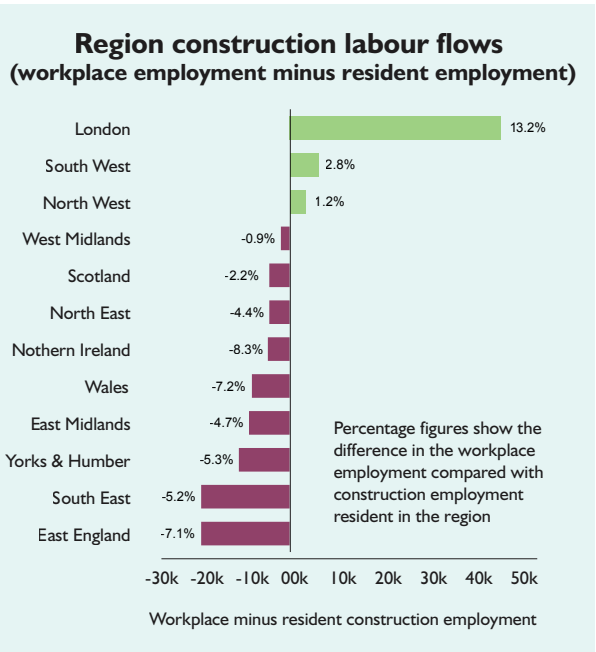
Figure 14: The regional distribution of construction employment[61]



So, when comparing regions, it is important to note that the spread of jobs regionally, measured on where people live, does not directly mirror the spread of aggregate workloads. Figure 15 ranks the regions by the difference between the number employed in construction in the region and the number employed in construction that live there. It shows there can be a wide difference between employment measured on where people live and where they work. This is particularly noticeable in London which draws in huge numbers. In 2018 there was a net inflow of about 41,000 of people working in construction. That represents a rise of about 13.2% on the resident workforce. The data shows that the 13.5% share of UK construction employment living in London is smaller than 14.2% share in the South East. But there is a bigger construction workforce active in London, a 15.4% share of the UK employment compared with the 13.6% working in the South East.

The West Midlands is roughly balanced between resident and workplace construction employment. But it and all those below in the chart can be considered as net exporters of construction labour.

Figure 15: Comparing where construction workers live and work by region[62]



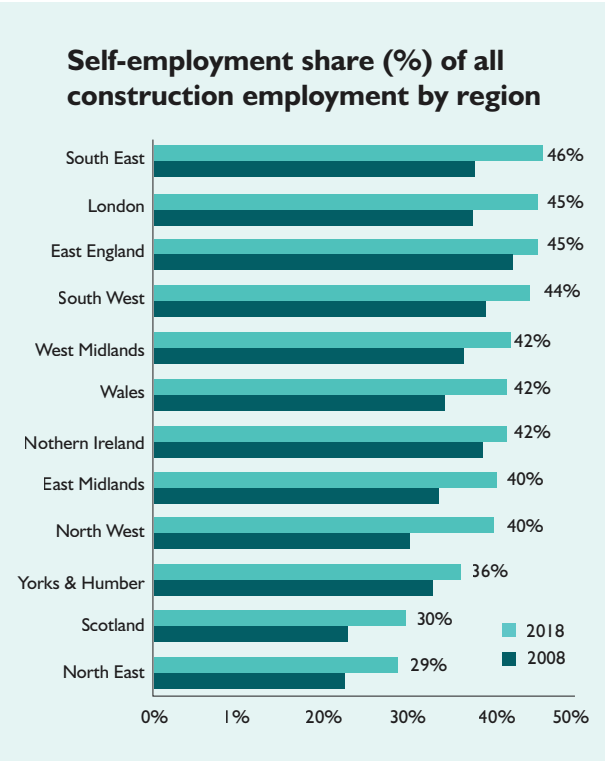
The number of jobs generated for people living in a region can also depend on the mix of work undertaken within the region. The labour intensity of construction work varies greatly with the type of work. Big civil engineering work uses far fewer workers for a given output than small housing repair and maintenance work.

For instance, in the South West where there is a relatively close balance between workplace and resident construction employment, the region's 9.0% share of UK workplace employment is noticeably higher than the 7.8% share of work undertaken in the region. This suggests lower productivity, which may well be down in part to its relatively higher level of housing repair, maintenance and improvement.

So, it is important if we are looking to compare, for instance, labour productivity in construction at a regional level, we take note of the potential quirks. Not accounting for differing levels of labour mobility or workload mix might easily lead to poor assumptions. Other quirks also come into play, for example the level of self-employment may have an influence.

There has been a significant increase in self-employment across all parts of Great Britain between 2008 and 2018, although the share has fallen in Northern Ireland as we see in Figure 16. The use of self-employment in part matches the episodic and volatile nature of work in the industry at a local level. Self-employment provides flexibility within the workforce. However, high levels of self-employment hinder efforts to train and engender cultures other than contractual price-based relationships.

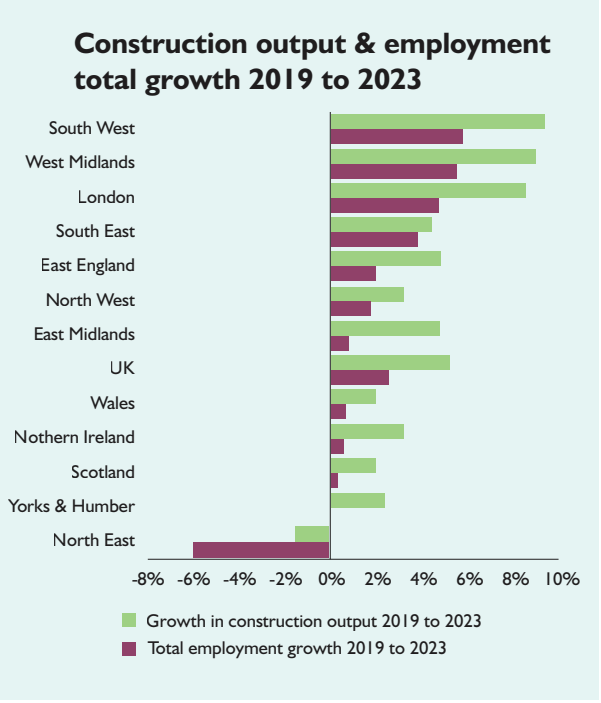
Figure 16: Comparing self-employment in construction by region and over time[63]



The issue of bogus self-employment has been a constant one for decades, with workers opting for self-employment over full-time employment to take advantage of tax benefits. While from the employers' point of view it provides not just flexibility but reduces the potential cost of carrying its workforce through lean times.

To make some sense of the prospects for both workload and jobs we can look to the analysis of the CITB's Construction Skills Network. Figure 17 shows the forecast for growth in construction output and employment between 2019 and 2023.

Figure 17: CITB forecast for jobs and employment in construction 2019 to 2023[64]



Also, comparing successive forecasts helps to show the fragility inherent within the prospects for construction. The current forecast places Wales below the average across the UK for both jobs and output. A year ago, the expectation had been highly positive, with Wales set to see the fastest growth in construction among the regions and devolved nations. That forecast, however, was based on the start of the new multi-billion-pound nuclear build at Anglesey, which has been shelved and so is not included within the latest figures. This highlights the precarious nature of forecasting construction, especially when key projects represent such a large proportion of future work.

This illustrates two of the major issues faced by construction, volatility and uncertainty. The industry at a national level is very much more volatile than the economy overall, but when there are large projects in local areas, the local impact is exaggerated. Furthermore, when there is uncertainty over the financing of projects the task of planning ahead can be both extremely difficult and far more expensive than it otherwise would be. The impact of both factors is that the construction sector is less effective and efficient than it might otherwise be.

However, for all the frailties of forecasts, planning by construction firms requires a measured view of the future. And the current forecasts suggest that the dominance of London has waned, albeit slightly. The South West and the West Midlands now offer the greatest prospects for employment growth in construction in the estimation of the CITB's Construction Skills Network.

The forecasts for both these English regions heavily rest on large projects. In the case of the South West it is Hinkley Point. In the West Midlands it is work flowing from the massive HS2 project.

The North West still looks set for growth above the UK average. However, hopes of a revival in the North East have waned.

Naturally the uncertainty over Brexit clouds any forecast. But at present the growth in workload appears more balanced, with the tilt towards London and the greater South East of England as the driver of construction growth reduced.

Regional

Profiles

East Midlands

Construction activity in the East Midlands has risen steadily since 2013 with new infrastructure work driving growth. The Office for National Statistics (ONS) estimates suggest that since 2016 about 6.3% of Great Britain construction output occurred in the region. With the region home to about 7.4% of the Great British population, this suggests there is less construction activity per head than the national average.

There may be proportionately less construction work in the region, but the East Midlands is home to a large contingent of construction workers who work elsewhere. About 6% more construction workers live in the region than are employed there, with many working in the West Midlands, Yorkshire & Humberside and across the South East of England.

Having accounted for 13% of construction output in 2013, in 2018 infrastructure is estimated to have accounted for more than a quarter. Industrial-related work, which includes warehouses, has also seen a boost and in 2018 accounted for more than 10% of construction work.

While overall economic growth in the region has been weaker than the UK average in recent years, the East Midlands benefits from its central location. The rise in infrastructure and warehousing, which has supported construction, in part reflects its importance in the transport and distribution networks that connect and support the economies of other regions.

In terms of construction's contribution to the regional economy, between 2013 and 2017 gross value added (GVA) by the construction sector rose by a third, faster than the UK overall at 26%.

This acceleration of growth, above the UK average, has meant construction has increased its share of regional GVA, up from 5.8% to 7.1%. Meanwhile, its share of total employment in the region rose from 7.1% to 7.3% between 2013 and 2018.

Looking forward, the CITB's Construction Skills Network (CSN) sees a bounce back in commercial construction driving output growth. It forecasts an annual average growth rate of 1.2% between 2019 and 2023, slightly below the UK average of 1.3%. It sees the number employed rising by 0.8% over the period, with the emphasis weighted to professionals.

CSN forecasts that 2,910 new recruits will be needed each year, amounting to 1.6% of the region's current workforce, in which includes professionals employed outside the narrowly defined construction sector. Currently migrant workers account for about 5.1% of the regional construction workforce.

Looking at current rates of pay, the average (median) male construction employee in the region earns around £33,100, about 13% more a year than the average across all industries. This gap is the largest regionally and has increased greatly since 2008 when it stood at below 3%.

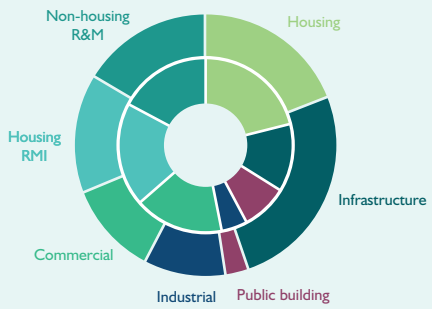
Key Projects

Selected projects pulled from the database of Barbour ABI highlight how construction is enhancing the regional economy. Infrastructure and distribution-related projects feature largely among the major projects that will drive construction in the region. At the top are the £1.8 billion Triton Knoll offshore windfarm on which work started in 2018 with it planned to be fully operational by 2022. The £1.3 billion work for the north portal of the HS2 Chiltern Tunnel also fall in the region. Large amounts of road works in the region include the £373 million M1 junction 13 to 16 smart motorway scheme which started in the summer of 2018 and is due to run through to 2022.

There are several major projects relating to logistics parks. These include the continuing expansion of Prologis Park Pineham, the Midlands Logistics Park and, large-scale investment in distribution and infrastructure, including cargo and rail freight facilities, at the expanding multi-modal East Midlands Gateway.

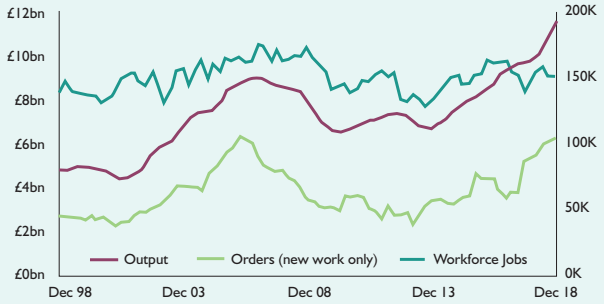
In other sectors, work started this year on the £86 million revamp of the Intu Broadmarsh Shopping Centre in Nottingham and on the new City Hub campus for Nottingham College.

Construction output by sector
2013 (inner) to 2018 (outer)



ONS, Output in the Construction Industry Sub-national and sub-sector data

Regional contruction orders, output & jobs
(orders & output, current prices, 4-quarter moving total)



ONS: Construction output, New Orders for Construction, Workforce Jobs (via Nomis)

Construction businesses (2019)	
All	23,130
Micro (0 to 9)	21,750
Small (10 to 49)	1,220
Medium-sized (50 to 249)	140
Large (250+)	25

ONS: UK business counts (via Nomis)

Stock of buildings	2019
All non-residential	153,910
Shops	37,540
Offices	26,470
Industrial and warehousing	47,520
Other	42,380
Homes	2,105,050

Valuation Office Agency

Employment by sector	2018	Share	2013	Share	Change
Agriculture, mining, energy & water	75,400	(3.3%)	71,700	(3.4%)	3,700
Manufacturing	290,800	(12.7%)	307,100	(14.5%)	-16,300
Construction	167,300	(7.3%)	150,200	(7.1%)	17,100
Wholesale, retail, accommodation & food	450,000	(19.7%)	405,800	(19.1%)	44,200
Transport & communications	200,100	(8.8%)	178,100	(8.4%)	22,000
Finance & real estate	68,700	(3.0%)	65,100	(3.1%)	3,600
Professional & technical	129,700	(5.7%)	117,300	(5.5%)	12,400
Admin and support	92,200	(4.0%)	96,300	(4.5%)	-4,100
Public admin, education & health	683,800	(29.9%)	623,700	(29.4%)	60,100
Other services	126,000	(5.5%)	105,000	(5.0%)	21,000

Annual Population Survey (LFS) (via Nomis)

CITB's CSN forecast 2019 to 2023	
Change in employment to 2023	1,000
Recruits needed annually	2,910
Employment growth 2019 to 2023	0.8%

CITB, Construction Skills Network, forecasts 2019 – 2023

Annual earnings	2018		2008		Change 2008 - 2018	
(Full-time male)	Mean	Median	Mean	Median	Mean	Median
Construction	35,958	33,100	29,018	26,494	23.9%	24.9%
All industries	34,347	29,235	31,447	25,795	9.2%	13.3%
Difference	4.7%	13.2%	-7.7%	2.7%	-	-

ONS: ASHE, Annual pay - Gross (£) - For male full-time employee jobs

East of England

Activity among construction firms in the East of England has been exceptionally strong since 2013 when the recovery took hold. The Office for National Statistics (ONS) estimates suggest that since 2016 about 9.8% of Great Britain construction output occurred in the region. With the region home for about 9.6% of the Great British population, this suggests there is more construction activity per head than the national average.

The region benefits greatly from its proximity to the highly active London market, with firms and workers finding plenty of work in the capital, especially from the expansion in East London. About 10% more construction workers live in the region than are employed there, so the level of construction in neighbouring regions, especially London, is important to the economy of the East of England.

The East of England has the highest concentration of construction workers among those employed. While the figures fluctuate greatly, construction accounts for above 8% of employment in the region compared with a national average of just over 7%.

The gross value added (GVA) by the region's construction sector grew by about 35% between 2013 and 2017, the fastest growth in any of the English regions or devolved nations. The average across the UK being 26%. Construction was easily the strongest performing sector in the East of England over the period and helped to drive the overall increase of almost 12% in the region's total GVA.

This acceleration of growth has meant construction has increased its share of regional GVA, up from 7.4% to 8.9% – the highest of any region in the UK. Meanwhile its share of employment in the region in 2018 was 7.9%– again the highest share in the UK and well above the average of 7.2%.

Having expanded greatly since 2014, new housing is the largest sector in the region with housing repair, maintenance and improvement (RMI) a close second. Housing related work accounts for almost half of all work. CITB's Construction Skills Network (CSN) sees construction growth in the region between 2019 and 2023 running at an annual rate of 1.2%, broadly in line if a bit below the UK average of 1.3%. Housing, as the biggest sector is expected to continue as the mainstay of growth, with a strong showing for public housing.

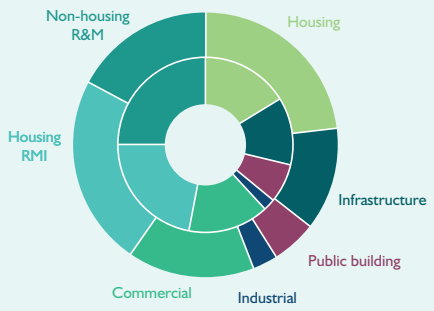
Over that five-year period CSN expects employment to expand by about 2% with 24,450 new workers needed to raise the numbers and fill for those leaving – an annual recruitment rate of approximately 5,000. The industry in the region will need to recruit more workers than any of the other regions or devolved nations. More than half of the new recruits are expected to be for managerial, professional and technical occupations. Currently migrant workers account for about 8% of the region's construction workforce, one of the highest shares outside London.

Looking at current rates of pay, the average (median) male construction employee in the region earns around £35,700, over 12% more a year than the average across all industries. Faster rising earnings in construction mean that the gap has widened since 2008, which should help to support construction recruitment in a region where competition for talent can be tough.

Key Projects

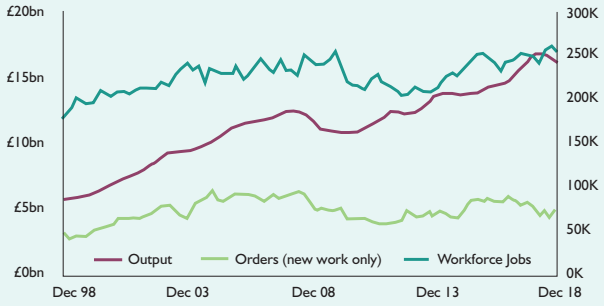
Among the major road works in the region are various large contracts associated with the £1.5 billion A14 Cambridge to Huntingdon improvement scheme. Work started in 2016 and the new road is expected to open to traffic by the end of 2020. Large amounts of road works in the region include the £373 million M1 junction 13 to 16 smart motorway scheme which started in summer 2018 and is due to run through to 2022. The East has seen huge investment in windfarms and work is still running on ScottishPower Renewables £1.8 billion East Anglia One project. The firm has plans for more offshore windfarms in the area. Work has started on a £1 billion regeneration project at Purfleet, which will include 2,850 homes and a film and TV complex. Cambridge continues to be a major hub of activity in the region. The University of Cambridge is developing a new district on a 150-hectare site for about 8,500 people in North West Cambridge, with phases of activity continuing through into the late 2020s. Among other major projects in the city is the £500 million AstraZeneca Cambridge Biomedical Campus due to complete in 2020.

Construction output by sector
2013 (inner) to 2018 (outer)



ONS, Output in the Construction Industry Sub-national and sub-sector data

Regional contruction orders, output & jobs
(orders & output, current prices, 4-quarter moving total)



ONS: Construction output, New Orders for Construction, Workforce Jobs (via Nomis)

Construction businesses (2019)	
All	42,465
Micro (0 to 9)	40,375
Small (10 to 49)	1,840
Medium-sized (50 to 249)	210
Large (250+)	40

ONS: UK business counts (via Nomis)

Stock of buildings	2019
All non-residential	207,750
Shops	44,140
Offices	38,300
Industrial and warehousing	57,020
Other	68,290
Homes	2,701,630

Valuation Office Agency

Employment by sector	2018	Share	2013	Share	Change
Agriculture, mining, energy & water	70,400	(2.3%)	79,500	(2.8%)	-9,100
Manufacturing	273,400	(8.9%)	275,900	(9.6%)	-2,500
Construction	241,700	(7.9%)	232,000	(8.1%)	9,700
Wholesale, retail, accommodation & food	547,000	(17.9%)	512,400	(17.9%)	34,600
Transport & communications	299,900	(9.8%)	271,100	(9.5%)	28,800
Finance & real estate	168,200	(5.5%)	168,400	(5.9%)	-200
Professional & technical	247,500	(8.1%)	211,600	(7.4%)	35,900
Admin and support	162,700	(5.3%)	131,600	(4.6%)	31,100
Public admin, education & health	870,600	(28.5%)	829,800	(28.9%)	40,800
Other services	176,400	(5.8%)	154,400	(5.4%)	22,000

Annual Population Survey (LFS) (via Nomis)

CITB's CSN forecast 2019 to 2023	
Change in employment to 2023	5,000
Recruits needed annually	4,910
Employment growth 2019 to 2023	2.0%

CITB, Construction Skills Network, forecasts 2019 – 2023

Annual earnings	2018		2008		Change 2008 - 2018	
(Full-time male)	Mean	Median	Mean	Median	Mean	Median
Construction	42,066	35,696	n/a	29,833	n/a	19.7%
All industries	38,516	31,741	33,381	27,359	15.4%	16.0%
Difference	9.2%	12.5%	n/a	9.0%	-	-

ONS: ASHE, Annual pay - Gross (£) - For male full-time employee jobs

London

London dominates UK construction, accounting for more than 20% of output since 2016 while being home to less than 14% of the population of Great Britain. It is also home to many of the largest firms of built-environment professionals operating nationally and internationally.

It was the first UK region to emerge strongly from the recession with housing and commercial dominating growth. In 2018, new housing, housing repair, maintenance and improvement (RMI) and new commercial building combined are estimated to have accounted for three quarters of the output in the capital, compared with less than 60% five years earlier.

Between 2013 and 2017 there was more than a 25% rise in gross value added (GVA) by the construction sector in the region, which was slightly slower than the UK overall at 26%. But this growth in activity came from a high base. Also, a large amount of construction work in London is snapped up by firms operating in neighbouring regions, most obviously the East of England.

Construction grew far faster than the overall London economy between 2013 and 2017, this led to its share of regional GVA rising from 4.3% to 4.7%. Construction's share of employment, in London, was 6.8% in 2018, below the UK average of 7.2%.

Despite having seen huge investment in recent years infrastructure accounts for a smaller share of overall activity than five years ago, due to the scheduling of what are massive project. But on site activity in the infrastructure sector is expected to expand again and is pegged as the fastest growth sector. However, the size of the housing sector means it will contribute more to the overall increase in activity. CITB's Construction Skills Network (CSN) forecasts construction activity in London to expand by an annual average of 2.1% between 2019 and 2023 – faster than the 1.3% UK growth.

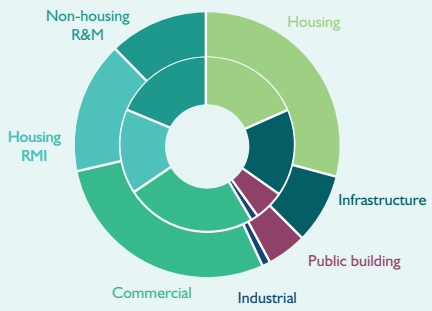
Employment in London is expected to rise by 4.8% over the period, compared with the 2.6% growth nationally. CSN estimates that London need to find 3,560 new recruits a year over the few years, this is lower than might be expected as workers are drawn in from neighbouring regions. A major factor that makes it difficult to predict the London construction workforce is the large proportion of non-UK but EU-born workers – about 37% in London's construction workforce.

Looking at current rates of pay, the average (median) male construction employee in the region earns around £43,100, about 2% more a year than the average across all industries in London and almost 30% more than the UK average for construction. In 2008, the average male full-time earnings in construction were about 7% lower than the equivalent in all industries, but faster pay rises have seen construction earnings surpass the average in what is a high-earning region of the UK.

Key Projects

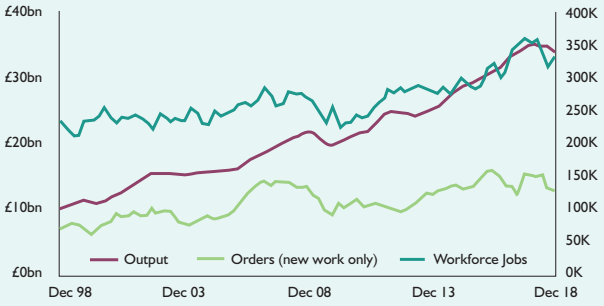
Infrastructure projects will contribute heavily to the workload in London, with projects associated with HS2 and the Thames Tideway providing a substantial bedrock of work along with a raft of work being undertaken by TfL. Among the largest of the building projects is Canary Wharf Group's Wood Wharf development, which includes offices and housing, is expected to be worth more around £2 billion. Whiteleys department store is down to undergo a £1 billion revamp and the Brent Cross shopping centre is set for a £1.4 billion expansion, although there have been delays in finalising the project. Work is under way on Google's £1 billion new London HQ in King's Cross. And there remains significant work under way and in the pre-construction stages for a host of major residential developments.

Construction output by sector
2013 (inner) to 2018 (outer)



ONS, Output in the Construction Industry Sub-national and sub-sector data

Regional contruction orders, output & jobs
(orders & output, current prices, 4-quarter moving total)



ONS: Construction output, New Orders for Construction, Workforce Jobs (via Nomis)

Construction businesses (2019)	
All	55,615
Micro (0 to 9)	53,620
Small (10 to 49)	1,745
Medium-sized (50 to 249)	200
Large (250+)	50

ONS: UK business counts (via Nomis)

Stock of buildings	2019
All non-residential	320,470
Shops	91,750
Offices	105,030
Industrial and warehousing	49,740
Other	73,950
Homes	3,642,640

Valuation Office Agency

Employment by sector	2018	Share	2013	Share	Change
Agriculture, mining, energy & water	43,000	(0.9%)	41,100	(1.0%)	1,900
Manufacturing	141,100	(3.1%)	145,800	(3.6%)	-4,700
Construction	310,400	(6.8%)	285,700	(7.1%)	24,700
Wholesale, retail, accommodation & food	714,600	(15.6%)	661,200	(16.4%)	53,400
Transport & communications	561,800	(12.3%)	487,800	(12.1%)	74,000
Finance & real estate	401,000	(8.8%)	342,600	(8.5%)	58,400
Professional & technical	565,100	(12.3%)	447,700	(11.1%)	117,400
Admin and support	269,700	(5.9%)	222,900	(5.5%)	46,800
Public admin, education & health	1,234,500	(26.9%)	1,118,800	(27.7%)	115,700
Other services	341,500	(7.5%)	287,900	(7.1%)	53,600

Annual Population Survey (LFS) (via Nomis)

CITB's CSN forecast 2019 to 2023	
Change in employment to 2023	21,000
Recruits needed annually	3,560
Employment growth 2019 to 2023	4.8%

CITB, Construction Skills Network, forecasts 2019 – 2023

Annual earnings	2018		2008		Change 2008 - 2018	
(Full-time male)	Mean	Median	Mean	Median	Mean	Median
Construction	50,640	43,106	41,432	33,767	22.2%	27.7%
All industries	59,555	42,213	55,751	36,360	6.8%	16.1%
Difference	-15.0%	2.1%	-25.7%	-7.1%	-	-

ONS: ASHE, Annual pay - Gross (£) - For male full-time employee jobs

North East

The North East has the smallest construction market of any English region and is smaller than both Scotland and Wales. Over the three years to the end of 2018 it represented 3.3% of the Great Britain construction output while accounting for 4.1% of the population. Construction elsewhere does, however, provide income for the region as its resident construction workforce outnumbers those who work in the North East, with many working on projects in neighbouring regions.

The recovery in the region's construction sector since 2013 has been based heavily on infrastructure and new housing. But infrastructure work has waned from 2017 and construction activity overall has declined. Unlike the pattern in other regions, the strength of recovery has failed to push construction volumes above the level seen in 2008 once inflation is accounted for.

The economic backdrop has been weaker in the North East than other English regions and the relatively smaller economy in the North East makes it more prone to fluctuations.

Between 2013 and 2017 there was a 21% rise in gross value added (GVA) by the region's construction sector, less than the UK average of 26%. But it was among the more buoyant sectors of the region's economy and its share of total GVA in the region rose from 5.4% to 6.2%, while construction's share of employment rose from 7.1% to 7.7% between 2013 and 2018.

However, CITB's Construction Skills Network (CSN), which expects all other parts of the UK to see expansion in construction activity, is forecasting a decline in the North East between 2019 and 2023, with the worst of the fall towards the start of the forecast period. Almost half the construction work in the region is related to new housing or infrastructure. The demographics are not favourable to continued growth in new housing and there is a lack of infrastructure projects coming through.

CSN expects the workforce to shrink by about 5,000 between 2019 and 2023, just over 6%. But there will still be a need to recruit to fill the jobs of those leaving the industry. The annual recruitment rate is put at 760, with the demand for talent heavily weighted towards non-manual occupations. Skilled trades are likely to be the hardest hit. Currently migrant workers account for about 5.1% of the regional workforce. Currently migrant workers account for little more than 1% of the region's construction workforce. Construction here relies less on migrant workers than any other region in the UK.

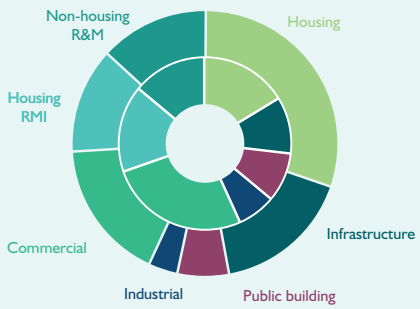
Looking at current rates of pay, the average (median) male construction employee in the region earns around £27,900, which is the lowest across the UK in 2018. The North East is one of the few regions where the average male construction worker does not earn more than the average male across all industries. Again, unlike the UK generally, the rise in the average pay in construction has lagged behind other sectors in the region.

Key Projects

Among the biggest ongoing projects is MGT Teesside's £650 million Tees Renewable Energy Plant, which is due for completion by 2020. There is a raft of spending by universities, Teesside University has a £300 million ten-year investment programme. Newcastle University continues to invest in both its estates with the £75 million Park View Student Village among its projects. And at Durham University work is progressing on the £85 million Mount Oswald student accommodation and games area project.

Housing is a big driver of activity in the region. Among the bigger projects there is a consortium of Persimmon Homes and Bellway Homes to start a £58 million development to build 500 new homes at Upper Warren in Hartlepool. Meanwhile, social housing provider Gentoo is developing a £79 million housing project at the former Prudhoe Hospital in Northumberland.

Construction output by sector
2013 (inner) to 2018 (outer)



ONS, Output in the Construction Industry Sub-national and sub-sector data

Regional contruction orders, output & jobs
(orders & output, current prices, 4-quarter moving total)

ONS: Construction output, New Orders for Construction, Workforce Jobs (via Nomis)

Construction businesses (2019)	
All	9,135
Micro (0 to 9)	8,410
Small (10 to 49)	625
Medium-sized (50 to 249)	85
Large (250+)	15

ONS: UK business counts (via Nomis)

Stock of buildings	2019
All non-residential	86,410
Shops	23,480
Offices	16,450
Industrial and warehousing	21,860
Other	24,620
Homes	1,239,790

Valuation Office Agency

Employment by sector	2018	Share	2013	Share	Change
Agriculture, mining, energy & water	41,800	(3.5%)	35,200	(3.2%)	6,600
Manufacturing	129,500	(10.8%)	129,300	(11.6%)	200
Construction	92,500	(7.7%)	79,300	(7.1%)	13,200
Wholesale, retail, accommodation & food	213,900	(17.9%)	216,200	(19.4%)	-2,300
Transport & communications	81,400	(6.8%)	81,800	(7.3%)	-400
Finance & real estate	43,500	(3.6%)	38,800	(3.5%)	4,700
Professional & technical	69,000	(5.8%)	50,900	(4.6%)	18,100
Admin and support	58,200	(4.9%)	49,500	(4.4%)	8,700
Public admin, education & health	403,800	(33.7%)	377,500	(33.9%)	26,300
Other services	63,500	(5.3%)	54,600	(4.9%)	8,900

Annual Population Survey (LFS) (via Nomis)

CITB's CSN forecast 2019 to 2023	
Change in employment to 2023	-5,000
Recruits needed annually	760
Employment growth 2019 to 2023	-6.1%

CITB, Construction Skills Network, forecasts 2019 – 2023

Annual earnings	2018		2008		Change 2008 - 2018	
(Full-time male)	Mean	Median	Mean	Median	Mean	Median
Construction	30,160	27,883	26,542	24,047	13.6%	16.0%
All industries	33,449	28,075	27,905	24,086	19.9%	16.6%
Difference	-9.8%	-0.7%	-4.9%	-0.2%	-	-

ONS: ASHE, Annual pay - Gross (£) - For male full-time employee jobs

North West

The North West has enjoyed a sustained recovery in construction since 2013 underpinned by a tripling in the amount of new-build housing, which in 2018 accounted for more than 30% of construction work in the region, compared with 14% in 2013.

The region accounts for more than 10% of construction in Great Britain. While this is lower than its share of population, the region has the highest regional output per capita in England outside the greater South East. The buoyancy of the sector has been underpinned by broad-based economic growth in previous years, with the manufacturing base expanding solidly in 2016 and 2017.

Between 2013 and 2017 there was more than a 23% rise in gross value added (GVA) by the construction sector in the region, which was slower than the UK overall at 26%. But the pace has quickened and since 2015 it has been among the faster growing regions for construction and current forecasts suggest this will continue for the next few years.

This acceleration of growth has meant construction has increased its share of regional GVA, up from 5.4% to 6.1%. Construction's share of employment in the region in 2018 was 6.9%, below the UK average of 7.2%.

In terms of its workforce, the number of construction workers employed in the region is pretty much in balance with the number living there. Looking forward, CITB's Construction Skills Network (CSN) expects construction growth in the region over the next few years to be positive at an annual average rate of 0.8%, but slower than the UK average of 1.3%.

The forecasts for both activity and jobs have been revised down in part due to the delays and uncertain future of Moorside nuclear power station. Its potential impact was removed from the numbers. Growth is expected to be driven by house building, supported by increases in infrastructure work.

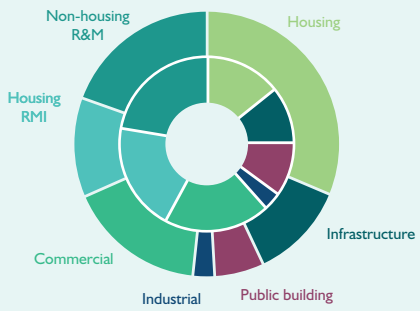
The number of construction jobs in the region is expected to rise by about 5,000 between 2019 and 2023. And the CSN see a need for about 3,050 new recruits annually between these years to account for the expansion and the losses of workers to the industry. This amounts to recruiting about 11 new workers for every 1,000 currently employed in the industry. Currently migrant workers account for about 3% of the regional construction workforce.

Looking at current rates of pay, the average (median) male construction employee in the region earns around £32,600, about 11% more a year than the average across all industries, a far larger gap than the average across the UK. This gap has increased from around 9% in 2018.

Key Projects

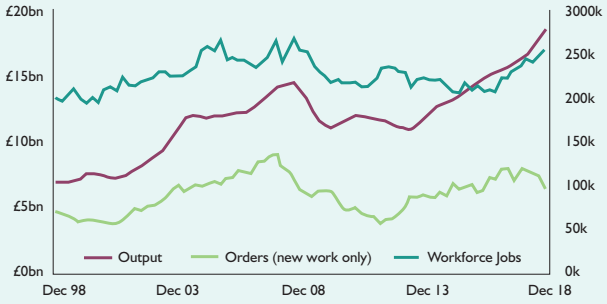
Selected projects pulled from the database of Barbour ABI highlight how construction is enhancing the regional economy. Among those offering the greatest potential impact is the £1 billion transformation programme at Manchester Airport. This will more than double capacity at Terminal 2 and boost the status of the airport and region internationally. In line with expanding Manchester's status as a world city, the £350 million Trafford Park line will add six new tram stops to the Metrolink system by 2020. Work on the Sir Henry Royce Institute on the University of Manchester's Engineering Campus is progressing and close to completion along with related residential and commercial work nearby. This is all part of creating an innovation hub of global standing. Looking outside the urban development, there is also plenty of homes being built, with Kier's Preston Road schemes at Longbridge near Preston among the larger. It is down to deliver 256 homes, with a neighbourhood centre and shops by 2024.

Construction output by sector
2013 (inner) to 2018 (outer)



ONS, Output in the Construction Industry Sub-national and sub-sector data

Regional contruction orders, output & jobs
(orders & output, current prices, 4-quarter moving total)



ONS: Construction output, New Orders for Construction, Workforce Jobs (via Nomis)

Construction businesses (2019)	
All	31,110
Micro (0 to 9)	29,015
Small (10 to 49)	1,800
Medium-sized (50 to 249)	260
Large (250+)	30

ONS: UK business counts (via Nomis)

Stock of buildings	2019
All non-residential	273,790
Shops	73,550
Offices	52,010
Industrial and warehousing	68,310
Other	79,920
Homes	3,300,940

Valuation Office Agency

Employment by sector	2018	Share	2013	Share	Change
Agriculture, mining, energy & water	84,900	(2.5%)	75,600	(2.4%)	9,300
Manufacturing	344,100	(10.1%)	352,200	(11.2%)	-8,100
Construction	235,800	(6.9%)	229,500	(7.3%)	6,300
Wholesale, retail, accommodation & food	655,200	(19.2%)	630,500	(20.0%)	24,700
Transport & communications	289,100	(8.5%)	251,700	(8.0%)	37,400
Finance & real estate	155,000	(4.5%)	146,800	(4.7%)	8,200
Professional & technical	215,800	(6.3%)	193,600	(6.1%)	22,200
Admin and support	168,000	(4.9%)	160,400	(5.1%)	7,600
Public admin, education & health	1,070,200	(31.4%)	957,400	(30.4%)	112,800
Other services	192,500	(5.6%)	156,700	(5.0%)	35,800

Annual Population Survey (LFS) (via Nomis)

CITB's CSN forecast 2019 to 2023	
Change in employment to 2023	5,000
Recruits needed annually	3,050
Employment growth 2019 to 2023	1.8%

CITB, Construction Skills Network, forecasts 2019 – 2023

Annual earnings	2018		2008		Change 2008 - 2018	
(Full-time male)	Mean	Median	Mean	Median	Mean	Median
Construction	35,447	32,631	30,913	28,313	14.7%	15.3%
All industries	35,598	29,401	30,893	25,915	15.2%	13.5%
Difference	-0.4%	11.0%	0.1%	9.3%	-	-

ONS: ASHE, Annual pay - Gross (£) - For male full-time employee jobs

South East

The South East is one of the most vibrant parts of Great Britain for construction activity outside London. It is home to more businesses than any other region and has been among the most buoyant in recent years, pulling out of the recession sooner than most of the UK.

The South East accounted for close to 14% of Great Britain construction output since 2016, more than any region outside London. Although, on an output per capita basis, it ranks slightly behind the East of England, with output per person of £2,500 annually compared with £2,566.

The industry's growth has been more balanced and broad-based across the various subsectors than in other regions, with the shares of each subsector having remained relatively similar between 2013 and 2018.

The broader economy in the region has slightly underperformed relative to the UK overall over the past couple of years, but construction has been one of the stronger sectors in the South East. Between 2013 and 2017 gross value added (GVA) by construction in the region rose broadly in line with the UK average of 26%. That was three times as much growth as total GVA in the regional economy.

This higher growth rate of construction than the economy at large has led to it increasing its share of regional GVA from 6.0% to 7.0% between 2013 and 2017. Construction's share of employment in the region in 2018 was approximately the UK average of 7.2%. Like the East of England, the workers living in the region feed off London. There are about 5% more construction workers living in the South East than are employed there.

The expectation of CITB's Construction Skills Network (CSN) is that over the next few years growth will be more modest at about 1.1% a year, below the UK average of 1.3%. The private housing sector is expected to be the strongest driver of construction growth, with growth also in public sector house building.

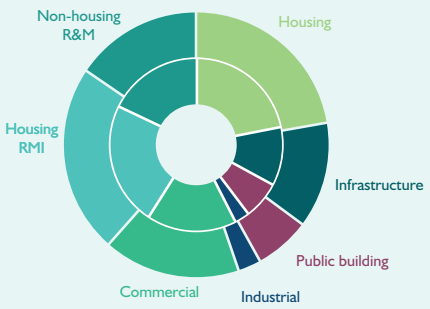
The number employed is expected to expand by 16,500. This growth and making up for those leaving the workforce suggests that 2,640 new recruits are needed over the period 2019 to 2023, across a range of managerial, professional and skilled occupations. That amounts to about six new people every year for every 1,000 currently employed. Currently migrant workers account for about 6.1% of the regional construction workforce, making it more dependent on overseas workers than most regions.

Looking at current rates of pay, the average (median) male construction employee in the region earns around £36,300, about 8% more a year than the average across all industries. This gap has increased from around 3% in 2018.

Key Projects

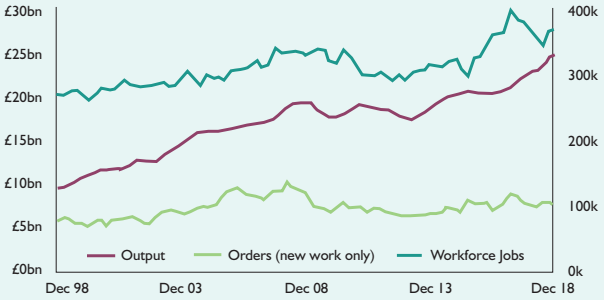
Selected projects pulled from the database of Barbour ABI highlight how construction is enhancing the regional economy. Among the biggest ongoing projects in the region are three smart motorway schemes for the M1 junctions 3 to 12, the M4 junctions 13 to 19 and M23 junctions 8 to 10, worth between them £1.3 billion. Work on Terminal 2 at the Port of Dover and the Western Docks and Marina is adding another £520 million to the pot of work in the region. Gatwick Airport is extending part of its North Terminal as part of a £1.1 billion five-year investment plan. Among several major private housing schemes in the offing or in progress there is a 1,500-home development at Sandleford Park in Newbury. There is a £500 million redevelopment of Woking town centre. Pinewood Studio has broken ground on the £200 million second phase of its expansion project and has plans in for a further £500 million expansion. Work has started on the £98 million Heatherwood Hospital in Ascot. Work is underway at Oxford University on the £70 million phase two expansion of its biochemistry building, while University of Sussex is investing a similar amount in a new state-of-the-art Life Sciences building.

Construction output by sector
2013 (inner) to 2018 (outer)



ONS, Output in the Construction Industry Sub-national and sub-sector data

Regional contruction orders, output & jobs
(orders & output, current prices, 4-quarter moving total)



ONS: Construction output, New Orders for Construction, Workforce Jobs (via Nomis)

Construction businesses (2019)	
All	56,640
Micro (0 to 9)	53,960
Small (10 to 49)	2,365
Medium-sized (50 to 249)	270
Large (250+)	45

ONS: UK business counts (via Nomis)

Stock of buildings	2019
All non-residential	287,410
Shops	68,010
Offices	60,990
Industrial and warehousing	72,860
Other	85,550
Homes	3,934,940

Valuation Office Agency

Employment by sector	2018	Share	2013	Share	Change
Agriculture, mining, energy & water	98,700	(2.2%)	104,200	(2.4%)	-5,500
Manufacturing	373,300	(8.3%)	358,100	(8.4%)	15,200
Construction	325,800	(7.2%)	327,800	(7.7%)	-2,000
Wholesale, retail, accommodation & food	770,200	(17.1%)	740,100	(17.3%)	30,100
Transport & communications	476,400	(10.6%)	440,700	(10.3%)	35,700
Finance & real estate	249,100	(5.5%)	217,200	(5.1%)	31,900
Professional & technical	380,700	(8.4%)	353,900	(8.3%)	26,800
Admin and support	218,700	(4.8%)	219,200	(5.1%)	-500
Public admin, education & health	1,341,600	(29.7%)	1,266,400	(29.6%)	75,200
Other services	277,500	(6.2%)	244,400	(5.7%)	33,100

Annual Population Survey (LFS) (via Nomis)

CITB's CSN forecast 2019 to 2023	
Change in employment to 2023	16,500
Recruits needed annually	2,640
Employment growth 2019 to 2023	3.9%

CITB, Construction Skills Network, forecasts 2019 – 2023

Annual earnings	2018		2008		Change 2008 - 2018	
(Full-time male)	Mean	Median	Mean	Median	Mean	Median
Construction	42,681	36,347	36,124	30,775	18.2%	18.1%
All industries	40,859	33,500	37,284	29,882	9.6%	12.1%
Difference	4.5%	8.5%	-3.1%	3.0%	-	-

ONS: ASHE, Annual pay - Gross (£) - For male full-time employee jobs

South West

The South West tends to be the more stable region for construction, suffering less volatility in its construction sector than other regions in Great Britain. The Office for National Statistics (ONS) estimates suggest that since 2016 about 7.9% of Great Britain construction output occurred in the region.

Its comparative stability is in part down to having a quarter of its construction output in the private housing repair, maintenance and improvement (RMI) sector. This is more than elsewhere and is greatly fed by inward migration of relatively wealthy older people from other regions, notably London and the South East. The effect is to cushion downturns and temper the speed of upturns.

That said, between 2013 and 2017 there was more than a 31% rise in gross value added (GVA) by the construction sector in the region, well above the growth experienced across the UK. And the pace is expected to continue to be above the UK average over the next few years. This faster growth for construction has meant it has boosted its share of regional GVA, up from 5.8% to 7.1%. Construction's share of employment in the region in 2018 was approximately the UK average of 7.2%.

The strength of the market can be seen in the employment figures, with the South West being a workplace for more workers than live in the region, with many coming in from Wales. Indeed, about 1 in 25 construction workers resident in Wales works in the South West region.

Most construction sectors are expected to grow over the next few years except possibly for commercial. But the strongest growth is expected to come from growth in infrastructure.

The CITB's Construction Skills Network (CSN) regional forecasts suggest the South West will be among the strongest parts of Britain for construction over the next few years with annual growth averaging about 2.2%, against 1.3% across the UK. Much of this rests on the more than £10 billion of contracted work associated with Hinkley Point C.

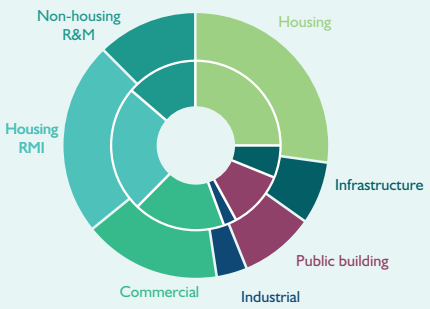
To meet the forecast growth, the industry in the region needs to recruit more workers than any of the other regions or devolved nations. According to the CSN it needs to boost its workforce by 5.9% between 2019 and 2023, which will mean 5,440 new recruits annually to expand the numbers and make up for those leaving the industry. The expectation is that there will be a significant demand for new recruits in most of the main trades and professions. Currently migrant workers make up about 3.3% of the regional construction workforce.

Looking at current rates of pay, the average (median) male construction employee in the region earns around £31,200, about 2% more a year than the average across all industries. The region, however, currently has a higher level of self-employment than all other English regions.

Key Projects

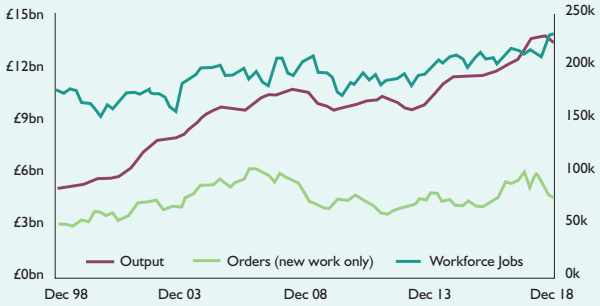
Selected projects pulled from the database of Barbour ABI highlight how construction is enhancing the regional economy. The Hinkley Point C project is by far the biggest in the region with contracts already over £10 billion. As part of Gloucester's ambition to regenerate the heart of the city, plans continue to be pursued for a major redevelopment of King's Square to boost the quality of retail, offices, cultural and leisure and new homes. In Bath the expansion of its housing is continuing with the former Bath Press site turned over to nearly 250 new homes. Meanwhile, Redrow is building almost 400 homes south of Cheltenham and the expansion of Poundbury is continuing with phases three and four. Construction is under way on the £252 million Resource Recovery Centre in Avonmouth which aims to generate up to 32 megawatts of electricity from non-recyclable waste.

Construction output by sector
2013 (inner) to 2018 (outer)



ONS, Output in the Construction Industry Sub-national and sub-sector data

Regional contruction orders, output & jobs
(orders & output, current prices, 4-quarter moving total)



ONS: Construction output, New Orders for Construction, Workforce Jobs (via Nomis)

Construction businesses (2019)	
All	31,900
Micro (0 to 9)	30,065
Small (10 to 49)	1,640
Medium-sized (50 to 249)	170
Large (250+)	25

ONS: UK business counts (via Nomis)

Stock of buildings	2019
All non-residential	219,720
Shops	47,700
Offices	33,560
Industrial and warehousing	58,450
Other	80,010
Homes	2,567,440

Valuation Office Agency

Employment by sector	2018	Share	2013	Share	Change
Agriculture, mining, energy & water	104,400	(3.8%)	88,700	(3.5%)	15,700
Manufacturing	258,100	(9.3%)	253,500	(10.0%)	4,600
Construction	199,300	(7.2%)	195,000	(7.7%)	4,300
Wholesale, retail, accommodation & food	532,600	(19.3%)	522,700	(20.6%)	9,900
Transport & communications	201,600	(7.3%)	188,900	(7.4%)	12,700
Finance & real estate	132,200	(4.8%)	118,500	(4.7%)	13,700
Professional & technical	191,500	(6.9%)	154,900	(6.1%)	36,600
Admin and support	127,700	(4.6%)	114,600	(4.5%)	13,100
Public admin, education & health	858,700	(31.1%)	758,300	(29.8%)	100,400
Other services	158,800	(5.7%)	147,600	(5.8%)	11,200

Annual Population Survey (LFS) (via Nomis)

CITB's CSN forecast 2019 to 2023	
Change in employment to 2023	14,000
Recruits needed annually	5,440
Employment growth 2019 to 2023	5.9%

CITB, Construction Skills Network, forecasts 2019 – 2023

Annual earnings	2018		2008		Change 2008 - 2018	
(Full-time male)	Mean	Median	Mean	Median	Mean	Median
Construction	34,440	31,167	30,883	25,557	11.5%	22.0%
All industries	35,869	30,397	31,504	25,970	13.9%	17.0%
Difference	-4.0%	2.5%	-2.0%	-1.6%	-	-

ONS: ASHE, Annual pay - Gross (£) - For male full-time employee jobs

West Midlands

Along with much of the UK, sustained construction growth in the West Midlands took hold in 2013. Growth started fitfully, but it has accelerated since 2017. Its share of the regional economy has increased from 5.7% to 6.3% between 2013 and 2017.

The region is expected to see the fastest growth in construction of any of the English regions or devolved nations over the next five years. The Office for National Statistics (ONS) estimates suggest that in the three years to the end of 2018 about 7.9% of Great Britain construction output occurred in the region and this share looks set to rise.

The construction sector in the West Midlands is expected to be a big beneficiary of the HS2 work and will also see a surge of construction related to the 2022 Commonwealth Games to be held in Birmingham.

New housing has been the big driver of growth in construction in the West Midlands, as it has across the UK. Its share of total construction output increased from 16% in 2013 to 27% in 2018. But the region has enjoyed solid growth across most sectors outside public building over the period.

The buoyancy of construction in the West Midlands has been underpinned by broad-based economic growth, which has been greater than the UK average. Manufacturing, at the core of the region's economy, has seen particularly strong growth in recent years. Between 2013 and 2017 there was more than a 24% rise in gross value added (GVA) by the construction sector, which was slower than the UK overall at 26%. But the pace has quickened, and prospects look brighter in the West Midlands than in most regions.

This acceleration of growth has meant construction has increased its share of regional GVA, up from 5.7% to 6.3% while the share of employment rose from 6.8% to 7.1% between 2013 and 2018.

CITB's Construction Skills Network (CSN) expects construction growth in the region over the next few years to be positive at an annual average rate of 2.3%, a faster rate than the UK average of 1.3%. Much of this will be driven by infrastructure which is forecast to grow by more than 10% annually.

This is expected to push up construction employment in the region by 14,000.

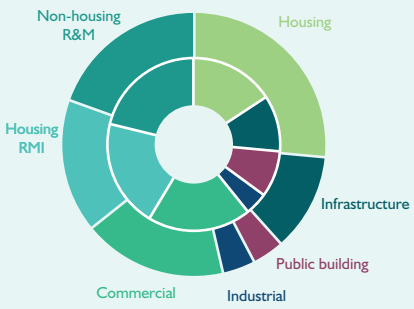
The region will be among the bigger recruiters of construction skills among the regions or devolved nations. According to CSN it needs about 3,800 new recruits annually between 2019 and 2023 to support the 5.6% expansion in the workforce and fill the gaps left by leavers from the industry. The region will need to recruit about 15 new people annually for every 1,000 in the workforce. Currently migrant workers account for about 2.9% of the regional construction workforce.

Looking at current rates of pay, the average (median) male construction employee in the region earns about £33,300, about 10% more a year than the average across all industries. This gap has increased from around 4% in 2018, making the industry more financially attractive to those in the region looking for a career.

Key Projects

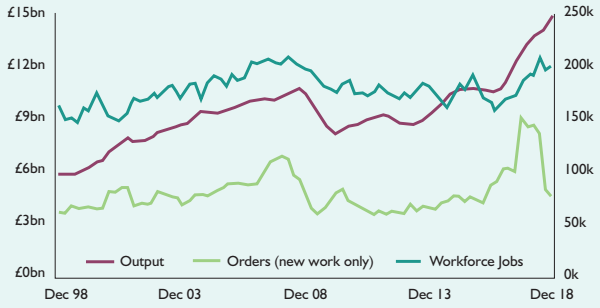
Selected projects pulled from the database of Barbour ABI highlight how construction is enhancing the regional economy. Contracts related to HS2 worth close to £4 billion dominate the projects in the region. On top of this infrastructure work there is more than £200 million of work on the M6 junction 13 to junction 15 smart motorway trunk road improvement. Among the work associated with the Commonwealth Games is the £350 million athletes' village project secured by Lendlease. Meanwhile Barratt Homes is to build 778 homes on a former city college site at Bristol Street on the edge of the city centre. And progress is being made on the Branston Locks development, Burton-upon-Trent, which will see 2,500 new homes built with a range of community facilities.

Construction output by sector
2013 (inner) to 2018 (outer)



ONS, Output in the Construction Industry Sub-national and sub-sector data

Regional contruction orders, output & jobs
(orders & output, current prices, 4-quarter moving total)



ONS: Construction output, New Orders for Construction, Workforce Jobs (via Nomis)

Construction businesses (2019)	
All	25,530
Micro (0 to 9)	24,045
Small (10 to 49)	1,325
Medium-sized (50 to 249)	135
Large (250+)	25

ONS: UK business counts (via Nomis)

Stock of buildings	2019
All non-residential	202,830
Shops	49,680
Offices	35,120
Industrial and warehousing	58,460
Other	59,570
Homes	2,505,570

Valuation Office Agency

Employment by sector	2018	Share	2013	Share	Change
Agriculture, mining, energy & water	70,100	(2.6%)	69,400	(2.8%)	700
Manufacturing	342,000	(12.5%)	341,200	(13.6%)	800
Construction	193,500	(7.1%)	170,100	(6.8%)	23,400
Wholesale, retail, accommodation & food	516,300	(18.9%)	482,000	(19.2%)	34,300
Transport & communications	241,400	(8.8%)	214,700	(8.5%)	26,700
Finance & real estate	111,700	(4.1%)	93,300	(3.7%)	18,400
Professional & technical	164,100	(6.0%)	142,800	(5.7%)	21,300
Admin and support	130,100	(4.8%)	111,300	(4.4%)	18,800
Public admin, education & health	830,500	(30.3%)	766,100	(30.5%)	64,400
Other services	137,500	(5.0%)	121,600	(4.8%)	15,900

Annual Population Survey (LFS) (via Nomis)

CITB's CSN forecast 2019 to 2023	
Change in employment to 2023	14,000
Recruits needed annually	3,820
Employment growth 2019 to 2023	5.6%

CITB, Construction Skills Network, forecasts 2019 – 2023

Annual earnings	2018		2008		Change 2008 - 2018	
(Full-time male)	Mean	Median	Mean	Median	Mean	Median
Construction	36,115	33,273	31,081	26,944	16.2%	23.5%
All industries	36,076	30,231	30,916	25,995	16.7%	16.3%
Difference	0.1%	10.1%	0.5%	3.7%	-	-

ONS: ASHE, Annual pay - Gross (£) - For male full-time employee jobs

Yorkshire & Humberside

Construction growth in Yorkshire & Humberside over recent years has, like most regions, been driven by new housing. But the area also saw a high level of investment in non-housing repair and maintenance. These two sectors of construction activity accounted for about half the construction output in 2018. The Office for National Statistics (ONS) estimates suggest that since 2016 about 7.4% of Great Britain construction output occurred in Yorkshire & Humberside.

Growth has been lower than in most regions, which may reflect the slightly less expansive economic performance in recent years. Yorkshire & Humberside's economic growth, as measured by gross value added (GVA), between 2013 and 2017 is estimated to have been 6.2%, which puts it ahead of the North East and Scotland, but behind all other English regions, Northern Ireland and Wales. The average growth across the UK was close to 10%.

That said, from 2013 to 2017 the GVA by the construction sector expanded by 23%, which was slower than the UK overall at 26%. And with construction growing faster than the regional economy overall the industry's share of regional GVA rose from 5.4% to 6.3%. Meanwhile its share of employment in the region increased from 7.1% in 2013 to 7.5% in 2018.

Construction growth in the region over the next few years is expected to be among the weakest according to CITB's Construction Skills Network (CSN). At an average annual rate of 0.6% it will be about half the UK average of 1.3%. The main drivers of growth are expected to be the infrastructure and housing sectors.

Currently there are more construction workers living in Yorkshire & Humberside than are employed in the region. In that sense it is a net exporter of employment. This obviously helps the local economy, but it may mean that the demand for jobs in the region is slightly less than it might otherwise be.

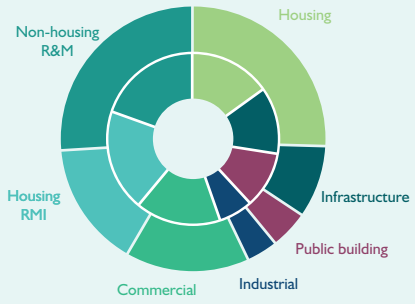
Recruitment for skills in construction over the next few years will be muted with the labour force remaining stable in terms of numbers. However, new recruits will be needed to fill the gaps left by those leaving. CSN puts the annual recruitment rate as 2,010 a year over the period 2019 and 2023. Although the numbers may be static the mix of jobs will change and this will favour those in managerial, professional and technical occupations, which follows the long-term trend towards a more professionalised and technical industry. Currently migrant workers account for about 3.1% of the regional construction workforce.

Looking at current rates of pay, the average (median) male construction employee in the region earns about £33,000, which is approximately 12% more a year than the average male across all industries. As one of the larger gaps regionally in pay between construction and other workers, this should assist in the recruitment of talent.

Key Projects

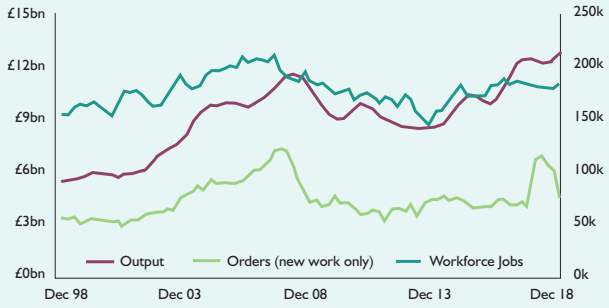
Selected projects pulled from the database of Barbour ABI highlight how construction is enhancing the regional economy. Two huge projects between them worth £6 billion dominate the work scheduled for the region. The three phase Hornsea Offshore Wind Farm, the cost of which is estimated at almost £4 billion, is in progress with work ramping up on the second phase. And work is planned for the £2.9 billion project to upgrade the Trans Pennine railway west of Leeds. Work will wrap up this year at the University of Hull's £130 million West Campus student accommodation project, while work is gearing up on the £113 million contract to deliver a 1,400-bed student accommodation on Campus East for the University of York. Outside York, work has started on the Germany Beck site at Fulford which will provide 655 new homes. In Leeds major redevelopment work is continuing at Wellington Place adding to the £120 million project to build a Government Hub at 7 & 8 Wellington Place.

Construction output by sector
2013 (inner) to 2018 (outer)



ONS, Output in the Construction Industry Sub-national and sub-sector data

Regional contruction orders, output & jobs
(orders & output, current prices, 4-quarter moving total)



ONS: Construction output, New Orders for Construction, Workforce Jobs (via Nomis)

Construction businesses (2019)	
All	23,495
Micro (0 to 9)	21,865
Small (10 to 49)	1,420
Medium-sized (50 to 249)	185
Large (250+)	25

ONS: UK business counts (via Nomis)

Stock of buildings	2019
All non-residential	201,130
Shops	51,970
Offices	36,130
Industrial and warehousing	57,430
Other	55,600
Homes	2,437,890

Valuation Office Agency

Employment by sector	2018	Share	2013	Share	Change
Agriculture, mining, energy & water	62,300	(2.4%)	57,800	(2.4%)	4,500
Manufacturing	287,300	(11.2%)	298,000	(12.5%)	-10,700
Construction	191,000	(7.5%)	169,000	(7.1%)	22,000
Wholesale, retail, accommodation & food	511,000	(20.0%)	474,100	(19.8%)	36,900
Transport & communications	210,600	(8.2%)	190,700	(8.0%)	19,900
Finance & real estate	112,200	(4.4%)	93,100	(3.9%)	19,100
Professional & technical	148,000	(5.8%)	127,000	(5.3%)	21,000
Admin and support	113,900	(4.4%)	100,900	(4.2%)	13,000
Public admin, education & health	788,800	(30.8%)	757,500	(31.7%)	31,300
Other services	135,300	(5.3%)	121,300	(5.1%)	14,000

Annual Population Survey (LFS) (via Nomis)

CITB's CSN forecast 2019 to 2023	
Change in employment to 2023	-
Recruits needed annually	2,010
Employment growth 2019 to 2023	0.0%

CITB, Construction Skills Network, forecasts 2019 – 2023

Annual earnings	2018		2008		Change 2008 - 2018	
(Full-time male)	Mean	Median	Mean	Median	Mean	Median
Construction	36,974	33,006	31,556	28,558	17.2%	15.6%
All industries	34,671	29,354	30,473	25,597	13.8%	14.7%
Difference	6.6%	12.4%	3.6%	11.6%	-	-

ONS: ASHE, Annual pay - Gross (£) - For male full-time employee jobs

Scotland

Scotland's construction sector emerged faster from recession than most of the UK. But its path since 2015, along with its wider economy, has been less vibrant. There are signs of the sector flagging with output falling.

This partly reflects the delayed effects changes in oil prices have on the nation's economy and the impact sharp oil price rise had in 2009 and 2010 followed by the subsequent plunge in 2014. In terms of construction output per head, Scotland ranks the highest after London or all the UK regions and developed nations. The Office for National Statistics (ONS) estimates suggest that since 2016 Scotland accounted for about 9.0% of Great Britain construction output while it accounts for about 8.5% of the population.

Although the regionalised construction output figures paint a picture of a declining market, Scottish Government data on gross value added (GVA) by the sector suggests that work undertaken by construction confirms the nation is still expanding. This divergence may well be related to a changing mix in the workload.

In keeping with many parts of Britain, the expansion seems weighted towards new housing and infrastructure. These two sectors accounted for about 42% of Scotland's construction output, up from 36% in 2013.

The contribution of infrastructure to the construction sector has been much higher in Scotland, at above 16%, than anywhere else in the UK. Over the next few years infrastructure work looks set for a significant drop. Meanwhile, new housing, particularly in the public sector, is expected to grow along with housing repair, maintenance and improvement (RMI).

With growth in construction faster than the wider economy in Scotland its share of national GVA has risen from 5.6% in 2013 to 6.1% in 2018, while the share of employment rose from 6.6% to 7.2% between 2013 and 2018.

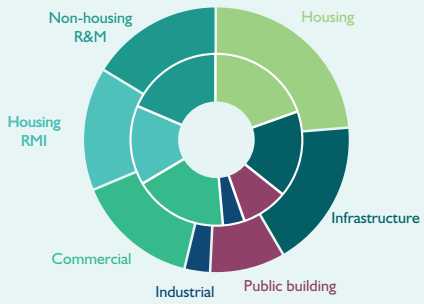
But over the period 2019 to 2023, construction in Scotland is expected to grow slowly, at about 0.5% a year, against a UK average of 1.3%, and employment in the industry should expand slightly over the five years, according to CITB's Construction Skills Network (CSN). The industry will need to recruit to make up for this small expansion and for those leaving the industry. The annual rate of recruitment is put at about 2,790, which amounts to about 12 new recruits for every 1,000 currently in the workforce. Migrant workers account for about 3.1% of Scotland's construction workforce.

Looking at current rates of pay, the average (median) male construction employee in the region earns £30,400, about 2% less a year than the average across all industries. This is a turnaround from 2008 when the average male full-time earnings in construction were 2% higher than across the board.

Key Projects

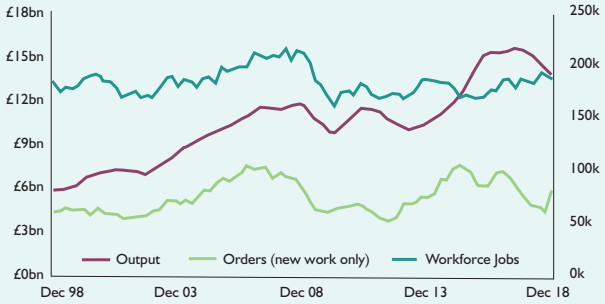
Selected projects pulled from the database of Barbour ABI highlight how construction is enhancing Scotland's economy. Scotland's potential for renewable energy is huge. Among the bigger projects planned or in progress are numerous wind farms, including those planned for the Moray Firth, which amount to almost £3 billion in investment. In Aberdeen the £350-million harbour expansion is well under way. Onshore, the £333 million Aberdeen Event Complex is approaching completion, work is starting on the £164 million Baird Family Hospital and ANCHOR Centre Project at the Foresterhill Health Campus with two buildings to be opened in 2021 and Aberdeen City Council has committed to a programme of building 2,000 new council homes across the city over the next five years. In Glasgow more than 400 homes are due to be built on Strathclyde University's former Jordanhill Campus in a project worth around £150 million and the £82 million Riverside Dalmarnock housing association scheme is well in progress.

Construction output by sector
2013 (inner) to 2018 (outer)



ONS, Output in the Construction Industry Sub-national and sub-sector data

Regional contruction orders, output & jobs
(orders & output, current prices, 4-quarter moving total)



ONS: Construction output, New Orders for Construction, Workforce Jobs (via Nomis)

Construction businesses (2019)	
All	20,680
Micro (0 to 9)	18,790
Small (10 to 49)	1,610
Medium-sized (50 to 249)	235
Large (250+)	45

ONS: UK business counts (via Nomis)

Stock of buildings	2019
All non-residential	253,714
Shops	53,871
Offices	45,130
Industrial and warehousing	55,042
Other	99,861
Homes	2,638,174

Valuation Office Agency

Employment by sector	2018	Share	2013	Share	Change
Agriculture, mining, energy & water	153,800	(5.9%)	134,600	(5.4%)	19,200
Manufacturing	204,900	(7.8%)	203,400	(8.2%)	1,500
Construction	190,300	(7.2%)	164,500	(6.6%)	25,800
Wholesale, retail, accommodation & food	496,800	(18.9%)	480,700	(19.4%)	16,100
Transport & communications	195,200	(7.4%)	187,400	(7.6%)	7,800
Finance & real estate	117,200	(4.5%)	122,500	(4.9%)	-5,300
Professional & technical	159,600	(6.1%)	148,700	(6.0%)	10,900
Admin and support	123,800	(4.7%)	128,400	(5.2%)	-4,600
Public admin, education & health	830,500	(31.6%)	771,500	(31.1%)	59,000
Other services	154,600	(5.9%)	137,700	(5.6%)	16,900

Annual Population Survey (LFS) (via Nomis)

CITB's CSN forecast 2019 to 2023	
Change in employment to 2023	700
Recruits needed annually	2,790
Employment growth 2019 to 2023	0.3%

CITB, Construction Skills Network, forecasts 2019 – 2023

Annual earnings	2018		2008		Change 2008 - 2018	
(Full-time male)	Mean	Median	Mean	Median	Mean	Median
Construction	35,093	30,440	31,896	26,856	10.0%	13.3%
All industries	37,710	31,106	31,527	26,276	19.6%	18.4%
Difference	-6.9%	-2.1%	1.2%	2.2%	-	-

ONS: ASHE, Annual pay - Gross (£) - For male full-time employee jobs

Wales

Construction in Wales has grown at a similar, albeit slightly slower, rate than the UK average since it climbed properly out of recession in 2013. However, having been pegged in 2018 for a bright period of growth in construction, the loss of the £12 billion Wylfa Newydd nuclear power plant project has relegated it to a far slower lane.

The Office for National Statistics (ONS) estimates suggest that in 2016 about 3.4% of Great Britain construction output occurred in Wales. CITB's Construction Skills Network (CSN) expects the Welsh construction sector to grow by about 0.5% annually, against a UK average of 1.3%, so its share of output will decline.

Infrastructure has played a big role in lifting construction output in the nation, and its share of total output has risen from 14% to 20% between 2013 and 2018. And there remains significant infrastructure work in the pipeline. Any growth, however, is expected to be down mostly to private housing.

Measured by gross value added (GVA), construction has done relatively well, between 2013 and 2017. It increased more than 24%, just slightly below the UK's 26%, but enough to make it one of the fastest growing sectors in the Welsh economy. This meant that construction has increased its share of the Welsh economy from 5.2% to 6.1%. The construction's share of employment in Wales has however remained relatively stable, standing at 7.0% in 2018.

But construction in other regions of the UK brings cash into the Welsh economy, as a large slice of the resident construction workforce, about 7% in 2018, was earning its money elsewhere, particularly in the South West.

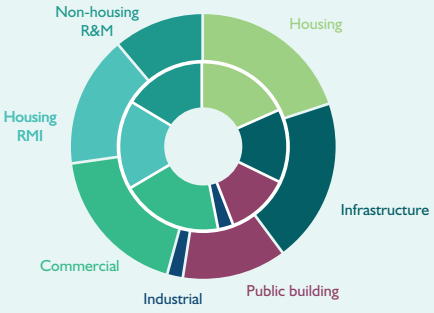
Employment in the Welsh construction industry is expected to grow slightly between 2019 and 2023, but there will still be a need to recruit more workers in solid numbers. According to CITB's Construction Skills Network (CSN), Wales will need about 1,300 new recruits annually between 2019 and 2023, mainly to fill the gaps left by those who leave the industry. Currently migrant workers account for about 1.6% of the Welsh construction workforce, which is the lowest level outside the North East.

Looking at current rates of pay, the average (median) male construction employee in the region earns £29,000, about 3% more a year than the average across all industries. But unlike in most other parts of the UK the gap has closed slightly since 2008, with construction pay rises lagging those of other employees. However, the self-employed share of the workforce has grown significantly in recent years and is now higher than in any English region or Scotland.

Key Projects

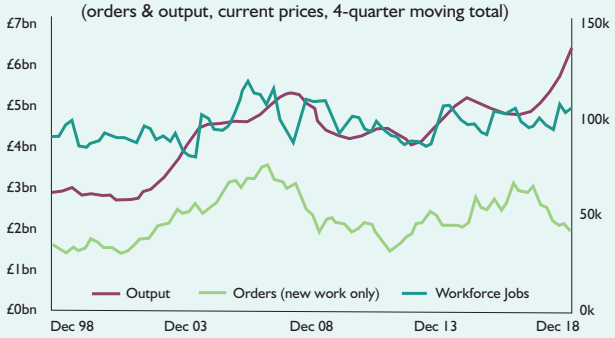
Selected projects pulled from the database of Barbour ABI highlight how construction is enhancing the regional economy. The M4 corridor around Newport represents a major slug of work for Wales over the next few years, with about £1.3 billion being spent and work planned to start this year with completion in 2023. Work began in 2018 on the £300 million Cardiff University Innovation Campus, with the Innovation Centre and with the Translational Research Facility now under way. The £350 million Grange University Hospital project at Llanfrechfa, near Cwmbran, is progressing towards its target of taking its first patients in 2021.

Construction output by sector 2013 (inner) to 2018 (outer)



ONS, Output in the Construction Industry Sub-national and sub-sector data

Regional contruction orders, output & jobs
(orders & output, current prices, 4-quarter moving total)



ONS: Construction output, New Orders for Construction, Workforce Jobs (via Nomis)

Construction businesses (2019)	
All	13,490
Micro (0 to 9)	12,570
Small (10 to 49)	825
Medium-sized (50 to 249)	90
Large (250+)	5

ONS: UK business counts (via Nomis)

Stock of buildings	2019
All non-residential	119,700
Shops	29,470
Offices	18,940
Industrial and warehousing	31,380
Other	39,910
Homes	1,440,920

Valuation Office Agency

Employment by sector	2018	Share	2013	Share	Change
Agriculture, mining, energy & water	66,100	(4.6%)	56,600	(4.2%)	9,500
Manufacturing	155,200	(10.7%)	149,300	(11.0%)	5,900
Construction	101,600	(7.0%)	96,300	(7.1%)	5,300
Wholesale, retail, accommodation & food	284,000	(19.6%)	261,500	(19.3%)	22,500
Transport & communications	89,100	(6.1%)	85,300	(6.3%)	3,800
Finance & real estate	49,000	(3.4%)	50,000	(3.7%)	-1,000
Professional & technical	81,000	(5.6%)	58,500	(4.3%)	22,500
Admin and support	56,800	(3.9%)	46,600	(3.4%)	10,200
Public admin, education & health	483,700	(33.3%)	471,900	(34.8%)	11,800
Other services	83,900	(5.8%)	79,800	(5.9%)	4,100

Annual Population Survey (LFS) (via Nomis)

CITB's CSN forecast 2019 to 2023	
Change in employment to 2023	700
Recruits needed annually	1,310
Employment growth 2019 to 2023	0.7%

CITB, Construction Skills Network, forecasts 2019 – 2023

Annual earnings	2018		2008		Change 2008 - 2018	
(Full-time male)	Mean	Median	Mean	Median	Mean	Median
Construction	31,657	29,045	26,566	25,119	19.2%	15.6%
All industries	32,593	28,110	28,189	24,150	15.6%	16.4%
Difference	-2.9%	3.3%	-5.8%	4.0%	-	-

ONS: ASHE, Annual pay - Gross (£) - For male full-time employee jobs

Ireland

Construction's contribution to the economy of the Republic of Ireland in 2018 was about 2.6% of the total gross value added (GVA) across the various economic sectors. This compares with above 7% in Northern Ireland and about 6.1% in the UK.

It is worth noting that the Republic of Ireland has a much stronger economy than Northern Ireland, and that the GVA per capita across all sectors is much higher. Therefore, in absolute terms, the share figure might flatter the performance in Northern Ireland. Nevertheless, since 2016 there has been more construction activity, as measured by GVA per capita, in Northern Ireland than in the Republic of Ireland.

This divergence marks a shift from previous trends. In 2006, for example, the construction sector accounted for around 10% of the GVA in both Northern Ireland and the Republic of Ireland.

Construction is volatile relative to other sectors. In Ireland over the past two decades it has been exceptionally volatile, particularly south of the border. Between 2006 and 2013 the construction activity in the Republic, measured by GVA, having expanded rapidly shrank to less than a tenth of its peak and the industry shed 70% of those it employed. The rise and fall were less pronounced north of the border, but compared with the rest of the UK, Northern Ireland's construction sector experienced a far sharper decline.

Having absorbed this shock, the industry has picked up strongly across the island of Ireland. The numbers employed have doubled in the Republic in five years and its share of the economy has more than doubled from the low in 2012. Activity in Northern Ireland meanwhile has expanded by about half.

Measured by GVA, construction in the Republic in 2018 was about double that of the North but growing much faster.

The fragmented nature of the construction sector is common across Ireland and mirrors the pattern in Great Britain. The dominance of small firms in construction is common throughout Ireland. Firms with fewer than 10 employees account for 97% of construction businesses in the Republic and 94% of firms in Northern Ireland.

Construction tends to draw in migrants given its boom-bust nature and the mobility that comes with site-based activity. In the Republic non-Irish workers represented about 13% of the workforce in 2018, but the numbers fluctuate. At the height of the boom in 2006, the share of non-Irish in the construction workforce topped 20%. In Northern Ireland the share of non-UK workers in the workforce was put at around 9% in 2018, although definitions of migrant workers become problematic given the mixing of workforces across the border.

Average earnings among all construction workers in the Republic were about £36,000 in 2018, given prevailing exchange rates. Having been suppressed for many years, wages are beginning to rise rapidly as the industry expands and skill shortages appear. The current earnings in the Republic are broadly above the equivalent UK average, well above those in the north, but currently below the earnings in the greater south east of England. The equivalent figure for Northern Ireland is about £28,400.

The income these provide to the economy in terms of compensation of employees (gross pre-tax wages paid) amounted to £3.3 billion in the Republic and £1.3 billion in Northern Ireland. But the economic impact is far greater when we take account of the wages paid to professionals, materials suppliers and others within the supply chain and the generated incomes within the economies where the wage earners live.

The forecasts for activity and employment within construction are very different north and south of the border. The Irish Construction Industry Federation (CIF) suggests average annual growth in the period 2018 to 2020 is likely to be just over 7%, following an estimated 11% rise in 2018. Here the employment issue will be skill shortages. Meanwhile, north of the border the CITB's Construction Skills Network (CSN) forecasts average annual growth over the period 2019 to 2023 at 0.8% a year, against a UK average of 1.3% with the level of employment remaining steady, with an annual recruitment rate of 500 a year.

Note on data: Comparisons between the UK and the Republic of Ireland are tricky, certainly when using the "construction output" concept. The Irish figures tend to be more encompassing. A useful comparison of output between UK and Ireland is provided by Euroconstruct, which for 2017 put Irish output at Euro 20.3 billion and the UK at Euro 212.7 billion using broadly similar definitions. This suggests construction output per capita is about 30% greater in Ireland than in the UK. Additionally, not all tables have been included due to differing measures between Great Britain, ROI and Northern Ireland.

ROI

Construction businesses (2017)	
All	57,255
Micro (0 to 9)	55,387
Small (10 to 49)	1,696
Medium-sized (50 to 249)	155
Large (250+)	17

Central Statistics Office (CSO)

ROI

Stock of buildings	2018
All non-residential	158,740
Shops	38,268
Offices	79,395
Industrial and warehousing	8,578
Other	32,499
Homes	2,032,000

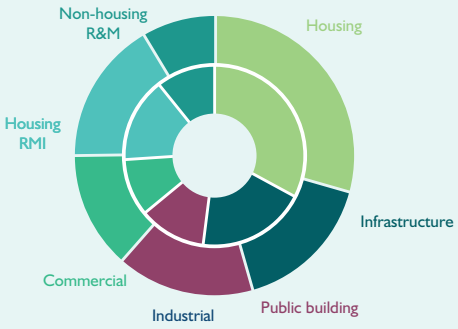
GeoDirectory, GeoView Commercial Vacancy Report, Q2 2019

Employment by sector	2018	Share	2013	Share	Change
Agriculture, mining, energy & water	107,325	(4.8%)	111,850	(5.8%)	-4,525
Manufacturing	279,850	(12.4%)	247,675	(12.8%)	32,175
Construction	143,375	(6.4%)	85,925	(4.4%)	57,450
Wholesale, retail, accommodation & food	477,175	(21.1%)	419,450	(21.7%)	57,725
Transport & communications	216,350	(9.6%)	178,875	(9.2%)	37,475
Finance & real estate	106,025	(4.7%)	102,150	(5.3%)	3,875
Professional & technical	136,650	(6.1%)	118,850	(6.1%)	17,800
Admin and support	103,900	(4.6%)	75,050	(3.9%)	28,850
Public admin, education & health	559,600	(24.8%)	488,825	(25.2%)	70,775
Other services	127,300	(5.6%)	109,125	(5.5%)	18,175

CSO, Labour Force Survey Quarterly Series, table QLF03, 4-quarter averages for 2013, 2018

Northern Ireland (NI)

Construction output by sector
2013 (inner) to 2018 (outer)



ONS, Output in the Construction Industry Sub-national and sub-sector data

NI

Construction businesses (2019)	NI
All	10,520
Micro (0 to 9)	9,865
Small (10 to 49)	575
Medium-sized (50 to 249)	75
Large (250+)	5

ONS: UK business counts (via Nomis)

NI

Stock of buildings	2019
All non-residential	75,000
Shops	n/a
Offices	n/a
Industrial and warehousing	n/a
Other	n/a
Homes	798,971

Northern Ireland Department of Finance, Land & Property Services estimate (non-domestic); Northern Ireland Department of Finance, Annual housing stock statistics (housing)

NI

Employment by sector	2018	Share	2013	Share	Change
Agriculture, mining, energy & water	38,100	(5.1%)	42,400	(5.4%)	-4,300
Manufacturing	82,900	(11.1%)	85,000	(10.7%)	-2,100
Construction	53,500	(7.2%)	56,700	(7.2%)	-3,200
Wholesale, retail, accommodation & food	132,000	(17.7%)	166,300	(21.0%)	-34,300
Transport & communications	45,400	(6.1%)	45,500	(5.7%)	-100
Finance & real estate	29,500	(4.0%)	28,700	(3.6%)	800
Professional & technical	44,600	(6.0%)	28,800	(3.6%)	15,800
Admin and support	33,300	(4.5%)	28,800	(3.6%)	4,500
Public admin, education & health	234,200	(31.4%)	273,500	(34.5%)	-39,300
Other services	53,000	(7.1%)	36,400	(4.6%)	16,600

Annual Population Survey (LFS) (via Nomis)

NI

CITB's CSN forecast 2019 to 2023	
Change in employment to 2023	-
Recruits needed annually	500
Employment growth 2019 to 2023	0.6%

CITB, Construction Skills Network, forecasts 2019 – 2023

Regional Policy Focus

East Midlands

Building better connections

The East Midlands is geographically critical to the transport, distribution and logistics. Taking key related sectors of the economy (wholesale trade, land transport, warehousing and transport support along with postal and courier activities[65]) these represented about 7.1% (at current prices) of the UK economy in both 2007 and 2017, but in the East Midlands in 2007 it represented 8.8% of the regional economic activity, while in 2017 it represented 10.0%.

The data shows the increasing importance of distribution and storage services to the region which is likely to grow with the rise of internet sales. This suggests huge potential to work with construction to plan and develop more innovative and productive approaches, which should generate higher levels of activity with higher paid employment for both and build on the region's geographical advantages. One subsector that is light in the region relative to the UK overall is air transport. Airport expansion is controversial at a national level, but the East Midlands might argue a case to shift growth to a more geographically central location. This would put less strain on, for instance, the South East. This would also bring employment to the region and, given it advantages in connectivity, enhance the overall effectiveness of the UK transport system.

South West and Wales

Embracing the ageing population

The South West and Wales have the highest proportion of citizens aged 75 or over. In 2017 against a UK average of 8.2% the proportion in the South West was 9.9% (up from 9.4% in 2007) and in Wales the proportion was 9.2% (up from 8.4% in 2007). The national increase between 2007 and 2017 was more than 15% and population projections suggest a sharper rise of above 60% over the 20 years from 2017 to 2037.[66]

Promoting projects, research and training that focus on ways to adapt the built environment for an ageing population, would support the local economies and reduce the growing local authority and health service welfare costs associated with the rapidly expanding numbers of older people. Establishing new approaches and solutions to tackling this growing global issue would not just benefit the region. The built environment has a major impact on the health bills of older people. It would also develop skills and knowledge in the region that will increasingly be in demand across the globe.

Scotland

Moderating volatility

Scotland's economy, with a strong showing from oil & gas and agriculture & forestry, is based more on resources- than the rest of the UK. Resource-based economies are more prone to volatility caused by fluctuations in exchange rates and commodity prices. Volatility in the wider economy is amplified in construction with damaging effects. The impact of oil prices on construction is evident in Scotland, most clearly in house building around Aberdeen.

Research suggests strong economic and institutional regimes regarded as helpful in mitigating detrimental impacts. One possible approach to reduce the impact of volatility might be to create a flexible financial pool providing funding for an agreed prioritised schedule of longer-term projects. The inflows and outflows to the fund could be arranged to work countercyclically to smooth the demand for construction. In effect the fund would be topped up when activity and prices in the resources sectors are high and funds drawn when they are low. This would not only benefit the wider economy (retaining jobs in construction during downturns) but support effectiveness, confidence and innovation within the construction sector.

West Midlands, North West, North East and Yorkshire & Humberside

Integration within the construction sector

The regions of the Northern Powerhouse along with the West Midlands individually and jointly have a deep and rich industrial heritage. These regions are home to numerous product assemblers and their supply chains, which include a raft of business spanning from high-tech specialists to major heavy engineering operations. These firms jointly not only supply the UK market but also satisfy growing demand across the globe.

Embedded within this industrial network are the engineers, managers and entrepreneurs that support the necessary development and innovations that keep these businesses relevant to ever changing demand.

This provides an ideal platform on which to build strong foundations for a construction industry that is rapidly moving towards greater integration, with work shifting from the point of assembly – the construction sites – to the design offices and offsite factories. Many of the offsite factories are already being set up in the north of England, such as Ilke Homes in Knaresborough, North Yorkshire and Legal & General Modular Homes, near Leeds and Laing O'Rourke's Explore Industrial Park, in Nottinghamshire.

The need for integration and the benefits of clustering related firms suggest that policies promoting increased engagement and encouragement could, at this period of rapid change, benefit both the wider construction sector, the economies of these regions and the nation. Now is the time to provide resources to nurture what looks set to become a significant job-creating, value-generating part of the construction industry and the overall economy.

London, South East and the East of England

Transforming a built environment legacy

Technology change (the impact of the internet and emerging technologies such as driverless cars) along with tackling climate change and a major demographic shift will mean a deep overhaul of the built environment. The greater south east is the most densely populated area of the UK, with the highest density of buildings. According to Eurostat[67] figures the proportion of land in the greater south east (South East, London and the East of England) taken by the built environment is 24.5%, about twice the UK average of 12.8%. The UK's building stock is very mature with arguably the oldest housing stock in the world. The densely populated greater south east will need to transform its built environment legacy to match a rapidly changing world.

Policies focusing on productivity, energy efficiency, quality of life, social cohesion and welfare will be essential in this transformation. The challenge is multi-disciplinary, but expertise in the built environment is a critical ingredient. Innovative solutions in techniques and funding mechanisms will be needed not just to create the end products, but to facilitate a challenging transition. These need to be based on a wider appreciation of the true value of construction and the built environment.

Recommendations

Creating clusters of construction-related businesses and activities and hubs of excellence

Clustering of businesses is seen as positive for innovation, productivity and raising the potential for international trade.

There is growing pressure for the construction sector to undergo a major reshaping, changing its focus from lowest cost to highest value and to increase its uptake of labour-saving technologies. Construction is also set to be a key player in efforts to reduce the impact of climate change, which may entail radical changes to current practices. There is also significant expansion in the global construction market which presents UK firms with huge opportunities.

This is a period when the industry would seem to benefit greatly from clustering. It could prove a critical tool in fostering closer cooperation across the supply chain and opportunities for knowledge sharing essential to meet the challenges ahead.

We recommend that both local and central government should seek to promote and support clusters of construction-related businesses to act as hubs of excellence and innovation. Incentives, such as low rents or low rates and provision of other services, such as business mentoring, that support development of the sector should be provided for a diverse range of businesses such as engineers, architects, surveyors, contractors, specialists and product manufacturers. These clusters should be near to and linked to centres of education and training. Incentives should, however, where appropriate be tied to engagement and training, with detailed assessments of their effectiveness.

Better measures to understand value

As the report has shown, the value construction provides – economic, social and environmental – is not revealed in the data provided. This inevitably leads to misinterpretation which can easily be translated into sub-optimal policy. Better measurement is needed if good policy is to be shaped.

Firstly, satellite accounts for construction should be prepared annually by the ONS in cooperation with the Department for Business, Energy & Industrial Strategy. These accounts would pull together all the essential elements of official data across what is described as the broad construction sector. This would provide on a consistent basis a series of meaningful statistics that capture the whole industry and not simply the assembly work undertaken on site. This would provide a clearer picture of trends in productivity, activity, employment and demand related to delivering the built environment. It would enhance the information needed for good decision and policy making.

Secondly, the expectations of building performance are rightly rising, with increasing emphasis on energy performance and the impact on welfare. If the industry is to fully understand how well its products (buildings and infrastructure) perform in practice, then post-occupancy evaluations are essential. CIOB supports calls by fellow institutions such as the RIBA in urging the government to do more to promote the use of post-occupancy evaluation and where practical, provide data, albeit anonymised, for research purposes.

Thirdly, the industry, local and central government and academic institutions should seek to promote more research into the value generated by construction which is not captured in the market. Significant work is being undertaken to assess the impact on land values, but deeper understanding of the externalities and spill over effects created by developing the built environment will provide scope for a more accurate appraisal of potential projects, leading to improvements in the value added through construction.

Devolved and smart funding for training

In line with devolving powers to city regions, the Department for Education is transferring elements of funding to the Mayoral Combined Authorities and the Mayor of London to undertake adult education. Most will take control in the academic year 2019/20, with North of Tyne and Sheffield City Region looking to take control in 2020/21.[68]

This is an important and potentially positive move for the wider construction sector. The trends suggest the production methods of industry are set to undergo a radical shift, with far more work being done offsite. This has major implications for training.

The most obvious is that the blend of skills needed nationally will change, as factory production is adopted. CITB's analysis into the impact of modern methods of construction on skills requirements for house building suggests there could be a shift of between 44% and 60% in skilled trades and manual occupations to working offsite.[69] This will not be a one-off

change. Assuming offsite is widely adopted, there will be rapid development as it matures.

Perhaps less obvious, there will be the regional variations in the demand for offsite skills that will relate more to where factories are sited rather than to where there are construction sites. We might reasonably expect there to be a northern bias in offsite production. Combined authorities will need to develop strategies for training that relate to their local demand for labour, which will be influenced by the share of offsite manufacture as well as construction activity. They will also have to be closely monitoring national patterns of demand and maintaining close dialogue with national bodies such as the CITB and professional bodies in the built environment when shaping their training plans.

There is a further issue that might easily be overlooked. Shifting construction offsite, may also shift activity once deemed as construction outside the industrial sector as it is defined. Elements may potentially be classified as manufacturing or maybe services. Given that funding pots often follow industries as they are classified, this may mean restructuring how we think about construction training and pay greater regard to how the skills needed to deliver the built environment connect, as they increasingly will, across each of these industrial sectors.

In light of this we recommend that those charged with training locally take specific note of these developments in their design of local training plans. More importantly, training needs to be developed in light of the potential economic opportunities that will be released by these changes and focused on the creation of high-value jobs. Ongoing discussions with the professions in the built environment will also present a round picture of skills considerations now and in the future.

There is a need to provide strong incentives to encourage training. This is particularly true of construction where the workforce can be highly mobile and move firm to firm, or into self-employment. This can disincentivise firms from training, as the opportunities for free riders are great. We suggest that it may be appropriate as far as possible and practicable to encourage training through obligations embedded in the system of public procurement.

The dynamism of change that appears to be facing construction should be grasped as an opportunity to deliver smarter, more effective training and seen as a springboard to create a more diverse and engaged workforce.

A business model fit for purpose

Concerns over how the construction industry operates to deliver the built environment are perennial. It has been a topic of numerous government and industry reviews for the best part of 80 years. More recently, allied to these concerns, has been increasing scrutiny over the struggle construction firms have to create enough value to sustain them through often volatile business cycles.

A large amount of construction work is tied to delivering medium- and long-term investment to the economy – offices, roads, factories, warehouses, homes etc. This means that when downturns hit and investment dries up, the flow of work falls rapidly. On the upturn when exuberance returns the industry often struggles to keep pace with demand.

This has fostered an industry business model, certainly among the larger firms, that is light on capital investment – other than perhaps land in the case of house builders – which typically seeks to devolve risk down the supply chain and focus on cash generation. The barriers to entry into the market are therefore low, competition is high and consequently profit margins are very low. Major contractors tend to operate on negative capital employed, owing more to their suppliers than they are owed by clients. The differentiation between firms mostly comes down to the bid cost.

The result is an industry characterised as one that invests little in research and development, frequently suffers from skills crises, disappoints its clients by failing to deliver on budget, to deadline or on the expected quality and experiences more than its fair share of business failures.

There is a growing view within and from outside the industry that the business models that underpin the way the industry operates needs major overhaul. This is a view that the CIOB supports.

It is also a view recognised in government and we recommend that the government remains committed to reviewing the construction industry's business model. However, in its deliberations we also recommend that it considers ways in which, as a critical key industry client, it can support more efficient, effective and sustainable business models within construction.

We suggest three potential avenues of thought. Firstly, how it might act long-term to subdue the volatility within the sector. Secondly, it might review how it selects construction firms and seek ways that, while retaining necessary competition, encourage those who operate to use more beneficial business models. Thirdly, that it considers how the regulatory framework, and the business cultures they shape, might be improved to promote better business models.

Boosting support and networking to promote international trade

The future of the UK rests increasingly on the export of services. From about a quarter of all exports 70 years ago, services now account for close to a half. In terms of the nation's balance of payments services are even more important. Exports in services deliver a positive balance equivalent to about 5.1% of GDP from 2016 to 2018, which helped to offset the 6.7% trade deficit for goods over the same period.[70]

Over the past 25 years or so exports of architecture, engineering and other professional services related to the built environment have increased greatly. While it is tricky to ascertain precise figures, UK exports of professional services into the global built environment market stood at around £12 billion in 2017. They now represent about 2% of all exports compared with about 1% in the early 1990s. In cash terms they roughly doubled between 2007 and 2017, as UK firms hit by recession took a wider view of opportunities (see Figure 9 and associated sources).

The hunger for built environment expertise in the faster developing nations is huge and is providing most of the global growth. This suggests that the coming decades could provide a golden age for the export of UK engineering, architectural, surveying and managerial talent into the global built environment market.

We recommend that both central and regional government prioritises support for construction related businesses, especially professional businesses that provide services to construction. The support should include providing more information, guidance and insights, direct encouragement through arranging seminars and networking events and where appropriate providing financial support in the form of directed loans or grants. Most importantly, it should focus on creating a connected UK ecosystem of complementary construction-related businesses that can provide mutual support entering and operating in overseas markets (see recommendations on clusters).

Endnotes

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8 *Satellite accounts* are described by ONS as accounts that cover activities linked to the economy but not part of the core UK national accounts including environmental accounts, tourism satellite account, and household satellite accounts. The CIOB and others believe there is a strong case to create a set of satellite accounts relating to the production of the built environment, which would draw together the elements of the broader construction sector beyond what is accounted for within the GDP or construction output figures.

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